The Old Medicines and the Net

History, theory, diagnosis, illness and healing in the old medicines of the world, read with the Vacuum.Net Theory and VALIS

J. Konstapel

Constable Research, Leiden

First edition, November 2026

The collecting of sources and the draft text of this edition were made by an AI model (Claude, Anthropic), on instruction of the author. The author set the question, the scope, the choice of the main traditions and the reading with the theory.

© 2026 J. Konstapel, Constable Research, Leiden. All rights reserved. Quotation with attribution is permitted.

Nothing in this book is medical advice. The book describes how old medicines read illness and how they heal. It does not tell a reader what to do about an illness of his own. Any change of treatment belongs with the person’s own doctor.

Several old remedies named in this book can harm. Some contain lead, mercury or arsenic. Some plants damage the kidneys or the liver. Chapter 75 lists what is known. A remedy is named here because a tradition uses it, not because it is safe.

Contents

Preface: what this book is 7

Part I — The Ground 13
1. One strand 14
2. Two ladders and the first knot 24
3. The body is a depth 31
4. Illness and cure in the Net 39
5. Perceiving, and six rules for acting 46
6. The complementary universe 53
7. VALIS: the self and the Other 60
8. How to read an old medicine 67

Part II — The Oldest Medicine: The Shaman 75
9. What a shaman is 76
10. The making of a healer 87
11. The San: n/om and the dance 97
12. The San: the /Xam testimony, the Mantis and the rock 107
13. Aboriginal Australia 115
14. Siberia and the Sámi 124
15. Inner Asia and the Himalaya 135
16. The Amazon: plant teachers 143
17. The Andes 154
18. Mesoamerica 162
19. The Navajo 173
20. Other nations of North America 185
21. The illnesses of the shaman's world 195
22. What has been measured 203
23. Read with the Net and VALIS 209

Part III — Yoruba and Ifá 221
24. The Yoruba world 222
25. Ifá: the diviner, the instruments and the cast 229
26. The geometry of Ifá 233
27. The sixteen great signs 241
28. Verse, sacrifice and medicine 262
29. Illness and healing in practice 268
30. Africa beyond Ifá, and across the ocean 274
31. Read with the Net and VALIS 280

Part IV — Temple and Text: From Mesopotamia to Unani 290
32. Mesopotamia: healers and texts 291
33. The Diagnostic Handbook 296
34. Mesopotamian therapy and ritual 304
35. Egypt: the body and its healers 311
36. Egypt: remedies, spells and the temple 318
37. Greece: Asklepios and the dream 324
38. The Hippocratic writings 333
39. Alexandria, Rome and Galen 345
40. From Baghdad to Delhi: Unani medicine 351
41. Illness and cure in the humoral world 362
42. Europe after Galen: cloister, shrine and fire 372

43. Read with the Net and VALIS 382

Part V — The Eastern System: China, India, Tibet 393
44. China: three thousand years of medicine 394
45. The four classics 405
46. The ground: qi, yin and yang, the five phases 413
47. The body: organs, warp and net 425
48. Causes and names of illness 438
49. The four examinations 449
50. The pulse 457
51. Needle and fire 466
52. Drugs and formulas 475
53. Food, hands, movement and stillness 503
54. The illnesses in Chinese medicine 509
55. Chinese medicine today 519
56. India: the knowledge of long life 524
57. The ground: three faults, seven tissues, one fire 531
58. Diagnosis in Indian medicine 541
59. The illnesses in Indian medicine 548
60. Healing in Indian medicine 558
61. Siddha, the vital points, yoga, and what has been measured 569
62. Tibet: the knowledge of healing 575
63. Tibet: diagnosis and the illnesses 582
64. Tibet: healing 591
65. Japan, Korea and Vietnam 597
66. One system 605
67. Read with the Net and VALIS 613

Part VI — Hawai‘i and the Pacific 623
68. Hawai‘i 624
69. Ho‘oponopono: to set right 637
70. Across the Pacific and the islands of Asia 650
71. Read with the Net and VALIS 684

Part VII — Convergence 695
72. The points of agreement, counted again 696
73. The counts 718
74. Rules, trials and tests 731
75. Measured, not measured, and harmful 744
76. Open questions 762

Part VIII — Atlas: The Illnesses, One by One 769
77. How to read the atlas 770
78. Fevers and infections 773
79. Breath, heart and vessels 786
80. Digestion and the turning of food 799
81. Pain and movement 815
82. Skin, eye and ear 828
83. Mind and spirit 837
84. Women and children 857
85. Growths, poisons and injuries 870
86. Old age and dying 880
87. Illnesses of want 887
88. Further infections 896

89. The passages 910
90. Nerves, senses and seasons 922
91. Illnesses that the hospital does not name 930
92. Women and children, second series 941
93. What the atlas shows 951

Part IX — Reference: Points, Drugs, Books, People and Comparisons 960
94. The three hundred and sixty-one points 961
95. The Chinese pharmacy, continued 997
96. Chinese formulas, continued 1022
97. The pharmacies of India, Tibet and the Unani physicians, continued 1038
98. The European herbal 1057
99. The plants of the Americas 1066
100. The plants of Africa 1073
101. The classical books: a reader's guide 1079
102. Healers and scholars: a who's who 1089
103. Measures, doses and preparations 1117
104. The atlas by tradition 1124
105. The hour, the day and the season 1191
106. Training, oath, fee and law 1196
107. The tools and the places of the healer 1202
108. One plant in four pharmacies 1207
109. Small ills and sudden dangers 1213

Appendices 1218
A1. Historical theories of what causes illness 1219
A2. Traditional medical systems 1230
A3. Fields, frequencies and information 1234
A4. Structure and touch 1252
A5. Nutrition, terrain, cleansing and natural cure 1260
A6. Plants and remedies outside the pharmacy 1274
A7. Mind, feeling and body 1282
A8. Breath, movement, rhythm and nature 1293
A9. Spiritual and religious healing 1302
A10. Scientific frameworks beyond the single compound 1309
A11. Other ways of diagnosis 1320
B. The three hundred beside the book on the body 1329
C. VALIS and the complementary universe on constable.blog 1355
D. Glossary 1369
E. Chronology 1381

Annotated references 1392

Index of names and subjects 1489

Preface: what this book is

The question

People fall ill. Most of them recover. Some do not. Three questions follow. Why do people fall ill? How do they best recover? And are there other remedies than the ones made by pharmaceutical chemistry?

Mankind has answered these questions for a very long time. The oldest answers are older than writing. They are older than farming. A healer of the San in the Kalahari works in a way that rock paintings show for thousands of years. A Chinese physician reads a pulse by rules written down two thousand years ago. A Yoruba diviner casts a chain and names one of 256 signs, as his teachers did before him. None of them needed a laboratory.

This book collects those answers. It sets out the history of each old medicine, the ground it stands on, how it finds what is wrong, how it names the illness, and how it heals. Then it reads each medicine with one theory, the Vacuum.Net theory, and with one body of reports, called VALIS.

What an old medicine is

The word “alternative” is a word of position. It says: other than the medicine of the hospital. For most of history, and for much of the world today, the medicines in this book are not other. They are medicine. The World Health Organization counted 170 member states that report the use of traditional and complementary medicine (WHO 2019).

In this book an old medicine is a way of healing with three parts of its own. It has its own diagnosis. It has its own naming of what is wrong. And it has its own way of healing. A community of practitioners carries it over many generations. A single remedy is not a medicine in this sense. A single theory is not one either.

That is also what sets these medicines apart from each other and from the hospital. A hospital physician and a Navajo singer may meet the same patient on the same day. They do not find the same illness. They do not give it the same name. They do not do the same work. This book takes that difference as its subject.

The choice of traditions

The world holds hundreds of healing methods. A list made for this research names three hundred (Konstapel 2026a). No book can treat all of them at depth. So three tests were set.

The first test is age. A tradition that has been carried for a thousand years has been tried on many patients by many healers. What did not help was dropped more often than kept.

The second test is the number of practitioners and patients. A medicine used by hundreds of millions is not a private belief.

The third test is the clearness of the explanation that the theory gives. Some traditions can be described in the language of the theory almost line by line. Others cannot, or not yet.

Five families pass the three tests. They are the main parts of this book.

Part	Family	Peoples and schools
II	The shaman	San, Aboriginal Australia, Siberia and the Sámi, Inner Asia, the Amazon and the Andes, Mesoamerica, the Navajo and other nations of North America
III	Yoruba and Ifá	The Yoruba of West Africa, their diviners and herbalists, other African healers, the diaspora in the Americas
IV	Temple and text	Mesopotamia, Egypt, Greece, Galen, the Unani medicine of the Islamic world and India
V	The Eastern system	China, India and Tibet, with Japan, Korea, Vietnam and Mongolia
VI	Hawai‘i and the Pacific	The Hawaiian healers and their setting right of the family, the Māori and other Pacific peoples

The Chinese, the Indian and the Tibetan medicine are treated as one system. The reasons are given in chapter 66. The shaman is treated as a medicine of his own kind, because he works with what this book calls the complementary universe and with many forms of awareness.

All other methods are in Appendix A. There are some 270 of them, from homeopathy and osteopathy to bioresonance and Bach flower remedies. Each is explained in short: where it comes from, what it says, what it does.

The atlas, the reference part and the appendices

Part VII brings the five families together. Two further parts turn the book into a work of reference.

Part VIII is an atlas of ninety-three illnesses, from fever to the illness that calls a healer. Each entry gives the names and causes in the old medicines, the signs by which the illness was known, what was done, and what has been measured. It then gives the entry of the earlier book on the body, where there is one, and a reading with the Net.

Part IX holds the lists. It gives the three hundred and sixty-one points of the Chinese body. It gives the drugs of China, India, Tibet and the Unani physicians, the Chinese formulas, and the plants of Europe, the Americas and Africa. It describes the classical books and lists the healers and scholars who are named in this book. It gives the old measures and preparations, and it turns the atlas so that it can be read tradition by tradition. Its last chapters set the traditions side by side on five matters. The first is the hour and the season of a cure. The second is the training and the law of the healer. The others are his tools and his places, the nature of one drug in four pharmacies, and the small ills of the household.

Five appendices follow. Appendix A explains the other methods. Appendix B sets the three hundred methods beside the book on the body. Appendix C lists what the author has written on VALIS and the complementary universe. Appendix D is a glossary and Appendix E a chronology. The annotated references and an index of names and subjects close the book.

How each part is built

Each family is described in the same order.

1. **History.** Where and when the medicine arose, how it was carried, how it met other medicines, where it stands today.
2. **The ground.** What the tradition says a human being is, and what illness is. The tradition's own words are kept.
3. **Diagnosis.** How the healer finds what is wrong. What he looks at, touches, hears, asks or casts.
4. **The illnesses.** How the tradition names and orders what goes wrong, and which illnesses it treats most.
5. **Healing.** What the healer does, with what, in which order, and for how long.
6. **What has been measured.** Trials and studies, with their numbers and their limits.
7. **Read with the Net and VALIS.** The same material once more, now in the language of the theory.

The first six sections say what the sources say. The seventh is a reading. The two are kept apart by their headings. A reader who does not want the theory can skip every seventh section and still have a full account of the tradition.

The two instruments of reading

The first instrument is the Vacuum.Net theory. Its formal statement has five axioms and some twenty theorems (Konstapel 2026b). In plain words it says that there is one strand. A distinction is a return of the strand to a place where it has been. What returns can close or stay

open. What closes persists. What does not close passes on as tension. The same rule holds at every depth. A body is one such depth. An earlier book computed what the rule gives for the body, for illness and for cure (Konstapel 2026c). Part I of this book repeats what is needed from it.

The second instrument is VALIS. The name comes from the writer Philip K. Dick: Vast Active Living Intelligence System. In the author's use it stands for a question. What does a human being meet when he meets what is not himself, and how much of it turns out to be himself? Across cultures and thousands of years the reports of such meetings show the same few figures and the same short course (Konstapel 2025). Healing traditions are full of such meetings. The shaman's spirits, the ancestors of the Yoruba, the gods of the Mesopotamian diagnosis and the healing god of Epidaurus all belong here. With VALIS comes the complementary universe: the other half of the world, which the old traditions entered by trance, by dream and at death.

A reading with these instruments is not a proof. The old medicines do not prove the theory. The theory does not prove the old medicines. A reading shows something more modest and more useful. It shows whether a tradition can be described in the language of the theory, where the description fits closely, and where it does not fit.

A rule of language

Modern speech about the body is full of words from the age of the steam engine. The body "burns fuel". It "runs out of energy". An illness is a "malfunction". A cure is a "repair". These words carry a picture: a machine that turns a stock of something into work, breaks down, and is fixed by a mechanic.

The old medicines do not hold that picture. The theory does not hold it either. So this book keeps those words out of its own sentences. It does not say that qi is energy or that a meridian is a channel through which something flows. It keeps the tradition's word and describes what the healers do with it. Where a source uses such a word, the word appears in quotation marks as the word of the source.

The words that this book uses for its own account are few. A strand winds. A winding has a direction. A window closes or stays open. Two stretches meet at a seam. What stays open is tension. A healer reads. These words are explained in Part I.

Experience and knowledge

An old medicine is first a practice. A pulse is felt under three fingers. A sickness is seen in the body of a dancer by the light of a fire. A chain falls on a mat. What the healer knows cannot be separated from what he does and feels.

A book can only describe. And a description can do damage. It can turn a living act into two numbers or four labels and then call the labels the medicine. This book tries not to do that.

Where a tradition has an image, the image is given: a pulse “like pearls rolling in a dish”, a sickness that is “pulled out” and “thrown away”. Where a tradition has an order of acts, the acts are told in that order. The schemes and tables in this book are aids for the reader. They are not the tradition.

What the book found

Part VII brings the traditions together. Ten points return in tradition after tradition, without known contact between them. A healer reads by making contact, with the hand, in trance, in a dream or by a cast. Illness is also found outside the body: in the family, among the ancestors, in the land. The name of an illness points to a place in a larger whole. Healing very often means that something is taken out or driven out, and that the patient sees it go. Rhythm, sound and the group are used everywhere. The healer is formed by a passage of his own. Direction counts for more than amount. Much healing is done in sleep. The reading comes before the act. And before the reading, the healer or the patient is made still by fasting, washing or keeping apart.

The theory gives each of these points a place. It also explains something else. The traditions count differently. One counts in twos, one in threes, one in fours, one in fives, and nearly all of them know the twelve. Chapter 73 shows that these are not five arbitrary choices. In the theory there are two ways to close, a meeting and a ring. One doubles and one triples. The two never coincide, and the places where they come closest are five and twelve.

How this book was made, and its limits

The research behind this book was done in November 2026. It began with the list of three hundred methods. It went on with a search of the medical literature for what has been measured about diagnosis and healing in the old medicines. It then moved to the oldest traditions and to the author’s own writings on perception, on the old oracles and on VALIS.

The collecting and the drafting were done by an AI model on instruction of the author. That has consequences, and the reader should know them.

- The accounts of the traditions rest on the standard literature of each field: ethnographies, translations of the classical texts, histories of medicine. The annotated references at the end name the works. The drafting model has read widely but not everything, and it writes from what it has learned. Details can be wrong.
- Numbers from trials and surveys were read in the cited papers or their abstracts during the research. Where a number comes from a secondary source, the text says so.
- Words between quotation marks come from sources that were read for this book, or are lines that are well known and easy to check. Nothing between quotation marks was made up.
- The reading with the theory is a reading. It was not tested against data in this book. Chapter 74 says how parts of it could be tested.

- Three pieces of the book were made by a program from the rest of the text. They are the chapter column of chapter 102, the tables of chapters 104 and 108, the third list of Appendix D and the index. A program finds a word and not a thought. It misses a place where a subject stands under another name.
- No person other than the author has reviewed the text.

A reader who needs certainty about a detail should go to the reference given for it. The list at the end was made for that purpose.

Not medical advice

This book describes. It does not prescribe. It tells how a Tibetan physician reads urine and how a Hawaiian elder sets a family right. It does not tell a sick reader what to do. Old remedies can harm, some of them badly, and an illness that a hospital can cure should not wait. Chapter 75 lists the known harms. Any change of treatment belongs with the person's own doctor.

How to read

The parts can be read in any order. Part I gives the theory, the body, perception, the complementary universe and VALIS. A reader who knows the earlier books can go straight to a tradition. A reader who cares only for one medicine can read its part alone. Every part ends with its own reading with the Net. Part VII needs the others.

Parts VIII and IX are made for looking up. A reader with one illness in mind can open its entry in the atlas and read across the traditions. A reader who meets a point, a drug, a formula, a book or a name can find it in Part IX or in the index.

The spelling of words from other languages follows the main works in each field. Chinese is given in pinyin without tone marks. Sanskrit and Tibetan are given in a simple form without diacritics. San words keep the click signs of the ethnographers.

Part I — The Ground

1. One strand

Why a theory stands at the start of a book on medicine

This book sets very different medicines side by side. A San healer, a Babylonian exorcist and a Tibetan physician do not share a word. If each is described only in his own terms, the reader ends with a row of closed rooms. If all are described in the terms of the modern hospital, most of what they do disappears. The hospital has no place for a sickness that sits in a family, and no word for a healer who reads by going into trance.

A third language is needed. It must be simple enough to hold a dance and a pulse and a prayer. It must not carry the picture of a machine. And it must say something about illness and about healing that can be laid beside each tradition.

The Vacuum.Net theory is used here as that language. This chapter gives it in plain words. It follows the formal statement of the theory, the *Foundations* of the Ninth Edition (Konstapel 2026b), and the first chapters of the book on the body (Konstapel 2026c). A reader who wants the proofs will find them there. Every count in this chapter was computed and checked in those two works.

Light and the path

The theory begins with very little. The only one there is, is light. Light is a location on a strand. It moves along the strand with the speed of light.

There is nothing beside the strand. It does not lie in a container. It is not carried by anything. It is the path that the light goes. What is called the universe is that path and nothing else.

The path has no fixed shape. It is not a grid that was laid out before the light came. But it does one act that matters. It returns. The strand comes back to a place where it has been. The *Foundations* take this as their first axiom.

> N1 (Strand). There is exactly one strand. Every distinction is a loop.

A loop here is a return. A place that the strand visits at least twice is a node. Each visit is a passage. So a node has a first passage and later passages.

Everything that can be told apart from anything else is such a return. A stone, a cell, a thought and a word are returns of one strand, wound in different ways and at different depths. That is the sense in which the theory is about medicine. A body is not outside the theory, waiting to be explained by it. A body is a winding of the strand. It is a depth.

An older wording of the same axiom says the same with other words. “There is one strand. It is oriented and continuous. Its only local act is crossing itself. A self-crossing has three states: over, under, or none” (quoted in Konstapel 2026c, section 1.1). The two wordings meet in the next section.

Direction

When the strand passes a node for the first time, it comes in one way and leaves another way. That first passage sets a direction at the node. Every later passage is read against it.

A later passage can do three different acts.

- It can leave the node the way the first passage left it. It goes along with the first.
- It can leave the node the way the first passage came in. It goes against the first.
- It can do neither.

The theory writes these three as +1, −1 and 0. In the balanced notation they are written 1, T and 0. The *Foundations* give them names: 1 is winding, T is counterwinding, 0 is rest. One such state is called a trit.

The numbers are a way of writing. They are not amounts. A crossing does not hold more or less of anything. It runs one way or the other, or it is not there. The author writes the two crossing states as → and ←. This point is easy to lose, and much depends on it. A reader who hears “plus one” and thinks of a quantity will misread the whole theory. A trit is a direction.

Seen from the side, in a flat picture of a wound strand, the same three states look different. Where the strand crosses itself it passes over, or passes under, or does not cross. These are the three states of the older wording. Over and under are the two directions. None is rest.

Space gives the three states once more. Space has three axes: front and back, left and right, up and down. On each axis a winding can go one way, go the other way, or take no part. So there is not only → and ←. There is also up and down, and towards and away. This returns in many old medicines. Chinese physicians say of a herb that it lifts or sinks, and that it goes inward or outward. Healers in the Andes ask whether the fluids of the body move to the centre or away from it. They speak of direction where the hospital speaks of dose.

Why three

Why three states and not two? With two states a step and its reverse are the same step. Go one step forward on a circle of two places and you are at the other place. Go one step backward and you are at the same other place. Forward and backward cannot be told apart. On a circle of three places they can. One step forward and one step backward end at different places. Three is the smallest count in which a step differs from its reverse.

This is the first theorem of the *Foundations*. It carries a condition, and the *Foundations* say so openly. The condition is that passages are read as steps that add up on a small circle. The reading of a trit as a step is assumed. Whether it follows from the axioms is one of the five open questions of the theory.

Three has a second property. To come back to the start by going round, in steps of one, takes three steps on a circle of three. No shorter round trip exists. So the shortest piece of strand that can go round and return has three passages. That piece is the window.

The window

A window is three passages in a row. It closes when the three add up to zero on the circle of three. In the notation: the sum of the three trits is a multiple of three.

There are 27 possible windows, since each of the three places has three states. They fall into three kinds.

Kind	Example	Number	Closes
Three equal	1 1 1	3	yes
Three different	T 0 1	6	yes
Two equal, one different	1 1 0	18	no
All		27	9 close

Nine of the 27 windows close. The rule can be said without numbers. A window closes when its three passages fully agree or fully differ. It stays open when two agree and the third does not.

The nine closed windows are of two kinds.

A **uniform** window has three equal states: 0 0 0, 1 1 1 or T T T. It holds and does not turn. The book on the body reads it as the fixed form, like a crystal.

A **mixed** window has all three states, each once. There are six of them, the six orders of T, 0 and 1. A mixed window can turn at every step and stay closed. The book on the body reads it as the living form.

Both names are readings. Nothing in the count says “crystal” or “living”. But the two kinds behave very differently in everything that follows, and the difference is the one that medicine knows. A stone in the bladder and the wall of the bladder are both closed forms. They do not close in the same way.

The same nine in the cube

The three places of a window can also be read as the three axes of space. Then a window is one cell of a cube. Each axis takes part one way, takes part the other way, or takes no part. Three axes with three states give 27 cells. Nine of them close, and they are the same nine.

Closed cells	Number	Place in the cube	Reading
0 0 0	1	The centre	No axis takes part: rest

Closed cells	Number	Place in the cube	Reading
1 1 1 and T T T	2	The two ends of the main diagonal	The two hands of space: closing towards a centre and opening away from it
The six orders of 1, T, 0	6	A hexagon around the centre	The turnings

The table follows an essay of the author on the algebra of space and the count in the book on the body (Konstapel 2026c, section 1.1). Two facts from that count are used later in this book.

The first fact is that the rule does not care in which order the axes are taken. Exchange front–back with left–right and all nine closed cells stay closed.

The second fact is that the rule is not blind to a mirror. Turn one axis around and only three of the nine stay closed. Turn all three around and all nine stay closed. So a reading in space must first fix its frame: which way is plus on each axis. A healer who reads a body does the same. He first settles left and right, upper and lower, inside and outside, and for whom: a man or a woman, the morning or the evening. Chapter 50 shows how much of Chinese pulse reading consists of fixing that frame.

Three ways to close

Longer stretches of strand are words of trits. A word closes when its sum is zero on the circle of three. The *Foundations* prove that every closed word, however long, is built from three small closures and from nothing else.

- A **standing**: a single 0. The strand passes and nothing turns.
- A **meeting**: a pair x, −x. One passage with the first, one against. Its length is two.
- A **ring**: a triple x, x, x. Three passages the same way. Its length is three.

Take any closed word. Remove a standing, a meeting or a ring. What is left is closed again. Go on, and the word reduces to nothing. No open word can be reduced so. The *Foundations* state the result in one line: “Apart from standing still there are two ways to close: to meet and to go round. Their lengths are 2 and 3.”

These two, the meeting and the ring, return throughout this book. A meeting is two that face each other and cancel. A ring is three that follow each other and come round. Traditions that think in pairs of opposites, hot and cold, wet and dry, yin and yang, think in meetings. Traditions that think in a turning cycle of three, such as the three *dosha* of India, think in rings. Chapter 2 shows what happens when the two ways of closing are repeated at larger and larger scale.

What closes, persists; what does not, passes on

The second axiom says what closure does.

> N2 (Closure). A loop persists if and only if it lies in a closed window. What does not close passes on as tension. Closure is the selection rule; there is no external selector.

Three statements are packed into it.

First, only what closes stays. A return that lies in a closed window persists. A return that does not is not kept.

Second, what does not close does not vanish either. It passes on. The theory calls what passes on tension. Tension is the name for an open window seen from its neighbours. It is not a stock of something. It is the fact that a window nearby has not closed, and that the next stretch of strand has to deal with it.

Third, nothing outside the strand chooses. There is no judge who inspects windows and keeps the good ones. Closing is itself the selection.

For medicine this is the central axiom. The book on the body draws its definition of illness from it: an illness is an open window that stays open (Konstapel 2026c, section 21.1). Chapter 4 works this out. Here it is enough to see the shape of the idea. Health in this language is not the absence of open windows. Open windows arise all the time. Health is that they are read and closed.

A path without tension repeats

What does a stretch of strand look like when every window in it closes? The answer is exact. If a word closes in every window, then each state equals the state three places earlier. The word repeats with period three. And a word of period three is fixed by its first three states. So there are exactly nine words without any tension, for every length: the three uniform ones and the six mixed ones. “A path without tension is one of nine.”

Two consequences follow.

Whatever closes, repeats. A closed stretch is a rhythm. It cannot be closed everywhere and be irregular. The book on the body calls this the first law of the living body in time.

Mixed rings exist only at depths that are multiples of three. A ring is a strand closed on itself. Its depth is its number of passages. A uniform ring can have any depth. A mixed ring, the living kind, exists only at depth 3, 6, 9 and so on. And at each such depth there are exactly two mixed rings, up to rotation. One runs T → 0 → 1. The other is its mirror and runs 1 → 0 → T.

So the living form has a direction. It turns one way or the other way, and there is no third. Two living rings that turn the same way are the same ring at another phase. Two that turn opposite ways are mirror images.

Seams

What happens where two closed stretches touch? The place where they touch is a seam. Two windows straddle it. The seam is closed when both of those windows close.

The count is exact. Take every ordered pair of closed windows. There are 81.

Pair	Number	Seam closes in
Uniform with mixed	36	0
Mixed with mixed, opposite direction	18	0
Mixed with mixed, same direction	18	6
Uniform with uniform	9	3
All	81	9

Only nine seams close, and they are the nine cases in which the second window is the same as the first. The *Foundations* put it in two sentences. “A window continued in its own order gives no tension. A seam between two different closed windows always carries tension.”

Two laws in this table are the roots of the reading of illness in chapter 4.

A uniform stretch never joins a mixed stretch. Something fixed that lodges in something living always leaves an open seam. A scar, a stone, a deposit and a splinter are of this kind.

Two mixed stretches of opposite direction never join. Two living forms that turn against each other cannot close on each other, however well each is closed in itself. A body that runs against the day, or two rhythms in one body that run against each other, are of this kind.

A third fact is quieter and just as important. Two mixed stretches of the same direction join only when they are also in phase. Of the 18 same-direction pairs only 6 close. Same direction is needed. Same phase is needed as well. This is the door through which timing enters medicine, and with it the pulse, the hour of the day and the season.

An error and its undoing

Take a closed ring of some depth and change the state at one place. The ring is no longer closed. How much opens, and what closes it again?

The count, proved for every ring of depth four and more, is this. One error opens exactly three windows: the three windows that contain the changed place. No other window changes. And exactly one single change closes the ring again. It is the change that puts back the state that was there, at the place where the error was made.

“So an error in a closed form is findable and has one cure. It is found where three open windows overlap. It is cured by restoring the state that was there. Any other single change leaves the ring open” (Konstapel 2026c, chapter 5).

Four properties of this small law are worth holding on to, because the old medicines hold on to them.

1. The error has a place. It is not spread over the ring.
2. The open windows are wider than the error. Three windows are open, and only one place is wrong. Where it hurts is wider than where it is.
3. The place is found by overlap. It is the one place that all open windows share.
4. Closing means giving back. The change that closes does not add anything new. It gives back the state that was there.

Memory

The third axiom says where the past is kept.

> N3 (Memory). At every node the passages are ordered. The first passage fixes the direction; later passages are taken relative to it. The net carries its history as its shape.

There is no store beside the strand in which its past is written. The past of a winding is the winding. Which way the first passage went decides how every later passage is read. Change the order of the passages and the same places give another word.

For a body this means that its history is in its form. The old medicines take this literally. A physician who reads a constitution reads what was laid down first. A healer who asks about the grandparents treats the family as one winding with an order of passages. Chapter 8 returns to this.

Context

The fourth axiom says that the same act does not always give the same answer.

> N4 (Context). The response of the medium is a state function, not a universal constant.

The *Foundations* speak of a “medium” here. Nothing is meant by it beyond the strand in its present state of winding. The axiom says that how a stretch of strand answers depends on the state it is in. A constant answer is the special case in which the state does not vary.

Modern trials look for the constant answer. They give the same dose to many people and average the result. The fourth axiom says that this average exists but hides the rule. The rule is that the answer depends on the state. All the old medicines in this book act on that rule. They read the state of the person first and choose the act after. Two patients with the same

complaint get different treatment, and one patient gets different treatment in spring and in autumn.

Scale and depth

The fifth axiom makes the theory the same at every size.

> N5 (Scale). Merged into blocks, the coarse strand obeys N1 to N4 again. What does not close at one scale is the material of the next.

A closed run of passages returns to its start. So it is itself a loop, one scale up. Closed windows become the passages of a larger window. The book on the body says it in one sentence: “What closes at one depth is the alphabet of the next.”

Two strokes alternate. In the first, units combine, and the number of combinations grows. In the second, only what closes stays. Three trits give 27 windows, of which 9 close. Two closed windows joined give 81 pairs, of which 9 close. At every further step nine forms survive.

Depth is the word for the place of a winding in this stacking. A word of three trits is shallow. A word of thirty trits lies deeper. The number of trits in a word is its depth. In the balanced notation a shift of the whole word by one place is a step of one depth. The same string of signs can be read at another depth and is then another size. The *Foundations* say: “Same string, other depth.”

A body is a depth in this sense. So is a cell, and so is a family. The fifth axiom says that the rule of closure holds in each of them in the same form. That is a strong statement. The book on the body calls it “the ground of the book” and adds that the axiom itself is not computed and not tested there. It is the same in this book. When a later chapter says that a family is an open window that a ceremony closes, it uses the fifth axiom. The reader should know that this is where the weight rests.

The second sentence of the axiom matters as much as the first. What does not close at one scale is the material of the next. An open window is not waste. It is what the next depth has to work with. A sickness that cannot be closed in the tissue is passed on to the organ, then to the person, then to the household. The old medicines follow the same path in the other direction. They often close at the widest depth first.

Address and mirror

Every whole number can be written in the balanced notation in exactly one way. The number 8 is 1 0 T: nine minus one. The theory calls such a word an address.

The opposite of a number is found by mirroring its word. Change every 1 into T and every T into 1. The address of minus eight is T 0 1. No minus sign is needed. The *Foundations* draw a consequence: “The sign of a charge is a property of the string, not a label attached from outside.”

So every winding has a mirror winding, written with the same strokes in the opposite direction. The mirror is not somewhere else. It is the same word read the other way. Chapter 6 uses this when it comes to what the old traditions call the other world.

Time and length

The theory has no clock and no ruler of its own. Its quantities are ratios: how many passages, in what order, at what depth. The companion text on physics says: “The model is dimensionless. Its native quantities are ratios.”

Seconds and metres are human points of reference. People took the day and the year as their clock and their own body as their ruler. To compare the theory with instruments, one length and one time are fixed afterwards, from the hydrogen atom: 45.59 nanometres and 1.52×10^{-16} seconds. A ring at depth n on the ladder of threes then has a period of 3^n times that time.

One number from this ladder is used later. The day of 24 hours sits at position 43.50, exactly halfway between two rings. The book on the body tested whether body sizes and body rhythms prefer the marks of the ladder. They do not. Of 388 measured body sizes, 49.5 per cent lay near a mark, against 50 per cent by chance. Its conclusion is kept here: “The ladder orders. It does not select.” No organ and no rhythm is assigned to a ring in this book.

The one who looks

One more point is needed before the theory can be laid beside a healer. Who looks at the strand?

Nobody stands outside it. There is nothing outside it to stand on. The one who looks is part of the path. Looking is itself a movement of the light along the strand. At a node, where the strand passes several times, the looker can see more than one side.

This removes a habit of thought. In the picture of the machine, a neutral observer stands beside the patient and reads off his state. In the theory there is no such place. To read is to join. Chapter 5 shows that the author’s work on the senses comes to the same point from the other end: to perceive is to close a seam with what is perceived. The old medicines never thought otherwise. The physician who feels a pulse lays his own rhythm against it. The shaman who sees a sickness has gone where the sickness is.

What kind of theory this is

Three remarks on the standing of the theory, so that the reader knows what is used in this book.

First, the theory is a compression. It was derived from existing physics. One source is the rewriting of the Dirac equation by Peter Rowlands, in which a state squares to zero. A second is the quaternions in which Maxwell first wrote his equations. The third and fourth are the theory of knots and the balanced ternary numbers. The texts that give those derivations are

named in the references. The theory is not presented here as older than those sources or as independent of them.

Second, its formal core is small and can be checked. The counts in this chapter, nine of 27, the three closures, the seam table and the undoing of an error, are arithmetic. Anyone can redo them with paper and pencil.

Third, what is laid on top of the counts is reading. That a mixed window is “the living form” is a reading. That a family is a depth is the fifth axiom applied. The author’s position is that the theory is a language in which other accounts can be rewritten. The test of a rewriting is whether it makes the account simpler and lets one see further. This book applies that test to the old medicines.

The words of this book

The table gathers the words that the following chapters use. Each has the meaning given in this chapter and no other.

Word	Meaning in this book
Strand	The one path that the light goes
Passage	One visit of the strand to a node
Direction	What a passage has against the first passage: with it (1, →), against it (T, ←), or neither (0)
Window	Three passages in a row
Closes	The three passages fully agree or fully differ
Stays open	Two agree, one does not
Uniform	Closed with three equal states: the fixed form
Mixed	Closed with three different states: the living form, with a direction of turning
Standing, meeting, ring	The three elementary closures: 0; x and −x; x, x, x
Tension	An open window, seen from what lies next to it
Seam	The place where two stretches touch
Phase	Where in its turning a mixed form is

Word	Meaning in this book
Depth	The length of a word; the place of a winding in the stacking of scales
Mirror	The same word with every direction reversed
Reading	Meeting a form at a place and finding whether it fits

2. Two ladders and the first knot

Counting in the old medicines

Every old medicine counts. The Chinese physician counts two principles, five phases and twelve vessels. The Indian physician counts three *dosha*, five elements and seven tissues. The Greek counted four humours from two pairs of qualities. The Yoruba diviner counts two marks, sixteen signs and 256 combinations. The Navajo singer does everything four times and orders his songs in sets of up to twelve.

Scholars have usually treated these counts in one of two ways. Either they are taken as local custom: one people likes four, another likes five. Or they are taken as early and failed attempts at science. Both views leave something unexplained. The counts are few. They are always the same few: two, three, four, five, seven, eight, twelve, sixteen. No tradition builds its medicine on six, on ten or on eleven. And the same counts turn up in peoples who never met.

The theory has something to say about this. In chapter 1 there were two ways to close apart from standing still: the meeting, of length two, and the ring, of length three. This chapter follows what happens when each is repeated at larger and larger scale. Two ladders arise. They never meet. The places where they come closest are few, and they are the counts of the old medicines. The chapter ends with the first knot, which gives the theory its left and right.

All counts in this chapter are from the *Foundations* (Konstapel 2026b, parts VI and VII). The musical and historical remarks are standard and can be checked in the works named at the end.

Doubling and tripling

The fifth axiom says that closed stretches can be merged into blocks, and that the blocks behave as passages one scale up. There are two kinds of block to merge, because there are two ways to close.

Merge meetings, and each block holds two passages of the scale below. Do it again, and each larger block holds four. Then eight, then sixteen. This is the ladder of two.

Merge rings, and each block holds three passages of the scale below. Do it again, and each larger block holds nine. Then 27, then 81. This is the ladder of three.

The two can be mixed. After a mergings of meetings and b mergings of rings, one coarse passage holds $2^a \times 3^b$ of the finest passages. The *Foundations* prove this under one condition, that all blocks at one scale have the same size.

So the theory has two natural ways of growing. One grows by pairs. One grows by threes. A count such as 4, 8, 16, 64 or 256 lies on the first ladder. A count such as 3, 9, 27 or 81 lies on the second. A count such as 6, 12, 24 or 72 uses both.

The ladders never meet

Does the ladder of two ever reach the same height as the ladder of three? It does not. A power of two is even. A power of three is odd. An even number is never an odd number. So 2^n is never 3^k, except at the bottom, where both are one.

This is elementary. Its consequence is not small. A world that builds by pairs and a world that builds by threes can be laid side by side, but their steps never coincide exactly. There is always a remainder. The second axiom says what a remainder is: what does not close passes on as tension.

Where they come close

The ladders do not meet, but at some heights they come close. Climb the ladder of three one rung at a time. At each rung, look for the nearest rung of the ladder of two. Most of the time the nearest rung is far off. Now and then it is nearer than it has ever been before. The *Foundations* call such a rung a closure depth.

The closure depths are 1, 2, 5, 12, 41, 53, 306, 665 and so on. The table gives the first seven.

Depth on the ladder of three	Nearest rung on the ladder of two	Comparison	Miss
1	2	3 against 4	33.3 %
2	3	9 against 8	11.1 %
5	8	243 against 256	5.35 %
12	19	531,441 against 524,288	1.35 %
41	65	3^{41} against 2^{65}	1.15 %
53	84	3^{53} against 2^{84}	0.21 %
306	485	3^{306} against 2^{485}	0.10 %

Between these depths nothing closes better. After 2, the next good place is 5. After 5, the next is 12. Then there is a long stretch with very little gain until 53. These numbers are not chosen. They follow from the two numbers two and three alone. In the language of arithmetic they are the denominators of the best fractions that approach the ratio of the logarithms of three and two.

The miss never becomes zero. At every closure depth something is left over. At depth 12 the leftover has a name that is older than the theory.

The same ladders in sound

A string that is halved sounds an octave higher. The ratio two is the octave. A string cut to a third sounds an octave and a fifth higher. The ratio three, brought back into one octave, is the fifth, with string lengths as three to two. Every people that has tuned strings or cut pipes has found these two steps first.

Tuning by fifths is climbing the ladder of three. Each new note is a fifth above the last. To stay within reach of the voice, the note is brought down by octaves whenever it gets too high. That is the ladder of two. A scale made in this way is a walk on both ladders at once. The question is when the walk comes home: after how many fifths is one back at the starting note, some octaves higher?

Never exactly. The ladders do not meet. But the closure depths say when one is nearly home.

- After **five** fifths one is nearly three octaves up. The five notes passed on the way are the pentatonic scale. It is the scale of Chinese court music, of many African and Celtic songs and of most children's songs. The miss is 5.35 per cent. It is a small step that the scale of five leaves out. The scale of seven notes has it as its half tone.
- After **twelve** fifths one is nearly seven octaves up. The twelve notes passed on the way are the twelve notes of the full scale. Seven of them make the common scale of seven notes. The miss is 1.35 per cent. Musicians call it the Pythagorean comma.
- After **fifty-three** fifths one is nearly thirty-one octaves up, and the miss is a fifth of a per cent.

The old cultures knew all three. In China the method is called *sanfen sunyi*, "divide in three, take away or add one". A pipe is shortened by a third to give the next note and lengthened by a third to bring it back within the octave. The method is described in the *Guanzi* and in the *Lüshi chunqiu*, the "Spring and Autumn of Master Lü", of the third century before our era. It gives first the five notes, then the twelve pitch pipes, the *lü*. The scholar Jing Fang, in the first century before our era, went on past twelve and found that the fifty-third note comes back almost to the first. The Greeks tell of Pythagoras and his strings. The numbers are the same, because they do not depend on who counts.

Chinese medicine was built in the same centuries and by the same kind of scholars. Its *Inner Classic* gives each of the five phases one of the five notes and ties the twelve vessels to the twelve months and the twelve pitch pipes. Chapter 46 gives the texts. The point here is only this. When Chinese physicians say that there are five phases and twelve vessels, they use the two counts at which the two ways of closing come nearest to each other. They took those counts from sound. The theory says why sound has them.

The comma

The leftover at depth twelve deserves one more word, because the old cultures did not hide it. They worked with it.

Twelve fifths overshoot seven octaves by a small amount. A circle of twelve notes tuned in pure fifths does not close. One fifth has to be made too narrow, or all twelve have to be made a little too narrow. The calendar has the same shape. Twelve moons fall short of one year of the sun by about eleven days. A calendar of twelve months does not close. A thirteenth month has to be put in every few years.

In both cases the open remainder is carried along and closed at a larger scale. That is the second sentence of the fifth axiom at work: what does not close at one scale is the material of the next. The Chinese physicians of the *Inner Classic* built this into their medicine. They called it the doctrine of the "five movements and six climates". In it each year has its own excess or shortfall and its own typical illnesses. Chapter 48 describes it. Whether those yearly predictions hold is a separate question. The shape of the thought is exact: a count that almost closes, and a remainder that returns as trouble.

The counts of the traditions on the two ladders

The table sets the common counts of the old medicines on the two ladders. The first three columns are arithmetic. The last column is a reading, and chapter 73 comes back to it with all the material of the book.

Count	Place on the ladders	In the theory	Examples in the old medicines
2	First rung of the ladder of two	The meeting: one with, one against	Yin and yang; hot and cold; the two marks of Ifá; the unbroken and the broken line
3	First rung of the ladder of three	The ring: three that come round; the window	The three *dosha* of India; the three *nyes pa* of Tibet; heaven, earth and man; the three worlds of the shaman; the three positions of the pulse

Count	Place on the ladders	In the theory	Examples in the old medicines
4	Two rungs of two	Two meetings crossed	Hot–cold crossed with wet–dry: four qualities, four elements, four humours; the four directions of the Navajo
5	Closure depth: five threes against eight twos	First good near-meeting	The five phases and five notes of China; the five elements of India and Tibet
7	Twelve fifths span seven octaves	Follows from the twelve and the five	Seven notes; seven tissues in India and Tibet
8	Three rungs of two	Three meetings	The eight trigrams; the eight marks of an Ifá sign; the eight principles of Chinese diagnosis
12	Closure depth: twelve threes against nineteen twos	Second good near-meeting; the comma	Twelve vessels, twelve pitch pipes, twelve double hours; twelve songs in a Navajo set
16, 64, 256	Four, six and eight rungs of two	Meetings merged again and again	Sixteen principal signs and 256 signs of Ifá; 64 hexagrams
9, 27, 81	Two, three and four rungs of three	Rings merged again and again	Nine regions of the pulse; 81 chapters in each half of the *Inner Classic*; 81 “difficult issues”

Three cautions belong with this table.

The first is that a count can be reached in more than one way. Twelve is a closure depth, and it is also four times three. The Navajo twelve is probably the second kind. The table shows where a count can sit. It does not prove how a people came to it.

The second is that the seven is weaker than the rest. It follows from the twelve and the five, and many sevens in the world have another source, such as the seven moving lights in the sky.

The third is the most important. The table does not say that the old physicians knew the theory. It says that they worked with what closes. People who sing, tune, watch the moon and treat the sick for a hundred generations will find the counts at which their work comes round. The theory names those counts in advance.

What does not appear

A reading is worth more when it also says what should be absent. The ladders give no special place to six, ten or eleven as ground counts. Six appears in the old medicines only as two times three. The six climates of China go with three yin and three yang vessels. The six tastes of India fall into two groups of three. Ten appears as two times five: the ten heavenly stems are the five phases, each in a yin and a yang form. Eleven does not appear as the ground of any medicine in this book.

The theory also says that the number of fingers should not matter. People count on ten fingers everywhere. Yet no great medicine has ten humours or ten elements. The counts come from what closes, and not from the hands that count.

The economy of three

One more piece of arithmetic explains why the window has three places and not four or five.

Writing a number takes signs. In base two, one needs many positions, each with only two possible signs. In base ten, one needs few positions, each with ten possible signs. The cost is the number of positions times the number of signs. Among all whole-number bases, base three has the lowest cost. The best possible base, if it did not have to be a whole number, would be 2.718. Three is the nearest whole number.

So three is the base in which the most can be told with the least. The *Foundations* note that this agrees with the theory but is not its ground. The ground is direction: three is the least count in which a step differs from its reverse.

The first knot

So far the strand was read as a row of passages. Now let it lie in space. Then the strand can pass over itself or under itself, and a new question arises. Can a winding be pulled straight again, or does it hold?

A loop with one crossing is only a twist. It can be undone. A loop with two crossings can be undone as well. With three crossings, something new is possible. If the strand goes over, under, over as it comes round, the loop cannot be undone without cutting. This is the trefoil, the first knot. The *Foundations* prove that three crossings are the least that hold.

The proof uses the rule of the window. Colour the arcs of a knot diagram with three colours. Demand that at every crossing the three arcs that meet are all the same colour or all different. This is the rule of chapter 1: all equal or all different. A plain loop can only be coloured with one colour. The trefoil can be coloured with all three. So the trefoil is not a plain loop, however it is pulled about.

The older wording of the theory defines a knot in six words: “Windings that hold each other in three directions”. A knot is the first form that persists by its own winding. It needs nothing to hold it. In the reading of the companion text on physics, the stable particles of matter are such closed windings.

For this book three properties of the first knot matter.

A knot has a hand. There are two trefoils, a left-handed and a right-handed one. Each is the mirror image of the other. No amount of pulling turns one into the other. The first form that holds therefore comes in two kinds that differ only as left and right. Chemistry knows this well. The building blocks of living bodies come in a left and a right form, and life uses one hand only. The old medicines know it in their own way. They treat left and right, man and woman, sunwise and against the sun as real differences and not as conventions. A Navajo singer moves sunwise. To move the other way is the way of the witch.

A knot stays until it is cut or untied along the way it was tied. A tangle that holds cannot be closed by adding more winding. It must be loosened in the order in which it was made. The Hawaiian setting right of a family, described in chapter 69, has a step for this, the patient untying of a tangle layer by layer. The Hawaiian word for the trouble itself means “entangled”.

Crossings can be read. At a crossing the strand goes over or under. That is a direction, and it can be found by following the strand. A healer who reads does this kind of work. He does not weigh. He follows, and at each place he finds which way it goes.

Turning twice

A last property concerns a winding that is attached to its surroundings, as every winding in a body is. Turn such a winding once fully around. It does not come back to its first state. It comes back with its sign reversed. Only a second full turn brings it home.

This can be shown with a belt held at both ends. One full twist cannot be removed without turning an end. Two full twists can be removed by passing the belt around one end. The *Foundations* prove the general statement: an attached strand returns to its initial state after two turns, not after one.

In the notation of chapter 1, the reversed sign is the mirror. So one full turn carries an attached winding to its mirror, and a second turn carries it back. This book will use that picture in chapter 6. The old traditions speak of a journey to another world and a return. They say that the other world is like this one, but reversed: left is right, day is night, the dead walk upside down. The reports are told in chapters 9 to 20. The theory offers a simple figure for them. The other world is one turn away. Home is two.

Summary

The chapter has added four tools to those of chapter 1.

1. There are two ladders of scale: by twos, from the meeting, and by threes, from the ring.
2. The ladders never meet. They come close at depths 1, 2, 5, 12 and 53. The remainder at each depth does not vanish and is carried to the next scale.
3. The common counts of the old medicines sit on these ladders. On the first are 2, 4, 8, 16, 64 and 256. On the second are 3, 9, 27 and 81. Five and twelve lie where the two come close.
4. The first form that holds is the knot of three crossings. It has a hand, it must be untied along the way it was tied, and an attached winding needs two turns to come home.

3. The body is a depth

A depth of the net

A body is a depth of the net. This sentence is not a comparison. It is the fifth axiom applied. The older wording of that axiom reads: “The net repeats its own construction across depth.” It ends: “The same winding, read at another depth, is the same winding.”

So the rules of chapter 1 are the rules of the body. They use closure and nothing else, and closure is the same test at every depth. What changes with depth is the unit. The source of the rule says: “The residue of one depth is the alphabet of the next.” At the depth of chemistry the units are atoms. At the depth of the body the units are what closed one depth lower: the organs and their rhythms.

The book *From Chemistry to Body and Mind* climbed from chemistry to the body step by step (Konstapel 2026c). At every step it computed what the rule of closure allows. This chapter retells that climb in short. It keeps the laws that the later chapters need when they turn to the old medicines. The numbers are those of that book after its judging. Where a test on living bodies failed, this chapter says so.

One warning comes first. The climb gives laws of form. It says what can close and what cannot. It does not give a single cure. The cures in that book were taken from medicine as it stands. The same holds here. The theory does not hand the old medicines their remedies. It gives a way to describe what their remedies do.

The word of three

Chemistry ends with four bases that pair in one way only. Living cells read a chain of such bases in steps of three. Each group of three is a word.

A word must be readable in one way only. If a reader can also read it after sliding one letter along, the reading is lost. Two kinds of word fail this demand. A word of three equal letters reads the same in every position and cannot mark a start. And the three rotations of one word are the same word turned, so only one of the three may be used.

With an alphabet of four letters there are 64 words. Four are uniform. The other sixty fall into twenty classes of three rotations. So at most twenty words can be read without doubt. Living cells build their proteins from twenty amino acids.

This count is old. Crick, Griffith and Orgel made it in 1957. It later turned out that the cell does not use such a code. It keeps its place by a start sign and by counting from there. The count is given here for another reason. It shows the first lesson of the climb. Reading needs a frame. A reader that counts in threes from a start loses every later word when the start shifts by one or two letters. The book on the body calls this the failure of frame. Two muscle

diseases differ in exactly this way. In one the frame is lost, and the disease is severe. In the other a whole number of words is lost, the frame holds, and the disease is mild.

The lesson returns in every medicine in this book. Before anything can be read, the frame must be fixed. Where does the count start? Which side is left? What hour is it? What season? A diagnosis without a frame reads noise.

Chain, fold and membrane

A chain is a row of words. An error in a chain behaves as chapter 1 said. It opens three windows, it sits where they overlap, and it is closed again only by giving back the state that was there. Cells do this all the time. After a chain is copied, a second reader passes along it. Where it finds a misfit, it takes the old chain as the pattern and restores the letter.

A fold is a chain that closes on itself in space. In the four directions in which a carbon atom binds, the smallest loop that closes has six steps. The six-ring is the ring of diamond, of ice and of the common sugars.

A membrane is two layers back to back. Of the nine ways to pair two closed layers, eight are unlike on their two sides. So a membrane has an inside and an outside almost by necessity. And two mixed strands can lie against each other only when they run in opposite directions.

These three laws are of small use for the old medicines, which do not work at this depth. They are named because the same figures return higher up. The six-ring is the meeting of two and three: two times three steps. Inside and outside become the inner and the outer of the Chinese diagnosis. And the rule that two living strands meet only when they run opposite ways returns in chapter 6 as the rule of the mirror.

The cell

At the depth of the cell three laws hold.

A state has one partner. For every state there is exactly one state that closes with it. A cell copies its chain by building, for each letter, the one partner. The copy of the copy is the original.

The mirror of a closed ring is closed. If a ring closes, the ring with every direction reversed closes too.

A ring of depth six divides into two closed rings. A closed form of double size can part into two closed forms. Nothing is left over.

The failure at this depth is the error of copy. A wrong letter that is not restored before the cell divides is carried into the daughter cell and into all cells that come from it. From then on it is not an error in the eyes of the cell. It is the pattern.

The old medicines know a kind of illness that is not caught and not earned, but received. It was there before the person. It came with the line. The Yoruba speak of what a person chose

before birth. The Hawaiian healers ask what was done in the family before. Tibetan physicians count a class of illnesses that come from earlier lives. These are not the same idea as a copied letter. But they stand at the same place in the order of causes: what is carried by the copy.

The tissue: one word, one phase

A tissue is many units joined. How many different chains of joined closed words close as a whole? The answer does not depend on the length. It is always nine. They are the chains that repeat one closed word, in one phase. “A chain that holds two different words never closes. So a tissue that closes as one strand is made of identical units, in step.”

Read on the body, a tissue is many cells of one kind, kept in register. Each cell does what its neighbours do, at the moment they do it. Where two kinds of tissue meet, the seam stays open. An earlier book of the author found most deviations at such seams.

“In step” is the second half of the law, and the easier half to forget. The units must be the same, and they must be in the same phase. A tissue in which every cell is sound but the cells are out of step is not closed. Much of what the old physicians call disharmony is of this kind. There is no wrong part. The parts are not together.

The organ and the body: forms held by carriers

An organ is made of several tissues. Since two different words in one chain never close, an organ cannot close as one strand. Its seams stay open. The count is exact. An organ of k kinds of tissue has at least $k - 1$ open windows. That is one at each seam, when the tissues lie in the best order.

The same holds one depth up. A body is many organs. It cannot close as one strand either.

What holds an organ and a body together, then? The theory has one class that crosses open seams. It is the class of what does not close.

“Closure is all or nothing. So at every depth there are two classes. The closed class holds its form: molecules, cells, organs, bodies. The unclosed class decays. While it lasts it carries tension from one closed form to the next: light between atoms, signal molecules between cells, the nerve impulse and the hormone within a body, speech between people. Only what ends can deliver” (Konstapel 2026c, chapter 16).

The unclosed class is called the carriers. A closed form gives its tension back to itself and can hand nothing over. A carrier ends, and in ending it delivers. That carriers decay is what keeps a body readable. Each message is wiped out after it is read.

So a body is “a set of closed forms held together by carriers”. In a body the carriers are the blood, the nerves and the hormones. “Health, read this way, is carriers that arrive and are read.”

Three remarks tie this to the old medicines.

First, the list of carriers in the quotation ends with speech between people. A word spoken to a patient is a carrier in the exact sense of the theory. It ends when it is heard, and in ending it delivers. A song is a carrier. So is a touch. The theory has no ground for setting such carriers below a molecule in the blood. They work at another depth.

Second, every old medicine has a name for what moves between the parts and holds them together. The Chinese call it *qi*, the Indians *prana* and *vata*, the Tibetans *rlung*, wind. The Greeks called it *pneuma*, breath. In each tradition it is what goes to and fro, what arrives or fails to arrive, and what a healer can lead. None of these words means a carrier in the modern sense. But each stands where the theory puts the carriers: between the forms, across the seams.

Third, the carriers have a limit. The book on the body counted the seams between two different closed words. There are 72. A carrier can close 12 of them. The other 60 stay open whatever is put in them. The 12 are the seams between two copies of the same living word at different phases. A carrier can bring two like forms into step. It cannot make two unlike forms into one.

Circulation

A carrier that is to last must itself return to where it started. The book on the body counted what such a returning path costs. A loop through k different organs leaves at least k open windows, one for each organ it passes. And every place where the loop reverses its direction costs at least one more.

“So a lasting circulation is a closed loop, it visits every organ kind once per round, and it flows in one direction.” Anatomy shows this form. Blood runs in closed loops, and valves in the heart and the veins keep it running one way.

The Chinese physicians wrote the same form two thousand years ago for their *qi*. It goes round the twelve vessels in a fixed order, passes each organ once in a round, and comes back to its start. It does not turn back. When it turns back, the classics call it “rebellious”, and it is a sign of illness. Chapter 47 gives the circuit.

Rhythm and coupling

Chapter 1 showed that a strand without tension repeats with period three. Whatever closes, repeats. At the depth of the body this means that a body is made of rhythms. A heart that beats, a chest that breathes, a gut that moves, a sleep that comes and goes: each is a closed form in time.

How do two rhythms act on each other? The book on the body computed what happens when two strands are laid over each other place by place.

- Closed with closed is always closed.
- Closed with open is never closed. Of 177,066 such pairs, none closed.

The law has a plain meaning. A closed rhythm can be laid on another closed rhythm, and the two go on as one. That is coupling. But a closed rhythm cannot close an open one by being laid on it. “Coupling keeps closure but cannot create it.”

Much follows from this for healing with rhythm. A drum, a chant, a lamp in the morning or a fixed hour for meals can hold a rhythm that is closed. They can bring two closed rhythms into step. They cannot, on their own, close a rhythm that is open. For that, the open place has to be found and given back its state. Chapter 5 shows that the old healers do both, in a fixed order. They read first and offer the rhythm after.

The impulse

How does a message move along a closed strand? An opening cannot move one place along in a single change. It takes two changes. There are two shortest ways to do it, and one of them passes through a state in which the strand is fully closed for a moment.

The book on the body reads the nerve impulse so: an opening that travels, with a closed state behind it. The reading is modest. It gives no speed and no voltage. Its use here is one point. A message in a living body is an opening that moves and closes behind itself. It is not a parcel that is sent.

The test: fit, misfit and unread

A body has to tell what belongs to it from what does not. In the theory this is one act. One form meets another and finds whether they close together. The act has three answers. A form that fits the reader closes with it. A form that does not fit is a misfit. And a form that the reader cannot read at all gives no answer.

The book on the body counted all strands of nine places, 19,683 in number, against a body’s own closed forms. Of the foreign strands, 93.3 per cent can be read as foreign. They open windows when they are met. But 5.9 per cent have no closed window at all and cannot be read. And eight are closed in the wrong way: they pass the test and are not the body’s own.

So any test of this kind has two ways to go wrong. It can miss a misfit. And it can take a fit form for a misfit. For the second, the theory has no law. The book on the body says so plainly: “The rules hold no object for a fit form that is read as a misfit.” Allergy and the illnesses in which a body attacks itself fall there. That gap is kept open in this book as well.

The three axes of the body

A body has the three axes of space. Anatomy names them: head to foot, left to right, front to back. Hospital medicine records on all three at once in one place at least. The heart’s electrical beat is followed as an arrow that turns through the three axes with every beat.

Two matters are not settled at this depth, and the book on the body names them. The first is the rule of writing: what counts as one place of a body rhythm, and how its direction is read on each axis. The second is the size of a form: how many places it has.

This is where the old medicines have more to offer than the hospital. They are almost entirely arts of reading direction on the axes of the body. The Chinese physician asks whether a sickness is above or below, inside or outside, left or right. He asks whether it rises or sinks. The Indian physician asks in which direction a *dosha* has moved from its seat. The shaman asks whether something has come in or something has gone out. A rule of writing for the body may be closer in these traditions than in any modern measurement. Part VII comes back to this.

The day

A body does not live alone. It lives in a day that it did not make. On the ladder of threes, the day of 24 hours sits at position 43.50, as far from any ring as a period can be. A body cannot simply be a ring that equals the day. It has to place itself in the day again and again.

The book on the body derived two laws about that placing. The laws are computed. Their use on a body is a reading.

Waking is free only at a whole. A sleeping body runs through cycles. It can leave sleep without an open window only at the end of a whole cycle, and only if the day goes on in the body's own direction and phase. A body that is woken in the middle of a cycle, or that lives against the day, opens at least one window at every waking.

The body returns by itself, within a limit. A closed form that has been changed comes back to itself, as long as fewer than one third of its places are wrong. Beyond that limit it may come back to a different closed form: its mirror, a uniform form or a shifted copy of itself. That is a wrong closure. The body is closed again and reads itself as well. It is not the same body.

The return needs quiet. In the book's reading it is done in sleep, and it must come often enough. If it comes too seldom, small errors add up faster than they are undone. That is drift.

What was tested on living bodies

The laws above are arithmetic. Whether a living body follows them is a question of measurement. The book on the body fixed its tests before looking at the data and had them recomputed by independent judges. Its own summary is sober, and it is repeated here.

Three results stand. In proteins, windows of electric charge along the chain close more often than chance, though not in a way that is special to the number three. In forty healthy people at rest, heart and breath lock in whole numbers of beats per breath more often than chance. The test as first fixed found nothing; an adjusted analysis found locking in 7.9 per cent of

windows against 5.0 per cent by chance. And that locking is strongest in deep sleep, weaker in light sleep and absent in dream sleep and waking.

Most other tests missed. All tests that looked for the number three in an amount missed: three beats per breath, three cycles per night and so on. The tests on the daily rhythm in depression missed as well.

The book reads those misses in one way, and says that the reading came after the results. A trit is a direction. A test that counts amounts tests the wrong rule of writing. A test that reads direction has been named and has not yet been run.

For the present book two points follow. The heart and the breath do lock, and most in deep sleep. That is the firmest measured bridge between the theory and the old medicines, since the pulse and the breath are their first instruments. And the reader should not expect the number three to turn up as a quantity in the chapters that follow. Three *dosha* are not three litres of anything. They are three directions of turning.

Mind as reading

The theory places mind in the act of reading: one form tests another. The book on the body computed what any reader built from closed strands can do. Three laws came out. They are stated here because every diagnosis in this book is an act of reading.

A reader that meets is exact. Take a closed ring with one error. Read it by windows of three, from outside, and one sees three open windows. One knows that something is wrong nearby. Read it by meeting, place by place, with a reader that is the mirror of the sound ring, and one finds exactly one misfit, at the place of the error.

A reader fits one form. Of the nine closed strands, a given reader fits exactly one everywhere.

A small reader knows a large form. A ring of depth three fits into a ring of depth $3k$ in exactly k places. “A small reader recognises a large form once as a whole, and counts it k times as parts.”

The first law draws the line between two kinds of diagnosis. The hospital mostly reads by windows. It measures from outside and learns that something nearby is open: a value is too high, a shadow is on the film. The old healers mostly read by meeting. The physician lays three fingers on the artery. The diviner’s hand is moved by the patient’s question. The shaman goes where the sickness is. Whether they find what they say they find is a matter for measurement. But the kind of reading they attempt is the kind that, in the theory, finds the place.

The third law is the ground for a practice that the hospital finds hard to credit: reading the whole from a part. The wrist, the tongue, the ear, the eye and the sole of the foot are each

used somewhere as a small map of the whole body. The law does not say that these maps are true. It says that a small closed form can meet a large one as a whole.

The book on the body adds a limit, and it is kept here. “These are laws of reading, not a theory of mind.” They say what a reader can do. They do not say what it is like to read, and they give no number for a mind.

The body in one view

Depth	What closes	The law	The way to fail
Word	Three letters	Readable in one frame only	The frame shifts
Chain	A row of words	One error opens three windows; one change closes them	An error that is not undone
Cell	A ring and its partner	A state has one partner; a double ring parts into two	A copy error carried on
Tissue	Like units in step	One word, one phase	A seam between kinds; units out of step
Organ, body	Nothing closes as one strand	Forms held together by carriers	A carrier that does not arrive or is not read
Rhythm	A form in time	What closes, repeats; coupling keeps and cannot create	Rhythms against each other or against the day
Person in the day	Sleep placed in the day	Free waking at a whole; return within one third	Drift; wrong closure
Reading	A reader that meets	Exact, single, part for whole	The unread; the over-read

The next chapter turns the last column into an account of illness and sets the cure beside it.

4. Illness and cure in the Net

An open window that stays

What is an illness in the language of chapter 1? The book on the body gives one answer for every illness it treats. An illness is an open window that stays open.

The answer has two halves, and the second is the one that counts. Open windows are not illness. They arise all day long. A cell is copied with an error. A meal comes at the wrong hour. A night is cut short. Each of these opens windows. In a sound body they are read and closed, and nothing remains.

“Health is not the absence of open windows. Open windows arise every day. Health is a test that reads them and closes them fast enough” (Konstapel 2026c, chapter 21).

That sentence can be counted. Take a living ring of 81 places. In every round, let one error fall at a random place. Do this for 200 rounds, under three regimes.

Regime	Open windows after 200 rounds, out of 81
Nothing is done	54.0
In every round one place is changed at random	54.0
In every round the error is undone at its place	0

Left alone, the ring ends with two thirds of its windows open. Changing places at random does not help at all. Even giving back the right state at a random place hardly helps: the ring then ends with 50.6 windows open. Only undoing each error where it sits keeps the ring closed.

The book draws one conclusion from the count, and it is the hinge of this chapter. “Illness, in this count, is not too many errors. It is errors that are not read where they are.”

So the first question about any illness is a question about reading. What is open, and where is the place that all the open windows share? And the first question about any medicine is the same question. How does it read, and how does it find the place?

Eight forms of failure

An open window can stay open for different reasons. The book on the body found eight. Seven come from laws of the earlier chapters. One has no law under it and is kept as an honest gap. Each got a letter.

Letter	Form	What the rules carry	What it looks like in a body
S	Seam	A uniform stretch never joins a mixed one	Something fixed lodged in something living: plaque, stone, crystal, scar
D	Direction	Opposite directions never join; waking is free only where the day continues the body's phase	Rhythms that run against each other or against the day; lost cycles
U	Unread	An error in a ring stays until it is undone at its place; some foreign forms cannot be read at all	A misfit that the body's test does not see or has not yet removed: a foreign organism, a changed cell
O	Over-read	Nothing. The rules hold no object for it	The test attacks the body's own forms or harmless outside forms: allergy, illnesses in which the body attacks itself
C	Carrier	No chain of different words closes; of 72 seams between different words, 60 cannot be closed by a carrier	A carrier that does not arrive or is not read: a closed artery, a missing hormone, a nerve that does not conduct

Letter	Form	What the rules carry	What it looks like in a body
W	Wrong closure	With one third or more of a form wrong, the return can end on another closed form	A stable, closed, wrong state that the body reads as healthy: fixed moods, dependence, lasting pain
F	Frame and copy	A shift of the frame loses every later word; a state has one partner	An inherited or acquired error in the text of the cell; a form laid down wrongly in growth
R	Drift	The return must come within a bound set by the size of the form	The return falls behind: wear, ageing, slow loss of rhythm

The forms combine. In the atlas of that book every illness has one primary form, the one that keeps it in place now, and up to two others.

The forms are a reading. The book says of itself: “A form is a reading, not a cause; it does not explain an illness.” But the reading was put to a test. Before any illness was classified, two predictions were fixed and sealed. The form of an illness should say something about whether it can be cured. And it should say something about the kind of treatment that medicine uses first. One reader then named the form of each of 375 illnesses without seeing the cure. Another named the cure without seeing the form. The form predicted the cure status in 227 of 358 illnesses, or 63.4 per cent, where chance gave 51.3 per cent. It predicted the kind of first treatment in 216 of 344, or 62.8 per cent, where chance gave 47.8 per cent. Both results shrink when the chapter of the classification is taken into account. They are real and modest.

The same forms in the words of the old medicines

The old medicines do not have these eight letters. They have their own words, and those words are given in the chapters on each tradition. But a reader who has gone through all of them will notice that certain words keep standing at the same places. The list below is only a pointer. It is not a translation. Each line will be filled in by the later parts of the book.

- **Seam.** Many peoples say that an illness is an object that has entered the body and does not belong there. It may be a splinter of bone, a small stone, a dart or a worm. The healer takes it out and shows it. A survey of hunter-gatherer peoples found this in 62 of 89 societies (Buckner 2022). The object is the fixed lodged in the living.

- **Direction.** The Chinese classics call *qi* that runs the wrong way “rebellious”. They treat living against the season as a main cause of illness. The Indian texts say the same of living against the hours of the day.
- **Unread.** The Chinese classics describe a “lurking” cause that enters in winter and shows itself in spring. The Mesopotamian diagnostician looked for the hidden offence that a god had noticed and the patient had not.
- **Carrier.** In China the rule of pain is short: where there is no passage, there is pain. The physicians of India and Tibet say that there is no pain without wind.
- **Wrong closure.** Possession, a spell, a soul that has settled elsewhere, a mood that will not lift. The old healers know states that are stable, that the patient lives in, and that are not his own.
- **Frame and copy.** What came with the family line, what was chosen before birth, what the ancestors left open.
- **Drift.** The Chinese speak of the slow using up of the *essence* received at birth. The Indian texts speak of the loss of *ojas*. Both tie it to living without rest and to age.

The over-read has no clear place in this list, and that is of interest in itself. The illnesses in which a body attacks itself are among those that the old medicines describe least clearly and that the hospital cures least often.

Five layers of cure

The reference work of illnesses on which the book on the body rests orders its treatments in an unusual way. It does not order them by molecule. It orders them by what they do.

“And the therapies order by layer rather than by molecule. Remove, rebuild, kill. Close one winding. Correct the register and let the body discharge. Restore step. Change what everyone hangs in” (Konstapel 2026d, p. 25).

The book on the body gave each of these five phrases a name and a fixed definition.

Layer	The source’s words	What falls under it
Mesh	Remove, rebuild, kill	Acting on a tissue or a foreign organism as a whole: surgery, devices, radiation, wound care, drugs that kill an organism
Chain	Close one winding	Giving, stopping or correcting one step of the body’s chemistry: a hormone, a vitamin, a mineral, a drug that fits one receptor

Layer	The source’s words	What falls under it
Reading	Correct the register and let the body discharge	Changing what the body’s own test reads or how strongly it answers: vaccines, drugs that calm or stir the defence
Phase	Restore step	Restoring rhythm, timing, use or a learned pattern: movement, sleep and light, ordered eating, talking treatments, rest
Surround	Change what everyone hangs in	Changing what a person is exposed to: clean water, avoiding what harms, safe surroundings

In the 375 illnesses of the atlas, hospital medicine reaches first for the Mesh layer in 138 cases and for the Chain layer in 119. It reaches first for the Phase layer in 49, for the Reading layer in 28 and for the Surround layer in 23. Hospital medicine is, by its own first choices, a medicine of taking out and of the single chemical step.

The outcome differs by layer. Where the first treatment takes something out or kills it, the illness is most often cured: in 96 of 138 cases. Where the first treatment gives a missing chemical step, the illness is most often held in check and not cured. The book explains why in one line: “A treatment that must be continued for life does not cure.” What is given must be given again tomorrow.

Where do the old medicines stand on this ladder? Nearly all of what they do lies in the two layers that the hospital uses least. They restore step: by regimen, by the hour of eating and sleeping, by movement, by breath, by song. And they change what everyone hangs in. But they take “everyone” and “what they hang in” far wider than clean water. For a Navajo singer the surround of a patient is his kin, his dead, his land and the holy people of his land. For a Hawaiian elder it is the family and its tangle of old wrongs. The source’s phrase fits them better than the hospital’s own narrow use of it.

The old medicines also take out. Chapter 21 shows how general that is. And they give plants, which is the Chain layer in its oldest form. What they add is an order. They read first. They change the surround and restore the step next. They give a plant after that. And they cut last or not at all.

Four rules of cure

Four rules of design follow from the laws of chapter 1. The laws under them are computed. Their use on a body is a reading.

1. Read before you act. The error sits where the open windows overlap. Only there does a single change close it. A change anywhere else leaves the form open, as the count with the ring of 81 places showed. So the state of the person must be read before anything is done, and the reading must find a place.

2. Restore, do not add. The one change that closes gives back the state that was there. It does not bring in a new state from outside. A treatment that returns a lost rhythm is of this kind. A treatment that lays something foreign over the open place is not. The book on the body tested this rule in a small way on sleeping pills. In 22 poor sleepers a sleeping pill did not raise the share of nights that ended at the close of a cycle, and did not raise deep sleep. The test was too weak to count as proof, and the book says so.

3. Match the direction. Opposite directions never join. A cure must turn the way the person turns, and it must come at the right phase. Light in the morning does what light in the evening undoes.

4. Living with living. Uniform never joins mixed. What is fixed cannot close with what lives. So a cure should move with the body. And what is given in a fixed dose should not be cut off at once. Trials of people who stopped a drug against depression show it. A slow taper with support protected against relapse about as well as going on with the drug (Konstapel 2026c, chapter 53).

Every old medicine in this book follows the first rule so strictly that it has become a rule of honour. A Chinese physician does not write a formula before the four examinations are done. Among the Yoruba a hard case goes to the diviner first, and the herbalist works from what the cast has shown. Among the Navajo the diagnostician and the singer are two different persons, and the second does not begin until the first has spoken. The other three rules are followed as closely. Parts II to VI show how.

The return, and its limit

A closed form that is changed a little comes back by itself. That is the body’s own healing, and every old medicine counts on it. The Greek physicians said that nature is the healer of disease. The book on the body computed how far it reaches.

As long as fewer than one third of the places of a form are wrong, the return leads back to the form itself. With one third or more wrong, the nearest closed form may be another one. The form then closes, but on the wrong shape. This is the wrong closure of the table above. It is the most treacherous of the eight forms, because nothing is open any more. The body’s own test finds no fault. The person is stably unwell.

The same count gives a law for what a body can bear. Let a load fall on a form in every cycle, and let the return run in every cycle. A load of fewer than one third of the places is always absorbed. The form comes back every time, however long this goes on. A load of one third is the first that can end in a wrong closure. So small insults that are followed by rest leave no trace, and one large insult can tip a body into another state. The old physicians speak in the same shape. They do not fear the single cold wind. They fear the wind that meets a person who has not rested.

One condition lies under all of this. The return must be left to run to its end. The book reads the time of return as the night. A body that is not allowed its nights does not complete its returns, and small loads add up.

Out of a wrong closure

How does one get out of a wrong closure? The algebra gives a hard answer. Two living forms that turn in opposite directions differ at two places of every three. To turn a form of 27 places from one direction to the other, 18 places must be changed. No shorter way exists.

On that way, the form is open. Between two closed forms there are only open ones. So a person who leaves a wrong closure must pass through a stretch in which more is open than before. He gets worse before he gets better.

The old medicines know this stretch and have names for it. The Greek physicians called it the crisis: the day on which a fever turns, with sweating, vomiting or bleeding, after which the patient recovers or dies. Homeopaths speak of the first aggravation. The Indian cleansing cure first loosens and drives out, with vomiting or purging, and builds the patient up only afterwards. In the Amazon the vomiting under ayahuasca is called “the purge” and is held to be the cure itself. Hospital medicine has little place for this. The algebra sides with the old view on this one point: out of a wrong closure there is no way that does not pass through the open.

The dose

The same count gives a law of dose. Suppose a cure has to make 18 changes, and the body’s own return runs once in every cycle. The return carries a form to the nearest closed form. If the cure has made fewer than half of its changes when the return comes, the nearest closed form is still the old, wrong one. The return undoes the cure completely. If the cure has made more than half, the nearest closed form is the new one. The return then completes the cure.

“A cure that has made less than half of its changes when the repair comes is undone completely … A cure that has passed half is completed by that same repair” (Konstapel 2026c, chapter 52).

The law fits some measured facts. One night without sleep lifts a depression in about half of patients within a day, and the gain is lost after the next night of sleep in most of them. Drugs against depression help while they are taken, and relapse is common after stopping.

The book drew a prediction from the law, and the prediction did not hold. It said that a treatment should last only if most of its work is done between two nights, and not if it is spread out. Trials say otherwise. Talking treatment spread over months lasts. So the law of dose stands as arithmetic, and its plain reading on the body is withdrawn. Two readings remain open. Either a "night" in the sense of the law is not a calendar night. Or the old healers are right in a matter on which they agree with each other: a cure is given as a whole. The Navajo sing for nine nights without a break. The San dance until dawn. The Indian cleansing cure fills weeks in which the patient does nothing else. Chapter 5 takes this up as the fifth of six rules.

Six questions for any healing act

This chapter and the last give six questions that can be put to any act of healing, old or new. They are used in the reading sections of Parts II to VI.

1. **How does it read?** From outside, by windows, or by meeting? Does the reading find a place?
2. **Does it restore or add?** Does it give back a state that was there, or does it lay something new over the open place?
3. **Does it match direction and phase?** Does it ask which way the person turns, and what hour and season it is?
4. **Does it work with what lives?** Does it move with the body, or is it fixed?
5. **At which depth does it act?** On a chemical step, on a tissue, on a rhythm, on the person in the day, on the family, on the land?
6. **Does it leave the return to run?** Is there rest, sleep or silence after the act?

The questions do not judge. A splint adds, is fixed, and acts on one bone. It is the right act for a broken leg. But the questions show at once where a medicine does its work. They also show what a trial of that medicine has to keep whole if it is to test the medicine and not a fragment of it.

5. Perceiving, and six rules for acting

No picture is made

How does a healer know what is wrong? The hospital answers with an instrument. A value is measured, a picture is taken, and a trained eye reads the result. Behind this answer stands a common account of perception. Something arrives from outside. An organ turns it into a signal. The brain builds a picture from the signal. Perceiving is making a picture of what is out there.

The author's essay *The Senses on the Ladder* gives another account (Konstapel 2026e). In the theory there is no stage at which a picture is made.

"Perceiving, here, is a seam that closes. A wave arrives. Where the pattern of the wave has the same window as the receiving structure, the seam closes. That closure is the perception. Outside and inside are, for that moment, one closure. What does not fit is simply not perceived."

Four points lie in these lines, and each matters for the chapters on diagnosis.

To perceive is to join. The one who perceives and what is perceived close together. For the moment of the perception they are one closed stretch. There is no reading from a distance.

A sense is a window. What a structure can perceive is fixed by the windows it has. "Perception is not a camera. It is the set of closures a given window can make."

What does not fit is not there. A structure without the right window does not perceive wrongly. It perceives nothing. Two people look at the same scene and see different matters, because their windows differ.

A closure need not be felt. A seam can close at a layer that waking awareness does not reach. The essay gives a measured case. In a study at the California Institute of Technology, 36 adults sat in a dark room while a magnetic field of the strength of the earth's was turned around them. Their brain waves answered the turning. They could not say whether the field had changed (Wang 2019). Something in them closed with the field. They did not know it.

A sense is a place, not an organ

The usual list of the senses is a list of organs: eye, ear, skin, nose, tongue. The essay replaces the list by a definition. "A sense is a structure that closes with whatever arrives in its own window, at its own depth on the ladder."

The ladder is the ladder of threes of chapter 2, made measurable by the hydrogen atom. Each rung is three times the one below. The essay places the known senses and some body rhythms on it.

Window	Measured range	Place on the ladder
Sight	400 to 700 nanometres	Rungs 2 to 2.5
The warmth of a body	Peak near 9.35 micrometres at 37 °C	Rung 5
Hearing	20 to 20,000 beats per second	Rungs 24 to 30
Heartbeat and breath	About 1 second; 2.5 to 7.6 seconds	Rungs 33 to 35
The cycle of rest	About 90 minutes	Rung 41
A human life	About 80 years	Rung 52.9

Several of these lie on or next to the depths 2, 5, 41 and 53, where the two ladders of chapter 2 come close. The essay is careful about what that means. The placements were found after the fact. They “can support, but not prove”.

Between the warmth of the body at rung 5 and hearing at rung 24 lies a wide band without any named sense. The essay points to measured human responses inside that band. Pulsed microwaves are heard as clicks. A turning magnetic field changes the brain waves. And it names one prediction that has never been tested. If man has a sense without a name anywhere in the band, the ladder puts it most probably at rung 12.

For this book the map itself is less important than what it says about the list of the senses. The list is not closed. “Every ring of the ladder is a possible window.” A human being may close with more than his five named organs suggest. The old healers say that they do. They say that they see a sickness inside a body, feel a presence in a house, hear what a plant teaches and know in the hand which sign will fall. The usual account of perception leaves only two verdicts for such reports: fraud or delusion. The account of the essay leaves a third. A trained structure may close at a place where an untrained one has no window. Whether it does in a given case is a matter of testing, and chapter 74 says how.

The healer as a window

If a sense is a window, a healer is a set of windows that most people do not have. Three consequences follow, and the chapters on the traditions bear them out.

The first is that a healer has to be made. A window is not information. It cannot be handed over in a book. It is a structure, and a structure has to be formed. Every old medicine has a long forming of its healers, and it is always a forming of the person and not only of his memory. The San healer learns through years of dancing to bear what rises in him. The Amazonian healer spends months alone in the forest on a strict diet with one plant. The

Chinese student feels a thousand pulses beside his teacher before he trusts his fingers. Chapter 10 tells these apprenticeships.

The second is that a healer perceives only where he has been formed. A pulse reader does not see spirits. A shaman does not feel the three depths of the artery. Each tradition is a school of certain windows. This is why the traditions cannot simply be merged, and why a healer of one school is often blind in another.

The third is that the state of the healer counts. A window that is out of tune closes badly or not at all. So the old medicines prepare the healer before he reads. He fasts, washes, keeps apart, is silent, prays or sings. The research for this book found such preparation among the Navajo, in the Greek temples of healing, in Mesopotamia and in the Amazon. It is the tenth of the ten points of chapter 8.

Experience and knowledge

A seam closes in the act. The closure is the perception, and it lasts as long as the act. Afterwards the healer can speak about it. But speech is a carrier in the sense of chapter 3. It ends when it is heard, and what it delivers to the listener is a new closure in the listener, at another depth. It is not the closure that the healer had.

That is the sense of a sentence that guided the research for this book: when experience is translated into knowledge, the experience is gone. A textbook of pulse reading lists twenty-eight pulses with their names. A student who has learned the list knows something. He does not yet feel one pulse. The same holds for this book. It can say what the San healers report when the sickness becomes visible to them. It cannot make the reader see it.

The consequence for method is plain. The chapters on the traditions try to stay close to the acts and to the images that the healers themselves use. And they keep apart what a healer does from what a scholar has made of it.

Phase locking

Two closed rhythms that are laid on each other go on as one. Chapter 3 called this coupling. When the two keep a fixed whole-number relation over time, the modern name is phase locking. Three beats of the heart to one breath, held over many breaths, is a locking of three to one.

Phase locking is the most direct way in which the account of perception of this chapter can be measured. Suppose that to perceive is to close a seam with what is perceived. Then a healer who reads a patient should come into step with him, in ways that an instrument can follow. The last twenty-five years have produced such measurements. They were not made to test the theory. They are set beside it here.

Within one body. In resting people the heart locks to the breath in whole-number ratios for stretches of time (Schäfer 1998). The book on the body repeated this on forty people and found it most in deep sleep.

Between singers. When a choir sings a song with a regular build, the hearts of the singers speed up and slow down together. In a Swedish study, humming a single note gave no shared rhythm. A hymn gave some. A slow mantra with phrases of ten seconds, in which all breathed between the phrases, gave the strongest. The authors wrote: “Unison singing of regular song structures makes the hearts of the singers accelerate and decelerate simultaneously” (Vickhoff 2013).

In prayer. Twenty-three healthy adults recited the Ave Maria in Latin, and a yoga mantra. Both brought the breath to about six in the minute. Both produced “striking, powerful, and synchronous increases in existing cardiovascular rhythms” (Bernardi 2001). Two traditions that never met had settled on the same slow turn of ten seconds.

Between those who share a bond. A Spanish village holds a fire-walking rite each year. The heart rates of the walkers and of their relatives among the onlookers rose and fell together. The heart rates of onlookers without a tie to a walker did not follow (Xygalatas 2011). The locking ran along kinship.

Between healer and patient. A clinician treats a patient in pain while both are scanned. Over the session the activity of their two brains comes to resemble each other, and more so when they have built a bond (Ellingsen 2020). In talking treatment, the bodily rhythms of therapist and patient come into step, and more step goes with a better bond (Tschacher 2020). When one person holds the hand of another who is in pain, the two bodies fall into step, and the pain is felt as less (Reddan 2020). In staged visits to a doctor, more shared movement between clinician and patient went with more trust and less pain (Goldstein 2020).

None of these studies proves that an old diagnosis is right. Together they show something simpler. Two people who attend to each other lock, the locking can be measured, and it goes with less pain. Contact is not the wrapping around a treatment. In these measurements it is part of what treats.

The pulse as phase locking

The oldest instruction for reading the pulse in China says how the physician is to count. It stands in the eighteenth chapter of the *Basic Questions*, the first half of the *Inner Classic*. In one breath out, the vessel of a healthy person beats twice. In one breath in, it beats twice again. With the pause between, that makes five beats to a breath. Then the text says whose breath is meant. The healthy is used to measure the sick. The physician is not sick. So he steadies his own breath and counts the patient’s beats against it.

This is a measurement of one rhythm against another across two bodies. The standard is not a clock. It is the breath of the reader. A pulse is fast or slow against the one who feels it. Only a

physician who has first brought himself to rest can carry out the instruction. He must hold his own rhythm steady while his fingers follow the other.

The position taken in this book is that pulse diagnosis is phase locking. The physician does not sample a signal. He closes a seam between his own rhythm and the patient's and reads where it will not close. The elaborate lore of the Chinese, Indian and Tibetan pulse, with its positions, depths and images, is the trained window through which that closing is felt. Chapters 50, 58 and 63 describe the three arts. Chapter 67 returns to the claim.

One objection should be met at once. Studies in which several practitioners take the pulse of the same patient often find that they disagree. The research for this book collected such studies, and chapter 55 gives the numbers. In the account of this chapter that outcome is not a surprise. If the reading is a locking between two persons, then another reader makes another pair. The right question for a trial is then a different one. It is not whether two readers name the same pattern. It is whether the treatment that follows from a reading helps that patient more than a treatment chosen without it. Very few trials have asked this.

Six rules for acting on a living structure

The essay on the senses does not stop at perceiving. It also derives rules for how a wave can act on a living structure: a sound, a light, a touch that moves. Six rules follow from the axioms. They are given here in the essay's words, each with a short gloss.

1. **Read the state first.** "The response of a medium depends on its state, not on universal constants. The same signal meets a different response in a different state." This is the fourth axiom, and it is the first rule of cure of chapter 4.
2. **Offer the layer's own window.** "Only equal windows close. A tone that is right for one layer is wrong for another." What is offered must have the form of the place where it is to close.
3. **Offer a nested triad.** "A window of three at one ring is one step of the ring above." A tone is offered together with the tones at a third and a ninth of its rate.
4. **Choose local or carried.** "A rotating three-phase signal closes in place. Three equal pulses form a ring and pass the closure one layer up." An act can be made to close where it is, or to hand its closure to the next depth.
5. **Offer the whole window at once.** The author computed what an open ring does when it is left to its neighbours. Of open rings of length five to ten, between 98.8 and 100 per cent keep cycling and never settle. "Single stimuli left to the tissue almost never succeed."
6. **Leave silence after each offering.** In the essay's words, drift is undone "only where nothing flows". After the act comes rest, and the rest is part of the act.

The essay applies the first rule to a century of disputed experiments in Russia on the weak light of living cells. Those experiments are known for giving a result in one laboratory and none in the next. The essay reads this differently from the usual verdict. “The notorious irreproducibility of these results is not noise. It is what the theory predicts when the receiver’s state is not read first.”

The same reading can be applied to trials of old medicines. A trial that gives every patient the same needles at the same points, at whatever hour, in whatever state, has left out the first rule on purpose. If the first rule is true, such a trial should give small and wavering results. Chapter 55 shows that this is what the large acupuncture trials found.

The six rules in the old medicines

The research for this book laid the six rules beside the old medicines. Four of the six are followed almost everywhere.

Rule	In the old medicines
1. Read the state first	Diagnosis comes before every act: pulse, cast, trance, dream. Often the reader and the healer are two persons
2. Offer the layer’s own window	The name of the illness decides what is offered. In Japan a pattern goes with one formula. In Ifá the sign that falls names the offering. Among the Navajo the cause names the chant
5. Offer the whole window at once	The San dance through the whole night. A Navajo chant lasts two to nine nights without a break. In one trial Indian medicine given as a whole did better than standard care, while single needles against sham needles differ little
6. Leave silence after each offering	The Hawaiian setting right has a fixed step of silence. The San healer falls down after the dance and sleeps. In the Greek temples the cure itself came in sleep

Rules 3 and 4 were not found in the form in which the essay states them. The search looked for healing sound built in levels that stand as one to three to nine. It did not find them. The levels that were measured stand as one to two to four: in the Swedish choir study the shared rhythms lay at 0.05, 0.1 and 0.2 cycles per second. That is the ladder of two of chapter 2. The

drum tempos used in experiments on trance lie at three, four, six and eight beats per second. The Navajo count in fours and twelves. For the fourth rule two cases were found in which what is open is handed on. In a Mesopotamian rite the evil is passed from the patient to water, from the water to a figure of clay, and with the figure into the river. And at the fire-walking the locking ran from walker to kin.

So the old medicines confirm four rules, leave one open and speak for a variant of another. Chapter 74 takes this up. It may be that the essay's triad is right and has never been tried. It may be that healing sound among people runs on the ladder of two, the ladder of the meeting, because it is a matter between persons who face each other. The question is open, and it can be tested.

What can be retuned and what cannot

The essay ends its practical part with a distinction that every honest medicine needs. "Drift means the structure is intact but out of tune with its own ring; drift stays within its class and can be retuned. A jump of class means the structure is gone — dead cells, a cut nerve. A continuous rewrite cannot restore a cut strand."

Four limits follow, in the essay's words.

- "Nothing settles by itself." Acting on a tissue and leaving it to find its own closure will seldom succeed.
- "What has jumped class does not return through vibration. Lost structure needs a new strand."
- Without what passes through a living form, nothing is laid again. A wave brings the window. It does not bring the building material.
- "The remainder of life stays." At depth 53, the depth of a human life, the two ladders miss each other by a fifth of a per cent. That opening can be spread out. It cannot be removed.

The old medicines draw the same line, each in its own words. The Egyptian surgeon of the Edwin Smith papyrus ends each case with one of three verdicts. It is an ailment he will treat, an ailment he will contend with, or an ailment not to be treated. The Greek physician was trained to foretell the course of an illness, and to leave alone those "overmastered by their diseases". The Tibetan physician learns the signs of approaching death in pulse, urine and dream, and does not treat against them. A medicine that claims to heal everything has left the old medicines as much as it has left the hospital.

The last of the four limits deserves a second look. In the theory a living form is never fully closed. A form that closed completely would hold nothing open towards what surrounds it, and nothing would pass through it. "That second state looks like perfect stability. It is death. A living whole keeps part of its boundary open." So health is not full closure. It is a closing that goes on, around an opening that stays. The essay calls that small opening "the signature of being alive".

The order of an act of healing

Chapters 3, 4 and 5 can now be drawn together in one order of steps. It is the order that the old medicines keep, and the order by which this book will describe them.

1. The healer is made ready. His own window is brought in tune.
2. The healer reads. He closes with the patient and finds where it will not close.
3. The place is named. The name says where in a larger whole the opening lies.
4. What was there is given back, or what does not belong is taken out, at that place.
5. A rhythm is offered, as a whole and for long enough, in the patient's own direction.
6. Silence follows. The return is left to run.

Coupling keeps closure and cannot create it. That is why step five comes after step four. A song laid over an open place does not close it. And nothing settles by itself. That is why step four is not left to chance.

6. The complementary universe

The other half in the old medicines

Every old medicine in this book works in two domains. One is the domain of the day: the body that can be touched, the house, the field, the plants. The other has many names. The San healer goes to the place of the spirits of the dead and to the village of the great god. The Aboriginal clever man travels in the Dreaming. The Siberian shaman climbs to an upper world and goes down to a lower one. The Yoruba speak of *aye*, the visible world, and *orun*, the world of the unseen, and say that the two are the halves of one closed gourd. The Egyptians had the Duat, the Greeks the realm that the sleeper entered in the temple of Asklepios, the Tibetans the *bardo* between two lives.

The second domain is not a place for the dead only. The healer goes there for the living. He goes to find out what is wrong, to fetch what was lost, to bargain with whoever holds it, and to learn. In most of these traditions a serious diagnosis cannot be made in the first domain alone.

Hospital medicine has one domain. This difference is larger than any difference in remedies. A book on the old medicines that leaves the second domain out, or treats it as decoration, has left out half of each medicine. This chapter says how the second domain is taken in this book.

Two souls

Scholars of religion found long ago that most peoples do not speak of one soul. They speak of at least two. One belongs to the body. It is the breath, the warmth, the life that stays in the body while it lives. The other is free. It leaves the body in sleep, in trance and at death, and it can go far. The Swedish scholar Åke Hultkrantz described this for the peoples of North America and called it soul dualism (Hultkrantz 1953). It has since been found on every continent.

The free soul is the one that the healer uses, and the one that the patient can lose. When it stays away too long, the person is alive and not present. He eats little, sleeps badly, takes no part and wastes. The peoples of the Andes and of Mexico call this state *susto*, fright. The Hmong hold a rite to call the soul back. The Siberian shaman goes after it. Chapter 21 treats soul loss as one of the great illnesses of the old world.

The Egyptians, as so often, wrote out in full what others kept in practice. They did not count two parts of a person. They counted nine, among them the name, the heart, the shadow, the double called *ka*, the free-moving *ba* in the shape of a bird, and the shining body called *sahu*. The author described this ninefold pattern in 2009 and returned to it in 2026 (Konstapel 2026h).

The space of the Sun and the space of the Moon

The author's own account of the second domain starts from physics. "Beside our day-space of the Sun there is a complementary space of the Moon" (Konstapel 2026g).

The physics is that of Peter Rowlands. Rowlands rewrote the equation by which Dirac had described the electron. In his form the equation says one simple matter. The universe as a whole must add up to nothing. A state that exists is always one of a pair, and the two members of the pair cancel. The partner of every state is the rest of the universe as seen from that state. Rowlands calls the space of the partner the dual space. Others call it antispace.

The author states what this means for a body in an essay of June 2026 (Konstapel 2026f). The lines below are translated from the Dutch.

> Every stable configuration in our ordinary space has a complementary structure in a mirror space. Not as a metaphor. As a mathematical necessity. … Space and antispace are not two separate worlds. They are two projections of the same underlying structure. … The body that medicine describes is the half that we can measure. The body that we really are includes both halves.

The essay offers a comparison. A stereo recording has a left and a right channel. Each channel alone is flat. Played together they give depth. The depth is not a third channel. It is the relation between the two. In the same way the soundness of a living being lies not in one of its halves but in how the two stand to each other.

Three points of this account are used in the rest of the book.

The second domain is not far away. It is not a region beyond the stars. It is the other projection of what is here. Every place of the body has its counterpart.

The two domains are mirror images. What is local here is spread out there. What runs one way here runs the other way there.

A living being exists in both. Health has two parts: the order of the measurable half, and the standing of the two halves to each other.

One observation, found again and again

In July 2026 the author traced the history of this idea (Konstapel 2026h). His claim is that it is not many ideas. It is one observation, made again by people who did not know of each other, each time in the language of the age. The table gives the line in short.

Age and place	Who	Their word for the complementary domain
Before writing	The shaman	The free soul and its journey through the layers of the world

Age and place	Who	Their word for the complementary domain
Mesopotamia	The myth of Inanna	The descent through seven gates
Egypt	The priests of the temples	*Sahu*, the shining body; the gate of *Sekhem*
Greece	Eleusis, Pythagoras, Empedocles, Plato	The mysteries; the wandering soul; the world of Forms
Late antiquity	Hermetic writings, Plotinus	The ascent; union with the One
Persia and Islam	Suhrawardi, Ibn Arabi	The world of images between spirit and matter
Judaism	Merkabah mystics, Kabbalah	The heavenly palaces; the tree of the *sefirot*
India	The Upanishads, yoga, tantra	The five sheaths of the person
China and Tibet	Daoist inner alchemy; Vajrayana	The immortal embryo; the rainbow body; the *bardo*
Renaissance Europe	Paracelsus, Böhme	The *archeus*; the astral body
Eighteenth to twentieth century	Swedenborg, Gurdjieff, Jung, Bergson	The spirit world; the higher body; the collective unconscious; the brain as a filter
Twentieth century	Robert Monroe; research on near-death	The Focus levels; the experience during clinical death
Present physics and philosophy	Rowlands, Bohm, Penrose and others	Dual space; the implicate order

The author then proposes a reversal. All these figures describe the passage *to* the complementary domain, seen from here. The reversal takes the complementary domain as the ground and this world as “one trajectory among many possible ones”. He leaves one question open, and this book leaves it open too. The return of the same pattern may be a fact about how the world is made. It may be a fact about how the human mind is made, so that it models

the world in the same shape again and again. “What remains standing is the observation itself.”

Monroe’s reports as demands on a theory

Robert Monroe was an American businessman. From 1958 he found himself leaving his body without wishing to. He treated what happened as a matter to be explored with care. He wrote three sober books and founded an institute that trained thousands of people to reach the same states by listening to sound (Monroe 1971, 1985, 1994). He numbered the states. In Focus 10 the body sleeps and the mind is awake. In Focus 15 the sense of time is gone. Focus 21 lies at the edge of this world. Focus 27 he called the reception centre.

The author does not ask whether Monroe’s reports can be fitted into a theory afterwards. He turns the question round. Suppose the reports are not illusions. What must then be true of the world? He draws five demands from them (Konstapel 2026g).

1. **Knowledge at a distance has content.** People out of the body do not report random images. They report places.
2. **The other domain has layers.** Each level has its own character and its own logic. It is not a formless void.
3. **Time is not a line there.** From Focus 21 on, past and future are reached together.
4. **There are lasting beings without bodies.** Monroe and his trainees met conscious, purposeful others again and again.
5. **The traffic goes both ways.** One does not only receive. One can go and fetch.

The old healers make the same five claims, in their own words and without exception. The diviner knows what happens in a distant village. The shaman’s other world has three levels, or seven, or nine. The diviner reads what will come, and the healer goes back to what was done before the patient was born. The spirits are met, named and bargained with. And the whole craft rests on going and fetching.

What is the evidence that any of this is more than report? The American government paid for more than twenty years of experiments in which people tried to describe distant places. In 1995 two reviewers were asked to judge the work. The statistician Jessica Utts concluded that the effect was small, consistent and too regular to be chance. The psychologist Ray Hyman agreed that the statistics could not be dismissed and denied that they proved what they were said to prove (Utts 1996). The matter stands there. This book does not rest on it. It notes that the claim has been tested, that the tests did not come out empty, and that the dispute is about what they mean.

The threshold, and a second kind of illness

In the author’s account the two halves of a living being are coupled, and the coupling can be weaker or stronger. In ordinary waking the measurable half leads. In deep trance, in certain dreams and near death the other half comes forward. Between lies a threshold. Below it a

being works without anyone being at home. At it, experience begins. The author takes the name of the threshold, *phaseonium*, from work by Peter Marcer and Rowlands, and places Monroe's Focus 27 on it.

From this follows a statement about illness that is new to the hospital and old to the healers.

"Medicine describes illness as a problem of the space component: something is broken or missing in the measurable structure of the body. The dual-space frame adds a second class of illnesses: disorders of the coupling between space and antispace" (Konstapel 2026f, translated).

The essay describes the patient of this second class. He feels unreal all the time. He is loose from his own body, "present but not present". He watches his own life as an onlooker. Every test of the measurable half may be normal. He does not answer to treatment of the measurable half, "because that is not where the problem sits".

Any healer of the old world would know this patient at once. It is the description of soul loss. The match is close, down to the remedy. The essay asks for acts that bring the two halves back into step: attention to the body, practices of rhythm and sound, surroundings that hold the coupling. The old healers call the soul back with song, drum, the patient's own name and the hands of his kin.

The essay adds a remark about people who are born with a strong coupling. They pick up small changes around them. They feel the mood of a room. They cannot live well in surroundings that do not suit them. Doctors call them very sensitive. The old world had a use for them. They were the ones who became healers.

The same in the language of the Net

The account so far uses the words of Rowlands' physics. Can it be said in the plain words of chapter 1? This section tries. All of it is reading.

The mirror is the same word reversed. In chapter 1 every word of the strand had a mirror word. Change every → into ← and every ← into →. The mirror of a closed ring is closed. The two living rings at every depth are each other's mirror: one turns one way, one the other. So for every living form the theory gives a second living form that is equally closed and turns the opposite way. The complementary universe is read here as the mirror word of this one: the same strand, read in the other direction.

Mirror forms cannot be joined end to end. The seam law of chapter 1 says that two living stretches of opposite direction never join. Of the eighteen possible seams between them, none closes. So there is no smooth road from here to there. One cannot walk into the other half along one's own direction. Whoever goes must pass through a stretch that is open.

The old traditions say this in the strongest words they have. The one who goes dies. The San call deep trance a death, and say of the great healers that they die and come back. The

Siberian novice is cut to pieces by the spirits and put together again. The initiate at Eleusis walked in darkness and terror before he saw the light. The crossing is not a stroll. It is an opening of the whole form.

Mirror forms close face to face. There is a second way in which two forms can stand to each other. They can lie against each other, place by place, as the two strands of the chain in the cell do. Then each place holds a state and its partner. A state and its partner are a meeting, the second of the three elementary closures. And the book on the body computed that two living strands can lie together in this way only when they run in opposite directions.

So the mirror form is the one form that cannot be joined to a living form at its end and that fits it perfectly along its whole length. This is the figure of the two halves. They are not neighbours. They are partners. Each place here is a meeting with its counterpart there, and the sum of the two is nothing, as Rowlands' equation asks.

The coupling is whether the meetings close. If every place meets its counterpart in step, the two halves are one closed whole. If the two halves have slipped against each other, the meetings do not close, though each half may be sound in itself. That is the second kind of illness. It is an illness of phase between a form and its own mirror.

The way back takes a second turn. Chapter 2 ended with a strand that is attached to its surroundings. One full turn brings it to its mirror. A second full turn brings it home. A journey to the other half and back is two turns. The traditions are strict about the second turn. A healer who goes must be brought back. The San hold and rub the one who has fallen in trance until he returns. The Siberian shaman has helpers who call him. A soul that has made one turn and not the second is lost.

What is reversed there. If the other half is the mirror word, then what is left here is right there, and what comes first here comes last there. Many peoples say exactly this of the land of the dead. The Egyptian texts for the dead contain spells against having to walk upside down. Peoples of Siberia say that in the lower world it is day when it is night here. The rivers run backward there, and what is broken here is whole there. For that reason the goods given to the dead are broken first.

Ancestors, intuition and light

Three more matters of the old medicines find a place in the same language. They too are reading.

The ancestors. The third axiom says that at every node the first passage fixes the direction and that later passages are read against it. "The net carries its history as its shape." A family is a winding at its own depth. Its first passages are its ancestors. They are not gone. They are the part of the winding against which every later member is read. And the fifth axiom says that what did not close at one scale is the material of the next. A wrong that a grandfather left

open is an open window in the winding of the family. It is passed on as tension, and it shows where the winding is weakest, in a grandchild who knows nothing of it.

This is what the Hawaiian elders, the Yoruba diviners and the Navajo diagnosticians say in their own way. The illness of one person may be the open window of a line. It cannot be closed in the person. It has to be closed where it was opened.

Intuition. A node is a place that the strand passes more than once. The passages lie far apart along the strand. They may be what we call years apart, or miles. At the node they are at one place. The one who looks is part of the path, and at a node he can see more than one side. Intuition is read here as perceiving at a node: closing a seam with another passage of the strand that is far along the path and near at the place. For such a perception the usual carriers are not needed. Nothing has to travel. The diviner's cast, the dream and the sudden knowing of the healer are attempts to stand at a node.

Time in the theory is a human point of reference, taken from the round of the sun and the moon. Along the strand there is order, and at a node the order folds. So the third of Monroe's demands, that past and future are reached together, is not strange in this language. It is what a node is.

Light. The only one there is, is light, and light is a location on the strand. A body is light that is wound to great depth. What is light that is not wound into a body? Every tradition has met it and has put it at the top. It is the fourth of the four figures of the next chapter, the formless light. The Inuit shaman receives a light inside his head by which he sees in the dark and through distance (Rasmussen 1929). The Aboriginal clever man carries quartz crystals in his body, put there at his making, and they are tied to the sky and to light. The Tibetan dying are taught to know the clear light when it dawns. The author stated his belief plainly in the research for this book. Intuition, the world of spirits and the higher forms of awareness are to be looked for in the light. In the language of the Net: in what the strand is before it is wound, and in the windings that are not bodies.

What follows for medicine

If a living being exists in two halves that are partners, four consequences follow for any medicine. The old medicines draw all four.

1. **Diagnosis can be made from the other half.** What cannot be read in the measurable body may be readable in its counterpart. Trance, dream, the cast and the vision are the instruments for this.
2. **There are illnesses of the coupling.** The halves have slipped. The person is present and not present. The remedy is a calling back and a bringing into step.
3. **Some illnesses lie in the winding of the family or the land.** They show in one person and are closed elsewhere.
4. **The healer is one who can make both turns.** He is formed by a crossing of his own, and he needs others to bring him back.

The limits of this chapter

The chapter has joined three layers that should be kept apart in the reader's mind.

The first layer is report. Peoples all over the world describe a second domain and a free part of the person that moves in it. That is fact of ethnography, as solid as such facts get.

The second layer is the author's dual-space account, built on Rowlands' physics. It makes predictions of its own, among them one about the rate at which the universe expands, and those are for astronomers to decide. They are not used in this book.

The third layer is the reading in the language of the Net: the mirror word, the seam that will not close, the meeting that does, the two turns, the node. It was made for this book. It has not been tested.

What the three layers share is a figure, and the figure is simple. The other world is the same world read the other way. It cannot be reached by going on. It can only be met.

7. VALIS: the self and the Other

The name and the question

In February and March of 1974 the American writer Philip K. Dick had a series of experiences that he could not place. He felt that a mind that was not his own had entered his, that it knew matters he did not know, and that it cared for him. He spent the remaining eight years of his life writing about it, in a journal of some eight thousand pages and in a novel. He gave it a name: VALIS, Vast Active Living Intelligence System (Dick 1981; Dick 2011).

The author took the name over in 2025 for a wider matter (Konstapel 2025). People in every age report that they have met an intelligence that is not human. They call it a god, an angel, a spirit, an ancestor, one of the little people, and in our time an alien. The reports are usually studied apart, by different scholars, as religion, as folklore or as delusion. Laid side by side, they turn out to agree in a way that nobody planned.

The author's page on the subject opens with the question in its barest form. "VALIS is not physics. It is the question of what a human being meets when he meets what is not himself — and how much of it turns out to be himself." And it adds: "Across cultures and thousands of years four figures return. That returning is itself the argument."

This chapter sets out the four figures, the course of a meeting, what is said in it, and the three ways in which the whole can be understood. It then shows why a book on the old medicines needs all of this. Healers are the people whose trade it is to meet the Other. They do so when they are made, when they read and when they heal.

Four figures

In the reports, old and new, at least four kinds of figure can be told apart. The description follows the author's page. Each figure is given twice: as it appears, and as a mirror of the one who meets it.

The small technical figure. It is compact, with a large head and large eyes. It is purposeful and follows a procedure. It examines, scans and uses instruments. There is "no conversation but an act". As a mirror, it shows what a person does not know of himself: being handled as an object, without explanation.

The guide or teacher. It looks human and has a calming presence. It speaks. What it passes on concerns direction, meaning and how to live. As a mirror, it is the conscience that seems to come from outside, because inside it weighs too much.

The praying mantis. It is large, jointed and exact. It often stands in a supervising role. It watches or directs while others measure and act. As a mirror, it is judgment without warmth: being seen by one who wants nothing from you.

The formless light. It has no stable body. It is a pattern or a brightness. It does not speak in sentences. It gives an impression, a great deal of meaning pressed into a moment, an insight into the order under the surface. As a mirror, it is the image of wholeness, which the psychiatrist Jung called the Self and set apart from the I.

The modern reports of these four come from people who say they were taken by non-human beings, and they were collected in the last half century (Vallée 1969; Mack 1994). The author's claim is that the same four are old. He points to the helper spirits and the little people of folklore everywhere, who steal and exchange and operate. He points to Mentor, the disguised goddess who guides the young Telemachus, and to the wise centaur Chiron who taught the healing art. He points to the Mantis of the San of southern Africa, who made the animals and plays tricks on men. And he points to the light of the mystics of every religion.

Jung had seen the general point already in 1958. He wrote a small book on the flying saucers that were then in the news. He did not ask whether they exist. He asked what people see in them, and he found the old figures in new dress (Jung 1959).

The course of a meeting

The second agreement is in the course of events. However different the settings, many meetings follow the same short chain of five steps.

1. **Loosening.** There is a break in the daily round. It may be bodily: an illness, a fast, a blow, exhaustion. It may be a break in attention: a long watch, a monotonous road, the edge of sleep.
2. **Examination.** The person is examined. With the technical figures this is done in a technical manner, as a scan of the body. With the guide it is inward, as a searching of the life.
3. **Exchange.** Something is passed on. It is short: a few sentences, a direction, one core insight.
4. **Showing.** Sometimes something is shown: a place, a way of doing, a structure under what is seen.
5. **Return.** The person is back, soberly, without a closing scene. "The experience works mainly afterwards."

The channel has shifted over the centuries. The old reports speak of a voice that is heard and a form that is seen. The newer ones speak more of thought passed directly, and of a great amount of knowing handed over in one moment. A sign or a strange coincidence often comes first and works as the opening.

What is said, and what it does

What do the figures say? Very little that can be checked. Dates, numbers and facts are rare, and when they occur they are not the point. The content is about conduct. It concerns care

with power and with tools, responsibility for the surroundings and for the community, and the tuning of attention and behaviour.

The effect is of the same kind. People who report such a meeting often change how they live. They fear death less. They have a stronger sense of direction. Where the meeting was forced on them, they also carry fear and strain. “Pain and growth occur side by side,” the author’s page says, and that is what makes the matter worth study whatever its origin.

There is a dark side, and the reports do not hide it. Dick called it the Black Iron Prison: the same kind of contact used for control. On the author’s page it is not a fifth figure. It is “what can go wrong with each of the four when the meeting becomes mastery”. The examiner becomes a torturer, the guide a deceiver, the overseer a jailer, and the light a fire that burns out the one who looks.

Three frames, no verdict

How is all this to be understood? The author sets three frames side by side and declines to choose. “That is not hesitation but the state of affairs.”

Frame	What it says	Strong point	Weak point
Brain and culture	The figures are made by the human brain under strain, dressed by the culture of the person	Explains the timing, the expected shapes, and why the setting matters	Does not explain all the agreement between cultures that had no contact
An outside presence	The figures are what they seem: others, met from outside	Fits the repeatable structure, the cases with several witnesses, and the practical bent of what is said	No hard physical trace that can be produced again
An interface	One presence shows itself in different forms, depending on what is to be done	Explains why acting on the body goes with the technical figures, meaning with the guide, and insight into order with the light	It is the least worked out

The third frame deserves a word. An interface is what a user sees of a complex working behind it. The same working can show a keyboard to one who must type and a map to one

who must travel. In this frame the four figures are four faces of one meeting, each fitted to a task.

This book follows the author in not choosing. It uses VALIS as a set of questions, and the questions can be answered for each old medicine without settling what the figures are. Whom does the healer meet? In what form? By what course? What is said? What changes afterwards? And where is the dark side?

A wider map

In December 2025 the author drew a wider map of the bodiless intelligences that people report (Konstapel 2025c). It has eight regions. The map is his. The examples from healing in the last column are added here.

Region	What is meant	Where healers meet it
Gods and cosmic orders	Beings with a will, a role and a rank, lasting over ages	Gula of the Babylonians, Asklepios of the Greeks, the *orisha* of the Yoruba, the Medicine Buddha of Tibet
Nature and the elements	The keepers of a place, an animal kind, a plant, a water	The owners of the animals in Siberia, the mothers of the plants in the Amazon, the holy people of the Navajo land
The mind of a group	What arises when many attend and intend as one	The ring of singers round a San dance; the kin round a Navajo patient; a praying congregation
The strange and non-human	Presences that fit no known kind	The modern reports of the first and third figure
Living networks	Forests, swarms, the life in the soil, taken as knowing wholes	The forest as teacher in the Amazon
Made on purpose	Presences built by human intent and kept up by attention	The helper that a sorcerer makes and sends; the charged object
The threshold	Beings met only in sleep, trance, fever or near death	The dream figures of the temple sleep; the dead who come for the dying

Region	What is meant	Where healers meet it
Pure order	Number, sign and law taken as alive	The 256 signs of Ifá, each of which the Yoruba treat as a person with a history

The map is useful for one reason above all. It stops the reader from pressing every report into one box. A Yoruba diviner greets the sign that has fallen. A Navajo singer draws the holy people in sand. A San healer shouts at the spirits of the dead to go away. The three acts are not the same. All three are meeting the Other. They meet in different regions of it.

The five steps in the making of a healer

The course of five steps was drawn from reports of meetings. It was not drawn from medicine. Yet it is, step for step, the course by which the old world makes its healers.

The classic account comes from Siberia. A man of the Nganasan people told it to the Russian ethnographer A. A. Popov, and Mircea Eliade retold it (Eliade 1964). The man lay ill with smallpox for three days and was nearly buried. In that time he was carried away. He was led down to the lower world by guides in animal shape. There he was shown the tents of the sicknesses, one after another, so that he would know them. A smith cut off his head, cut his body into pieces and boiled them. The smith then forged him a new head. He gave him new eyes with which to see what others cannot see. He pierced his ears so that he could understand the speech of plants. He woke in his tent.

Every step is there. The illness loosens. The body is examined in the hardest possible manner: taken apart and counted. Knowledge is passed on. The causes of illness are shown. And the man returns, soberly, to a life in which what happened works itself out as a calling.

The same course can be followed in the Amazon. There the novice goes into the forest alone, eats almost nothing for months and is taught by the spirit of a plant. It can be followed in Australia, where the old accounts say that the body of the novice is opened by spirits and filled with crystals. It can be followed among the Zulu, where the call comes as a long sickness with dreams of the ancestors. Chapter 10 gives these accounts in full.

One remark belongs here. In the second step it is the human being who is read. The healer-to-be is first of all a patient of the Other. He is examined before he ever examines. He learns what it is to be read down to the bone, and only then to read. A hospital doctor is trained by reading thousands of patients. A healer of the old kind is trained first by having been one.

The five steps in a healing

The course also describes a healing. The clearest case is the temple sleep of the Greeks, because the patients themselves had their cures cut in stone. Chapter 37 gives the inscriptions of Epidaurus. In outline they run as follows.

The sick person leaves his town and travels to the sanctuary. He washes, makes an offering and waits. At night he lies down in the hall of sleep. That is the loosening. In his sleep the god comes to him. The god looks at what is wrong, touches it, and often acts on it with his hands or with a knife. That is the examination, and it is "no conversation but an act". Sometimes the god says a few words or orders a remedy. That is the exchange. Sometimes he shows what he has taken out. One stone tells of a man who had carried the point of a spear in his jaw for six years. In his sleep the god drew it out and laid it in his hands. In the morning the man walked out with the spear point in his hand. That is the showing and the return.

The same order holds for a night of healing with ayahuasca on the upper Amazon, for a Navajo chant and for a San dance. The healer then stands in the place of the god or beside him. The patient is taken out of his daily round. He is read. Something is said or sung over him that is short and meant for him. What was wrong is shown to him, very often as an object taken from his body. And he goes home, where the healing completes itself over the following days.

The four figures among the healers

All four figures appear in the old medicines. They do not appear equally everywhere.

The one who acts on the body without speaking is the spirit surgeon. The god at Epidaurus cuts and sews. The healers of the Peruvian Amazon speak of *doctores*, the spirits of the plants, who come in the night and operate on the patient (Luna 1986). In a hospital study in the 1990s volunteers were given the vision-bringing compound DMT. To the surprise of the researcher, many reported that beings had examined and worked on them (Strassman 2001).

The teacher is by far the commonest figure among healers. Nearly every tradition says that its medicine was taught by one who was not a living human being. The Chinese received theirs from the Yellow Emperor and the Divine Farmer. The Indian texts say that the science of life was handed down from the creator to the physicians of the gods and from them to the sages. The Tibetans received the Four Tantras from the Medicine Buddha. The Yoruba have theirs from Orunmila, who was present at the making of the world. The Amazonian healer is taught by the mother of the plant. The Greek temple healers had Asklepios, and Asklepios had learned from Chiron.

The watcher who judges is less a healer than a presence that the healer must reckon with. The San of the south told of the Mantis, who made the eland and watches over it. It is the eland whose potency the healers call on in the dance (Lewis-Williams 2002). The Babylonian exorcist asked which god had turned his face from the patient, and why.

The formless light is what the greatest healers are said to have. The Inuit told the explorer Knud Rasmussen that a man cannot be a shaman until he has received a light within his body. It lets him see in the dark and into what is hidden (Rasmussen 1929). The San healers speak of threads of light on which they climb to the sky.

The dark side is as old as the rest. In every tradition of this book the means of the healer are also the means of the sorcerer. The Amazonian healer who can suck a dart out of a body can also shoot one in. Among the Navajo the witch does everything the singer does, in reverse. A great part of old medicine is defence. Chapter 21 treats sorcery as an illness with its own diagnosis and cure.

VALIS in the language of the Net

Three points from the earlier chapters bear on VALIS. They are reading, and they do not decide between the three frames.

What is met depends on the window. Chapter 5 said that perceiving is the set of closures that a given window can make. A meeting with the Other is a perception. It can only take the form for which the one who meets has a window. A person whose trouble is in the body meets one who acts on bodies. A person at a parting of ways meets a guide. A person who can bear it meets the light. This is the third frame in the words of the theory. The four figures are four windows at which the meeting closes.

A meeting is a closure with a partner. The second of the three elementary closures is the meeting: a state and its opposite. Chapter 6 read the complementary universe as the mirror word of this one, lying against it place by place. What a person meets when he meets his counterpart is, in the exact sense of the theory, his own mirror. So the question on the author's page has a plain answer in this language. How much of the Other turns out to be oneself? As a form, all of it. As a direction, none of it. It is the same word, read the other way.

Nothing stands outside the strand. The second axiom says that there is no external selector. There is one strand, and everything that can be told apart is a winding of it. So the Other cannot be outside in the sense in which a visitor is outside a house. Whatever is met is another winding of the same strand, at another depth or in the other direction. This does not make the Other less real. It makes the border between self and Other a border between windings, and not between two worlds.

How this book uses VALIS

VALIS is used in this book as a discipline. It keeps three matters in view that books on medicine tend to lose.

The first is that the old healers meet someone. Their work cannot be described as technique alone. A description of a San dance that leaves out the spirits of the dead has not described the dance.

The second is that the meeting has a form and a course that can be compared across traditions without deciding what it is. The reading sections of Parts II to VI ask the same questions each time. Whom does the healer meet, and in what form? By what course, with what words, to what effect, and with what shadow?

The third is the author's own conclusion from his study of the reports. He holds that the chance is large that there is something to meet. This book records that conclusion as his. It does not need it for its argument. The argument needs only what the reports show. In all ages people have been made into healers by a meeting, have read the sick with the help of what they met, and have healed in its presence. A theory of medicine that has no place for this has not yet looked at most of the medicine that mankind has had.

8. How to read an old medicine

Three parts and one loop

An old medicine has three parts of its own: its diagnosis, its naming and its healing. This book describes each tradition under those three heads. The division helps the reader. It should not mislead him. In practice the three are one loop.

The diagnosis is already the first act of the healing. A patient whose pulse is taken for ten minutes in silence by a physician who attends to nothing else is not the same patient afterwards. The naming is the hinge. It turns what the healer has found into a statement of where the trouble lies and what must be done. And the healing is read again by the same means that made the diagnosis. In the Japanese school of acupuncture called Toyohari the practitioner feels the pulse after each needle. The pulse tells him when the treatment is finished (O'Brien 2013).

So an old medicine cannot be tested part by part without loss. A needle without the reading that chose its place is not acupuncture. A herb without the pattern that called for it is a chemical. The last sections of this chapter show what happens in trials when the loop is cut.

What the hospital's own scholars have seen

The old medicines have been studied from the side of the hospital for a century. Three findings of that study are worth knowing before the traditions themselves are met.

Disease and illness. In the 1970s the psychiatrists Leon Eisenberg and Arthur Kleinman drew a distinction that has stayed. Patients suffer illnesses. Doctors diagnose and treat diseases (Eisenberg 1977). An illness is what the person lives through. A disease is what the doctor finds. The two do not always go together. A person can have a disease without an illness, as with high blood pressure that he does not feel. He can have an illness for which no disease is found. Kleinman added that every patient and every healer carries an account of the trouble: what it is, why it came, why now, what it does and what should be done. He called this an explanatory model, and he showed that healing goes better when the models of healer and patient meet (Kleinman 1978).

The causes that peoples name. In 1932 Forrest Clements went through the reports from the whole world. He found that peoples outside the tradition of the hospital name five causes of illness, alone or together. They are sorcery, the breaking of a taboo, an object that has entered the body, a spirit that has entered the body, and the loss of the soul (Clements 1932). In 1980 George Murdock counted the theories of illness of 139 societies. Causes of the kind that the hospital would call supernatural were named about twice as often as natural ones. Attack by spirits was almost universal (Murdock 1980). Later critics pointed out that the line between natural and supernatural is drawn by the hospital and not by the peoples themselves. The counts stand. The headings are doubtful.

The shape of a healing. In 1986 James Dow proposed that all healing by symbols, from the shaman's seance to the talking cure, has the same four steps (Dow 1986). First, healer and patient share a world of story about how matters stand between people, spirits and the body. Second, the healer persuades the patient that his trouble can be stated in the terms of that world. Third, the healer ties the feelings of the patient to particular symbols taken from it. Fourth, the healer works on those symbols, and the feelings of the patient move with them. Thomas Csordas found three matching steps in his study of religious healing among American Catholics. The patient must be disposed to be healed. He must experience a power at work. And he must perceive that he has changed (Csordas 1983).

These findings are sound as far as they go. They share one limit. They explain healing by what it means to the patient. They take for granted that nothing is really taken out, nobody is really met, and the pulse really tells the physician nothing that a questionnaire would not. In the language of this book, they describe the carrier, which is speech and symbol, and leave open what the carrier delivers. The chapters that follow try to keep the question open in the other direction too.

The ritual has its own effect

The most careful work on this point comes from Ted Kaptchuk at Harvard. He was trained in Chinese medicine before he became a researcher of placebo.

In one trial, 262 patients with irritable bowel were divided into three groups. The first was put on a waiting list. The second received sham acupuncture from a practitioner who had been told to say almost nothing. The third received the same sham acupuncture from a practitioner who took forty-five minutes at the first visit, asked about the patient's life, listened, and showed confidence. Nobody received real needles. After three weeks, 28 per cent of the first group reported adequate relief, 44 per cent of the second and 62 per cent of the third (Kaptchuk 2008).

The needles were the same in the second and third groups, and they were not needles. What differed was the meeting. Kaptchuk drew the conclusion in a later paper that compared a Navajo chant, an acupuncture session and a visit to a hospital doctor. In all three, he wrote, the healing ritual has a specific effect of its own, and "placebo" is the name that trials give to it (Kaptchuk 2011). Daniel Moerman proposed to drop the word placebo and to speak of the meaning response (Moerman 2002).

Chapter 5 gave the measurements that show the bodily side of this. Healer and patient come into step, and more step goes with less pain. In the language of the theory there is nothing puzzling about it. Speech, touch and attention are carriers. The fourth rule of cure prefers what lives to what is fixed. A meeting of two persons is the most living of all means.

What has been measured about the old diagnoses

Can the diagnoses of the old medicines be repeated? If two practitioners see the same patient, do they find the same? The research for this book collected the studies. The result is mixed, and the way in which it is mixed is instructive.

At the level of detail, agreement is low. In an Australian study, practitioners of Chinese medicine examined the same 35 patients from the general public and chose from a list of 56 patterns. Agreement on the pattern was 23 per cent (Popplewell 2019). A review of earlier studies found the agreement on pulse reading anywhere from low to very good, depending on how exactly the terms had been defined beforehand (O'Brien 2009). In a German trial of Indian medicine for the worn knee, the Ayurvedic physicians agreed poorly on the constitution of each patient and on the state of his digestive fire.

At the level of the conclusion, agreement is much better. The same Ayurvedic physicians agreed well on the final diagnosis on which the treatment was based (Kessler 2019). Tibetans who filled in a list about their own constitution came to the same type as expert physicians in 80 to 93 per cent of cases (Tsomo 2024).

And the types are not empty. In a study of 262 Indian men who had been sorted by Ayurvedic physicians into the three constitutions, 52 markers in the hereditary material differed between the groups (Govindaraj 2015). A larger Indian programme found differences in genes that govern how the body handles drugs (Prasher 2017).

The World Health Organization has drawn its own conclusion. The eleventh edition of its classification of diseases, in use since 2022, has a chapter for the patterns of East Asian medicine, with 150 disorders and 196 patterns. A pattern may be coded only beside a diagnosis from the main chapters. The patient gets two codes, one for the disease and one for his state (Reddy 2022). That is an official form of the old distinction between the illness and the person who has it.

How should the low agreement on details be read? Chapter 5 gave one answer. If a reading is a locking between two persons, another reader is another pair, and exact agreement between readers is the wrong demand. There is a second answer, and the old physicians give it themselves. The patterns are not boxes. A patient has several at once, they shift from week to week, and a good physician names the one that leads today. Two physicians who name different leading patterns in a patient with three may both be right.

What has been measured about the old healings

The trials of old healings show one pattern so often that it can be stated as a rule. Single parts, tested alone against a sham, show small effects. Whole treatments, tested against other whole treatments, show large ones.

Acupuncture. The largest analysis pooled the records of 20,827 patients from 39 trials of acupuncture for lasting pain. Real acupuncture was better than sham acupuncture, by a small

margin. It was better than no acupuncture by a large margin (Vickers 2018). The German trial known as GERAC makes the same point more sharply. The patients had low back pain. With real acupuncture 47.6 per cent improved. With sham needles at the wrong places 44.2 per cent improved. With the standard care of doctors and physiotherapists 27.4 per cent did (Haake 2007). The needles at the wrong places beat the hospital.

Chinese herbs. In an Australian trial for irritable bowel, patients received a standard Chinese formula, a formula made for each patient by a Chinese physician, or a placebo. Both formulas beat the placebo. At the end of treatment the standard formula did as well as the personal one. Fourteen weeks after treatment had stopped, only the patients with the personal formula were still better (Bensoussan 1998).

Indian medicine as a whole. In the German trial for the worn knee, one group received twelve weeks of Ayurveda as its physicians would give it. That meant massage, diet, herbs, advice on living and yoga postures. The other group received twelve weeks of the best conventional care. The Ayurveda group improved by 61 points on the usual scale of pain and stiffness, the conventional group by 32. The difference was still there after a year (Kessler 2018).

Single molecules. Two great modern drugs came out of old remedies. Tu Youyou found artemisinin, now the first drug against malaria, by following a fourth-century Chinese text. The text told her to steep the herb in cold water and not to boil it (Tu 2011). Arsenic, an old and feared Chinese remedy, turned out to cure a form of leukaemia. Combined with one other agent it left 97 per cent of patients free of the disease after two years, against 86 per cent with the standard chemotherapy (Lo-Coco 2013). Both drugs work at the layer that chapter 4 called Mesh and Chain. Both were taken out of their systems to do so.

Healing of the mind. A review of 32 studies from 20 countries looked at traditional healers. They help people with the common distresses, low mood and worry. The review found no evidence that they help in the severe disorders of the mind (Nortje 2016). In a Brazilian trial, one session with ayahuasca in a hospital room lowered severe depression within a day. By the seventh day the difference from placebo was large (Palhano-Fontes 2019).

Harm. One study bought Ayurvedic remedies on the internet. A fifth of them contained lead, mercury or arsenic, and of the kind that is made with metals on purpose, two in five did (Saper 2008). Chapter 75 gives the full list of known harms.

The rule that these results show has a simple reading. A trial of a single part against a sham keeps the meeting, the reading and the rhythm the same in both groups, and varies only one small element. It then finds that the small element matters little. It has measured the small element. It has not measured the medicine. The six rules of chapter 5 say the same from the side of the theory. Read the state first. Offer the whole window at once.

Ten points on which the old medicines agree

The research for this book went through the traditions looking for what returns without known contact. Ten points were found. They are listed here with the number of traditions in which a source was found for each. The parts that follow give the sources.

	Point	Found in
1	Diagnosis is made by a reader who makes contact: by the hand, in trance, in a dream or by a cast	Nine traditions: China, India, Tibet, the Navajo, the San, the Yoruba, Mesopotamia, the Greek temples, the Sámi
2	Illness also lies outside the body: in the family, among the ancestors, with the gods, in the group, in the land	Eight: Mesopotamia, the Navajo, the Sufi shrines of India, Hawai‘i, Aboriginal Australia, the San, the Yoruba, the Sámi
3	The name of the illness points to a place or a cause in a larger whole	Five: Mesopotamia, Ifá, China, Tibet, the Andes
4	Healing means taking out or driving out, and the patient sees it go	Seven here; and 62 of 89 hunter-gatherer peoples in one survey
5	Rhythm, sound and the group are means of healing	Six: the San, the Navajo, the Amazon, the Sámi, Ifá, Hawai‘i
6	The healer is formed by a passage of his own: an illness, a pain, a fast, an initiation	Four: southern Africa, the Amazon, the San, Siberia
7	Direction counts for more than amount	Three: the Andes, the herbs of China, the moving line of the *Book of Changes*
8	Healing is done in sleep or in a dream	Two: the Greek temples, the Amazon

	Point	Found in
9	The healing follows the order: read first, offer what fits, offer it whole, then silence	The four rules of chapter 5 that were found almost everywhere
10	Before the reading, healer or patient is made still by washing, fasting or keeping apart	Four: the Navajo, the Greek temples, Mesopotamia, the Amazon

The numbers in the last column are floors. They count only the traditions for which a source was read during the research. The later parts of the book add many more. The first five points are found so widely that they can be taken as general. The sixth is probably general. The seventh and eighth are less sure.

One matter did not converge. The traditions count differently: in twos, in threes, in fours and in fives. Chapter 2 showed that these counts are the rungs of two ladders, and chapter 73 takes it up again.

The fourth point as an example

The fourth point shows how the reading in this book works, and where it parts from other readings.

In a great many peoples, healing an illness means removing something. The healer sucks at the place of the pain, or pulls with his hands, and brings out an object. It may be a sliver of wood or bone, a small stone, an arrow point, a small animal or a clot of blood. He shows it to the patient and to those who watch. Then he destroys it or throws it far away. William Buckner found this practice described for 62 of 89 hunter-gatherer societies in the largest collection of ethnographies, on every inhabited continent (Buckner 2022). Buckner cites an older count for western North America. It found the belief that illness is an object in the body in 155 of 165 tribes.

Buckner calls the practice deceptive. The healer, he notes, often has the object in his mouth before he starts. That is true in many reported cases, and some healers have said so. But the verdict assumes that only a bodily object lodged in the flesh could count as the illness, and that the showing is therefore a trick. This is a judgment from within the picture of the machine. It is recorded here as the judgment of the source.

The reading with the theory is another. The first of the eight forms of chapter 4 is the fixed lodged in the living. The healers say, in the plainest image they have, that the illness is something that does not belong to the winding of the person and that it has a place. Chapter 5 said that to perceive is to close a seam. When the patient sees the object leave, he does not receive information about a cure. He takes part in a closure. The object is the carrier of that

closure. It ends, as carriers must. It is burned or thrown away. And what was open in the patient, at the place where the healer worked, is closed with the whole group as witness.

Is that all? The honest answer is that nobody knows. The best healers of such peoples are said to cure people whom others could not, and that claim has hardly been tested. The reading does not settle it. It only shows that the practice has a shape that the theory expects, and that "trick" is not a description of it.

How the following parts are written

Each of Parts II to VI ends with a chapter called "Read with the Net and VALIS". Those chapters use the tools of Part I in a fixed order, so that the traditions can be compared.

1. **The counts.** In what does the tradition count, and where do its counts sit on the two ladders of chapter 2?
2. **The reading.** How does the healer read: from outside or by meeting? What frame does he fix first? Does the reading find a place?
3. **The name.** To what larger whole does the name of the illness point? Which of the eight forms of chapter 4 stand behind its main names?
4. **The act.** How does the healing answer the six questions of chapter 4 and the six rules of chapter 5?
5. **The other half.** Does the tradition work in the complementary domain? How does it cross, and how does it come back?
6. **The meeting.** Whom does the healer meet? In what form, by what course, to what effect, with what shadow?
7. **What does not fit.** Where does the tradition say or do something for which the theory has no place, or which goes against it?

The seventh question is kept on purpose. A reading that fits everything teaches nothing.

Words that are left as they are

The old medicines have words for which English has none. This book leaves them in their own language and says what the healers do with them. It does not translate them into the words of the machine. The table lists the most important, with the place where each is treated.

Word	Tradition	What the tradition says of it	Chapter
n/om	San	What lies in the belly of the healers, is heated by the dance, rises up the spine and "boils"	11

Word	Tradition	What the tradition says of it	Chapter
qi	China	What moves in the body and between heaven and earth; it rises, sinks, enters and leaves	46
prana, *vata*	India	The breath of life; that which moves all else in the body	57
rlung	Tibet	Wind; the mount on which awareness rides	62
ashe	Yoruba	The power to bring about what is said, present in words, persons, plants and the signs of Ifá	24
mana	Hawai‘i and Polynesia	The standing and efficacy of a person, a line or a place	68
pneuma	Greece	Breath; what is drawn in with the air and spread through the body	39
hózhó	Navajo	The state in which all is in its place and in good relation; beauty, order, health	19

None of these words means energy. Each names what moves between forms and holds them in relation. Chapter 3 gave the theory’s word for that: the carriers. The table should be read with that chapter in mind, and with the warning that a carrier in the theory is not a material either. It is an opening that travels and closes behind itself.

Part II — The Oldest Medicine: The Shaman

9. What a shaman is

The oldest healer

Before there were physicians there were shamans. Every continent that people reached has known a healer of this kind. He or she works for a small community, without a temple and without a book. The work is done in a changed state of attention, which the healer enters at will. In that state the healer sees what others do not see, meets beings that others do not meet, and acts on what makes people ill.

This part of the book describes that medicine. It begins with the San of southern Africa, whose healing dance is probably the oldest medicine still practised. It goes on to Australia, Siberia and the north of Europe, Inner Asia and the Himalaya, the Amazon, the Andes, Mesoamerica, and North America with the Navajo at the centre. Three closing chapters gather the illnesses of the shaman's world, what has been measured, and the reading with the theory.

This chapter gives the general picture. It says where the word comes from, how outsiders have judged the shaman and how old the practice may be. It says what the shaman does, and in what kind of world the work makes sense.

The word

The word *shaman* comes from the Evenki, reindeer herders and hunters of eastern Siberia whom the Russians called Tungus. In their language a *šaman* or *saman* is a man or woman who has mastered spirits. The word is often explained from a root that means "to know", so that a shaman would be "one who knows". Scholars of the Tungus languages do not agree on this.

Europe learned the word in the seventeenth century. The Russian priest Avvakum, exiled to Siberia, described in his memoirs of 1672 how a Tungus shaman foretold the outcome of a raid. He thought it the work of devils. In 1692 the Amsterdam burgomaster Nicolaas Witsen published a great book on northern and eastern Asia. It holds the first European picture of a Siberian shaman: a man in a fur coat with antlers on his head and a drum in his hand. Witsen's caption calls him a "priest of the devil".

The word was then applied far outside Siberia. In the nineteenth and twentieth centuries scholars used it for the *angakkuq* of the Inuit and the medicine men of North America. They used it for the *payé* of the Amazon, the *!gi:xa* of the southern San and the clever men of Australia. Each of these peoples has its own word. Many of those words say the same as the Evenki word is thought to say. The Aymara *yatiri*, the Shipibo *onanya*, the Yucatec *h-men* and the Finnish *tietäjä* all mean one who knows or one who does.

Whether one word should cover so much is a real question. A later section returns to it. This book uses “shaman” as a convenient general word and uses each people’s own word in the chapter on that people.

How outsiders judged the shaman

The judgment of outsiders has turned round several times. Each turn says as much about the judges as about the shaman.

Servant of the devil. The first observers were churchmen and conquerors. For them the matter was simple. The spirits were real, and they were devils. In Peru the church ran campaigns “to root out idolatries” from 1609. In Lapland the drums of the Sámi healers were collected and burned. In New England, New Spain and Siberia the healers were preached against, flogged or worse.

Impostor. The travellers of the eighteenth century no longer believed in devils. They concluded that the shaman was a cheat. The German naturalist Johann Georg Gmelin watched Siberian shamans in the 1730s and described their sessions as jugglery. The great French encyclopaedia of the 1760s called shamans impostors. Catherine the Great of Russia wrote a comedy that made fun of them. A few voices differed. The philosopher Herder saw in the shaman the first poet and singer of mankind.

Madman. In the nineteenth century the Russian state exiled many educated men to Siberia. Several became fine ethnographers. Waldemar Bogoras lived for years with the Chukchi. He found the shamans nervous, excitable and odd, and many of his colleagues agreed. Around 1900 this became a theory. The shaman was a sick person, and the cause was sought in the cold, the dark and the hunger of the north. The illness was named arctic hysteria (Czaplicka 1914). As late as 1956 the psychoanalyst George Devereux wrote that the shaman must be regarded as mentally deranged. In 1967 an American paper compared shamans with patients in acute schizophrenia (Silverman 1967).

Healer. The answer came from those who had looked longest. Sergei Shirokogoroff lived among the Evenki between 1912 and 1917. In his great book of 1935 he wrote that the shaman is the opposite of a sick person. Others are mastered by spirits and fall ill. The shaman has mastered them. He takes them into himself when he chooses and sends them away when he chooses. He serves his clan as its physician of the mind (Shirokogoroff 1935). The historian of religion Mircea Eliade said the same in one sentence in 1951. The shaman is a sick man who has been cured, and who has succeeded in curing himself (Eliade 1964).

Later studies supported this. Richard Noll compared the reports of shamans with the signs of schizophrenia point by point. The shaman enters his state at will, keeps his attention, remembers what happened and comes back to do his daily work. The patient can do none of these (Noll 1983). A study among refugees from Bhutan examined shamans and other

villagers with the same psychiatric interview. The shamans had no more mental disorder than their neighbours (van Ommeren 2004).

Teacher. The last turn came in the 1960s. Western readers began to look to the shaman for what their own culture lacked. Carlos Castaneda's books about a Yaqui sorcerer sold millions of copies. They were later shown to be invented. The anthropologist Michael Harner, who had studied with the Shuar and the Conibo in the Amazon, taught a method of drumming and journeying to Western students from 1980 (Harner 1980). Many indigenous healers have objected to the trade that followed. In 1993 a gathering of Lakota, Dakota and Nakota people issued a declaration against those who sell their ceremonies.

This book takes none of these five positions. It describes what the healers do and say, gives what has been measured, and then reads the practice with one theory.

The classic descriptions

Three descriptions of the shaman have shaped the field.

Shirokogoroff's is the oldest. A shaman is a person of either sex who has mastered spirits and who can take them in at will. The shaman uses this command for the good of others, above all those who suffer from spirits. The stress lies on mastery and on service to a group.

Eliade's is the best known. Shamanism is a technique of ecstasy. What marks the shaman among all healers and priests is the journey. His soul leaves the body and goes up to the sky or down to the underworld. He meets spirits and is not their instrument (Eliade 1964). Eliade wrote from books and never saw a session. His stress on the flight of the soul fits Siberia well and other regions less well.

The third comes from the Swedish scholar Åke Hultkrantz. A shaman is a person who reaches ecstasy with the help of guardian spirits. He does so to make contact with the other world on behalf of the members of his group (Hultkrantz 1973). This adds the helpers and the group to the journey.

Two further distinctions are useful.

The first separates the journey from possession. The ethnomusicologist Gilbert Rouget put it most clearly. The shaman goes to the spirits. The possessed person is visited by them. The shaman makes his own music and directs his own trance. The possessed person is played into trance by others and often remembers nothing (Rouget 1985). In practice the two mix. A Siberian shaman calls his helpers into his body before he sets out. A Korean *mudang* speaks with the voice of a dead grandmother and also escorts her along the road to the other world.

The second separates kinds of healer by kind of society. Michael Winkelman compared the religious healers of 47 societies. He found that hunters and gatherers have one kind: a part-time healer, chosen through illness or dreams, who journeys in trance, turns into animals and heals. Farming societies add priests, who hold office and do not go into trance, and mediums,

often women, who are possessed. Witches and sorcerers, as persons whom others accuse, appear where there are rulers and classes (Winkelman 1990). On this view the shaman in the strict sense is the healer of the hunting peoples. Where farmers and states take over, the role splits. Pieces of it live on in the medium, the priest, the herbalist and, in the end, the physician.

Is it one practice?

Some anthropologists reject the word. They say that "shamanism" is an invention of Western scholars, who gathered very different practices under one Siberian name. There is something in this. A San healer dances in a ring of his own kin and takes no helpers. A Shuar healer drinks a brew of vines and keeps darts in his chest. A Navajo singer does not go into trance at all.

Yet the likenesses are too many and too exact to be chance. The table lists features that return on every continent among peoples who never met.

Feature	Found among
The healer is called through an illness or a crisis, and is cured by becoming a healer	Evenki, Sakha, Zulu, Korean, Mapuche, Inuit, Hmong
The future healer is taken apart and remade by spirits	Sakha, Nganasan, Arrernte, Inuit
The healer has helpers who are not human and who teach songs	Siberia, the Amazon, North America, Malaya
The soul can leave the body, and its absence is an illness	Siberia, the Andes, Mesoamerica, the Himalaya, Southeast Asia
An illness can be an object in the body, which is drawn out and shown	The Americas, Australia, southern Africa, Ladakh
The world has levels, joined by a tree, a pole, a rope or a thread	Siberia, the San, the Mapuche, the Amazon, Australia
The work is done at night, with rhythm and song, before the group	Almost everywhere

A study of 33 hunting and gathering peoples from all parts of the world found shamanism in about four out of five. From the way the trait is spread over the family tree of these peoples, the authors concluded that it was probably present in their last common ancestors (Peoples 2016).

Why should this pattern return so widely? Three answers are given. The first is common descent. The pattern is very old, and people carried it with them out of Africa and across the

world. The second is the common build of the human brain. Trance, visions and the feeling of leaving the body are possible for every human being, and each people discovers them afresh (Winkelman 2010). The third is common need. Illness, death and bad luck strike everywhere. A specialist who seems able to deal with unseen causes will be wanted everywhere, and the most convincing form of the role wins (Singh 2018).

The three answers do not exclude one another. Chapter 23 adds a fourth reading with the theory of this book. It does not replace them.

How old

Nobody knows how old the shaman's medicine is. The signs point to a great age.

The oldest known figure that joins man and animal is the Lion Man from the Hohlenstein-Stadel cave in southern Germany. It was carved from mammoth ivory about 40,000 years ago. It stands upright like a man and has the head of a cave lion. On the island of Sulawesi a painted hunting scene shows small figures that are part human and part animal. It is at least 44,000 years old, and a newer dating method has made such scenes older still (Aubert 2019).

The painted caves of France and Spain contain several figures of the same kind. In the shaft at Lascaux a man with the head of a bird lies or falls before a wounded bison. Beside him stands a staff with a bird on top. In the cave of Les Trois-Frères a figure with antlers, known as the Sorcerer, looks down from a height of four metres. David Lewis-Williams has argued that much cave art records the visions of trance. The rock wall, he holds, was felt as a veil between this world and the other (Lewis-Williams 2002). He drew on what the San said of their own rock paintings. Chapter 12 describes that evidence. Other scholars doubt that the reading can be carried from the Kalahari to Ice Age France.

Graves give firmer ground. At Hilazon Tachtit in Israel a woman of about 45 was buried some 12,000 years ago. She was small and had a deformed spine. In her grave lay fifty tortoise shells, the wing tip of an eagle and the pelvis of a leopard. There were also the skulls of two martens, the tail of a wild ox and a human foot. The excavators called her a shaman (Grosman 2008). At Bad Dürrenberg in Germany a woman was buried about 9,000 years ago with a head-dress of deer antler and hangings of animal teeth. At Star Carr in England more than twenty masks made from the skulls and antlers of red deer were left at a lake shore about 11,000 years ago.

None of this proves that a healer danced or sang over the sick. It shows that the joining of human and animal, the special treatment of certain persons, and the wearing of antlers are very old. The age of the San evidence, taken up in chapter 11, points the same way.

What the shaman does

Healing is the centre of the work. It is seldom the whole. In a small community the same person is asked for everything that depends on what cannot be seen.

- **Healing the sick.** The shaman finds the cause of an illness and acts on it. The two most common findings are that the soul has gone and that something has come in. A later section introduces both.
- **Guiding the dead.** A dead person must reach the place of the dead. One who lingers makes the living ill. Among many peoples the shaman escorts the soul. The Nanai of the Amur held a great rite for this, sometimes years after the death.
- **Finding game.** The animals have owners or masters. The shaman visits them and asks for animals to be released. Among the Inuit the shaman went down to the Mother of the Sea Beasts when the seals stayed away.
- **Seeing what is hidden.** The shaman is asked where the lost reindeer are, who stole, whether the traveller is alive, and what the winter will bring.
- **Weather.** Rain-making was one of the three crafts of the southern San healers.
- **Defence.** Where illness is sent by enemies, the healer is the shield of the group. This is the root of the shaman's double name. The one who can turn harm away can also send it.
- **Keeping the knowledge.** The shaman knows the myths, the songs, the names of the places and the plants. Among peoples without writing the shaman is the library.

Most shamans have been part-time. They hunt, herd and plant like their neighbours. Payment is often small or absent. Among the San no healer is paid. A Siberian shaman was given a share of the sacrificed animal. In the Amazon and among the Navajo a fee is fixed and can be high.

Both men and women are shamans. Among the Mapuche of Chile, in Korea and in parts of Siberia women are the majority. In several Siberian languages the words for a male shaman differ from people to people, and the word for a female shaman is the same over a wide area. Some scholars have concluded that the women were first.

The world in which the work makes sense

The shaman's medicine rests on a picture of the world. The picture differs from people to people. Four features return so often that they can be described together.

All that lives is a person. The hunter knows the animal he follows as a being with a will, a family and a way of seeing. So are the tree, the river, the wind and the mountain. The Ojibwe of Canada, asked by the anthropologist Irving Hallowell whether all the stones around them were alive, answered: no, but some are. Hallowell proposed to speak of "other-than-human persons" (Hallowell 1960). The old word for this view is animism. For a century it was used as a term of contempt. Since the 1990s anthropologists have taken it seriously again as a way of living in which the world is made of relations between persons (Bird-David 1999).

In the Amazon this goes one step further. Every kind of being sees itself as human. The jaguar sees itself as a man, sees its prey as wild pig and sees blood as manioc beer. Only the body differs. The shaman is the one who can change bodies and see as the other sees

(Viveiros de Castro 1998). Illness then often comes from a meeting with another kind of person that went wrong.

The world has more than one level. Most peoples of Siberia speak of an upper world, a middle world where people live, and a lower world. A tree, a pole, a mountain or a river joins them. The Sakha shaman climbs a birch with nine notches. The Mapuche healer climbs a carved trunk that stands before her house. The San healer climbs threads to the sky. In the Amazon the levels are many, and the forest, the river and the sky each have their peoples.

A human being has more than one soul. Hultkrantz gathered the reports from North America and found the same division almost everywhere. One soul, or group of souls, keeps the body alive: it is breath, warmth and movement. Another is the person as he appears in dreams. It can leave the body in sleep, in trance, in fright and in illness. It is the one that goes on after death (Hultkrantz 1953). The Sakha count three souls, the Hmong and the Tzotzil Maya count many, the Inuit count a soul for every joint. The principle is the same. A person is not one piece, and one part can be elsewhere.

Chapter 6 laid this division beside the two domains of the complementary universe. For the shaman it is first of all a practical fact. If a part of a person can leave, it can also be lost, held or stolen, and somebody must be able to go after it.

The dead and the unborn are near. The ancestors are present. They watch, they long for the living, and they punish neglect. Much illness comes from them. Much help comes from them too. Among many peoples the helper of a shaman is a dead shaman of his own line.

In such a world, illness is hardly ever a private event inside one body. It is a sign that a relation has gone wrong: with an animal, a place, a dead kinsman, a neighbour or a spirit. The healer's question is therefore different from the physician's. He does not first ask what the patient has. He asks who or what is involved.

The ways in

The shaman works in a changed state of attention. Each tradition has its own word for it and its own way of reaching it. The means are few, and they return everywhere.

Rhythm. The drum is the instrument of the north, from Lapland to Greenland. The Siberian shaman calls it his horse or his reindeer and rides on it to the other world. Elsewhere the rattle does the work, or the clapping of hands, or a bundle of leaves that is shaken, or the stamping of feet with rattles tied to the legs.

In 1962 Andrew Neher made a proposal about the drum. Beaten at four to seven strokes a second, it would drive the rhythms of the brain into the same range and so cause trance (Neher 1962). The idea is still repeated. It has not held up well. Rouget showed that the same rhythm that sends one person into trance leaves his neighbour unmoved. People go into trance to every kind of music, or to none (Rouget 1985). The rhythm is a carrier. It does its

work in a setting, on a person who has learned what to do with it. Chapter 22 gives the measurements.

Song. The song is more than accompaniment. In most traditions the songs are the healer's real possession. They are given by the helpers, they are learned word for word, and they do the healing. The San speak of songs that hold *n/om*. The Amazonian healer receives his *icaros* from the plants. The Navajo word for a healer means singer.

Dance and exertion. The San healer dances for hours until the sweat runs. Sufi orders, the Salish spirit dancers and the dancers of the Plains Sun Dance know the same road.

Fasting, thirst and wakefulness. The seeker of a vision on the Plains stands alone on a hill for up to four days without food or water. The Amazonian novice lives for months on plantains and a little fish. All-night sessions are the rule in almost every tradition.

Darkness and solitude. The Siberian session is held in a dark tent. The Kogi of Colombia raise their future priests in a dark house from early childhood. The Inuit novice sits alone in the winter night.

Pain. The Plains dancer is pierced through the skin of the chest. The Maya nobles of the classic age drew blood from the tongue.

Plants. In the Americas, more than anywhere else, plants open the way. Tobacco is the oldest and the most widespread. The others are the vine brew *ayahuasca* in the upper Amazon, the snuffs of the Orinoco and the San Pedro cactus of the Andes. Further north come the peyote cactus of Mexico and the Plains, the mushrooms of the Mazatec, and the daturas. In Siberia some peoples used the fly agaric. In Gabon the root bark of iboga is eaten. Most shamans of the world have used no plant at all.

Dream. For many peoples the dream is the first and commonest way. The Mohave said that all a shaman knows was dreamed. Temiar healers of Malaysia receive their songs in dreams from the spirits of plants, animals and places (Roseman 1991).

What is the state itself? Those who know it describe attention that is narrowed and at the same time widened. The healer no longer hears the talk around him and sees what is far away. The body trembles, sweats or lies as dead. Images come with the full weight of the real. The healer can still act, speak and sing, and afterwards he remembers. That last point separates the shaman's state from the deep possession in which another speaks and the person knows nothing of it.

Journey and return

The journey has a shape. The Siberian accounts give it most fully.

The shaman calls his helpers. They come one by one, and the audience hears them come: the cry of a loon, the grunt of a bear, the beating of wings. He sets out. He sings where he is and what he sees. He crosses a river, climbs a mountain, passes a guardian. He reaches the one he

has come to find: the lord of the dead, the mistress of the animals, the spirit that holds the patient's soul. He pleads, bargains, tricks or fights. He takes what he came for and turns back. He arrives, often falling down, and is brought round by his assistant. Then he tells what he has learned and what must be done.

Two points deserve attention.

First, the return is part of the work. A shaman who cannot come back is lost, and everyone present knows it. The helper who watches the fire, the assistant who holds the shaman's belt, the woman who sings the Sámi healer back: they are there to make the return sure. The old accounts tell of shamans who did not come back.

Second, the journey is told aloud as it happens. The patient and the whole group travel with the healer. They hear the river and the guardian. They answer, encourage and sometimes argue. The session is a shared act.

Two great illnesses

Chapter 21 treats the illnesses of the shaman's world in full. Two must be named here, because the rest of this part cannot be read without them.

The first is the loss of the soul. The free soul has left and has not returned. It was frightened out by a fall, a sudden noise or a great grief. Or it was drawn away by a dead kinsman who misses the living. Or it was taken by a spirit of the place or by a sorcerer. The person is listless, sleeps badly, does not eat and wastes away. The cure is to find the soul and bring it back. The healer travels after it, or calls it home with the person's name, clothes and favourite food.

The second is intrusion. Something is in the body that does not belong there. It may be an object: a dart, a splinter of bone, a stone, a worm. It may be a spirit. The person has a sharp pain in one place, or a swelling, or behaves as someone else. The cure is to take it out or drive it out. The healer sucks, pulls, brushes, blows smoke, or frightens the intruder off.

The two are opposites. In the one, what belongs to the person is absent. In the other, what does not belong is present. Clements noted in 1932 that soul loss is the leading idea in Siberia and intrusion in much of the Americas, and that many peoples have both (Clements 1932). The two cures are opposites too: bringing in and taking out. A healer who mistakes one for the other makes matters worse. That is why the reading comes first.

The session as a public act

A session is not a consultation. It is closer to a performance in which everybody has a part.

It is held at night, in a tent, a house or a dance ground. The kin of the patient are there, and often the whole camp. The healer may wear a coat hung with iron and bells, or a mask, or nothing special. The work lasts for hours. There are songs that everyone knows and joins.

There is fear when the spirits arrive. There is often laughter. The Chukchi shamans whom Bogoras heard made voices come from every corner of the dark tent, and the listeners judged a shaman by how well he did it.

That raises the old charge of trickery. The best-known answer is the story of a man called Quesalid.

Around 1900 a Kwakwaka'wakw man of the Canadian coast told Franz Boas how he had become a shaman. He had not believed in the shamans and wanted to expose them. So he asked to be taught. He learned their songs and their way of falling into a fit. He also learned their best secret. The healer hides a tuft of eagle down in his cheek and bites his tongue until it bleeds. At the right moment he spits out the bloody down as the sickness he has sucked from the body.

Before his training was over he was called to a sick man who had dreamed of him as his healer. He used the method, and the man recovered. His name grew. On a visit to a neighbouring tribe he saw that the shamans there only spat a little saliva into their hands and called it the sickness. He tried his bloody down on a patient whom they had failed to cure, and she declared herself well. The other shamans were ashamed and begged him for his secret. He said nothing. He practised for the rest of his life, proud of his skill and scornful of rivals. He was no longer sure that there were no real shamans (Boas 1930).

Claude Lévi-Strauss made the story famous. His conclusion is often quoted: "Quesalid did not become a great shaman because he cured his patients; he cured his patients because he had become a great shaman" (Lévi-Strauss 1963). For Lévi-Strauss the cure rests on three experiences that hold one another up: that of the healer, that of the patient, and that of the public that agrees.

There is more to it. Later research showed that Quesalid was George Hunt, Boas's own co-worker for forty years. Hunt had been initiated in earnest as a young man and had his own visions. The sceptic's tale was only one of the versions he gave (Whitehead 2000). And the healers of many peoples have answered the charge themselves. Yes, they say, the object is in the mouth beforehand. The sickness is not the object. The object is what the sickness is caught in, so that it can be seen and carried off. Chapter 8 gave the reading of this book. The seeing is part of the closing.

The dark side

Every people that has shamans fears them a little. The power to see and to take out is also the power to send. In the upper Amazon the same darts that the healer sucks from a patient lie ready in his own chest. A healer whose patients die is suspected. Among the Tlingit and the Shuar, and in many other places, shamans have been killed as sorcerers.

Some peoples keep the two roles apart by name. The Navajo set the singer against the witch. The Sakha distinguished white shamans, who served the bright gods of the upper world, from

black ones, who dealt with the spirits below. Elsewhere there is only one role, and its direction depends on the man and on who is speaking. The healer of my village is the sorcerer of the next.

In Guyana and northern Brazil there is a form called *kanaimà*, in which the practitioner stalks and kills a victim in a ritual manner. Neil Whitehead studied it. He insisted that the dark shaman is as much a part of these societies as the healer, and that outsiders prefer not to see him (Whitehead 2002). A book on the old medicines has to say this plainly. The traditions themselves never forget it. A large part of their healing is defence.

Suppression and return

For four centuries the shaman's medicine was attacked by churches and states.

In the Spanish Americas the healers were tried as idolaters and their sacred objects were burned. In Scandinavia the Sámi drums were taken from the seventeenth century on. About seventy survive, almost all in museums. In the United States the Code of Indian Offenses of 1883 made the practices of medicine men a punishable offence. Canada banned the potlatch in 1884 and later the dances of the Plains. These rules stayed in place until 1934 in the United States and 1951 in Canada. Full legal protection of native religion in the United States came only in 1978.

The Soviet Union treated shamans as exploiters and class enemies. From the late 1920s they lost their civil rights. In the 1930s many were arrested, and their drums and coats were destroyed or sent to museums. In Mongolia the purges of the same years struck shamans and Buddhist lamas alike. In China, Korea and Japan the campaigns were waged in the name of progress against superstition. South Africa passed a Witchcraft Suppression Act in 1957.

The practice survived in three ways. It went underground, as in Siberia, where old people kept the songs and worked without drum or coat. It merged with the new religion, as in Latin America, where the healer prays to the saints and the Virgin. Or it lived on at the edge of the state's reach, as in the Amazon and the Kalahari.

Since about 1990 it has returned in the open. Tuva, Sakha and Buryatia have associations of shamans. In Mongolia shamans became numerous within a few years after the end of the one-party state. Many people traced their troubles to ancestors whom the purges had made them forget (Buyandelger 2013). South Africa passed a law in 2007 that recognises traditional health practitioners, among them the diviners. Bolivia and Ecuador name ancestral medicine in their constitutions. In the south of Chile the Mapuche healers work in public health centres. In South Australia the *ngangkari* healers of the desert are called into hospitals. In 2024 the federal health insurer of the United States allowed four states to pay for traditional healing in tribal clinics.

The return has a second side. Outsiders now travel to the healers. Thousands go each year to the Peruvian Amazon to drink *ayahuasca*. Healing has become a trade there, with skilled

healers and with impostors, and with harm as well as benefit. Chapter 16 and chapter 75 return to this.

The order of this part

The chapters that follow keep one order as far as the sources allow. They give the people and their history, the ground on which their medicine stands, the diagnosis, the illnesses, the healing, and what has been measured.

Chapter 10 comes first, because it concerns all of them. It describes how a person becomes a healer. The traditions agree on this more closely than on anything else.

10. The making of a healer

Three roads

A physician is made by study. He applies to a school, is admitted, and reads for six or ten years. A shaman is made in another way. The traditions describe three roads. Most healers have travelled on more than one.

The first road is descent. The gift runs in families. Among the Sakha of Siberia a shaman has shaman ancestors, and one of them chooses his successor. Among the Zulu the calling comes from the dead of the family. In the Amazon a father often teaches his son.

The second road is election. The spirits choose a person, who has not asked for it and often does not want it. The sign is an illness or a crisis. This is the road that the Siberian sources describe most fully, and it is found on every continent.

The third road is the quest. A person goes out to seek what the spirits can give. He fasts, keeps awake, goes into the wilderness or drinks a plant, and waits for what comes. This is the common road in North America and in the Amazon.

A fourth road hardly belongs with the others: plain apprenticeship. The Navajo singer and the Yoruba priest of Ifá learn an enormous body of words by heart over many years. Nobody expects them to have visions. Chapters 19 and 25 describe that training. Even there a sign at the start is common. A singer often began as a patient who was cured by the chant he later learned.

The illness of the call

The accounts from Siberia were written down between 1880 and 1930, before the Soviet campaigns. They agree closely.

The call comes in youth, most often between the ages of twelve and twenty. A lively child turns silent. He withdraws from the others, sleeps long or not at all, and wanders alone in the forest. He has dreams that frighten him. He hears voices and sees the dead. Some fall into fits. Some lie for days without food. Some sing in their sleep.

The Chukchi told Bogoras that the call is a heavy burden and that young people fight it. Their parents fight it too, because the life of a shaman is hard and dangerous. But refusal has a price. The one who is called and does not answer stays ill, goes mad or dies (Bogoras 1904). That rule is stated in almost the same words by the Sakha, the Evenki, the Buryats, the Zulu, the Koreans, the Hmong and the Mapuche.

The cure is to accept. An old shaman is sent for. He examines the young person and says whether this is the shaman’s illness or an ordinary one. If it is the call, he names the spirits that are at work and begins to teach. As the novice learns to call the spirits and to send them away, the illness lifts. In the end he holds a session before the clan, and they accept him.

Shirokogoroff added an observation that changes the picture. Among the Evenki the call does not concern one person only. When a shaman dies, his spirits are left without a master. They roam and trouble the clan. People fall ill, quarrel, and behave strangely. The whole clan is unwell until one of its young people is seized more strongly than the rest, masters the spirits, and becomes the new shaman. The illness of the candidate is the illness of the clan, gathered in one person (Shirokogoroff 1935). The healing of the one is the healing of the many.

Taken apart and put together

At the centre of the Siberian accounts stands an experience that the candidates describe as real. They are killed, cut into pieces and made again.

The Russian exile Gavriil Ksenofontov, himself a Sakha, collected such accounts in the 1920s (Ksenofontov 1930). They differ in detail and agree in outline.

The future shaman lies as dead in the tent for three days, or seven. He hardly breathes and takes no food. In that time his soul is far away. A great bird with iron feathers, the Mother of the Birds of Prey, has carried it to a tall tree. In the branches of that tree are nests, and in the nests the souls of shamans are hatched and reared. The higher the nest, the greater the shaman will be.

When the soul is grown, dark spirits take the candidate. They cut off his head and set it on a shelf, so that he can watch what follows with his own eyes. They cut the body into small pieces. They scrape the flesh from the bones and count the bones. If one bone is missing, a member of his family must die to make up the number. They share out the flesh among the spirits of all the illnesses. Each spirit that has eaten of his flesh owes him a debt. Later he will be able to cure exactly those illnesses, and no others. Then the spirits put the bones together, join them with iron, and cover them with new flesh. He wakes.

The Nganasan account in chapter 7 has the same core. There a smith boils the pieces, forges a new head, and gives the man new eyes and pierced ears. The Buryats said that the dead shamans of the family carry off the soul of the novice, teach it, and torment the body meanwhile. The Evenki said that the soul is reared by an animal mother at the root of the clan tree.

The same experience is reported from the other side of the world. Baldwin Spencer and Francis Gillen recorded it among the Arrernte of central Australia in the 1890s. A man who wished to become a healer went alone to the mouth of a certain cave and lay down to sleep. At daybreak a spirit came out and threw an unseen lance at him. It pierced his neck from behind and passed through his tongue, leaving a hole. A second lance went through his head from ear to ear. He fell dead and was carried into the cave. There the spirits took out his inner organs and gave him a new set. With them they placed in his body a number of small magic stones. He came to life again and for some days was not in his right mind. The hole in his

tongue stayed. Spencer and Gillen saw such holes, large enough to pass a finger through (Spencer 1899).

Among the Inuit the taking apart is done by the novice himself. Knud Rasmussen was told by the Iglulik shamans that the first task is to see oneself as a skeleton. By the strength of his thought the novice strips his body of flesh and blood until only the bones remain. Then he must name every bone, one by one, in the special language of the shamans. The bones are what lasts longest of a man. The one who has seen and named them is bound to what does not perish (Rasmussen 1929).

What should be made of these accounts? Eliade read them as the pattern of every initiation: death and rebirth (Eliade 1964). That is true, and too general. The details say more.

The candidate is not simply killed. He is taken apart down to the smallest piece, and the pieces are counted. Nothing may be missing. He watches it happen. Each illness receives its share of him. He is put together again in the same order, with something added: iron joints, new eyes, stones. Afterwards he can do what he could not do before. He can see into bodies, and he can treat the illnesses that have had a part of him.

In plain words, the healer is a person who has been read completely. Chapter 23 takes this up with the theory. Here it is enough to note that the accounts do not describe an ordeal that must simply be endured. They describe an examination, and a making.

Southern Africa: the brooding of the ancestors

Among the Zulu, the Xhosa, the Swazi and their neighbours the diviner is called *isangoma*. The call is named *ukuthwasa*. The word is also used of the new moon and of the season when it first appears. It means to come out, to become visible.

The first full description was written down in Zulu in the 1860s by the missionary Henry Callaway, from the words of his informants (Callaway 1870). The signs begin slowly. A strong person becomes delicate. He grows particular about food and can eat only a little. He has pains in the shoulders and the sides. He yawns and sneezes again and again. He weeps without reason. He dreams of many snakes that wind about his body, and of rivers and pools. His sleep is broken. In the words of Callaway's informant, he becomes "a house of dreams". At night he wakes and sings songs that nobody has taught him, and the people of the homestead get up to clap and sing with him.

The family then has a choice. They may call a healer to "bar" the spirit and close the road. Callaway's informants said that this can be done and that the person is then seldom healthy again. Or they may accept. Then the sick person is taken to an experienced diviner, who becomes his teacher.

The Zulu explanation is exact. The dead of the family, the shades, wish to work through this person. They "brood" over him. The Swedish missionary and anthropologist Axel-Ivar Berglund, who grew up among the Zulu, reports that the word is the one used for a hen sitting

on her eggs (Berglund 1976). The illness is the brooding. What comes out of the egg is a diviner.

The training lasts from several months to several years. The novice lives at the homestead of the teacher. She smears her body with white clay. White is the colour of the shades and of what stands between two states. She wears strips of goatskin crossed over the chest. Each morning she drinks a foaming medicine and vomits, to clean the body and to make the dreams clear. She learns to dance to the drums until the shades come. She learns the plants. Above all she learns to attend to her dreams and to say what the shades show her. During this time she keeps apart from ordinary life. She avoids sex, certain foods, and the company of those who are in mourning.

The test at the end is public and practical. People of the neighbourhood hide objects: a bead in the thatch, a coin under a stone, a knife in a calabash. The novice must find them, guided only by the shades and by the shouts of the crowd. One who cannot find is not yet a diviner. An animal is then killed for the shades, and the new diviner goes home with the gall bladder tied in her hair.

Most Zulu diviners are women. The anthropologist Harriet Ngubane, herself Zulu, explained this from the place of a woman in a Zulu homestead. A wife comes from another family and stands between two groups of ancestors. She is at home on a threshold. The diviner must stand on one (Ngubane 1977).

South Africa is often said to have some two hundred thousand traditional healers, diviners and herbalists together. The figure is an estimate and has never been counted. The call is as common as ever. It comes to nurses, teachers and students. Hospital psychiatrists in South Africa regularly meet patients whose families say that this is not madness but *ukuthwasa*. The tradition itself makes the distinction. It has its own words for madness and for the illness sent by sorcery, and an experienced diviner is expected to tell them apart.

Korea, Chile, Laos: the same illness

The pattern returns among peoples who have nothing to do with one another.

In Korea the illness of the call is named *sinbyeong*, spirit sickness. Most of those struck are women, often in a hard period of their lives. The woman has no appetite, cannot sleep, and has pains that move about. She dreams of gods and of the dead and sees them by day. Doctors find nothing. The illness may last for years. It ends when a senior shaman holds the initiation rite for her, in which the gods “descend” and she speaks their words for the first time. From then on she serves them as a *mansin*. If she stops, the illness returns (Kendall 1985). In the south of Korea, by contrast, shamans inherit the office and have no such illness.

Among the Mapuche of Chile the healer is the *machi*. The call comes in childhood or youth as fevers, boils, fainting and dreams. The child dreams of a drum, of the sacred *foye* tree, of white animals. An old *machi* reads the signs. The girl, or less often the boy, is trained for

years and is then initiated beside the carved pole on which she will climb in her trances. Her bond with her spirit must be renewed in a rite every few years. A *machi* who neglects it falls ill again (Bacigalupo 2007).

Among the Hmong of Laos and their descendants in America the helpers of a dead shaman look for a new master within the family. They announce themselves through a long illness that no remedy touches. A master shaman is called. If the sick person begins to shake during the master's rite, the spirits have shown themselves, and the training begins. The Hmong say that nobody chooses this work. One is chosen and cannot refuse.

In each of these cases three points are the same. The illness is real and may be severe. It is read, by one who has had it, as a call. And the cure is not the removal of what troubles the person. It is the making of a lasting relation with it. Chapter 4 gave the theory's first rule of cure: read before you act. The old healer who examines the novice does exactly that. He does not drive the spirits off. He asks first who they are.

The quest

On the third road the person goes out to meet what the others wait for.

The Plains. Among the Lakota the rite is called *hanbleceya*, crying for a vision. A man who feels the need goes to a holy man with a pipe. He is first cleansed in the sweat lodge. Then he is led to a hill or to a pit dug on it. Four poles with cloths in the colours of the four directions mark the place. He stays there alone, with his pipe and without food or water, for one to four days and nights. He prays aloud and weeps. What comes may be an animal, a bird, a thunderstorm, a voice, or nothing. He comes down, goes again through the sweat lodge, and tells the holy man everything. The holy man says what it means and what the seeker must now do.

The best-known vision of the Plains was not sought. Black Elk of the Oglala fell ill when he was nine. He lay as dead for twelve days. In that time two men came down from the clouds and took him to a tipi made of cloud with a rainbow for a door. Six old men sat there: the powers of the four directions, of the sky and of the earth. Each gave him a gift. Among the gifts were a cup of water, which holds the power to make live, and a herb. He saw the hoop of his people and a flowering tree at its centre. He told nobody for eight years. A growing fear, worst when thunder came, at last drove him to an old healer. The healer told him that the vision must be performed before the people, or it would kill him. The band acted it out with horses of four colours. Only after that did Black Elk begin to heal. He cured a sick boy with the herb, the cup of water, a drum and a pipe. He said afterwards that he had known what to do without having been taught (Neihardt 1932).

One rule in this account is stated by many peoples. A vision gives nothing until it has been made visible to others. What was seen alone must be shown.

The Arctic. Igjugarjuk, a shaman of the Caribou Inuit, told Rasmussen how he was made. As a young man he had strange dreams, and an old shaman took him on as a pupil. In the depth of winter the old man dragged him on a sledge to a place far from the camp. He built a snow hut just large enough to sit in and left him there. For five days Igjugarjuk had nothing. Then he was given a little lukewarm water. After fifteen more days he had water again and a small piece of meat. He stayed thirty days in all. He told Rasmussen that he sometimes "died a little". Near the end a helping spirit came to him in the form of a woman. A year of strict rules followed.

Igjugarjuk drew a conclusion that Rasmussen wrote down. True wisdom, he said, is found far from people, in the great solitude. It is reached through suffering. Hunger and hardship alone open the mind to what is hidden from others (Rasmussen 1930).

Aua, a shaman of the Iglulik, had another experience. He had tried to learn from older shamans and had failed. He went off alone and became very sad. Then, without cause, he was seized by a joy so great that he had to break into song, a song with one word: joy. In the middle of such a fit he became a shaman. He could see and hear in a new way. He had received what the Iglulik call the shaman's light. Aua described it as a light inside his body and his head by which he could see through darkness. The same light shone out from him. People could not see it. The spirits of earth, sky and sea could, and they came to him and became his helpers (Rasmussen 1929).

Taught by plants

In the upper Amazon the teachers are plants.

The healers of the Peruvian towns of Iquitos and Pucallpa are of mixed descent and speak Spanish. They call themselves *vegetalistas*, and they call certain plants *doctores*. Luis Eduardo Luna asked four of them in the 1980s where their knowledge came from. All four gave the same answer. The plants themselves had taught them (Luna 1984).

The way to learn is the *dieta*. The novice goes to live alone in a hut in the forest for months, and in the old days for years. He eats boiled green plantain, rice and a few kinds of fish. He takes no salt, sugar, fat, pepper, pork or alcohol. He has no sex and sees no woman who is menstruating. Every few days he drinks a preparation of one teacher plant. It may be the vine *ayahuasca*, or tobacco, or the bark of one of the great trees. Then he waits and pays attention.

The healers explain the rules in their own way. A plant has a "mother", a person who owns it. She is shy and has a keen nose. The smell of salt, spice and sex drives her off. The body of the dieter must become bland and clean, like the plant, before she will come near. When she does, it is mostly in dreams. She shows the dieter how the plant is to be used. She gives him songs. The songs, called *icaros*, are the real fruit of the diet. A healer's standing depends on how many he has and from whom.

Breaking the diet is dangerous. The plant then turns on the dieter. He falls ill, his skin breaks out, or he loses his mind. Several of Luna's teachers had first come to the plants as patients. One had a leg so badly infected that the hospital wished to cut it off. He went home, drank and dieted for three years, and was cured. In that time he learned to heal.

Two further gifts are spoken of. The first is a thick phlegm that the healer keeps in his chest and can bring up into his throat at will. It is his shield and his tool. With it he catches the darts that he sucks from a patient. An old healer can pass some of it to a pupil from mouth to mouth. The second gift is the darts themselves, which live in the phlegm.

Among the Shuar of Ecuador the first darts are bought. Michael Harner described the transaction in the 1960s. The novice brings a gift to a practising shaman. The shaman brings up his darts from within, and the novice swallows them. He lies in pain for ten days and drinks the vine brew again and again. For at least three months he may not sleep with a woman. After about a month a dart rises of itself into his mouth. At that moment, the Shuar say, he feels a great urge to shoot it at someone. If he does, he will be a sorcerer for life. If he masters the urge and swallows the dart again, he will be a healer (Harner 1973).

That small scene says something that the whole tradition knows. The means of healing and of harming are the same. What separates the two crafts is a turn made at the beginning: outward or back.

In the mountains of Oaxaca in Mexico the Mazatec healer María Sabina told her life to a neighbour who wrote it down. As children she and her sister ate the mushrooms that grew where they herded goats, because they were hungry. Years later her sister lay dying, and María Sabina ate a great many of the mushrooms to find out what to do. Beings whom she called the Principal Ones appeared, seated at a table. They showed her a book. It was white, and it grew until it was as large as a person. They told her it was the Book of Wisdom and that it was hers. She had never learned to read. In the vision she read it. After that night she did not need to see the book again, because its language was inside her. Her sister lived. She became what the Mazatec call a wise one, a healer who works with words (Estrada 1981).

Passed from hand to hand

Where there is no illness of the call and no solitary quest, the gift is handed over by one who has it.

Among the Ju/'hoansi San the old healers "shoot" *n/om* into the young. They snap their fingers at the belly of the novice during the dance and rub him with their sweat. The novice dances beside his teacher for years. The teacher holds him when the *n/om* rises and he is seized by pain and fear. Chapter 11 describes this in the words of the healers.

Among the Wiradjuri of New South Wales a father made his son. Alfred Howitt wrote down the account of one such man in the 1880s. When he was a small boy his father took him into the bush. He pressed two pieces of quartz crystal against the boy's chest, and they vanished

into him. He felt them go through him like warmth. His father gave him water to drink in which crystals lay, and after that the boy could see the dead. Years later, at his initiation, his father led him along a thread to the camp of the sky being Baiame. Baiame was a very old man with a long beard, and from his shoulders two great crystals rose to the sky above (Howitt 1904).

Among the Ojibwe of the Great Lakes the Grand Medicine Society, the Midewiwin, had four degrees. At each one the candidate was "shot". The priests aimed their medicine bags of otter skin at him, and a small white shell was said to fly into his body. He fell down as dead. They revived him, and he coughed up the shell. He now carried what the shell carried (Hoffman 1891).

Crystals, darts, phlegm, shells, the heat of *n/om*: in each case the teacher puts something of his own into the pupil. The healer's knowledge is treated as present in the body. It is not information alone.

Songs and the other language

All over the world the novice learns songs, and very often a way of speaking that is not the daily one.

The Inuit shamans had their own words for the common matters of life, and used them when they addressed the spirits. Eliade cites a report that a Sakha shaman commanded some twelve thousand words in his chants, three times as many as his neighbours used (Eliade 1964). The Kallawaya healers of Bolivia speak a language among themselves that outsiders do not understand. The Ifá priest recites in an old and dense Yoruba.

Graham Townsley studied the songs of the Yaminahua shamans of Peru. They sing in what they call twisted language. Nothing is called by its name. Night is "swift tapirs". Fish are "peccaries with white collars". A shaman explained to him why. With ordinary words he would run straight into what he sings about. With twisted words he circles around it, comes near without colliding, and so sees it clearly (Townsley 1993).

That is a precise statement about a way of knowing. The healer does not stand opposite the illness and label it. He moves around it until he can see it from every side. The next chapters show the same attitude in the reading of the sick.

How long, and how it ends

The table sets the traditions of this part beside one another. Yoruba Ifá is added for comparison.

Tradition	How the call comes	Training	What completes it
Sakha, Evenki	Illness in youth; being taken apart in a vision	Years with an old shaman	A session before the clan, which makes the drum and the coat
Zulu	A long illness with dreams of snakes and water	Months to years at the teacher’s home	Finding hidden objects; an animal killed for the shades
Korea, north and centre	Spirit sickness, often for years	Years with a “spirit mother”	The rite in which the gods descend
Mapuche	Illness and dreams in childhood	Years with an old *machi*	Initiation at the carved pole
Ju/’hoansi San	A wish, and the courage to bear the pain	Many years of dancing beside a healer	The first time the healer stays upright in the changed state and heals
Inuit	A wish or a sign; then solitude and hunger	With an old shaman, then alone	The inner light; the first helper
Lakota	A vision, sought or unsought	With a holy man	The vision performed before the people
Upper Amazon	An illness cured by plants, or a wish	Months or years of diet alone in the forest	Songs received; phlegm and darts in the chest
Arrernte	Spirits at the cave, or other healers	A year of silence	The hole in the tongue stays open
Navajo	Interest, often after being cured	Many years as a paid pupil of one singer	The first chant sung alone, with the teacher’s leave
Yoruba Ifá	A divination, often at birth	Ten years or more of learning verses	Initiation in the sacred grove

Every tradition tests its candidates. The Zulu novice finds what was hidden. The Buryat novice climbed a row of birches set up for the day, nine times, with the whole clan watching.

Shirokogoroff reports that Manchu candidates had to dive under the river ice from one hole to the next. The Sakha shaman had to show that he could bring his audience with him.

In the end the patients decide. A healer is one to whom the sick come, and they come back only to one who helps. A shaman with a great vision and no cures is soon without work. In that sense the old medicine has always had a test of outcome, applied by those with most at stake.

The price

The calling is not a privilege. The sources agree on what it costs.

The healer keeps rules that others do not keep. He fasts and stays apart before every large piece of work. The Navajo singer may not sleep with his wife during a chant and for four nights after it. The Amazonian healer goes back into the diet again and again throughout his life.

The work is dangerous in the eyes of those who do it. The healer takes the sickness into himself before he casts it out. San healers say that the pain of the patient passes into their own bodies. Amazonian healers fall ill from what they have sucked. Healers are also the first to be blamed when deaths follow one another.

The work does not make rich. Among most hunting peoples the healer has no more than his neighbours. In old Korea the shaman belonged to the lowest class of society, together with butchers and actors.

And the healer may not stop. The Korean shaman who ceases to serve her gods falls ill again. The Mapuche healer must renew her bond or lose her health. The San healer who no longer dances feels the *n/om* go cold. The healer's own health is tied to the healing of others. He stays well by doing the work.

Between man and woman

In many traditions the healer also stands between the sexes.

Bogoras described among the Chukchi what they called a soft man. The spirits ordered a young shaman to braid his hair as a woman does, then to dress as a woman, and in the end to live as a wife. Such shamans were held to be the strongest of all, and people feared them (Bogoras 1904). Mapuche men who become *machi* wear women's shawls and head-dress in their rites. The coats of Siberian male shamans carried the signs of a woman's dress. Among the Navajo, and many other peoples of North America, those who were neither wholly man nor wholly woman were held to have special gifts, and often served as healers.

The peoples themselves give the reason. The healer is a go-between. He stands with one foot in each world, and it fits that he joins what is elsewhere kept apart.

The wounded healer

Europe once knew the same idea. The Greeks told that the art of healing was taught to Asklepios by the centaur Chiron. Chiron was the wisest of teachers, and he carried a wound that would not close, from a poisoned arrow. He could heal others and not himself. Asklepios in his turn was cut from the body of his dead mother on her funeral pyre.

The psychiatrist Carl Jung took up the image in the twentieth century. Only the wounded physician heals, he wrote, and he meant that a doctor of the mind works with what he knows from his own suffering. The idea has lived on in a practical form. In the fellowships for people with addictions, founded from 1935, the helper is always someone who has had the illness. Mental health services now employ former patients as peer workers. These are modern cases of the oldest rule of the old medicine.

What the accounts share

Six points return in nearly every account of this chapter.

1. The healer does not choose. He is chosen, or he places himself where he can be chosen.
2. The way leads through an illness, a danger or a hardship of his own. He has been a patient before he treats one.
3. He is examined to the bottom: taken apart, counted, emptied, stripped to the bone.
4. Something is put into him that was not there before, and it stays in his body.
5. He receives songs and a language. He learns to go round what he must see.
6. What he has received must be shown to others and used for them. If it is kept back, it turns against him.

Chapter 7 laid the first five beside the course of a meeting as the reports of VALIS give it: loosening, examination, exchange, showing, return. Chapter 23 reads all six with the theory. The next chapter turns to the people among whom this medicine can still be seen in what may be its oldest form.

11. The San: n/om and the dance

The people

The San are the hunting and gathering peoples of southern Africa. They lived there before the herders and farmers came, and before the Europeans. Today they number about a hundred thousand. Most live in Botswana and Namibia, with smaller groups in South Africa, Angola, Zambia and Zimbabwe.

“San” is a name given by their neighbours, the Khoekhoe herders. “Bushmen” is the name the Dutch settlers gave. Both have been used as insults, and both are now used by the people themselves when they speak of all groups together. Each group has its own name and its own language. The best known are the Ju/’hoansi of north-eastern Namibia and north-western Botswana, who appear in older books as the !Kung. Others are the Naro of Ghanzi, the G/ui and G//ana of the central Kalahari, and the !Xóõ of the south. Still others are the Khwe of the Okavango, the Hai//om of Etosha, and the ǂKhomani of the far south. The /Xam of the Cape, whose testimony fills the next chapter, no longer exist as a people.

The signs /, //, ! and ǂ stand for click sounds, which are ordinary consonants in these languages. The central word of this chapter is written *n/om*, and in older books *n/um* or *num*. The changed state of the healer is written *!aia*, and in older books *!kia*.

Until the 1960s many Ju/’hoansi lived wholly from hunting and gathering. They moved in bands of twenty to fifty people between waterholes. The women gathered nuts, roots and berries. The men hunted with small bows and poisoned arrows. Meat was shared through the whole camp by strict rules. Nobody gave orders. A hunter who boasted of his kill was mocked until he stopped. The Ju/’hoansi explained to the anthropologist Richard Lee that this was done on purpose. It kept any man from thinking himself above the others (Lee 1979).

This way of life matters for the medicine. The healing of the San is not the business of a specialist with clients. It is done by the camp for the camp, in the same spirit as the sharing of meat.

How old

The San are not living fossils. They have a history like every people, and they have traded and fought with herders and farmers for at least fifteen hundred years. Yet three lines of evidence point to a very great age for their way of life.

The first is in their bodies. The lineages of the San and their Khoekhoe neighbours branch off earlier than any others in the family tree of living humankind. A study of 220 people from eleven southern African groups put the split at a hundred thousand years ago or more (Schlebusch 2012). Later studies have made it older still.

The second is in the ground. Border Cave lies on the border of South Africa and Eswatini. A layer there, about 44,000 years old, held a set of objects that any San hunter of the last century would have known. There were digging sticks, bone points like those of San arrows, beads of ostrich eggshell, and a notched stick that had been used to apply poison (d'Errico 2012).

The third is on the rock. Southern Africa holds tens of thousands of painted and engraved sites. Painted stones from the Apollo 11 cave in Namibia are almost 30,000 years old. Most surviving paintings are far younger, from the last few thousand years. Many of them show the healing dance: lines of men bent forward, women clapping, figures with blood falling from the nose. The next chapter describes them.

So the dance has certainly been danced for thousands of years. It is known from every San group that has been studied, in the north and in the south, among peoples whose languages are as far apart as English and Chinese. That spread suggests that it is much older than the oldest painting. How much older, nobody can say.

The sources

The dance of the Ju/'hoansi is the best-described healing rite of any hunting people.

The Marshall family of Massachusetts lived with the Ju/'hoansi of Nyae Nyae for long periods from 1950. Lorna Marshall wrote the first full account of the dance and of the beliefs behind it (Marshall 1969; Marshall 1999). Her daughter Elizabeth Marshall Thomas wrote two books about the people. Her son John filmed the dance.

Richard Lee worked at the Dobe waterholes in Botswana from 1963 and counted who danced, who healed and how often (Lee 1968). In 1968 the psychologist Richard Katz spent three months at the waterhole of /Kae/kae and talked at length with the healers about what they feel and see. His book lets them speak in their own words (Katz 1982). He went back in 1989 with Megan Biesele, who speaks Ju/'hoan fluently, and described what twenty years of change had done (Katz 1997). Biesele also recorded the stories (Biesele 1993). Mathias Guenther did the same work among the Naro of Ghanzi (Guenther 1999), and George Silberbauer among the G/ui (Silberbauer 1981).

Katz gave his book the title *Boiling Energy*. "Energy" is his rendering of *n/om*. Lorna Marshall wrote "potency". This book leaves the word as it is. The next section gives what the Ju/'hoansi say about it.

The ground: n/om

N/om is what the healers work with. The Ju/'hoansi do not describe it as a being. It has no will and no shape. They describe it by what it does and where it is found.

It is strong. That is its first quality, and "strong" here also means dangerous. *N/om* is neither good nor bad. The healers speak of it with respect and with fear.

It is found in many places. It is in the songs of the dance, each of which was given by the great god. It is in the fire, the sun, falling stars and rain. It is in bees and honey, in the eland and the giraffe, in certain roots, in ostrich eggs, and in the blood of a woman's first menstruation. It is in the sweat of a healer. Above all it is in the healers themselves, who are called *n/om k"ausi*, owners or masters of *n/om*.

In a healer it lies in the pit of the belly and at the base of the spine. There it is cold and still. Song and dance heat it. When it is hot it rises up the spine, and the Ju/'hoansi use the word for water coming to the boil. When it reaches the base of the skull, the healer enters *!aia*.

It was given by the great god at the beginning, and people pass it on to one another. It is not used up. A healer who gives *n/om* to a pupil does not have less. A camp with many healers does not have less for each. Katz noticed how unlike this is to the way his own society treats healing, as a scarce good that must be rationed and paid for. Among the Ju/'hoansi it grows by being used.

The ground: the god and the dead

The Ju/'hoansi speak of a great god who lives in the east, where the sun rises. He made the earth, the animals and the people, and he made death. In the old stories he is also a trickster who plays the fool. A lesser god lives in the west. He is the bringer of sickness and of bad luck, and he does the errands of the great god.

The dead go to the place of the great god in the sky. There they live much as before. They are called *//gauwasi*. At night they come down to the camps of the living. They stand in the dark just beyond the light of the fire and watch.

It is the dead who bring sickness. They carry it as small unseen arrows and shoot them into the living. The Ju/'hoansi gave Lorna Marshall several reasons why they do so. Sometimes the great god sends them. More often they come of their own accord, because they long for those they have left. A dead mother wants her child with her. A dead husband wants his wife. They do not mean harm. They mean to take their kin home. Then again the dead are quick to take offence. They see quarrels in the camp, a child neglected, a wife ill-treated, and they say: these people do not look after one another, we shall take this one away.

Sickness, then, has a clear place. It comes from outside the body, from the dark at the edge of the camp. It is carried by those who were once members of the camp. And it finds its way in most easily where the living are at odds.

Not every ailment is traced to the dead. A cut, a cough or a headache is treated with plants, with fat, with small cuts in the skin, or left alone. But the Ju/'hoansi also say that everybody carries a little sickness at all times, whether it shows or not. Katz's healers spoke of pulling out "the death things God has put into the people". For that reason the healing at a dance is given to everyone present.

The dance

A dance begins when people feel like one. Nobody orders it. A hunter has brought in a large animal and the camp is full of meat. Visitors have come. The moon is full. Somebody is seriously ill. Or a few women simply start. Katz found that at /Kae/kae a dance was held about four times a month. Lee found that dances were most frequent when several bands camped together and when there was meat.

After dark the women build a fire at an open place in the camp. They sit down around it, shoulder to shoulder, legs stretched out, facing the flames. They begin to clap and to sing.

The singing carries everything that follows. The songs have no words, or only a few. Each has a name: Giraffe, Eland, Gemsbok, Honey, Sun, Rain, Mamba. They are named after strong beings and are said to hold *n/om*. The women sing in several interlocking voices, in a high clear tone. They clap with flat hands, sharply, in patterns that cross one another. One group claps a steady beat. Others fill the spaces between. The sound is very loud and very exact.

The men tie rattles around their lower legs. The rattles are strings of dried cocoons with bits of ostrich eggshell inside. They begin to dance in a line around the women. The step is short and hard, a stamp that barely leaves the ground, and each stamp sounds the rattles. In the course of the night the feet wear a circular groove in the sand. Children dance for a while and go to sleep among the women. Old people sit close to the fire. People talk and joke between songs. There is nothing solemn about the first hours.

Towards midnight the mood changes. The singing grows stronger, and the dancers grow quiet and intent. One of the experienced healers begins to sweat heavily. His stare is fixed. His legs tremble and his belly heaves. He is entering *!aia*.

The healer Kinachau described it to Katz:

“You dance, dance, dance, dance. Then *n/um* lifts you in your belly and lifts you in your back, and then you start to shiver. *N/um* makes you tremble; it’s hot. Your eyes are open but you don’t look around; you hold your eyes still and look straight ahead. But when you get into *!kia*, you’re looking around because you see everything, because you see what’s troubling everybody” (Katz 1982).

During the night several men, and sometimes a woman, enter the state. It comes in waves. A healer works for a time, cools, rejoins the dancers, and heats up again. The dance is strongest in the hours before dawn. It ends when the sun is up, with a last round of healing. People sit about tired and content, and the day is spent in rest.

What the healer feels

The healers do not speak of *!aia* as a pleasure. Almost all of them speak of pain and fear.

The pain is in the belly and the back, where the *n/om* boils. They compare it to fire and to being pierced with thorns. Breath comes short. The heart pounds. The legs will not obey. Thought stops; a healer says that there is nothing in his head.

The fear is the fear of dying. The Ju/'hoansi say outright that *!aia* is a kind of death. The soul leaves the body. One healer told Katz that in *!aia* the heart stops and a man is dead. He sees the spirits killing people. He smells burning, rotten flesh. Then he heals and pulls the sickness out, and then he lives again. An ordinary person who died so would stay dead. The healer has learned to come back.

The whole skill lies in handling the heat. If the *n/om* stays cool, nothing happens. If it boils over, the healer loses command of himself. He may fall rigid to the ground. He may run off into the dark, or into the fire. Then the others act at once. They catch him and hold him. They rub him with their own sweat and blow in his ears. They lay him down and work on his body until he comes round. An experienced healer keeps the boiling at the point where he can see and heal and still stand. A learner cannot do that yet, and much of a dance is taken up with looking after the learners.

What the healer sees and does

In *!aia* the healer sees what he cannot see by day. The Ju/'hoansi have a word for it that Katz translates as "seeing properly".

He sees the *n/om* in the others, rising in them like steam. He sees into the bodies of the people around the fire and sees where the sickness sits. He sees the dead standing in the dark beyond the firelight. He can see what happens far away: whether lions are near, how distant kin are faring. The strongest healers travel. Their souls go out along threads to the place of the great god, to plead for a person whom the dead are about to take.

The story of the blind healer Kau Dwa belongs here. He told Katz: "God keeps my eyeballs in a little cloth bag." When the dance begins and the singing rises, he said, God comes down from the sky with the bag and puts the eyes back into his head. Then he sees, and he heals. When the women stop singing, God takes the eyes out again and carries them back to the sky (Katz 1982).

Then the healing begins. The healer goes from person to person around the fire. He treats everyone: the sick woman who is the reason for tonight's dance, the baby asleep on its mother's back, the old man, the visitor. He kneels behind or beside the person. He lays his hands, which flutter and tremble, on the chest and the back, or on the place where it hurts. He draws the sickness out of the person and into himself. It enters through his hands and travels up his arms. That is the worst of the pain, and at this point the healers shriek. Then he throws his arms out towards the dark and shakes the sickness off his hands, back to where it came from. The cry and the casting off are repeated at each person.

A dangerously ill person is treated for a long time, often by several healers together. They rub their sweat on him, since sweat carries *n/om*. They lay their bodies against his.

The healer also deals with the dead directly. He goes to the edge of the firelight and shouts at them. He scolds and insults them. He throws sticks and ash. He pleads: this woman has small children; leave her; go back. Lorna Marshall heard healers address the great god in the same rough way. There is no reverence in it. It is a quarrel between kin, and the healer is the advocate of the living.

The women

The dance cannot happen without the women. Their song heats the *n/om*. A healer whose *n/om* will not rise blames the singing, and the women answer that the men are dancing badly. When the singing slackens, the healers cool. When Kau Dwa's eyes are returned to him, it is because "the singing rises up". The men heal with what the women raise.

Women are healers too. Lee and others found that about half of the adult men and a third of the adult women had learned to enter *!aia* and heal. Women take the same road as men, often later in life, when their children are grown. Some of the strongest healers whom Katz met were old women. He was told to go to a blind old woman named Wa Na, who was spoken of as the most powerful of all.

There is also a dance of the women's own, in which they stand in an open curve and move to a drum beaten by a man. Many women enter *!aia* there. In the 1960s few of them went on to heal in that dance. By 1989 it had grown and had become a place of healing in its own right (Katz 1997).

Becoming a healer

Among the Ju/'hoansi nobody is called by an illness. A young person decides to seek *n/om*, and the others help.

Boys and girls play at the dance from the time they can walk. They know every song. In the late teens or early twenties a young man begins to dance in earnest and asks an experienced healer, often his father or an uncle, to teach him. Teaching means dancing beside him, night after night. When the pupil's *n/om* begins to stir, the teacher adds to it. He snaps his fingers against the pupil's belly and sides. Each snap is said to shoot an arrow of *n/om* into him. He rubs the pupil with his sweat. The Ju/'hoansi say that the pupil "drinks" *n/om*.

Then the pain comes, and the fear. This is the point at which most give up. The pupil feels the heat climb his spine and knows what the next step is. He must let himself go into what everyone has told him is death. Many young men try for years, come near, and draw back each time. The teacher's task at that moment is to hold him: to keep hold of his body, to cool him when he boils over, and to bring him back. Katz was told that a good teacher can judge how much a pupil is able to bear and gives no more.

The first *!aia* is not yet healing. The young man falls, or runs wild, and has to be looked after. Only when he can keep his feet in that state, see, and lay on hands is he a healer. It takes years. Some arrive at thirty or forty. Some never do.

Why do people take this on? The Ju/'hoansi gave Katz two reasons. A healer can help his own family when they are ill, and that is the first wish of everyone. And the dance itself draws them. One healer said that when he hears the singing he cannot stay away.

About half of the men reach it and about a third of the women. In a camp of thirty people that is perhaps eight or ten healers. This number is the most unusual fact about San medicine. In almost every other tradition in this book the healer is one among hundreds. Here healing is as common a skill as hunting.

No rank, no fee

Being a healer gives no standing in other matters. A strong healer has no more say in the camp than anyone else. He hunts and she gathers as before. Healers do not dress differently and own nothing that others lack.

They do not boast. The same rule that makes a hunter belittle his kill makes a healer speak lightly of his gift. When Katz asked healers who was strong, they named others. Yet everybody knows who is strong, and when someone is gravely ill a messenger walks for days to fetch such a person.

Nobody pays. In the 1960s the idea of paying a healer of one's own people struck the Ju/'hoansi as absurd. One does not pay for a share of meat either. Healers did accept gifts when they treated the neighbouring herders, who had come to value them. By 1989 some healers had begun to ask their own people for payment, and others spoke of that with unease (Katz 1997).

What the dance does for the camp

The Ju/'hoansi do not separate the cure of a sick person from the good of the camp. Lorna Marshall, who was a careful observer and no romantic, wrote that the dance draws the people together as nothing else does. Whatever their relations have been by day, at night they sit shoulder to shoulder, sing in one rhythm, and are touched by the same hands (Marshall 1969).

Lee noticed that dances cluster at the times when many bands camp at one waterhole. Those are also the times of most friction. People who have not seen one another for months bring old grudges with them. The Ju/'hoansi themselves say that a dance makes hearts happy. Katz and his colleagues took the phrase as the title of their second book.

The link with their account of sickness is direct. The dead take those whom the living do not hold. A camp that sings and dances through the night and lays hands on every member shows the dead, and itself, that it holds its people. In this medicine the treatment of the cause and the treatment of the patient are one act.

A dance has other fruits too. People speak of feeling light and strong on the following day. Hunters say that they shoot better. A dance may be held before a hunt for that reason, and after a big kill to thank and to share.

Other ways of healing

The dance is the centre of San medicine. It is not the whole.

The Ju/'hoansi and their neighbours know a large number of plants. Roots are chewed, boiled or burned to ash, and rubbed into small cuts in the skin over the place that hurts. Fat is rubbed on the body. A woman carries a small tortoise shell filled with a sweet-smelling powder of roots and leaves. She uses it to anoint, and at a dance to cool a healer who has gone too far. Massage is given freely and for a long time. Chris Low studied the medicine of San and Khoekhoe groups across the region. He found massage to be the commonest treatment of all, more common than plants or dance (Low 2008).

Several plants of the San and the Khoekhoe have entered the wider world.

- **Devil's claw** (*Harpagophytum procumbens*) grows in the Kalahari sands. Its root tubers are used for pain and for troubles of digestion. In Europe it is now sold for back pain and worn joints. A Cochrane review looked at extracts with a daily dose of 50 or 100 milligrams of the marker compound. They probably ease low back pain in the short term better than a placebo (Oltean 2014).
- **Hoodia** (*Hoodia gordonii*) is a spiny succulent that hunters chewed to still hunger and thirst on long trips. Its fate is told in the next chapter.
- **Kanna** (*Sceletium tortuosum*) was chewed by the Khoekhoe and the San of the south for calm and good spirits. The Dutch at the Cape noted it in the seventeenth century. An extract is now sold as a supplement.
- **Buchu** (*Agathosma betulina*) is a strongly scented shrub of the Cape mountains. The /Xam used its powder to calm a healer in trance. Settlers took it over as a household remedy.

Low makes a further point about how the San themselves think of all this. Plants, fat, sweat, smoke and song all work by their potency, he was told. A strong smell is a sign of potency, and smell is how potency moves from one being to another. Wind carries it. A person can be made ill by the wind of an animal or of another person, and well by the smell of the right root. There is no separate class of "natural" remedies beside the dance. It is one medicine.

Other San peoples

The dance is found among all San. The differences show what is fixed and what is free.

The G/ui of the central Kalahari told Silberbauer that sickness is sent by an evil being. He throws tiny splinters at the camp, and they lodge in the women. The men must then dance to draw the splinters out of the women through their own bodies and cast them back. In this version the women are the ones through whom harm enters the camp, and the men the ones

through whom it leaves. The dancing, the clapping, the heat, the falling and the laying on of hands are the same as among the Ju/'hoansi (Silberbauer 1981).

Among the Naro of Ghanzi, who have lived for a century as labourers on cattle farms, Guenther found fewer healers and a new kind. A handful of famous dancers travelled from farm to farm and were paid by San and by their black neighbours alike. The dance had become a service that could be bought. The form had hardly changed (Guenther 1999).

Healers of several groups say that the strongest among them can take the form of a lion and travel by night. People fear a healer who is said to do so. This is the one place where San medicine has a dark side. It is a faint one. Accusations of sorcery within the camp, so common elsewhere in Africa, are almost absent among the San.

Bradford Keeney, an American therapist, spent years with healers of the Ju/'hoansi and other groups from the 1990s and published their accounts. They speak of ropes or threads of light that hang down from the sky. A healer in the dance climbs them, or is drawn up along them, to the village of the great god. There are other ropes that run level, from one person to another, and a strong healer sees them (Keeney 2003). Academic anthropologists have doubts about Keeney's method. The threads themselves are well attested. Biesele recorded them, and they are painted on the rocks.

What changed

The world of the Ju/'hoansi changed fast after 1960.

In Namibia the South African administration gathered them at the settlement of Tsumkwe. The army recruited San trackers for its war on the Angolan border and paid them wages that broke the old economy. In Botswana cattle herders took over the waterholes. Hunting was restricted and then forbidden. People came to live on government rations and on casual work. Drink arrived, and with it fights that the old ways of settling quarrels could not contain. Tuberculosis became common, and later the virus that causes AIDS.

Katz, Biesele and Verna St. Denis went back to /Kae/kae in 1989 expecting to find the dance in ruins. They did not. People were poorer and more troubled than twenty years before. They danced as often as ever. The healers said that they needed the dance more than before. What had changed lay at the edges. Some healers took pay. The women's drum dance had grown. And people had begun to speak of *n/om* as theirs, as the one possession that nobody had taken from them (Katz 1997).

Since 1998 the Ju/'hoansi of Nyae Nyae in Namibia have managed their own land as a conservancy. They are one of very few San groups that still hold a part of their old territory. Dances are held there today. They are also performed for visitors, and the people know the difference.

The clinic and the healer are used side by side. For tuberculosis people go to the clinic. The healers send them there. A healer told Katz in 1989 that the nurses' medicine and *n/om* do

different work. This sorting of illnesses between two kinds of healer returns in almost every tradition of this part.

What has been measured

Very little.

Katz gave psychological tests to healers and others in 1968. He asked them to draw themselves. Those who were not healers drew a figure with a head, a trunk and limbs. Several healers drew something else: a set of zigzag lines, or separate strokes with no outline, and said that this was their body. Asked about the difference, they said that it was how they knew themselves in *!aia*. Katz also found that healers gave richer and more inward answers on a picture test. He did not find them more troubled than others (Katz 1982).

Nobody has measured what happens in the bodies of dancers and healers during a dance: the heart, the breath, the heat, the blood. Nobody has followed patients to see who recovered. The reasons are plain. The people have been studied by anthropologists, and anthropologists do not carry such instruments. And a dance cannot be turned into a trial without ceasing to be a dance.

What can be said rests on measurements made elsewhere. Chapter 5 gave them, and chapter 22 adds others. People who sing together breathe together, and their hearts speed and slow in step. People who move in time with one another for an hour bear more pain afterwards and feel closer to each other. Laying hands on a person in pain, by someone who is in step with him, eases the pain. A Kalahari dance joins all three, for a whole night, among people who have known each other all their lives. It would be strange if nothing happened.

That is an argument from likeness, and no more. The claim of the healers goes further. They say that they see the sickness and pull it out. That claim has not been tested.

What stands out

Six features set this medicine apart. They will be needed again when the traditions are compared.

1. **Healing is a common skill.** About half the men and a third of the women can do it. There is no healing class.
2. **Everyone is treated.** The healer lays hands on each person at the fire, sick or well. Sickness is taken to be present in everybody in some measure.
3. **The group raises what the healer uses.** The *n/om* is heated by the women's song and the dancers' rhythm. Without the group no healer can work.
4. **The healer bears the cost.** He goes through pain and the fear of death at every dance, and takes the sickness into his own body before he throws it off.
5. **Sickness comes from the dead and from bad feeling.** It enters from the dark at the edge of the camp, where the living do not hold one another.

6. **Nothing is owned.** *N/om* cannot be hoarded and grows by use. Healing was not paid for.

The healers also make a claim about knowing. In *!aia*, they say, a person sees properly. He sees what is troubling everybody. The Ju/'hoansi do not treat this as belief. They treat it as a skill that is reached by a known road, at a known price, and that half of them have. Where this knowing sits, and how it can be put to use, is one of the questions that chapter 23 asks of the theory.

The next chapter turns to the San of the south, who are gone, and to what they left: twelve thousand pages of their own words, and the paintings.

12. The San: the /Xam testimony, the Mantis and the rock

A people that was destroyed

The /Xam lived in the dry plains of the northern Cape, south of the Orange River. They hunted springbok, dug roots and moved between waterholes that each belonged to a family. From about 1770 the Dutch-speaking stock farmers pushed into this country. The farmers' flocks drank the water and ate the grass on which the game lived. The /Xam took sheep. The farmers rode out in armed bands called commandos, shot the men, and carried off women and children as servants.

It went on for a century. In 1863 a magistrate, Louis Anthing, reported to the government in Cape Town that the killing of the San on the northern frontier was general and unpunished. Nothing was done. By 1870 the /Xam who were left worked on farms or sat in prison for stock theft. Their language died early in the twentieth century. The historian Mohamed Adhikari has called what happened a genocide (Adhikari 2010).

At the last moment their words were written down.

The notebooks

Wilhelm Bleek was a German scholar of languages who had settled in Cape Town. In 1870 he learned that a number of /Xam men were serving sentences at the Breakwater prison, breaking stone for the harbour. He asked the governor of the colony to let some of them live at his house in the suburb of Mowbray, so that he could learn their language. The governor agreed.

Bleek died in 1875. Most of the work was done by his sister-in-law Lucy Lloyd, who went on until 1884. They wrote down what the /Xam said, word for word, in the left column of a notebook, and put an English translation beside it. The result is more than twelve thousand pages in about a hundred and fifty notebooks. Nothing like it exists for any other hunting people of the nineteenth century. Since 1997 it has been on the Memory of the World register of the United Nations.

The narrators were few, and they have names.

- **/A!kunta**, a young man, came first, in 1870.
- **//Kabbo** was about sixty. His name means Dream. He was a man of the rain and a man of the Mantis, and the greatest storyteller of them all. He stayed for more than two years.
- **ǂKasin** and **Diä!kwain** came from the Katkop hills. Diä!kwain gave most of what is known about the healers.
- **/Han≠kass'o** was //Kabbo's son-in-law. He came back alone in 1878 after his wife had died on the road, and dictated for almost two years.
- **!Kweiten ta //ken**, Diä!kwain's sister, was the only woman.

//Kabbo knew what he was doing. He told Lloyd that he wished to go home, to sit with his own people and hear their stories again. He added a sentence that has become the best-known line of the collection. It runs: “a story is like the wind, it comes from a far-off quarter, and we feel it” (Bleek 1911).

A selection appeared in 1911. Bleek’s daughter Dorothea published the material on customs and beliefs in the 1930s, with two long parts on healers (Bleek 1935; Bleek 1936). She translated the /Xam word for a healer as “sorcerer”. That choice misled readers for forty years. The notebooks were read again in the 1970s, and their importance was seen (Hewitt 1986; Lewis-Williams 1981). All of them can now be read online.

The people of !gi

The /Xam word for a healer is *!gi:xa*, plural *!gi:ten*. It means a person full of *!gi*. *!Gi* is what the Ju/’hoansi of the north call *n/om*. The languages are unrelated and the idea is the same: a potency that some people hold, that is dangerous, and that heals.

Both men and women were *!gi:ten*. The narrators named three crafts.

The healers of illness. Diä!kwain described how such a healer works. He puts his nose to the place where the sick person hurts and sniffs strongly. The /Xam word is rendered as “snoring”. In this way he draws the harm out of the patient and into himself. The harm may be an unseen arrow, a little stick, or a small animal. Then he sneezes it out, and blood comes from his nose. He rubs that blood on the patient. Its smell will keep further harm away.

The moment of drawing out is dangerous. The healer shudders and may fall. He may begin to bite, like a beast of prey. The narrators said that lion’s hair comes out on his back. The others hold him down. They rub his back with fat until the hair goes, and they hold buchu under his nose, whose scent calms him. They sing to him. His blood vessels, which had stood up, lie down again.

The people of the rain. For the /Xam the rain was a living being. They spoke of the rain’s hair, the rain’s legs and the rain’s breath. A soft, soaking rain was female. A violent storm with hail and lightning was male. The same distinction is made, in the same words, by the Navajo of Arizona.

A rain’s man had to catch the rain-animal. It lived in a waterhole. He went to it in a state the narrators compared to dreaming. He threw a thong over its horns and led it across the dry country, over the places where rain was wanted. There it was killed. Its blood and its milk fell as rain. //Kabbo was such a man. He told Lloyd how he had once made rain for his people at their request, and how it had rained too hard.

The people of the game. These could bring the springbok near. One woman, the narrators said, kept a tame springbok whose heart she held in the herds, so that they followed where she wished.

Other abilities were spoken of too. A healer could leave his body in the form of a small bird and go to see how distant kin were faring. A healer could become a jackal or a lion. When a healer died, his heart fell from the sky as a shooting star.

The /Xam healers had a dark side that is hardly found in the north. A *!gi:xa* who was angry could shoot unseen arrows into a person, and people feared an offended healer. The narrators told of healers who killed and of healers who fought other healers over a patient. Here the double nature of the shaman's craft, which chapter 9 described, is plain.

Qing

In 1873 a magistrate named Joseph Orpen crossed the Maloti mountains, in what is now Lesotho, with a column of police. His guide was a young San man called Qing. Qing had never met a white man except in fighting. In the evenings, when he was "happy and at ease smoking", he told Orpen the stories of his people. On the way they passed painted rock shelters, and Orpen asked what the pictures meant (Orpen 1874).

One painting showed men with the heads of small antelope. Qing said that these were men who had died and now lived in rivers. They had been "spoilt", he said, at the same time as the elands, and by the dances of which Orpen had seen paintings.

Then Qing described the dance. It had been given by Cagn, who is the /Kaggen of the /Xam. Men and women danced in a circle, one behind another, all night. Some fell down. Some became as if mad and sick. Blood ran from the noses of those whose charms were weak. When a man was sick, the dance was held around him. The dancers put their hands under their armpits and then pressed them on him. When he coughed, those who knew put out their hands and received what had harmed him. Qing called what they received "secret things".

Orpen sent his copies of the paintings to Bleek in Cape Town. Bleek showed them to Diä! kwain and the others. One picture showed men leading a large animal by a rope. Orpen's guide had said nothing about it. The /Xam recognised it at once. That, they said, is the rain-animal, and these are the people of the rain leading it over the land.

So there are three bodies of testimony. Qing spoke in the eastern mountains in 1873. The /Xam spoke in the western plains in the same decade. The Ju/'hoansi have been heard in the Kalahari since 1950. The three peoples lived up to fifteen hundred kilometres apart and spoke languages that are not related. They agree on a dance in a circle that lasts all night, on a potency that is raised by it, and on healers who tremble, fall and "die". They agree on the laying on of hands, and on a harm that is drawn out of the sick and thrown away. The southern accounts add bleeding from the nose. No other healing rite of a hunting people is documented so widely and over so long a time.

The Mantis

The central figure of the /Xam stories is /Kaggen. The word means mantis, the insect that holds its forelegs as if in prayer. In the stories he is a man, and he belongs to the First Order, the time before animals and people were distinct.

He is no solemn god. He is curious, vain and foolish. He meddles, is beaten, and flees. When he flees he grows feathers and flies to the water, and his shoes, his quiver and his cloak pick themselves up and follow him home. His wife is the Dassie, the rock rabbit. His adopted daughter is the Porcupine. His grandson, the Mongoose, lectures him on his folly. He also dreams, and what he dreams comes about.

/Kaggen made the eland. /Han≠kass'o and Diä!kwain both told how. He put a piece of his son-in-law's shoe in the water among the reeds, and it grew. He went to it in secret, called it out, and rubbed its flanks with honey. When his family found the eland and killed it in his absence, he wept. He pierced its gall, and darkness covered the world. Then he threw his shoe into the sky to make the moon, so that there should be light at night (Bleek 1911).

He goes on caring for the eland. He sits between its horns. When a hunter has shot an eland with a poisoned arrow, the animal takes a day or more to die, and in that time /Kaggen tries to save it. He comes to the hunter's hut as a small creature that pinches and bothers him. If the hunter loses his temper, jumps up or stamps about, the eland will take strength from his movement and get away. So the hunter must walk home slowly, sit still, eat little and endure. What he does, the eland does. The /Xam held that the man and the wounded animal are joined, and that the hunter must behave as he wishes the animal to behave.

Qing spoke of the same being in other words. Orpen asked him where Cagn was. He answered: "We don't know, but the elands do. Have you not hunted and heard his cry, when the elands suddenly start and run to his call? Where he is, elands are in droves like cattle." He also gave a prayer that his father had taught him: "O Cagn! O Cagn! are we not your children, do you not see our hunger? Give us food" (Orpen 1874).

The eland is the link between the Mantis and the healers. It is the largest antelope, with more fat than any other animal, and for all San it is the animal of greatest potency. The Ju/'hoansi sing the Eland song at a girl's first menstruation, at a boy's first kill and at marriage. The southern healers drew on the eland's potency in the dance. Chapter 7 noted that the post on VALIS names /Kaggen among the old appearances of the fourth of its figures, the watcher. The stories give that some ground and no more. /Kaggen watches over the game and tests the conduct of the hunter. He is also a clown, which the watcher of the modern reports is not.

The paintings

The San left the largest body of rock art in the world. It covers southern Africa from the Cape to the Zambezi.

The Drakensberg and Maloti mountains hold about six hundred painted shelters with more than thirty-five thousand single images. The Brandberg in Namibia has even more. The Tsodilo Hills in Botswana have some four thousand five hundred. The Cederberg in the Cape and the Matobo Hills in Zimbabwe are as rich. On the open plains of the interior, where there are no shelters, images were pecked and scratched into boulders. Several of these regions are World Heritage sites.

The painters used red and yellow ochre, white clay, and black from charcoal or manganese. They ground the colour fine and mixed it with a binder. They painted with brushes of hair or feather, and some of the work is very fine. An eland no longer than a hand is shaded from red on the back through pink to white on the belly. Each hoof and the tuft of the tail are in place.

The age of most paintings is not known. Paint has been dated directly at a few sites. The oldest dates of that kind lie around five thousand years. The youngest paintings show horses, guns and ox-wagons, and were made in the nineteenth century.

How the paintings were read

For a long time the paintings were taken for simple pictures of daily life, or for hunting magic, or for art made for pleasure. Three findings ended those readings.

The first was a count. Patricia Vinnicombe recorded more than eight thousand images in the southern Drakensberg in the 1960s. The animal most often painted was the eland, by a wide margin. Yet the bones in the floors of the same shelters show that the people who lived there ate mostly small antelope. The painters were not painting their dinner. They painted what mattered most (Vinnicombe 1976).

The second was the testimony. David Lewis-Williams set the paintings beside the words of Qing, the /Xam and the Ju/'hoansi. He took copies of paintings to the Kalahari and showed them to people who had never seen rock art. They recognised details at once. A line of men bent forward with their arms held stiffly back: that, they said, is how a healer stands when he asks the great god for *n/om*. Figures with a hand to the nose, and red lines falling from the face: the old southern healers bled from the nose. Women in a row with fingers spread: clapping. Men with short sticks in their hands: dancers often lean on two sticks when the *n/om* makes them weak. A switch of animal hair: carried only at a dance (Lewis-Williams 1981).

The third was the eland itself. Many paintings show an eland with its head hanging, its hind legs crossed, its hair on end and blood at its nose. That is exactly how an eland looks when the poison of an arrow is killing it. Beside such an animal the painters often set human figures in the same state: knees giving way, hair standing up, blood at the nose. Some of these figures have hoofs or the head of an antelope. The best-known example is in the Game Pass shelter in the Drakensberg. A dying eland staggers with crossed legs. Behind it a man with an antelope's head and hoofs holds its tail, and his own legs are crossed like the eland's.

The reading is this. The eland is the animal of greatest potency. When it dies, its potency is set free. The healer in the dance "dies" in the same way and with the same signs. The painters showed the two deaths as one. The figures that are half man and half antelope are healers who have taken on the potency of their animal. Qing had said as much in 1873: the men with antelope heads were men who had died, and they had been spoilt by the dances.

Other images fit the same account. There are figures stretched to twice the natural length; healers speak of being pulled long as the *n/om* rises. There are figures with fins or tails among fish, and winged figures in flight; healers speak of being under water and of flying. There are large rounded beasts led on ropes by small men, as the /Xam explained to Bleek.

And there are thin red lines, often edged with tiny white dots, that wander across the rock for metres. They link one figure to another. Figures walk along them and climb them. They run into a crack in the rock face and come out again further on. The healers of the Kalahari speak of threads of light that they climb to the sky and that join people to one another (Lewis-Williams 2000).

The rock as a veil

The last observation led to a further step. Many images are placed so that they seem to come out of the rock. An eland emerges from a crack, with only its front half painted. A snake winds out of a fold in the stone. A line of figures walks into a step in the rock face and does not come out. Lewis-Williams and Thomas Dowson proposed that the painters treated the wall of the shelter as a veil. Behind it lay the world that the healers visited. The images were what came through (Lewis-Williams 1990).

There is some testimony for this too. In 1930 an old man named Mapote, who had learned to paint from San half-brothers in his youth, painted an eland for Marion How in Lesotho. He told her that the red paint must be ground by a woman at full moon and mixed with the fresh blood of an eland (How 1962). In the 1980s an old woman of San descent in the Transkei took researchers to a painted shelter where her father had worked as a rain-maker. She said that the people used to dance in the shelter. When they wished for more potency they turned to the paintings and laid their hands on them.

If this is right, the paintings were not records made after the event. They were made of potent materials, held potency, and were used in the dance. They were part of the medicine.

What is disputed

Lewis-Williams went further than the San evidence. With Dowson he proposed that the nervous system of every human being produces the same forms in deep trance. First come grids, zigzags, dots and nested curves. Then the mind turns these into objects. In the last stage the person enters a tunnel and meets animals, monsters and beings that are part human. On

this ground they argued that the painted caves of Ice Age Europe record the same experience (Lewis-Williams 1988; Lewis-Williams 2002).

This step has been attacked from several sides. Some neuroscientists hold that the three stages are not well supported. Some archaeologists hold that the reading has been stretched to cover every kind of rock art.

There is also criticism inside southern Africa. Anne Solomon has argued that many of the painted figures are not living healers in trance at all. They are the dead, and the beings of the First Order from the stories (Solomon 1997). The difference is smaller than it sounds. On either reading the paintings concern the other world and those who go there. They are disputed in the details. Hardly anyone now doubts that the art of the San is bound up with their healing.

Reading the two chapters together

The San evidence is of three kinds, and each makes up for a weakness in the others.

The Kalahari accounts are full and recent. They come from living healers who could be questioned. They cover fifty years.

The /Xam and Maloti accounts are a century older and come from peoples who are gone. They were given by a handful of men, far from home, to listeners who understood only part of what they heard. They show that the dance was not a local custom of one desert.

The paintings cannot speak. They reach back thousands of years, and they show postures and signs that the two bodies of testimony explain.

Together they describe one medicine. It has no priests, no temples and no drugs. Its means are the song of the women, the rhythm of the dancers, the fire, and the bodies of the healers. Its account of illness is that harm comes from the dead and from discord. Its cure is that a person who has gone to the edge of death lays hands on the others and takes the harm away. It has been practised over half a continent for a length of time that cannot be measured.

The San today

About a hundred thousand people in six countries count themselves San. Most are very poor. They have lost nearly all their land, and with the land the hunting and gathering that carried the old life. A few events of recent years bear on their medicine.

Land. In 1999 the ǂKhomani San of the southern Kalahari won back some sixty-five thousand hectares in a land claim, the first of its kind in South Africa. In Botswana the government moved the G/ui and G//ana out of the Central Kalahari Game Reserve in 1997 and 2002. In 2006 the High Court ruled that the removal had been unlawful. Many of those who went back still live there without the right to hunt.

Hoodia. For as long as anyone remembers, San hunters have chewed pieces of the succulent *Hoodia* to keep hunger and thirst away on long trips. In the 1990s the state research council of South Africa isolated the active compound and patented it. It licensed the patent to a British firm, which sold the rights on to a large drug company and later to a food company. The hope was a slimming drug for the world market. Nobody had told the San. They learned of it from a newspaper in 2001. In the same year the head of the British firm was quoted as saying that the people who had discovered the plant had died out.

The San organised and negotiated. In 2003 the research council signed an agreement that gave the San six per cent of all royalties and eight per cent of the staged payments (Wynberg 2009). No drug ever reached the market. The companies withdrew over doubts about safety and effect. But the agreement set a rule: knowledge of a remedy belongs to those who found it.

Rooibos. The rule was applied again in 2019. The South African rooibos tea industry agreed to pay one and a half per cent of the farm price of all rooibos to the San and the Khoekhoe. They are the first users of the plant. It was the first agreement of this kind that covers a whole industry.

A code for researchers. In 2017 the San of South Africa published a code of ethics for those who wish to study them. It rests on four words: respect, honesty, justice and care. It asks researchers to come through the San's own councils, to explain their work in plain language, to share what they find, and to keep their promises. It is the first such code issued by an indigenous people of Africa (Schroeder 2019). The long history of this chapter explains why it was written. For a hundred and fifty years the San were measured, photographed, recorded and published, and they seldom saw the results.

The words. South Africa chose a new coat of arms in 2000. It took two human figures from a San rock painting for the centre and a motto in /Xam, the dead language of //Kabbo. The motto reads *!ke e: /xarra //ke*. It is translated as "diverse people unite".

Towards the next chapter

The San show the shaman's medicine in the form that is probably closest to its beginnings. The same elements return, differently joined, on the other side of the Indian Ocean. The peoples of Australia were cut off from the rest of mankind for some fifty thousand years. Their healers also draw objects out of the sick, also travel to the sky on a thread, and also carry something in their bodies that was put there by others. The next chapter describes them.

13. Aboriginal Australia

The people and their time

People reached Australia at least fifty thousand years ago. A rock shelter in Arnhem Land has given dates of about sixty-five thousand years (Clarkson 2017). From that time until 1788 the peoples of the continent lived with little contact with the rest of mankind. They are often called the oldest continuous culture on earth.

When the British arrived there were some two hundred and fifty languages and more than five hundred named groups. Estimates of the population run from three hundred thousand to a million. All lived by hunting, fishing and gathering, and by managing the land with fire. The peoples of the Torres Strait islands, between Australia and New Guinea, are a separate people with gardens and seagoing canoes.

What followed 1788 was as hard as anywhere in the world. Smallpox struck in the first year. The settlers took the land and the water. There was a long frontier war. The survivors were moved to missions and reserves. From about 1910 to 1970 many children of mixed descent were taken from their families by the authorities. Aboriginal people were counted in the census only after a vote of 1967. The courts recognised their title to land in 1992.

Today about a million Australians are Aboriginal or Torres Strait Islander. On average they die about eight years younger than other Australians. In the remote centre and north, the old languages are spoken and the old medicine is practised daily. That is where most of what this chapter describes was recorded.

The ground: the Dreaming

Every Aboriginal people has a word for the ground of its life. The Arrernte say *Altyerre*, the Pitjantjatjara *Tjukurpa*, the Warlpiri *Jukurrpa*, the Yolngu *Wangarr*. English has settled on "the Dreaming". The word is misleading, and no better one has been found.

In the beginning the land was flat and without features. Then ancestral beings rose out of it or came across the sea. They were at once animal and human: Kangaroo, Emu, Honey Ant, the Two Sisters, the Rainbow Serpent. They travelled, hunted, fought, made love and held ceremonies. Where they dug, there is now a waterhole. Where one died, there is a hill. Where they camped, they left the spirits of children yet to be born. They gave each stretch of country its language, its marriage rules and its songs. Then they went back into the ground, or became rocks and trees, and they are still there.

The anthropologist William Stanner, who spent fifty years with Aboriginal people, said that one cannot fix the Dreaming in time. It was, and is. He proposed the word "everywhen" (Stanner 1979).

Three consequences matter for medicine.

A person belongs to a place. Each person comes from a spirit left by an ancestral being at a particular site. He is of one kind with that being and with that site. He holds its songs and has duties towards it. The country in turn knows him. Aboriginal English says "country" without an article, as one says a person's name.

The Law holds everything in order. What the ancestors laid down is called the Law. It covers whom one may marry, whom one must avoid, with whom one must share food, who may see which ceremony, and how the country is to be looked after. The Law is not a matter of belief. It is how the world is built.

Country must be cared for. People visit the sites, clean the waterholes, burn the grass at the right season and sing the songs. Country that nobody visits goes wild and grieves. People who are kept from their country sicken.

Health in this world is not a property of one body. In 1989 the Aboriginal health organisations of Australia wrote a definition that is still used. Health, they said, is "not just the physical well-being of an individual but refers to the social, emotional and cultural well-being of the whole Community". They added that it is "a whole-of-life view and includes the cyclical concept of life-death-life" (NAHSWP 1989).

Body and spirit

The peoples of the Western Desert, whose healers are the best described, speak of the *kurunpa*. The word is usually translated as spirit. It is a person's life, will and awareness. It sits in the middle of the body, in the chest or the belly.

The *kurunpa* is not fixed in its seat. In sleep it goes out, and what it meets are dreams. A sudden fright can knock it out of place or out of the body. A small child's *kurunpa* sits loosely and is easily lost. Grief makes it shrink. At death it leaves for good and returns to the country it came from.

The Yolngu of Arnhem Land say that a person has two spirits. One goes back at death to the sacred waters of the clan, to be born again. The other stays in the bush as a restless and mischievous ghost (Warner 1937). This is the division that chapter 9 described: a soul that belongs to the lasting order, and one that clings to the place of the body.

The body has its own ground. The Jesuit Anthony Peile lived for years with the Kukatja of Balgo and wrote down how they speak of it. For them a healthy body is cool and dry. Sickness is heat and wetness in the wrong place. Breath and blood carry the life, and both are tied to the spirit in the belly (Peile 1997). Kidney fat is the seat of strength across much of the continent. In the south-east the commonest form of sorcery was held to be the theft of a man's kidney fat while he slept.

Where illness comes from

Aboriginal people sort illness in a way that Janice Reid, who worked with the Yolngu, set out most clearly (Reid 1983). There are two levels.

Small ailments just happen. A cold comes from the wind, a sore from a scratch, a bellyache from bad food. They are treated at home with plants, smoke, heat and rest. Nobody looks further.

A serious illness, a wasting, a sudden death, or any death of a person in the prime of life raises another question. Reid's Yolngu teachers knew perfectly well that the man's heart had stopped or that his lungs were infected. They asked why it had happened to him, and why now. The answers come from a short list.

- **Sorcery.** Someone has done it. In Arnhem Land the sorcerer is the *galka*. He is said to overpower his victim in a lonely place, open his side, pierce the heart, and close the wound so that no mark shows. The victim remembers nothing, goes home, and dies within days. In the centre the best-known form is the pointing of the bone. A wand of bone or wood, with a cord of human hair fixed to it by resin, is "sung" and then pointed at the victim from a distance. A person can also be sung through something that was part of him: hair, spittle, a footprint.
- **A breach of the Law.** Someone has walked on a sacred site, seen what he should not see, married wrongly, neglected a ceremony, or eaten a forbidden food. The ancestral being of the site strikes, or the old men act for it.
- **Spirits.** In the desert harmful beings called *mamu* come at night and feed on the *kurunpa*. The newly dead are also dangerous to their close kin. For that reason the name of a dead person is not spoken for a long time, and the house is cleansed with smoke.
- **Loss or shifting of the spirit.** Fright, grief and homesickness move the *kurunpa* from its seat.
- **Strong feelings in the group.** Jealousy, shame, unpaid debts and unsettled quarrels make people ill, either directly or because they lead someone to sorcery.

A third class has been added since 1788. Diabetes, heart disease, the effects of alcohol and many infections are called white man's sickness. For these the clinic is the right place. People use both systems without any sense of contradiction. The clinic answers how. The healer answers why.

One illness described by the psychiatrist John Cawte shows how closely sickness can be tied to place. The Lardil of Mornington Island in the north call it *malgri*. Each stretch of shore belongs to a clan and has its own guardian being in the water. A person who has eaten land food must wash his hands before he enters the sea, and the reverse. If he does not, and above all if he is in waters that are not his own, the guardian enters his belly. He doubles up with pain, his belly swells, he vomits. The cure is sung by an old man of the place. A cord of grass

is tied from the sick man's foot to a stick set in the sand, towards the sea. The being then has a road by which to leave (Cawte 1974).

The healers

Every region has its healers and its own name for them. The Pitjantjatjara, Yankunytjatjara and Ngaanyatjarra of the desert say *ngangkari*. The Yolngu say *marrnggitj*. In the Kimberley and the western desert the word is *maparn*. Older books speak of medicine men, clever men and doctors. The anthropologist A. P. Elkin, who collected the evidence from the whole continent, called them "men of high degree". He meant that they had gone furthest in the secret life of their people. Of the Aboriginal healer he wrote that he is "not a mere charlatan" (Elkin 1945).

Women are healers too. In many regions the men deal with sorcery and with men's ailments, and the women with children, births and the knowledge of plants. Among the *ngangkari* of the desert both do the same work.

Chapter 10 described how such a person is made. In the desert today the gift is usually handed on in childhood by a grandparent or a parent who has it. The old person places in the child's body what the Pitjantjatjara call *mapanpa*. These are unseen sacred objects. They live in the hands, the forehead and the belly of the healer. They are his tools. With them he feels, sees and draws out.

Elkin listed what the clever men of the old days were said to be able to do. They could see into a body and see what a person was thinking. They could travel great distances in a night. In the south-east they produced a cord from their own bodies and climbed it into the sky. They could walk on fire and vanish at will. They owed their gifts to a great being, in many regions the Rainbow Serpent, who is bound up with water, with quartz crystal and with pearl shell.

The *ngangkari* have described their work themselves. In 2013 the women's council of the desert communities published a book of their words. More than twenty healers, men and women, speak in it in their own languages, with English beside (NPYWC 2013). Several points return in almost every account.

They see. A healer looks at a sick person and sees where the trouble sits. It shows as a piece of wood, a small stone, a dark clot, or a place where the blood does not move as it should. He also sees whether the *kurunpa* is in its seat, or has slipped up or sideways, or has gone.

They work with their hands. The first treatment is touch: firm pressing and rubbing over the place of the trouble. Then the healer draws the harmful object out. In the old days he sucked. Today most pull with their hands. They show what has come out and throw it far away. They finish by blowing their breath on the place, or into the ears, to give strength.

They bring the spirit back. This is the commonest work of all, above all with children. A child has had a fright. It cries, will not eat and cannot sleep. The healer finds the *kurunpa*, which is

usually not far away, often at the place where the fright happened. He takes it up in his hands and presses it back into the child's body. The healers say that the change shows at once. The child grows calm and asks for food.

They travel at night. While the body sleeps, the healer's own spirit goes out. The *ngangkari* say that they fly together, like a flock, over the communities. They look for spirits that have strayed and bring them home. They drive off the *mamu*.

They work together. A hard case is treated by two or three healers side by side. Nobody claims a cure for himself.

Healers of other regions use other means for the same ends. A *maparn* of the Kimberley rubs sweat from his armpit on the patient's belly. The San healer does the same with his. A Yolngu *marrnggitj* has spirit children who sit on his shoulders and tell him what they see.

Bush medicine

Beside the work of the healers stands a large knowledge of remedies. It is held by ordinary people, and above all by the older women. Philip Clarke, who surveyed the records, counts it as a second system beside the first. The healer deals with what is sent. The household deals with what merely happens (Clarke 2008).

The methods are few and practical.

- **Smoke.** Green leaves are laid on hot coals in a shallow pit. A mother and her newborn child are held in the smoke, or a sick person lies on a bed of branches above it. In the desert the leaves of the emu bush are used. The smoking of a baby is said to make it strong and quiet.
- **Steam and heat.** Leaves of eucalyptus or tea tree are heated with water, and the sick person breathes the vapour under a cover. Aching limbs are buried in warm sand or packed with heated earth from a termite mound.
- **Washes and poultices.** Leaves and bark are crushed in water. The liquid is used to bathe sores, scabies, sore eyes and aching heads. Crushed leaves are bound on wounds.
- **Gums and clays.** The red gum that oozes from eucalyptus trees is rich in tannin. It is dissolved for diarrhoea and dabbed on cuts. White clay and termite earth are eaten for an upset belly.
- **Fats.** The fat of the goanna and the emu is rubbed into stiff joints and dry skin.
- **Binding.** A cord or a vine is tied tightly round the head for headache. Broken limbs are splinted with bark.

Plants are not gathered as mere materials. Each belongs to a place and to a Dreaming. The gatherer speaks to the country, takes a little, and leaves the rest. A remedy from one's own country is thought stronger than one from elsewhere.

The table gives some of the best-known remedies.

Remedy	Where	Use	What is known from study
Emu bush (*Eremophila* species)	Desert and southern inland	Smoke for mothers and babies; washes for sores and colds	Extracts kill bacteria in the laboratory; no trials in people
Tea tree (*Melaleuca alternifolia*)	North coast of New South Wales	Crushed leaves on wounds; vapour for coughs; bathing in lagoons under the trees	The oil kills bacteria and fungi; several clinical trials
Eucalyptus leaves and gum	Whole continent	Vapour for colds; gum for diarrhoea and wounds	The oil eases blocked airways; the gum is strongly astringent
Kakadu plum (*Terminalia ferdinandiana*)	Top End and Kimberley	Fruit as food on the march; inner bark for sores	The richest known natural source of vitamin C
Pituri (*Duboisia hopwoodii*)	Channel Country of the inland	Dried leaf chewed with ash against hunger and tiredness; traded over great distances	Contains nicotine
Corkwood (*Duboisia myoporoides* and relatives)	East coast	Thrown into pools to stun fish	Source of most of the world's scopolamine, used against motion sickness
Goanna and emu fat	Whole continent	Rubbed into painful joints	Emu oil reduces inflammation in animal studies

Two entries need a word more.

The Bundjalung of the north coast of New South Wales used the tea tree for wounds and chest complaints. Its oil was distilled from the 1920s and went into the first-aid kits of Australian soldiers. Laboratory work shows that it kills many bacteria and fungi (Carson 2006). In a trial of 124 people with acne, a gel with five per cent of the oil reduced the spots

as a standard treatment did. It worked more slowly and caused fewer side effects (Bassett 1990).

Pituri shows how far knowledge travelled. The plant grows in a small area of south-west Queensland. Its leaves were dried, packed in woven bags and carried along trade routes for hundreds of kilometres. Old men of the growing area controlled the preparation. It is the nearest that Australia came to a drug trade before 1788.

Song, country and the settling of wrongs

Three further means of healing do not fit under either the healer or the plant.

Song. Families own healing songs, as they own the songs of their country. A song is sung over a sick person, close to the body, and breath is blown on the place between verses. The same act of singing can harm. To “sing” someone is the common English phrase for sorcery. The power is in the song, and its direction depends on the singer.

Country. Old people who are ill ask to be taken home. They say that their own country will make them well, and that they cannot get better away from it. The best modern example concerns kidney failure, which is very common in the desert. Until twenty years ago a person from a remote community who needed dialysis had to move to a town hundreds of kilometres away, for the rest of his life. Many refused and died. In 2000 painters of the Western Desert sold their work at an auction in Sydney and raised more than a million Australian dollars. With it they set up their own dialysis service in the desert. It began treating patients at Kintore in 2004 and now works in many remote communities under the name Purple House. The founders gave their reason plainly. People must be on their country, with their families, to pass on the Law. Away from it they lose heart and die.

Settlement. A serious illness or a death opens a wrong that must be closed. The kin of a dead person seek the one who caused it. In the old Law the matter ended with a formal punishment, often a spear through the thigh, which the guilty party accepted in public. After that the two families could live together again. Mourning itself, which Aboriginal English calls sorry business, is long and strict. It is a duty of the whole community. These rites do for the group what the healer does for the single body: they take out what has lodged, before it does more harm.

Death by sorcery

Australia supplied the classic accounts of what came to be called voodoo death.

In 1925 the physician Herbert Basedow described a man who learns that the bone has been pointed at him. He stands aghast and stares at the pointer. His cheeks go pale and his eyes glassy. He tries to cry out and cannot. He sways, falls, writhes, and then crawls to his shelter. From that moment he sickens, refuses food, and keeps apart. Unless a healer removes the charm, he is dead in a short time (Basedow 1925).

The American physiologist Walter Cannon collected such reports from many parts of the world in 1942. He proposed that extreme and lasting fear keeps the body in a state of alarm until the circulation fails (Cannon 1942). The idea was famous and unproved for decades.

Two later studies changed the picture. Harry Eastwell, a psychiatrist in Arnhem Land, followed real cases. He found that once a person is known to be marked, his kin draw back. They begin the mourning songs while he still lives. They stop giving him water. In that climate a person without water dies within days. Eastwell concluded that the death is real and that its immediate cause is thirst (Eastwell 1982). Reid and a Yolngu colleague replied that this was too simple. In their experience families fight for a victim of sorcery and bring a healer. They withdraw only when the old or very sick person is truly dying (Reid 1984).

Both accounts say the same about the medicine. The person who has been sung is no longer held by the group. Whether fear, thirst or despair does the rest, the first event is that he has been put outside. And the cure is the reverse. The healer finds the object, takes it out, and shows it. The older accounts agree that a person who sees the bone or the stone that was in him recovers quickly. Chapter 21 returns to deaths of this kind and to what is now known about the heart under extreme fear.

Healers and hospitals

For most of the twentieth century the health services ignored the healers. That has changed in the last twenty-five years.

The women's council of the desert communities has employed *ngangkari* since 1998. They work in clinics, hospitals, nursing homes and prisons across the border country of three states. In 2009 the council's healers received a prize from the college of Australian and New Zealand psychiatrists, and in 2011 an international award for psychotherapy.

In South Australia a body of *ngangkari* was formed in 2013 to offer its services to hospitals and the public. Healers are called to patients in the large hospitals of Adelaide. The mental health law of that state says that the care of Aboriginal patients may, where it is fitting, involve traditional healers from their communities.

The desert healers have also worked with mental health staff on words. Western psychiatry has a large vocabulary for states of mind, and so do the desert languages, and the two do not match. Since 2012 a group of *ngangkari* and clinicians has met to set the words of both sides next to one another. The healers describe a *kurunpa* that has shrunk, turned or fled. The clinicians describe depression and trauma. Neither side has been asked to give up its own words. The aim is that each should know what the other means.

What has been measured

The plants have been studied a little. The healers have not been studied at all in the sense of a trial. A review of the published work on traditional medicine in Aboriginal primary care found descriptions and opinions and almost no measurement of results (Oliver 2013).

Two studies bear on the wider claim that health depends on country.

In Arnhem Land researchers examined nearly three hundred adults of one remote community. They asked how often each person took part in caring for country: walking on it, burning, gathering food, looking after sacred places. Those who did so more often had less body fat, lower blood pressure, less diabetes and better blood sugar than their neighbours. The differences held after allowance for age, sex and income (Burgess 2009).

In the Northern Territory another group followed the people of the Utopia homelands for ten years. These families live in small settlements on their own country, hunt and gather part of their food, and have their own health service. Their death rate from all causes was clearly lower than that of other Aboriginal people of the Territory, and the difference was largest for diseases of the heart (Rowley 2008).

Neither study proves that country heals. People who are well can do more on the land. But both fit what the old people say, and no study has gone against it.

What stands out

1. **Health is not a property of one person.** It is the state of a group and its country over a whole cycle of life. The Aboriginal health bodies have written this into their definition.
2. **Two opposite troubles are both known.** The spirit can be out of its seat, and a foreign object can be in the body. The healer brings in the one and takes out the other.
3. **The healer carries his tools in his body.** They were put there by an elder or by spirits. What he knows is not kept apart from what he is.
4. **Healers work together, and part of their work is done in sleep.**
5. **Illness is tied to named places.** A breach at a site makes ill, and return to one's own country makes well.
6. **A wrong must be settled in the open.** Until it is, the illness that came from it is not at an end.

The peoples of Australia and the San of Africa have been apart for as long as there have been people outside Africa. Both speak of a potency carried in the body of the healer. Both speak of harm that enters as a small object and is drawn out by hand or mouth. Both know sweat that carries the healer's strength, and a thread or cord to the sky. This book does not decide whether that is common inheritance or a discovery made twice. Either answer is remarkable.

14. Siberia and the Sámi

The land of the word

Siberia gave the shaman his name. It reaches from the Urals to the Pacific and from the Arctic Ocean to the steppes of Mongolia. About forty native peoples live there. They speak languages of at least five unrelated families.

- The **Tungusic** peoples are spread thinly over the eastern forests: the Evenki, the Even, and on the Amur the Nanai and the Udege.
- The **Turkic** peoples are the Sakha, whom the Russians call Yakuts, on the Lena, and the Tuvans, Altaians and Khakas in the southern mountains.
- The **Mongolic** Buryats live around Lake Baikal.
- The **Uralic** peoples are the Nenets, Nganasan and Selkup of the tundra and the Khanty and Mansi of the Ob.
- In the far north-east live the Chukchi, Koryak and Itelmen. The Yukaghir, the Ket and the Nivkh speak languages with no known relatives.

In the north these peoples hunted, fished and herded reindeer. In the south they kept horses, cattle and sheep. The Russians came from the 1580s. They took tribute in furs, built forts, and brought the Orthodox church and smallpox. The native religion went on under a thin cover of baptism until the 1920s.

The best accounts were written between 1880 and 1935. Chapter 9 named the authors: the exiles Bogoras, Jochelson and Sieroszewski, the turkologist Radlov, the ethnographers Shirokogoroff, Anisimov and Popov, and the Sakha scholar Ksenofontov. After 1990 a new generation, both native and foreign, has described what was left and what came back (Balzer 1997; Vitebsky 1995).

The ground: a world with depth

All these peoples describe a world of several levels, and they join the levels in a similar way.

The Sakha speak of an upper world of nine skies. The bright creator beings live there, each on his own level, with the White Lord Creator on the highest. People, cattle and the spirits that own every place and object live in the middle world. Below is a dark world of harmful beings that hunger for the souls of people and cattle. A great tree grows at the centre of the middle world. Its crown reaches the upper world and its roots the lower.

The Evenki speak of a river. Each clan has its own. The river rises in the upper world, at a place where the souls of the unborn live as small birds in the branches of the clan tree. It runs through the middle world, where the clan lives. Its mouth lies in the lower world, where the dead of the clan have their camp. The shaman travels up and down this river.

When an Evenki clan held a great rite, it built this world in wood. Arkadii Anisimov described the structure in the 1930s. A round tent stood for the middle world. From its eastern

door ran a gallery of young living larches, set with their roots in the air: the upper river. From its western door ran a gallery of dead wood: the river of the dead. Wooden figures of the shaman's helpers stood along both. There were salmon to carry him, pike and elk to guard the passage, birds to scout. Inside the tent the shaman sat on a raft made of wooden fish (Anisimov 1963). The clan sat around him inside the model of its own world while he travelled through it.

The same peoples count more than one soul. The Evenki name three. One lives in the body and goes to the land of the dead when the body dies. One is the shadow, which travels in dreams and can be lost. The third is the soul of fate. It lives in the upper world and is tied to the person by an unseen thread. If the thread is cut, the person dies. The Sakha likewise count three souls, of earth, of air and of the mother. They add a fourth quality, a kind of inner strength, that shamans have more of than others.

Every place has an owner. The fire has a spirit that must be fed with the first bite and the first drop at each meal. The forest, the river, the mountain pass and the bear each have a master. The hunter lives by their goodwill.

Where illness comes from

The Siberian sources name the causes of serious illness in a few forms.

The soul is gone. This is the leading idea, here more than anywhere else. The shadow soul has strayed in a dream and lost its way. Or it was frightened out. Or a spirit of the lower world has carried it off and holds it. Or the dead of the family have taken it, because they want company. The person weakens, sleeps badly, loses interest in everything, and at last dies.

A spirit has come in. A being of the lower world has entered the body and gnaws at it. The Sakha said that the spirit eats the organ where it sits. The person has pain in that place, or raves.

A rule was broken. Someone threw rubbish into the fire or stepped over the hearth. A hunter boasted over a bear or broke its bones. A woman walked over a man's hunting gear. The owner of the place or of the animal has answered.

The dead shamans want a successor. Chapter 10 described this illness.

An enemy has sent it. Shamans of hostile clans sent their helpers against one another, and against one another's people. The Evenki shaman set a fence of spirit watchmen around the land of his clan. Sickness came when the fence was breached.

One class of illness lay outside all this. Smallpox and measles came with the Russians. The Sakha and others spoke of them as foreign women in Russian dress who travelled from camp to camp. Shamans were held to be helpless against them, and in many places they were

forbidden to try. Here, as in Australia and the Kalahari, the old medicine set the new diseases apart and did not claim them.

The coat and the drum

The Siberian shaman has two tools that no other tradition has in the same form.

The coat is made of reindeer or elk hide and hung with iron. On an Evenki coat the iron pieces are bones: ribs along the chest, long bones down the arms, a spine down the back. The shaman wears his skeleton on the outside. It is the skeleton that the spirits counted and joined with iron when they made him. Fringes hang from the sleeves and the hem like the feathers of a bird. Or the coat carries antlers on a cap. A shaman may travel as a bird or as a deer. A Sakha coat carries an iron sun and moon. It also carries a round plate with a hole in the middle that the Sakha call the opening in the ice. It is the passage to the lower world. Among the Buryats and the Tungus peoples a bronze mirror hangs on the chest. The helpers live in it, harm glances off it, and the shaman looks into it to see. A full coat can weigh fifteen or twenty kilograms.

The drum is a wide, shallow hoop of larch with a hide stretched over one side. The wood should come from a tree that the spirits have pointed out, best of all a tree struck by lightning. The hide is from a reindeer, an elk or a horse. A new drum is dead and must be brought to life. In a rite that may last several days the shaman tells the life of the tree: where it grew, how it was cut. Then he tells the life of the animal, going back from its death to its birth. He goes in spirit to the place where it was born and catches its soul. Now the drum lives. It is the shaman's mount. A Sakha or Tuvan shaman calls it his horse, an Evenki his reindeer. On water it is his boat. In a fight it is his shield and his bow.

In the Altai, among the Khakas and the Selkup, the skin is painted. A line divides it into an upper and a lower field. Above are the sun, the moon, stars, birds and riders. Below are trees, snakes, frogs and the animals of the dark.

When a shaman dies, his drum is slit and hung on a tree by his grave.

The session

Wacław Sieroszewski, a Pole exiled among the Sakha for twelve years, described a session in the 1890s.

The house has been swept. The neighbours have come in and sit along the walls, men on the right and women on the left. The shaman sits on the hide of a white mare in the middle of the floor. He unbraids his hair. The fire is allowed to burn down to embers. Nobody speaks. For a long time nothing happens. He yawns, hiccups and shivers. Then there is a single sharp cry, like a falcon, and silence again. The drum begins very softly, like the hum of a gnat. It swells and breaks into thunder. Out of the noise come the cries of birds: the loon, the eagle, the

cuckoo. The helpers are arriving. He greets each one in song. Then he leaps up, and the iron on his coat crashes with every step. He dances, and he sings where he is going.

What follows depends on the task. For a sick person whose soul is lost, the shaman travels to wherever it is held. He sings every stage: the ride, the river crossed, the guard at the gate. He finds the one who holds the soul. He flatters him, offers gifts, and bargains. An ox or a horse may be promised in exchange. Or he cheats him and snatches the soul. He rides back, falls to the floor, and is brought round. Then he places the soul in the sick person, through the crown of the head or the ear, and declares what offering has been promised and must be paid.

Among the Chukchi the session was held in the pitch-dark inner room of the skin tent. The shaman drummed and sang until the spirits came. Then voices spoke from the corners and the roof, in bird and animal sounds and in a spirit language that the shaman had to translate. Bogoras was sure that this was a trained skill, and equally sure that the shamans did not think of it as fraud (Bogoras 1904).

Bogoras noted something else. Among the Chukchi and the Koryak almost every family owned a drum. At the seasonal feasts each member of the household took it in turn, drummed, sang, and tried to call the spirits. He named this family shamanism. Professional shamans were the few who went furthest. That is close to what chapter 11 described among the San. In the simplest societies of the north, as in the Kalahari, the road was open to everyone.

Finding the cause

Before a Siberian shaman acts, he finds out what kind of illness is before him. He has several means.

He asks. Where did it begin? What did the sick person do before? Has anyone in the family died lately? Did the hunter kill a bear? The answers point to a broken rule or to a dead kinsman.

He lets his helpers tell him. In the first part of the session he sends them out to look, and they report in his own voice.

He casts. The commonest way is to throw the drumstick. It is carved with a hollow side and a rounded side. If it lands hollow side up, the answer is yes. The shaman throws it for each person present in turn, and people take the result seriously. Among the herders of the south the shoulder blade of a sheep is laid in the fire, and the cracks that form are read.

He dreams. A shaman who is asked to treat someone will often say that he must sleep on it first.

Only then does he say what must be done: a journey for the soul, a driving out, an offering, or nothing. The sources mention again and again that shamans refused cases. A shaman who saw that the soul had already crossed to the dead said so and did not begin.

The ways of healing

Bringing the soul back. The journey has been described. Among the Nanai of the Amur the work did not end with the return. The shaman who had found a child's strayed soul did not always put it back into the child. He took it to a safe place of his own in the other world and kept it there under guard. The parents brought him gifts each year for his care. A child whose soul was in keeping could not be reached by harm.

Taking out. Where a spirit or an object sits in the body, the shaman sucks at the place. He spits out what he has drawn: a worm, a small stone, a clot. Or he strokes the body with his hands or with the drum and shakes off what clings to them.

Moving the illness. A figure of straw, wood or dough is made. The shaman calls the spirit of the illness out of the sick person and into the figure. The figure is then carried far off, burned, or set on the water. In place of a figure a live animal may be used. Among the Buryats a goat was led three times round the patient, and the illness was sent into it.

Exchange. The being that holds the soul is offered another life in its place. A reindeer or a horse of a named colour is killed, and its soul goes where the patient's would have gone. The hide is hung on a pole with the head pointing in the right direction, up or down.

Smoke and breath. The patient and the house are smoked with juniper, wild rosemary or thyme. The shaman blows on the crown of the patient's head.

Guarding. After a cure the shaman may carve a small figure to house one of his helpers and leave it with the family. It must be fed with fat and smoke. A sickly child was given a new and ugly name, or a boy was dressed as a girl, so that the spirits would not know him.

Rules afterwards. For three days after a session nothing may be given or lent out of the house. No stranger may enter. The fire is not allowed to go out. What has been closed must be left closed.

Beside the shaman stood other healers. Bonesetters set limbs and rubbed strained backs. Midwives delivered and treated children. Herbalists knew the plants. Among the Buryats there were also lama physicians of the Tibetan school from the eighteenth century on; chapter 64 comes back to them.

Several Siberian remedies are now sold in the West.

Remedy	People	Old use
Golden root (*Rhodiola rosea*)	Altai, Sakha	Against tiredness and for strength in the cold
Chaga, a fungus of the birch (*Inonotus obliquus*)	Khanty and others	A tea for the stomach and for wasting illness

Remedy	People	Old use
Wild rosemary (*Ledum palustre*)	Whole forest zone	Smoke for cleansing; a tea for coughs
Velvet antler of deer	South Siberia	Strengthening after illness
Fly agaric (*Amanita muscaria*)	Koryak, Chukchi, Khanty	Eaten, mostly by ordinary people at feasts, for strength and visions

The fly agaric has drawn much attention in the West. In Siberia itself it was a minor aid. Most shamans did not use it, and some looked down on those who needed it.

Suppression and return

The Soviet state set out to end shamanism. From the late 1920s shamans were classed with rich peasants and priests. They lost the vote and were taxed heavily. Their children were kept out of schools. In the 1930s many were sent to camps or shot. Drums and coats were burned in public or taken to museums, where thousands still lie. Young people were taught that the shamans had been frauds who lived off the poor.

The knowledge did not vanish. Old people went on singing over the sick in secret, without drum or coat. Some used the lid of a pot or a bundle of twigs. Children who had the signs of the call were taken quietly to those who knew.

After 1990 it all returned to the daylight within a few years.

In Tuva the writer and scholar Mongush Kenin-Lopsan had collected the shamans' songs through the Soviet decades. In 1992 he founded a society of shamans named Dungur, the Drum. It opened a house in the capital where shamans see clients for a fee, much like a clinic. Other societies followed. In the Sakha Republic healers formed an association and the government declared shamanism part of the national heritage. Among the Buryats a body of shamans holds public rites at Lake Baikal each summer.

The new shamans differ from the old. Many live in towns. They serve strangers, are paid in money, and treat the troubles of modern life: drink, unemployment, bad luck in business. Piers Vitebsky has observed that the old shaman worked for a clan, inside a world that all its members shared. The new one works for single clients who come and go (Vitebsky 1995). The form is alive. Whether the medicine is the same is a question that the people of Siberia are asking themselves.

What has been measured

The Siberian shamans have hardly been measured. Three studies on Western practitioners of drum journeys give some idea of the state.

In Austria, volunteers who had learned to journey listened to drumming with and without the instruction to journey. The instruction changed what they experienced. They reported heaviness, a slower heart, images like dreams, and the sense of leaving the body. The stress hormone cortisol fell in both conditions, and not more with the drum than with quiet music (Gingras 2014).

In a scanner, fifteen experienced practitioners listened to drumming and entered their trance. Three regions of the brain that are known as hubs of attention to the inner world became more closely linked with one another. At the same time the pathway that carries sound from the ear became less linked with the rest. The authors spoke of a brain that holds an inner stream of images steady and shuts the outer world out (Hove 2016).

A third study recorded the brain waves of trained practitioners during a drum journey and compared them with people who merely listened. The practitioners showed a different pattern, with more fast activity, and by one mathematical measure their brain state resembled the state seen under psychedelic drugs (Huels 2021).

These studies say that the state is real, that it can be entered at will by trained people, and that it differs from rest and from ordinary listening. They say nothing about whether a soul is fetched or a patient healed.

What stands out in Siberia

1. **Loss of the soul is the leading illness, and the journey is the leading cure.** The shaman goes where the soul is.
2. **The world has depth, and the depth is mapped.** Nine skies, a river with a source and a mouth, a tree with roots and crown. The shaman's work is movement along that depth.
3. **The journey is sung aloud.** The patient and the clan travel with the shaman.
4. **Rhythm is the mount.** The drum is brought to life from a tree and an animal and carries the shaman.
5. **The healer wears his own bones.** What was done to him when he was made is shown on his coat.
6. **The illness of one is the illness of the clan.** The shaman is the place where it is gathered and dealt with.
7. **A cure ends with closing.** For three days nothing leaves the house.

The same medicine was practised at the other end of the northern forest, in Europe itself.

The Sámi

The Sámi are the native people of the far north of Europe. Their land, Sápmi, runs across Norway, Sweden and Finland to the Kola peninsula in Russia. They number about eighty thousand. They are known as reindeer herders, though only a minority herd today. Others have always lived by fishing on the coast and in the rivers.

Their healer was the *noaidi*. He is the only shaman of Europe whose work was described by people who saw it.

The oldest account is in a Latin chronicle of Norway from about 1200. Christian merchants are at table with Sámi hosts. The woman of the house suddenly falls down as dead. The Sámi say that she is not dead. Her soul has been snatched by the spirit of an enemy. A man skilled in such matters spreads a cloth and makes ready. He raises a small drum painted with figures: a whale, a reindeer with a sledge, a boat with oars. He sings and leaps for a long time and then falls to the ground. His face turns black, he foams at the mouth, his belly bursts, and he dies. A second man tries, and succeeds. The woman rises unhurt. She tells what happened to the first. His spirit had taken the shape of a whale and was crossing a lake at speed. An enemy spirit, in the shape of sharpened stakes hidden on the lake bed, had ripped its belly open.

Everything is there: the soul that is taken, the drum, the fall, the journey in animal form, the fight, and the danger to the healer.

The fuller accounts date from 1670 to 1770. Sweden and Denmark-Norway had decided to make real Christians of the Sámi. Clergymen were sent to describe the old religion so that it could be rooted out. The Uppsala professor Johannes Schefferus gathered their reports in a Latin book, *Lapponia*, in 1673. It was translated within ten years into English, German, French and Dutch. The Norwegian missionaries of the next generation wrote down long confessions of old *noaidi* (Bäckman 1978; Rydving 1993).

The same campaign destroyed what it described. Drums were handed in, seized and burned. In Sweden a Sámi named Lars Nilsson was burned at the stake with his drum in 1693. He had used it to try to bring his drowned grandson back to life. In Norway an old man named Anders Poulsen was tried in 1692. He explained every figure on his drum to the court and said that he had used it only to help people. He was killed in custody before the verdict. His drum was sent to Copenhagen. It came back to the Sámi museum at Karasjok, and in 2022 it was handed over to the Sámi for good.

About seventy drums survive, nearly all in museums far from Sápmi (Manker 1938).

The Sámi ground

The Sámi world has several regions.

The living share the land with the *sáiva* people. These live inside certain holy mountains and under certain lakes. Their life is like that of the Sámi and better: they are rich in reindeer and always content. A Sámi family is tied to one or more such places. The *noaidi* gets his helpers there.

The dead go to a land under the earth ruled by an old woman, the Mother of the Dead. Deeper still lies the land of Rota, who sends plague and death.

Above are the powers of the sky: the Sun, the Thunderer, the Wind Man. On the earth and in the tent live the goddesses who care for women and birth. The Mother of the Beginning receives the soul of a child from above and passes it to her daughters. One daughter makes its body in the womb. The others guard the door and the hearth.

A person has a soul of the body and a soul that can travel. In illness the travelling soul has gone to the land of the dead, drawn there by dead relatives. The Sámi explained this to the missionaries as the San explained it to Lorna Marshall. The dead miss the living and want them near. They do it out of love.

The *noaidi* had three animal helpers from the *sáiva*. A bird carried him and scouted for him. A fish guided him down to the land of the dead. A reindeer bull fought for him. When two *noaidi* quarrelled, their bulls fought, and if a bull was wounded its master fell ill. He also had helpers in human form, the *sáiva* people themselves. They came to a young man unasked, offered their service, and taught him.

The drum as an instrument of reading

The Sámi drum was a tool of healing and still more a tool of reading. That sets it apart from the Siberian drum.

There were two main forms. In the south the drum was a hoop of bent wood with a skin on one side, like the Siberian drum. In the north it was a bowl hollowed from a pine burl, with the skin over the opening. The skin was painted with red juice from chewed alder bark.

A southern drum has the sun at the centre, as a diamond with four rays. Around it stand the figures of the whole world. There are the Thunderer and the Wind Man, the goddesses of birth and the Mother of the Dead. There are the holy mountain, the reindeer in its pen, the storehouse, the bear, the church and the village of the settlers. A northern drum is divided by lines into three or five bands, one above another: sky, earth and the lands below.

To consult the drum, a man laid a brass ring or a small piece of bone on the skin. He beat the edge lightly with a hammer of reindeer antler, shaped like a T. The pointer danced over the figures. Where it went, and how, was the answer. Movement with the sun was good. Movement against it was bad. If it came to rest on a god, that god wanted an offering. If it crept to the land of the dead and stayed there, the matter was grave.

In the south nearly every household had such a drum. The head of the family asked it before a hunt, a journey or a move, as another man might look at the sky. Poulsen told his judges that he could find out who had stolen, comfort women in labour, and learn how his family was faring when he was away. The drum was the common instrument. The *noaidi* was the man called for what the household drum showed to be too much for it.

The journey for the soul

When the pointer went to the land of the dead, the *noaidi* had to go there himself. The Norwegian missionaries heard the same account from many mouths around 1720.

The men and women of the settlement gather. The *noaidi* prepares himself. He beats the drum hard, sings, and moves faster and faster. He handles glowing coals and cuts himself, and it does not hurt him. Then he falls and lies as dead, without breath. Nobody may touch him. Not even a fly may settle on him.

While he lies there, the others sing without stopping. Their song is the *joik*, the old Sámi way of singing. One young woman has a special task. She must follow him in her song, find him in the other world, and call him back. If she stops, or cannot find him, he will not wake.

Meanwhile he rides his fish down to the Mother of the Dead. He asks for the soul of the sick person. She seldom gives it for nothing. The two bargain. He promises a reindeer, a certain one, of a certain colour and sex. If she accepts, he takes the soul and returns. The young woman's song reaches him and he wakes, very slowly. He says where he has been and what was promised. The reindeer is killed and its bones are laid whole in the earth, and the sick person recovers.

If the Mother of the Dead refuses every offer, the person will die, and the *noaidi* says so.

What remained

The drums fell silent in the eighteenth century. Sámi healing did not end. It took forms that the church could not seize.

In the north of Norway today there are men and women known as readers or helpers. People go to them, or telephone them, for bleeding, pain, burns, skin trouble, anxiety and bad nerves. The healer says a formula under his breath. It is partly a verse from the Bible and partly words that were handed down in the family. The best-known skill is the stopping of blood. A person with the gift is called when someone has cut himself badly, and is said to stop the bleeding from a distance.

Three rules govern this healing. The gift is passed on in secret to one person of the next generation, and the old healer loses it when he gives it away. The healer takes no payment. And the patient must not say thank you. Thanks would close the account, and the healing is not a sale (Miller 2007).

Older bodily treatments went on beside the words. Blood was drawn with a cupping horn. A small cone of dried birch fungus was set on a painful joint and burned down to the skin. The Chinese physician does the same with a cone of mugwort, and for the same complaints. A child that sickened without cause was thought to carry the wrong name. It was washed and given the name of a dead relative who wished to "rise again" in it.

A survey of the population of northern Norway found that people of Sámi background had used a traditional helper about three times as often as their Norwegian neighbours (Kristoffersen 2017). A study was also made in psychiatric clinics of the same region. Sámi patients had used such help far more than Norwegian patients and wished it to be part of their care (Sexton 2008).

The knower of the Finns

The Finns and Karelians are distant relatives of the Sámi by language. Their healer was the *tietäjä*, the knower. He is of interest here for one reason. His whole method rests on a principle that chapter 8 listed as the third point of agreement among the old medicines. The name of an illness points to its place and origin. Whoever can state the origin commands the illness.

The knower worked with words. Collectors wrote down tens of thousands of his charms in the nineteenth century. Elias Lönnrot, who put together the Finnish national epic, was a country doctor. He wrote his medical thesis on the magic medicine of the Finns, and he later published a volume of the charms.

A healing ran as follows. The knower first found the cause, by lots or in a dream. Then he raised himself to a pitch. He stamped, ground his teeth, spat, and his hair stood up. The Finns said that his "nature" rose in him. Only in that state would the words bite. Then he recited the origin of the harm.

For a wound made by iron he told the birth of iron. Three maidens let their milk fall on the ground, black, white and red, and from it came the three kinds of iron. Iron hid from its elder brother Fire in the swamps. The smith found it and forged it. Iron swore an oath never to cut its kin. Then a hornet dropped venom into the water in which the blade was tempered, and iron broke its oath. Having told this, the knower spoke to the iron directly. I know your family, he said. I know where you were born and how you were shamed. Now stop the blood that you have let.

There was an origin for fire, to be spoken over burns. There were origins for the snake, the bear, frost, the stitch in the side, and for pain itself. At the end the knower sent the pain away to a named place. This was the Hill of Pain, where the Maiden of Pain gathers the aches of the world and boils them in a small pot.

In the Finnish epic the wise old singer Väinämöinen gashes his knee with an axe. He cannot stop the blood, because he has forgotten some words of the origin of iron. He must travel until he finds an old man who helps him, and only when the origin has been told in full does the charm take hold.

The body was treated in the sauna. A Finnish saying holds that if sauna, tar and spirits do not help, the illness is fatal. In the sauna the cupper drew blood, the masseur rubbed, the bonesetter worked on backs and joints, and women gave birth. In a Finnish trial of 114 people

with long-standing back pain, traditional bone-setting did at least as well over a year as physiotherapy and light exercise (Hemmilä 2002). The sauna itself has been studied in a large group. The study followed 2,315 Finnish men for twenty years. Those who went four to seven times a week had less than half the rate of sudden death from the heart of those who went once (Laukkanen 2015). That is an association, and healthy men may simply go more often. No other old remedy has been followed in so many people for so long.

What stands out among the Sámi and the Finns

1. **Reading is separate from healing, and reading is common.** Every household read its drum. The *noaidi* came when the reading called for him.
2. **The dead draw the living to them out of love.** The cure is a bargain: another life in exchange.
3. **A woman's song brings the healer back.** His return is the task of someone else.
4. **To know the origin is to command.** The Finnish knower cures by telling an illness where it comes from, and sends it to a named place.
5. **The gift is handed on and not sold.** There is no fee and no thanks.

15. Inner Asia and the Himalaya

A belt of living traditions

South of Siberia a belt of country runs from Korea across Mongolia and northern China to the Himalaya and the hills of Southeast Asia. In all of it shamans have worked beside the great religions and the learned medicines for two thousand years. Buddhist monks, Confucian officials and Communist parties have each tried to push them aside. They are still there, and in several countries they are more numerous now than fifty years ago.

This chapter describes four of these traditions: the Mongols, the Koreans, the peoples of the Nepal hills, and the Hmong. It ends with a short survey of their neighbours. The learned medicines of the same region, Chinese, Tibetan and Mongolian, are the subject of Part V. The two kinds of healing have always lived side by side, and they share more than their practitioners admit.

One sign of that shared past is in Chinese writing. The oldest form of the character for a physician was built on the sign for a shaman, the *wu*. Later that part was replaced by the sign for a jar of medicinal wine. The change in the character records a change in the profession. Chapter 44 returns to it.

The Mongols

The Mongols call a male shaman *böö* and a female shaman *udgan*. The second word is the same among Turkic and Mongolic peoples from the Altai to the Pacific. The first differs from people to people.

The ground of Mongol shamanism is the Sky. The Eternal Blue Sky, *Tenger*, is father of all. The Earth is mother. Between them live the lords of mountains, rivers and passes, to whom every traveller still adds a stone at the cairns called *ovoo*. A family is guarded by its ancestors. Small figures of felt or metal called *ongon* are made for them, kept in the tent, and fed with milk and fat.

The oldest Mongol book, the *Secret History* of the thirteenth century, shows a shaman at the centre of power. A man named Teb Tengri spoke with the Sky and proclaimed Genghis Khan's right to rule. He grew too bold, and the khan let his brothers break his back.

From the sixteenth century the Mongol princes turned to Tibetan Buddhism. In the 1570s Altan Khan forbade blood sacrifice and ordered the *ongon* burned. The lamas took over many tasks of the shamans and gave them a Buddhist form. In the forests of the north, among the Darkhad and the Buryats, the shamans held out. The socialist state of the twentieth century struck both. In the purges of the late 1930s thousands of lamas and many shamans were killed.

After 1990 shamans multiplied, most of all among the Buryats of north-eastern Mongolia. Manduhai Buyandelger lived with them in the years of economic collapse. She found a community that explained its misfortunes by its lost history. The Buryats had fled Russia after the revolution. A large part of their men had been shot in the purges. For fifty years nobody was allowed to mention the dead, hold rites for them or even remember their names. Now the cattle died, the jobs were gone, and people fell ill. The shamans said that the forgotten ancestors had come back as restless spirits and were asking to be known. A family's cure began with the search for its own dead. Often their names had to be recovered through the shaman's trance, since no living person knew them (Buyandelger 2013).

This is an illness that lies in a family's past. Chapter 6 gave the theory's reading: the ancestors are first passages, and what they left open stays open at the depth of the family.

A Mongol session resembles a Siberian one. The shaman wears a coat with strips of cloth and metal, a head-dress with a fringe that hides the eyes, and a bronze mirror on the chest. He or she beats a drum or plays a jaw harp until an ancestor spirit enters. The spirit speaks through the shaman's mouth in an old person's voice. It asks for tobacco and milk tea, greets its descendants, scolds them, and tells them what is wrong and what to do.

Beside the shamans the Mongols have bonesetters, who belong to certain families and treat fractures and sprains with their hands. They have a household medicine of milk products, meat broths and rest. The old cure for a person worn out by illness was a summer of fermented mare's milk on good pasture.

The tale of the Nisan shaman

The Manchu, a Tungus people who ruled China from 1644 to 1912, kept shamans at court. They also kept a story that tells, better than any ethnography, what a shaman's journey for a soul was thought to be.

A rich man's only son dies while hunting. A woman of the village of Nisan is known as a great shaman. The father begs her to help. She puts on her bells, takes her drum and falls into trance. With her helpers she sets out for the land of the dead. She comes to a river. The lame ferryman demands his fee, and she pays him. She passes gate after gate by gifts and by threats. She finds the boy's soul playing in the city of the lord of the dead, seizes it, and runs. The lord's officer pursues her. They bargain. She buys years of life for the boy with a cock and a dog, and beats the price up from twenty years to ninety.

On the way back she meets her own dead husband. He is boiling a pot of oil. He demands that she bring him back as well. She tells him that his body has long since rotted and that it cannot be done. He threatens her, and she has him thrown into the pit from which nobody returns. She comes back and fans the soul into the boy's body. He wakes.

The story does not end happily. Her mother-in-law complains to the emperor that she saved a stranger and destroyed her own husband. Her drum and bells are taken away and thrown down a well (Nowak 1977).

The tale holds the whole craft. It has the river, the fee, the gates and the bargaining for years of life. It has the limit of what can be done, and the price the shaman pays.

Korea

Korea has more working shamans than any other industrial country. The shamans' own associations and the press speak of hundreds of thousands. No exact figure exists. Most are women. They are called *mudang*, or more politely *mansin*, a word that means ten thousand spirits.

There are two kinds. North of the Han River the shaman is called by the gods through the spirit sickness that chapter 10 described. She is possessed, and the gods speak through her. In the south the office is inherited in families. The southern shaman sings and dances for the gods and is not possessed.

For five centuries the Confucian state held shamans in contempt and placed them in the lowest class. The Japanese colonial government and the modernising governments after 1960 called them a disgrace and a superstition. In the 1970s village shrines were pulled down. Then the mood turned. Shaman rites were declared part of the national heritage, and several shamans have been named living treasures. In the cities shamans today advertise, keep offices and see clients about business, examinations and marriage as well as illness.

The ground. A Korean house is full of gods. The House Lord lives in the roof beam. The Birth Grandmother lives in the inner room and gives and guards children. The Seven Stars give long life. The Mountain God rules the hill behind the village. There are generals and kings of old, and child gods who died young. Around the house move the dead. Those who died well and have descendants are ancestors. Those who died young, by violence, away from home or unmarried are wandering ghosts, hungry and resentful.

The gods and the dead are not evil. They are touchy. They want attention, food and entertainment. If they are neglected they stir, and the household suffers. The anthropologist Laurel Kendall, who worked for years with a shaman near Seoul, stresses that the unit of illness is the house and not the single person. One member has a pain, another loses money, the son fails his examination, the husband drinks. The shaman treats these as one trouble. The gods of the house are restless (Kendall 1985).

Diagnosis. A woman comes to the shaman, usually on behalf of her whole family. The shaman shakes a brass rattle and casts rice grains or coins on a tray. She asks the ages and birth years of everyone in the house. Then she says what she sees: a grandmother who died with a grudge, a child who was not mourned, a god whose shrine was moved without his leave. She names the remedy. A small matter needs a simple offering. A large one needs a *kut*.

The illnesses. Koreans speak of *han*: a knot of grief and resentment that has had no outlet. A person who has swallowed wrongs for years carries *han*. The dead carry it too, and theirs is the more dangerous. A related illness is *hwabyeong*, fire sickness. It strikes mostly women in middle age who have held back anger for a long time. They feel a lump pressing upward in the chest or throat, heat rising, a pounding heart and a wish to sigh. Korean psychiatrists have described it carefully, and American psychiatry listed it as a syndrome bound to Korean culture.

The kut. The great rite takes a day and a night, or several days. The shaman and her helpers set up a table of offerings: rice cakes, fruit, a pig's head, wine. Drummers and gong players sit to one side. The rite has a fixed number of parts, twelve in the Seoul tradition. In each part the shaman puts on the dress of another god or group of gods and lets them come.

The gods are greedy and funny. The Official complains that the pig is too small. The General struts and demands money, and the women of the house tuck notes into his hat band while they laugh and protest. The Birth Grandmother blesses the children. When all the gods have been fed and flattered, the ancestors are called. This part is the heart of the rite. A dead mother speaks through the shaman to her daughter. Both weep. Each says what was never said. The dead one is given food, clothes of paper and money for the road, and is sent off content.

The last part is for the wandering ghosts. Food is thrown out at the gate for them, and they are told to leave.

The road of the dead. In the south-west of Korea the rite for a dead person contains an act that deserves special notice. A long strip of white cotton is tied into a row of large loose knots. The knots stand for what binds the dead person to this world: the grief, the grudges, the unfinished business, the *han*. The shaman sings and dances with the cloth. One by one she pulls the knots out, with a slow shaking of the strip, until it runs smooth. Then the smooth cloth is stretched out as a road. A small boat or basket that holds the soul is passed along it to the other world.

Illness and misfortune are tied knots, and the cure is to undo them along the cloth on which they were tied. The Navajo, the Lakota and the Hawaiians use the same image in their own rites. Chapter 2 introduced the knot as the first form that cannot be undone by pulling. Chapter 23 gathers these cases.

Princess Bari. In the rite for the dead the shaman sings the long song of the Abandoned Princess. A king has six daughters and wants a son. When the seventh child is again a girl, he has her thrown away. She is saved and raised by an old couple. Years later the king and queen fall mortally ill. Only water from the well of life in the other world can cure them. The six daughters at court refuse to go. The seventh, who owes her parents nothing, goes. She crosses the lands of the dead, serves the guardian of the well for nine years, and brings the water back. She arrives as the funeral procession is leaving the palace, and revives her parents.

Offered half the kingdom, she asks to be the one who guides the dead. Korean shamans call her their ancestor.

The song says what chapter 10 said. The healer is the one who was cast out, who made the journey that the well-placed would not make, and who came back with what gives life.

The hills of Nepal

Nepal has more than a hundred peoples and languages. Hindu castes farm the valleys. In the hills live peoples of Tibetan and older stock: the Tamang, Gurung, Magar, Rai, Limbu, Sherpa and many more. Nearly all of them have shamans. In Nepali the general word is *jhankri*. Each people has its own: the Tamang *bombo*, the Gurung *poju*, the Limbu *phedangma*.

For most villagers the shaman is the first resort in illness. Health posts are far and badly stocked. Surveys of the paths that Nepali patients follow before they reach a hospital find again and again that the majority went first to a *jhankri*.

The ground. The hill peoples live among many unseen neighbours. The lords of the soil own each field and house site. Serpent beings live in springs and under old trees, and they are easily polluted. The forest has its masters. The dead who died badly wander as ghosts. Some neighbours are witches, who harm by envy and by a look. The planets send bad periods. And a person has a soul, or several, that can be lost.

The *jhankri* has helpers among these beings and a teacher among the dead shamans of his line. Many say that they were also taught by the forest shaman. He is a small golden-haired being who lives in caves. He carries off children who show the signs, keeps them for days or weeks, teaches them the chants, and sets them down again near the village. People fear his wife, who is large and fierce and would eat the children if she could.

The call and the tools. The call comes as shaking. A young person begins to tremble without cause, runs into the forest, or falls ill. An older shaman takes him on, and he learns for years. His drum is a hoop with skin on both sides and a carved wooden handle, held upright before the face. He wears a long white skirt, strings of bells crossed over the chest, a necklace of seeds and one of snake bones, and feathers on his head.

Finding the cause. The Nepali shaman has more means of reading than most.

He feels the pulse. He takes the wrists of the sick person, and often the elbow or the ankle too. He is not counting beats as a physician does. He feels in the pulse who is troubling the patient. The pulse beats one way for a ghost, another for a witch, another for an offended god of the soil. Shamans say that the pulse "speaks".

He counts rice. A handful of grains is dropped on a plate while he murmurs. He moves them aside two by two, or reads the heaps into which they fall. Odd and even give the answer.

He asks his helpers. He drums and sings until he begins to shake. Then a god or a dead shaman speaks through him and tells the family what has happened. They question the spirit directly, and it answers.

He looks at the signs around the case: where the patient went, what was eaten, who quarrelled, what was dreamed.

The illnesses. The findings fall into a known list.

- *An attack.* A ghost or spirit has struck the person, most often at a crossing of paths, a stream, a cremation ground, at noon or at dusk.
- *A witch.* An envious neighbour has sent harm into food or cast it with a look. Children and milk cows are the usual victims.
- *The serpent beings.* Someone has fouled a spring, cut a tree or ploughed where they live. The result is a skin disease, a swelling or sores.
- *The lord of the soil.* He was not given his due when the house was built or the field opened.
- *The planets.* The person is in a bad period of his birth chart.
- *Loss of the soul.* The person has had a fright: a fall, a barking dog, a clap of thunder. The soul jumped out and has stayed at the spot. This is the commonest illness of children.

Robert Desjarlais, who apprenticed himself to a shaman of the Yolmo people, has described soul loss as the villagers feel it. The body grows heavy. One has no wish to eat, work, talk or walk. Sleep is poor and dreams are dull. The light goes out of the eyes. People say of such a person that the soul is not at home (Desjarlais 1992).

The healing. Small matters are dealt with by sweeping and blowing. The shaman brushes the patient from head to foot with a broom or a bunch of leaves and blows a chant over him. Nepalis call this simply “sweep-blow”, and it is what most consultations amount to.

A serious case needs a night-long session. It is held in the patient’s house before the family and the neighbours. The shaman sets up an altar of rice, eggs, incense and small dough figures. He drums, sings the story of the origin of the world and of the first shaman, and calls his helpers. He shakes, leaps and dances. He may suck at the patient’s body through his fist and spit out a dark clot or a splinter. He may offer a chicken to the attacker, passing it round the patient first so that the bird takes the illness on. He may tie threads at the door.

For a lost soul he goes out, in song, over the hills and through the forest to look for it. Desjarlais stresses how the song is built. It names place after place, in great detail, and at each place the shaman asks whether the soul is there. The family follows the search. When he finds it he “hooks” it and brings it home. He sets it on the drum skin as a small moving point, sometimes a tiny insect. He tips it onto the patient’s head or into a bowl of food that the patient eats. Many patients say that they feel a jolt at that moment. Desjarlais’ own

conclusion is that the rite works by rousing the senses of a person who has gone dull. The noise, the smoke, the many places called to mind and the sudden touch all do this.

Nobody has followed the patients of Nepali shamans in a controlled study. Researchers who have asked patients find that most report relief for the common complaints, and that shamans send on the cases they judge to be beyond them. Health workers in Nepal have for that reason trained *jhankri* to recognise dehydration, pneumonia and severe mental illness and to refer such cases early.

The Hmong

The Hmong are a people of the mountains of southern China, Vietnam, Laos and Thailand. In the 1960s many Hmong of Laos fought on the American side in the war there. After 1975 some two hundred thousand of them came as refugees to the United States, France and Australia. Their medicine came with them and met the hospital head-on.

The ground. A Hmong person has many souls. Different families count three, seven, twelve or more. One stays with the body and one wanders. One will stay at the grave, one will go to the ancestors and one will be born again. Health means that all are at home. The souls of small children are timid and leave easily. A fall, a loud noise or a time of loneliness can send a soul off, and spirits of the wild can catch it and hold it.

Around the house live tame spirits who guard the door, the hearth, the bed and the central post. Outside are the wild ones. Every household keeps an altar for the helpers of the family's shaman, if it has one.

The shaman. The Hmong shaman is called *txiv neeb*, father or master of the helping spirits. Men and women both serve. Nobody chooses the work. The helpers of a dead shaman choose a new master and announce themselves through a long illness. The first shaman, in the old stories, was a man named Siv Yis who came down from the sky to fight the spirits that eat people. When he returned to the sky he left his tools behind, and the shamans of today use them.

The tools are plain. A wooden bench is the shaman's horse. A black cloth over the face shuts out this world. There are a gong, a hoop with iron rattles, finger bells and a sword. Two halves of a buffalo horn are thrown to ask yes or no.

The session. The shaman sits on the bench before the altar, face covered, and begins to chant and to bounce. The bench rocks like a galloping horse. An assistant beats the gong and stands by to catch him. At the height of the ride the shaman leaps to his feet on the bench with his eyes covered. He is riding with his troop of helpers into the other world. He tells where he is. He finds the spirit that holds the soul and bargains. The price is usually the soul of an animal. A pig or a chicken is brought. Its soul is sent to stand in for the patient's. Paper money is burned for the journey. Then the animal is killed, cooked and shared.

A simpler rite of soul calling is done at the door by any elder who knows the words. He holds a live chicken or two eggs and calls the soul by name to come home, from the fields, from the forest, from the road, from the hospital. Afterwards white strings are tied round the wrists of the patient to bind the soul in.

The meeting with the hospital. The best-known account of Hmong medicine is the story of a small girl. Lia Lee was born in California in 1982. At three months she had her first seizure, just after her sister slammed the front door. Her parents knew what it was. The noise had frightened her soul away, and a spirit had caught it. The Hmong name for the illness means "the spirit catches you and you fall down". It is serious, and it is also a mark of distinction, since people who have it often become shamans.

The doctors of the county hospital diagnosed severe epilepsy and prescribed a changing list of drugs. The parents, who spoke no English and could not read, gave them irregularly, because they saw that the drugs made her dull and feared that they were making her worse. They also held soul callings and sacrificed animals. The doctors saw parents who would not follow orders, and had the child placed in foster care for a time. At four she had a massive seizure with blood poisoning and was left without higher brain function. Her family took her home and cared for her for twenty-six years.

Anne Fadiman told the story with equal respect for both sides (Fadiman 1997). Her book is read in most American medical schools. Its conclusion is that the child was failed by two groups of people who each wished her well, and who had no shared account of what was wrong.

The hospital in question changed its practice. From 2009 it has had a formal policy for Hmong shamans. After a short course they wear a hospital badge and may hold a fixed set of rites at the bedside. Soul calling and the tying of strings are among them.

Death in sleep. The Hmong refugees brought another lesson. In the late 1970s and the 1980s more than a hundred healthy Hmong men in the United States died suddenly in their sleep. Doctors named it sudden unexplained nocturnal death. Later work linked it to an inherited fault in the rhythm of the heart that is common in Southeast Asia. The men who died had more to bear than their genes. Shelley Adler interviewed Hmong immigrants about a nightmare that they knew well: one wakes unable to move, with a being sitting on the chest. In Laos this spirit was kept off by rites that the refugees could no longer hold. Adler argued that the terror of men who believed themselves without protection was part of what killed them (Adler 2011). If she is right, these deaths belong beside the Australian cases of the last chapter.

Neighbours

The same patterns continue south and east. A few examples must stand for many.

The binding of the soul. The Thai and the Lao speak of the *khwan*, a soul of thirty-two parts that live in the parts of the body. It leaves in fright, in illness and on journeys. At every change in life an elder calls the *khwan* home. He ties white cotton threads round the wrists of the person, with a blessing, to hold it in. Guests at a Lao wedding or homecoming do the same. The Hmong strings are the same act.

Oracles of Ladakh and Tibet. In the Buddhist Himalaya, men and women called *lha-pa* and *lha-mo* are possessed by local gods. In trance they suck illness from the patient's body through a small tube or straight through the skin. They spit out a dark fluid, small stones or needles. Tibetan Buddhism has its own rite for a lost soul. A lama calls the soul back and offers a dough figure dressed in a scrap of the patient's clothing as a ransom in its place.

The winds of the Malays. The Malay healer speaks of the inner winds. Each person is born with certain winds, which are gifts and leanings: for music, for fighting, for love, for healing. A wind that cannot blow freely thickens and makes its owner ill. In the old rite of the Malay east coast the patient is brought into trance with music. He acts out his wind, as prince or warrior, until it moves again (Laderman 1991).

The plant in the other world. The Iban of Borneo say that every person has a plant double, something like a clump of bamboo. It grows in the other world beside those of his family. When the plant wilts, the person sickens. The shaman, in his song, travels to the garden, weeds around the plant, props it up and fences it against harm.

These are four pictures for one event. A part of the person that should be in place, moving and held, is out of place, stuck or unprotected.

16. The Amazon: plant teachers

The forest and its healers

The basin of the Amazon and the Orinoco is the largest forest on earth. Before 1500 it held several million people. Today some four hundred native peoples live there, most of them small. Around them lives a far larger population of mixed descent, the river people and the townspeople of Iquitos, Pucallpa, Leticia and Manaus.

Both groups have healers who work in the same way. Among the native peoples each language has its word: the Shipibo *onanya*, the Shuar *uwishin*, the Tukano *payé*, the Yanomami *shapori*. Among the Spanish-speaking river people of Peru the healer is a *curandero* or a *vegetalista*, one who works with plants. In Colombia he is a *taita*, a father.

Amazonian healing differs from everything described so far in one respect. Its teachers and its chief means are plants. A healer of the San raises his potency by dancing. A Siberian shaman rides his drum. The healer of the upper Amazon drinks a plant, sings what the plant has taught him, and blows tobacco smoke.

The sources are rich. Richard Spruce, an English botanist, saw the vine brew drunk on the Vaupés river in 1852. Gerardo Reichel-Dolmatoff described the Tukano of Colombia (Reichel-Dolmatoff 1975). Michael Harner described the Shuar. Luis Eduardo Luna and later Stephan Beyer described the mestizo healers of Peru (Luna 1986; Beyer 2009). Angelika Gebhart-Sayer and others described the Shipibo. In 2010 a Yanomami shaman, Davi Kopenawa, published his own account of his training and his world. It was written down by a French anthropologist who had known him for thirty years (Kopenawa 2013).

The ground: a forest of persons

Chapter 9 gave the Amazonian view in outline. Every kind of being is a person. The peccaries, the jaguars, the anacondas, the trees and the river dolphins have their own houses, chiefs and feasts. Among themselves they look like people. Only their bodies, which are like clothing, differ from ours.

It follows that life in the forest is a matter of dealings between peoples, and that those dealings are dangerous. To eat an animal is to eat someone. The animal's kin or its master may take revenge by sending illness. Among the Tukano the *payé* visits the Master of Animals in his house inside the hills. He bargains with him for game, and the price is human souls. The deaths of people repay the deaths of animals. Many Amazonian peoples "bless" meat with chants before it is eaten, to take the animal's weapons out of it.

Plants are persons too. Each has what the Spanish-speaking healers call a mother, an owner who can appear in human form. Some plants are strong and knowing. They are the teachers.

The world has layers, as in Siberia. Above is the sky with its peoples. Below the rivers lies a water world with cities of dolphins, mermaids and great snakes. The mestizo healers have added what they know of the modern world. In the visions that the painter and former healer Pablo Amaringo recorded there are spirit hospitals with operating tables, spaceships, and doctors from distant planets (Luna 1991).

The healer is the one who can travel between these peoples and speak with them. Tobacco and the vine give him the sight. The songs are his language.

Tobacco

Tobacco comes first. It is the oldest and the most widespread of the sacred plants of the Americas. Johannes Wilbert, who gathered the records for South America, found it used by nearly three hundred peoples and in every way that a plant can enter a body. It is smoked, chewed, drunk as juice, licked as a paste, snuffed, and given as an enema (Wilbert 1987).

The tobacco of the healers is not the mild leaf of cigarettes. It is a stronger species, grown in gardens, with several times as much nicotine. The Peruvian healers call it *mapacho*. Novices in some peoples drink tobacco juice until they fall down as dead, and that is their first journey.

For the Amazonian peoples tobacco is the food of the spirits. The spirits crave it and cannot grow it. The healer feeds them and they come. Smoke is also the healer's breath made visible. He blows it over the crown of a patient's head, into the hands and over the chest. It cleans, it seals, and it carries the song. Among the mestizo healers there is a specialist, the *tabaquero*, who works with tobacco alone.

The vine and the leaf

The brew for which the Amazon is known is made from two plants.

The first is a thick woody vine of the forest, *Banisteriopsis caapi*. In Quechua it is called *ayahuasca*, vine of the souls or of the dead. The second is the leaf of a shrub of the coffee family, *Psychotria viridis*, called *chacruna*. Further north the leaf of another vine is used. Pieces of the pounded vine and a mass of leaves are boiled together for many hours and cooked down to a thick brown liquid.

The chemistry was worked out in the twentieth century. The leaf contains a compound, DMT, that brings strong visions when it reaches the brain. Taken by mouth it does nothing, because an enzyme in the gut destroys it. The vine contains compounds that switch that enzyme off for some hours. The leaf alone does nothing, and the vine alone gives little vision. Together they act for about four hours. How the peoples of the forest found the one pair that works, among tens of thousands of plants, is not known. When the healers are asked, they say that the plants told them.

The healers do not see it as the chemists do. For them the vine is the main plant. It is the one that teaches and gives strength. The leaf gives light, so that one can see what the vine shows. Many healers “diet” the vine alone.

The brew has many names: *yagé* in Colombia and Ecuador, *natem* among the Shuar, *nixi pae* among the Huni Kuin, *oni* among the Shipibo. The river people of Peru call it *la purga*, the purge, because it makes most drinkers vomit. That name says how they understand it. It is first of all a cleanser.

How old the practice is, nobody knows. A leather bundle about a thousand years old was found in a rock shelter in Bolivia. It held traces of the compounds of both plants, together with cocaine and a snuff (Miller 2019). That is the oldest firm evidence. The common claim of five thousand years has no support. Some researchers think that the brew spread through the lowlands of Peru only in the last few centuries, along the mission and rubber routes.

The teachers

The vine is one teacher among many. Chapter 10 described how a healer learns from a plant: months alone on a bland diet, drinking the plant and attending to dreams. The Peruvian healers call any plant that teaches in this way a *planta maestra*. The table lists the best known.

Plant	Kind	What the healers say it gives
Ayahuasca (*Banisteriopsis caapi*)	Vine	Sight, songs, knowledge of all other plants
Tobacco (*Nicotiana rustica*)	Herb	Strength, protection, the food that calls the spirits
Toé (*Brugmansia* species)	Shrub with trumpet flowers	Sight of sorcery and of what is far away; dangerous, and feared
Chiric sanango (*Brunfelsia grandiflora*)	Shrub	Drives out cold and stiffness; makes the body firm
Ajo sacha (*Mansoa alliacea*)	Vine that smells of garlic	Cleans bad luck; sharpens the hunter
Bobinsana (*Calliandra angustifolia*)	Riverside shrub	Opens the heart; songs of gentleness
Chullachaqui caspi	Forest tree	Bond with the forest and its guardian

Plant	Kind	What the healers say it gives
Lupuna (*Ceiba* species)	The largest tree of the forest	Great protection; also used by sorcerers
Camalonga (*Thevetia* seeds)	Seeds steeped in cane spirit	Dreams that show who has done harm

Most of these plants give no visions. A teacher plant works slowly, in dreams and in the body. Some are poisonous in careless hands. *Toé* and its relatives have killed people.

Healers name themselves after their plants and means. An *ayahuasquero* works with the vine and a *tabaquero* with tobacco. A *palero* works with the barks of great trees. A *perfumero* works with scents. One who heals with prayers alone is an *oracionista*. A healer usually commands several. The highest rank among the mestizos is the *banco*. The word means bench. He lies face down, and the spirits come and sit on him to speak. Among the Shipibo the highest was the *meraya*, who could vanish and change shape. People say that there are no more of them.

Songs, phlegm and darts

What does a healer have when his training is done? The healers name three possessions.

Songs. The *icaros* are the centre. Each was given by a plant, an animal or a spirit, during a diet. A healer may hold a hundred or more. They are sung, whistled, or breathed almost without sound. Some are in Quechua, some in the tongues of forest peoples, some in a language that only the spirits use. Each has a task. One calls the mother of the vine. One brings the visions on and another takes them away when a drinker is frightened. One cleans. One closes the body against harm. One calls a lost soul home. One makes a remedy work. Healers say that a plant without its song is only a leaf. The song is what the plant does, in a form that a person can carry.

Phlegm. In his chest the healer carries a thick phlegm. He received the first of it from his teacher or from the plants. It grows with tobacco smoke and with every diet. He can raise it into his throat when he needs it. It protects him. When he sucks a dart out of a patient, the phlegm catches it, so that it does not pierce him.

Darts. Illness sent by a sorcerer is a dart. It is spoken of as a small sharp object: a thorn of a palm, a splinter of bone, a fish spine, a razor blade. It lives in the sorcerer’s phlegm, and he shoots it with his breath. The healer has such darts too. He keeps them to defend himself and to send back what was sent. Chapter 10 told how a Shuar novice decides which of the two he will be.

The healer has helpers besides. There are the mothers of his plants, animals of the forest and the river, and the souls of dead healers. He calls them with his songs, and they stand around him while he works.

Finding the cause

A sick person comes to the healer's house in the evening. The healer listens to the story. He may feel the pulse at the wrist. Mestizo healers attach weight to the pulse. A racing or jumping pulse with no fever tells them that the trouble is not a simple bodily one. He may look at the eyes and smell the breath.

Then he decides how to look further. For a small matter he blows smoke and sings and watches what the smoke does. For a serious one he drinks the vine that night. In the old practice the healer drank and the patient did not. The brew is the healer's instrument for seeing, as the X-ray is the radiologist's. Healers say that under the vine a sick body is transparent. The illness shows as a dark place, a tangle, a knot of worms, or a dart lodged in the flesh. They see whether it is a natural illness or one that was sent. If it was sent, they see who sent it.

The first question is always that one: sent or not sent. Illnesses that merely happen are called illnesses of God in Peru. They are treated with herbs, baths and diet, or the patient is told to go to the health post. The healers are firm about this. They do not treat everything, and they say so. Illnesses that were sent are their proper work.

The illnesses

The healers of the upper Amazon name their illnesses by cause. The list below is from the mestizo tradition of Peru. The native peoples have their own names for much the same illnesses.

Harm (*daño*). Somebody has paid a sorcerer, out of envy or revenge, and he has shot a dart or sent a spirit. The pain is sharp and fixed in one place, or a swelling appears that no medicine reduces. The person wastes. Envy is named as the motive in most cases: of a good harvest, a new boat, a faithful wife.

Bad air (*mal aire*). The person passed a place where the dead walk, or met something in the forest at dusk. He has headache, nausea, chills and a great tiredness.

Fright (*susto* or *manchari*). The soul has left after a shock. It is the illness of children above all. The child cries at night, starts in its sleep, loses weight and has diarrhoea.

Crossing (*cutipa*). The person has broken a diet, or come too close to a strong animal or plant, and its nature has passed into him. The classic victim is an unborn or newborn child whose father has killed a certain animal or touched a certain plant. A child crossed by the sloth is slack and slow. A child crossed by a boa is swollen. A dieter who eats pork is crossed

by the plant he was dieting and breaks out in sores. The word comes from Quechua and means to give back in kind.

Salt (*saladera*). The person has a run of bad luck. Nothing succeeds: work, love, hunting, trade. The healers treat this as an illness like any other, and one of the commonest.

The knot in the belly (*pulsario*). A hard, throbbing lump is felt at the mouth of the stomach. It is said to be made of grief or anger that has been swallowed for a long time. It is common in women. The healer works on it with his hands and with songs until it softens.

Love magic (*pusanga*). A person is helplessly drawn to another who has used a charm. This is treated as a kind of harm.

Among the forest peoples the list widens. The masters of animals send illness for careless killing. The dead draw the living after them. And there are the diseases that came with the white people. Davi Kopenawa describes how the Yanomami understand epidemics. They are a smoke, *xawara*, that rises when the earth is opened for gold and metals. It spreads over the forest and eats people. The shamans cannot stop it. They can only hold up the sky a little longer (Kopenawa 2013).

The night of healing

A healing session is held after dark in the healer's house, with all lights out. Patients and their families sit along the walls. The healer sits at one end with his few tools: a bottle of the brew, tobacco, a bundle of dry leaves bound to a handle, flower water and camphor.

He begins by making the place safe. He blows smoke to the four sides and over each person. He whistles a song of protection. Then he drinks, and in present-day practice some of the patients drink too. For half an hour or more there is silence.

When the brew begins to act, the healer starts to sing and to shake the leaf rattle. Its dry rustle keeps a steady, quick beat through the whole night. The first songs call his helpers. The later ones depend on what he sees.

He calls the patients to him one at a time. The patient sits or lies before him. The healer sings over him, close, so that the breath of the song touches the body. He shakes the leaves over the head and down the trunk as if sweeping. He blows smoke on the crown, the chest, the back and the palms. He may pour flower water into his hand and rub it on.

If he has seen a dart, he sucks. First he brings up his phlegm with loud gurgling and retching. He puts his mouth to the place of the pain and draws, hard, several times. He turns aside and spits or vomits what he has drawn. Sometimes he shows it. Then he blows smoke over the place to close it.

At the end of each treatment the healer closes the patient. This step has its own songs and its own name, the *arkana*. He sings a wall around the person and blows smoke at the openings of

the body. He may draw a cross on the forehead with perfume. A body that has been opened and cleaned must be shut again, or what was removed will come back and bring more with it.

The session ends towards two or three in the morning. The healer sings the visions down and blows over everyone once more. People sleep where they sit.

The treatment is not over. The patient is given a diet for days or weeks: no salt, no pork, no chilli, no alcohol and no sex. He may be given a plant to drink each morning, or baths of leaves and flowers. The healers say that the diet is half the cure. One who breaks it undoes the work and may end worse than before.

Purging

Outsiders think of the brew as a bringer of visions. The river people name it for its other effect. Most who drink it vomit, and many purge below as well.

For the healers this is not a side effect. It is the work. What comes up is the illness: the bad food, the envy swallowed, the grief, the sorcerer's filth. A session in which a patient vomits hard is a good session. A patient who cannot vomit is given tobacco juice or made to drink warm water until he does.

A whole class of cures uses purging without any vision. There are plants for vomiting, plants that clean the bowels, and the milky sap of a wild fig that drives out worms. A course of such purges, with diet, is the usual start of any long treatment. European medicine did the same until the nineteenth century, as Part IV describes. Researchers who interviewed drinkers of the brew found that they too speak of the vomiting as a release and a cleansing, and value it (Politi 2022).

The Shipibo: illness as a spoiled pattern

The Shipibo and Konibo live along the Ucayali river in Peru. They are known for a style of design that covers their cloth, their pots, their paddles and, at feasts, their faces. It is a dense net of angular lines, like a maze or a woven mesh, in which broad lines are filled in with finer ones. The Shipibo word is *kené*. The designs are made by the women.

Angelika Gebhart-Sayer studied the designs in the 1980s and reported what the healers told her about them (Gebhart-Sayer 1986). The account is one of the most exact that any healing tradition has given of what illness is.

Every person, the healers said, is covered by a design. It lies on the skin, and it cannot be seen by day. It was given at birth and built up through life. In a healthy person it is clear, regular and bright. In a sick person it is smudged, twisted, tangled or blotted out in places. A harmful spirit has scribbled over it, or it has been muddied by bad air.

Under the vine the healer sees the design of his patient. He also sees designs in the air: shining nets of lines that come down from the plant spirits and from a great hummingbird

who is the scribe among the spirits. When such a design reaches the healer's lips, it becomes a song. He sings it, and as he sings it settles on the body of the patient and sinks in. Line by line the song lays a new, clean design over the damaged one. The Shipibo speak of the song as "straightening" the pattern. A treatment takes several nights, because the design must be laid again and again until it holds. Between sessions the patient keeps a diet and avoids strong smells, which could blur it once more. If the healer cannot make the design stay, he knows that the patient will die.

Gebhart-Sayer named this an aesthetic therapy. The Shipibo word for healthy and the word for beautiful and well-ordered are close kin. The same holds, as chapter 19 will show, for the Navajo.

Later researchers have added cautions. The designs painted on cloth are not musical scores. No singer reads a song off a skirt. And today the designs are also made for tourists (Brabec 2009). What the healers said about their own work stands.

In the words of this book, illness is here described as the loss of the proper winding of a person, and healing as its restoring, line by line, by song. Chapter 23 takes that up.

The Yanomami: the house in the chest

The Yanomami live in the hills between Brazil and Venezuela. Their shamans use no vine. They take a snuff made from the resin of a forest tree or from the seeds of another. A helper blows it deep into the shaman's nose through a long tube.

Davi Kopenawa has described what follows. The first times, the novice falls and lies in terror. Then he begins to see the *xapiri*. They are the images of the first animal ancestors, and they appear as tiny human beings, bright as dust in a sunbeam. They come down from the hills along shining paths. They dance, each kind with its own song, on great mirrors. Their bodies are painted and they wear feathers, and they smell sweet.

The old shamans who teach the novice call the *xapiri* down for him. If the spirits accept him, they do not merely visit. They tear him apart and put him together again. Then they build a house inside his chest and hang their hammocks there. A strong shaman has a great house with very many spirits. When he sings, it is their songs that come out of his mouth.

To heal, the shaman sends his *xapiri* out. They find the harmful beings that have seized the image of the sick person, fight them, cut the image free and carry it back. They wash it and put it back in the body. They cool a fever with water from the mountains. Each kind has its skill. The spirit of the tapir is strong. The spirit of the spider monkey is quick. The spirit of the hummingbird can reach into small places.

Kopenawa's book is also a warning. The white people, he says, do not see the spirits. They dig up the earth and loose the smoke of sickness. The shamans hold up the sky. When there are no more shamans, the sky will fall (Kopenawa 2013).

The first report: Hispaniola, 1498

The oldest European account of healing in the Americas already contains the whole pattern. It was written on the island of Hispaniola by Ramón Pané, a friar whom Columbus had ordered to live among the Taíno and record their beliefs.

The Taíno healer was called a *behique*. When a person fell ill, Pané writes, the healer first prepared himself as the patient did. Both fasted. Both cleaned themselves out by pushing a carved stick down the throat until they vomited. The healer then took a snuff, *cohoba*, which made him see and speak with the spirits. He entered the sick person's house with his mouth blackened, walked twice round the patient, and began to draw his hands down the patient's legs as if pulling something off. He went to the door, shut it, and said: go away to the mountain, or to the sea. Then he blew, as if blowing chaff from his hands. He put his mouth to the patient's neck, chest, belly and shoulders, and sucked hard. He coughed, made a face as if he had tasted something bitter, and spat into his hand. In it lay a stone, a bone or a piece of meat. See, he said, what I have taken out of your body. That is what made you ill. Keep it well. The object was wrapped in cotton, kept in a basket and given food, like the family's sacred images.

Pané adds the other side. If the patient died and his family was strong, they tested whether the healer had been at fault. If they judged that he had not kept his fast, they beat him with sticks and broke his limbs (Pané 1999).

Fast, purge, snuff, sight, stroking off, blowing, sucking, showing: every element of an Amazonian healing night of today was observed in the Caribbean in the 1490s. The Taíno had come from the South American mainland many centuries before. The practice is at least that old.

Other peoples, other means

The upper Amazon is one province of a larger region. A few further examples show its range.

The Shuar and Achuar of Ecuador and Peru call the vine *natem*. Their healers work almost wholly with darts. Illness is a dart sent by an enemy shaman, and the cure is to suck it out and send it back. Feuds between families were carried on in this way for generations (Harner 1972). The Shuar also seek visions for themselves. A boy or a man goes to a sacred waterfall, fasts, drinks a potion of the dangerous *maikua*, and waits for an ancestor to appear and give him strength.

The Tukano peoples of the Colombian Vaupés say that the patterns seen in the first stage of the vine are the designs that they paint on their houses and pots. Reichel-Dolmatoff asked men to draw what they saw, and they drew rows of dots, zigzags, nested curves and grids, each with a name and a meaning (Reichel-Dolmatoff 1975). These are the same forms that chapter 12 mentioned in connection with the rock art of the San.

The peoples of the Orinoco take snuffs made from the seeds of a tree of the bean family or from the red resin under the bark of another tree. The old Taíno *cohoba* was of the first kind.

The Matsés and their neighbours live on the border of Peru and Brazil. They burn small points in the skin of the arm and dab on the dried secretion of a large green tree frog. Within a minute the heart races, the face swells, and the person vomits violently. It is over in a quarter of an hour. Hunters used it to clear laziness and bad luck. The secretion holds a number of strongly active peptides. The practice has spread to Western cities under the name *kambô*, and several deaths have been reported.

The churches of Brazil. In the 1930s a rubber tapper of African descent, Raimundo Irineu Serra, learned the brew from native people on the Bolivian border. He founded a church in which it is drunk as a sacrament, with hymns that he received in visions. The church is called Santo Daime. Two other churches arose in the same way. Together they have tens of thousands of members in Brazil and branches abroad. In these churches there is no healer who sucks out darts. Everyone drinks, sings and sits upright through the night, and healing is expected from the brew, the hymns and the fellowship. Brazil gave the religious use of the brew legal standing. The Supreme Court of the United States ruled in 2006 that one of these churches may use it.

What has been measured

The brew is the most studied of all the means of the shaman. The findings fall into four groups.

What it does in the body. Spanish researchers gave freeze-dried brew to volunteers in a hospital. The effects begin after half an hour to an hour, peak at about two hours and are gone by six. Blood pressure and heart rate rise a little. Nausea is common. No lasting harm to healthy volunteers was found (Riba 2003).

Depression. In Brazil, 29 patients had severe depression that had not yielded to at least two drugs. They were given a single dose of the brew or a placebo, in a quiet hospital room. A day later the brew group was clearly better. After a week the difference was large. By then 64 per cent of the brew group had responded, against 27 per cent of the placebo group (Palhano-Fontes 2019). It is one small trial. Nobody has yet shown how long the effect lasts.

First-time drinkers. A Dutch and Spanish team followed people who drank the brew for the first time in a ceremony. Nearly half met the criteria for a psychiatric disorder beforehand. Of those, more than four in five were clearly improved six months later (Jiménez-Garrido 2020). There was no control group, and people who seek out such a ceremony are not typical patients.

Harm. An international survey reached more than ten thousand people who had drunk the brew. About seven in ten had had bodily effects at the time, chiefly vomiting. A little over two per cent had needed medical attention. More than half reported difficult states of mind in the

weeks afterwards, such as bad dreams, low mood or a sense of unreality. Most of those said that the difficulty had been part of a change for the better. About one in eight sought professional help (Bouso 2022).

The brew is dangerous together with several common medicines, above all certain antidepressants. It can set off psychosis in people who are prone to it. Deaths have occurred, most of them where other plants were added or where there was no experienced person present.

Almost none of this research concerns the old medicine as chapters 16 and 10 described it. The trials give the brew to patients. The tradition gives it to the healer. The trials leave out the songs, the smoke, the sucking, the closing and the diet. They test one compound from a practice that works with a whole night and a whole way of living. Chapter 8 called this the rule of the trials: the part is measured, and the medicine is not. That the part alone has an effect is worth knowing. It says little about what the healers do.

One observation from the field deserves to be set beside the trials. Beyer, Luna and others report that experienced healers judge a session by two signs that no trial has used. The first is whether the patient purged. The second is whether the body, at the end, was properly closed.

The trade

Since the 1990s foreigners have come to the Peruvian Amazon in growing numbers to drink the brew. Around Iquitos and Pucallpa there are now scores of lodges that sell stays of a week or more. Many employ Shipibo healers. Some are run with care. Some are not.

The trade has changed the practice. Healers who once drank alone to see into a patient now pour for twenty paying guests who all expect visions. A young man can set up as a healer after a few months, since the visitors cannot tell the difference. Old healers complain that the new ones have songs and no diet behind them. The tradition’s own safeguard, years of solitary discipline before one may treat anybody, is the first loss.

There has been harm of other kinds. Visitors have died from added plants and from undeclared heart conditions. Women have been abused by men who used the standing of a healer. In 2018 a respected Shipibo woman healer, Olivia Arévalo, was shot dead in her village. A Canadian man who had been her client was blamed and was lynched by villagers the next day.

There has been gain as well. Shipibo families earn a living from their knowledge. Young Shipibo take an interest in it. Peru declared the traditional use of the brew part of the nation’s cultural heritage in 2008. The healers themselves are divided on whether the trade is saving their medicine or emptying it.

What stands out in the Amazon

1. **The teachers are plants.** The healer learns alone, on a diet, from beings that are not human. What they give him are songs.
2. **The song is the medicine.** The plant acts through its song, and the healer's skill is measured in songs.
3. **The first question is whether an illness was sent.** What merely happens is left to herbs or to the clinic.
4. **Healing and harming use the same means.** Darts are in the chest of the healer as in that of the sorcerer.
5. **What is wrong is taken out, and the body is then closed.** Sucking, purging and sweeping remove. The closing song seals.
6. **Illness can be described as a spoiled pattern.** The Shipibo say that a song lays the right pattern over the wrong one, line by line.
7. **The cure continues in a diet.** What was done in a night holds only if the days after are kept quiet.

17. The Andes

Mountain and people

The Andes run for seven thousand kilometres along the western edge of South America. In their central part, in Peru and Bolivia, people farm and herd at heights of three to four and a half thousand metres. Some ten million speak Quechua and about two million speak Aymara. Their ancestors built Chavín, Tiwanaku and the empire of the Incas.

The Spanish conquest of 1532 was followed by epidemics that killed most of the population within a century. From 1609 the church sent inspectors through the villages to "root out idolatries". They burned mummies of ancestors, smashed shrines, and tried healers as sorcerers. The manuals that these inspectors wrote are now among the best sources on the old religion.

The medicine came through. It took in the saints, the cross and the Spanish doctrine of hot and cold, and kept its own ground. Today it is practised from Ecuador to northern Chile and Argentina, in villages and in the markets of La Paz, Cusco and Lima. Bolivia has recognised it in its constitution and in a law of 2013.

The ground: feeding and being fed

The Andean world rests on one principle. Quechua speakers call it *ayni*. It means that whatever is received must be returned. Neighbours work each other's fields in turn. A gift calls for a gift. The same holds between people and the powers of the land.

The earth is a mother, *Pachamama*. She feeds people, and she is hungry herself. The great snow peaks are lords, called *apu* in Quechua and *achachila*, grandfather, in Aymara. They own the water, the herds and the weather. Lesser powers live in springs, rocks, crossroads and old ruins.

People feed these powers. Before a drink a few drops are poured on the ground. Before chewing coca, three leaves are held up and blown over towards the peaks. In August, when the earth is said to lie open and hungry, every household burns or buries an offering. If the powers are fed, they give rain, lambs and health. If they are forgotten, they take what they are owed. The earth then "grabs" a person and eats him from within.

So the first Andean idea of illness is a debt. The second is a view of the body that Joseph Bastien recorded among the Kallawaya of Bolivia.

The Kallawaya live on the slopes of Mount Kaata. They speak of the mountain as a body. The high pastures are its head, with the lakes for eyes and the grass for hair. The middle slopes, where the main village lies, are its trunk and heart. The low valleys, where maize and fruit grow, are its legs. The people of the three levels marry one another and exchange meat,

potatoes and maize. In their rites they carry llama blood and fat to the shrines of all three levels, so that the mountain is fed as one body (Bastien 1978).

They speak of their own bodies in the same way. A body is a mountain with ducts in it. Through them move air, blood and fat. Blood is life, fat is strength, air is breath and thought. In health these three move inward towards the heart, where they are brought together, and outward again towards the skin, from which what is spent is cast off. Illness is a wrong movement. The fluids scatter and do not return, or they gather and do not leave, or one of them is lost. Bastien stressed that this is not the Greek idea of a balance of amounts. What counts in the Andes is the direction in which the fluids move (Bastien 1985).

A person also has souls. The Aymara count three, a great one and two lesser. The Quechua speak of the *animu*. It is small and easily startled. It leaves the body in a fright and stays at the place where the fright happened.

The healers

The Andes have many kinds of healer. The table gives the main ones.

Name	People	Work
Yatiri, “one who knows”	Aymara	Reads coca, names the cause, prepares offerings
Ch’amakani, “owner of darkness”	Aymara	Calls the mountain lords and the dead in a dark room and lets them speak
Paqo	Quechua of Cusco	Makes offerings to earth and peaks; two grades, the lower for the earth, the higher able to speak with the peaks
Kallawaya	Bolivia, north of Lake Titicaca	Travelling herbalist and ritual healer
Qulliri or *hampiq*	Aymara, Quechua	Herbalist
Curandero	Spanish-speaking coast and towns	General healer; in the north works with the San Pedro cactus
Bonesetter, midwife	Everywhere	Hands-on care
Layqa	Aymara, Quechua	Sorcerer, feared; the reverse of the healer

The call to the higher ranks comes from the sky. The Aymara and the Quechua agree on it. A person is struck by lightning. The first bolt kills him. The second tears his body apart. The third puts him together again. He must lie alone where he fell, and nobody may watch, or he will not rise. One who gets up is marked to be a *yatiri* or a *paqo*. The lightning has opened him so that he can read. This is the remaking that chapter 10 described for Siberia and Australia, here performed by the sky itself. Other signs are being born a twin, or feet first, or with an extra finger.

The Kallawaya

The Kallawaya deserve a section of their own. They come from a handful of villages in one province of Bolivia. For centuries their men have walked the length of the Andes, from Ecuador to Argentina, as healers. They carry woven bags of dried herbs, roots, minerals and animal parts. Their knowledge is said to cover close to a thousand plants (Girault 1987).

Among themselves they speak a language of their own. Its words come largely from Puquina, a tongue that was spoken around Lake Titicaca before the Incas and has otherwise vanished. Its grammar is Quechua. Only the healers know it, and it is passed from father to son.

A Kallawaya is both herbalist and ritual healer. For a simple ailment he gives a plant. For a serious one he reads coca, finds the offended place, and lays out an offering for it. In 2003 the United Nations placed the Kallawaya view of the world on its list of masterpieces of the heritage of mankind.

Their past is visible in the ground. In the 1970s a grave was opened at Niño Korin in their home valley. It was about a thousand years old. Beside the dead man lay a healer's kit: snuff trays and tubes, a mortar, bundles of dried leaves, and enema syringes of reed. Near by lay a skull that had been opened by a surgeon's hand (Wassén 1972).

Finding the cause

Coca. The leaf of the coca bush is the chief instrument of reading in the highlands. The healer spreads a woven cloth. He chews some leaves himself, prays to the peaks by name, and asks leave to see. Then he takes a handful of leaves, holds them over the cloth, and lets them fall.

He reads how they lie. A leaf has a bright green upper side and a pale underside. Green side up is good. Pale side up is bad. A whole, well-shaped leaf speaks of health. A torn, folded or spotted one speaks of harm. Leaves that fall pointing to the patient's marker mean one outcome, and leaves that fall across it another. He throws again and again and asks a narrower question each time. Is it the earth? Is it the lightning? Is it a neighbour? Is it at the spring behind the house? He works towards a named place and a named fault, as a physician works towards a diagnosis by excluding one cause after another.

The guinea pig. This is the best-known Andean method, and it joins reading and healing in one act. The healer takes a live guinea pig, by preference a black one. He rubs it slowly over the whole body of the patient, from head to feet, front and back, while he prays. The animal is held to draw the illness into itself. Often it goes limp or dies under the rubbing. The healer then opens it at once and reads its organs. A spot on the liver, a dark lung, a swollen gut or a clot of blood at a joint shows where the patient's trouble sits. People call it the X-ray of the Andes. The body of the animal is carried away and buried or left at a crossroads, and the illness goes with it (Morales 1995).

The egg. A fresh egg is passed over the body in the same way. It is broken into a glass of water, and the shapes in the white are read.

Pulse and veins. Kallawaya and coastal healers feel the pulse. They do it at the wrist and often at the temples and the pit of the stomach as well. They judge whether the blood runs fast or slow, thick or thin, and whether it "jumps". A jumping pulse with no fever points to fright.

Other signs. Healers read the urine, the flame of a candle that the patient has rubbed over his body, and their own dreams.

The illnesses

Andean healers name an illness by what caused it. The same headache can belong to any of the following.

Fright. In Quechua it is *mancharisqa*, in Spanish *susto*. The soul has jumped out at a shock: a fall, a dog, thunder, a fight, a sudden death in the house. Children are struck most. The child is pale and listless, starts in its sleep, does not eat, has diarrhoea, and grows thin. Adults sleep badly, lose their will to work and feel a weight on the chest. Fright is the most widespread illness of native America. Chapter 21 gives what has been measured about it.

Seizure by the earth. A person has sat, slept or fallen at a place where the earth was hungry, or his family has neglected its offerings. The earth has taken hold of him. He has pains in the bones and joints, sores that will not heal, a swelling, or a slow wasting.

Winds. A bad wind has entered the body. There are many kinds. The most feared comes from the tombs and bones of the people who lived before the present sun. It causes a wasting in which the body dries out and the bones ache. Another wind twists the face and mouth to one side.

Lightning. One who was near a strike and was not called by it falls ill with fear, trembling and weakness.

The fat-taker. All over the highlands people speak of a being who steals human fat. He is called *kharisiri* by the Aymara, *ñak'aq* by the Quechua and *pishtaco* in Spanish. He looks like a stranger: in colonial times a friar, later an engineer, a doctor or a foreign visitor. He meets a

traveller on a lonely road and puts him to sleep. He draws the fat from his side through a small cut that leaves almost no mark. The victim wakes knowing nothing. Over the next days he weakens, cannot eat, and dies unless the fat is restored. The fat is said to be sold for church bells, for oiling the engines of factories, or for medicines abroad.

Fat is strength in the Andean view of the body, and the offering to the mountains is fat. The fat-taker turns the order of the world upside down. A stranger takes the best of a person and gives nothing back. The belief has existed since the sixteenth century. It flares up in times of fear, and it has cost innocent travellers their lives.

Sorcery. A *layqa* has been paid to do harm. Signs are a sudden illness with no cause, a toad or a doll with pins found near the house, or a string of misfortunes.

Anger and grief. A fit of rage that is swallowed turns to illness of the liver and bile. A mother's grief or anger spoils her milk, and the child falls ill from it.

Illnesses for the doctor. Tuberculosis, broken bones that need metal, and what the hospital can cut out are sent to the hospital. Andean patients move between the systems, and healers send them.

The ways of healing

The offering. The central act is the laying of a table for the powers. In Quechua it is a *despacho*, in Aymara a *mesa*, in Spanish a *pago*, a payment. The healer spreads a sheet of white paper. On it he sets out, in a fixed order, what the earth and the peaks like to eat. There are sets of three perfect coca leaves, llama fat, grains of maize, sweets, seeds, coloured wool, shells from the sea, small figures of lead, and gold and silver paper. For a great occasion he adds the dried foetus of a llama. He breathes on each item and names the power for which it is meant. The patient breathes on it too. Then the bundle is folded, tied, passed over the patient's body, and burned at midnight or buried. The powers eat the smoke. If the bundle burns to clean white ash, they have accepted.

The offering pays the debt. With the debt paid, the earth lets go.

Calling the soul. For fright the healer goes at night to the place where it happened. He carries the clothes or the hat of the patient, some sweets, and a small bell. He calls the soul by the person's name, softly and coaxingly, and tells it to come home. He walks back without turning round, ringing the bell and trailing the clothes. At the house he lays the clothes on the sleeping patient. Nobody speaks. The patient must not be woken until morning.

Cleansing. The rubbing with the guinea pig or the egg is a cure as well as a reading. So is a brushing with bunches of strong herbs and flowers, or with a piece of alum. The alum is afterwards thrown in the fire, where it bubbles into shapes that are read.

Turning back. Andean healers use a principle of reversal. Wool for ordinary use is spun to the right. For healing and protection a thread is spun to the left, against the usual direction.

Such a thread is tied round the wrists, ankles and waist of a person who is ill or under attack. It is later broken and thrown away, and the harm goes with it. Offerings meant to send sorcery back to its sender are laid out and stirred against the sun. The Quechua word for this means to make return. What came by one direction is undone by the other.

Giving back fat. The victim of the fat-taker is fed fat and rubbed with it, and rites are held to recover what was taken.

Herbs, steam and touch. The household remedies are many. Hot and cold govern them. An illness from cold, such as a chill or aching bones, is treated with warming plants. An illness from heat is treated with cooling ones. Sweat baths, rubbing with warm fat, and the setting of bones belong here. So does the binding of the belly after birth.

Coca

No plant is as close to Andean life as coca. Leaves have been found at a site in northern Peru that is about eight thousand years old, with lumps of the lime that is chewed with them (Dillehay 2010).

A chewer puts a wad of leaves in the cheek with a little ash or lime and lets it soak. It stills hunger and thirst. It eases the breath and the headache at great heights. It gives stamina for long walks and heavy work. A tea of the leaves settles the stomach. The amount of cocaine in a leaf is small, and chewing takes it in slowly. Leaf and powder are as different as a grape and a glass of spirits.

Coca is also the proper gift to the powers and to one's neighbour. It is the instrument of reading. No rite is held without it. To share coca is to set up the bond of giving and returning on which the Andean world rests.

In 1961 the United Nations placed the coca leaf under the same controls as cocaine and heroin and called on the Andean countries to end the chewing within twenty-five years. They did not, and could not. Bolivia left the treaty and rejoined in 2013 with a reservation that permits traditional use on its own soil.

Cocaine was isolated from the leaf in 1860. In 1884 the Viennese eye doctor Carl Koller showed that a few drops numb the eye for surgery. With that, local anaesthesia began. Every local anaesthetic in use today descends from that discovery.

The bark and the opened skull

Two other pieces of Andean medicine entered world history.

The bark of the cinchona tree, from the eastern slopes, cures malarial fever. Jesuits in Peru learned of it around 1630 and sent it to Rome, where malaria was rife. For three centuries the "Jesuit's bark", and from 1820 the quinine drawn from it, was the only real remedy for the disease. Whether the native healers used the bark for fevers before the Spaniards came is

disputed. Malaria itself probably arrived with the conquest. They may have used it for the shivering of cold.

The surgeons of ancient Peru opened the skull. More than eight hundred trepanned skulls have been found, from about 400 before our era to the Inca period. The operation was done with stone and bronze tools, for head wounds from slings and clubs. By the healed edges of the bone one can tell who lived. In the Inca period three out of four patients or more survived, and many had been operated on more than once. Among soldiers of the American Civil War who had the same operation, about half died (Kushner 2018).

The table of the north coast

On the dry coast and in the mountains of northern Peru the healers work with a cactus.

The San Pedro cactus is tall, ribbed and columnar. It contains mescaline. A stone carving at the temple of Chavín, about three thousand years old, shows a fanged being that holds a stalk of it. The healers slice it, boil it for hours, and drink the liquid at night.

The healer sets up a table, the *mesa*, on the ground. Douglas Sharon learned the meaning of every object on the table of the healer Eduardo Calderón in the 1970s (Sharon 1978). It has three fields. On the left lie the objects of the dark side: stones from ancient ruins, a deer's foot, shells and old pottery. They serve to find and to master what does harm. On the right lie the objects of the light: images of saints, crystals, holy water, perfume, sugar and lime juice. In the middle lie the objects that keep the two in balance. A row of wooden staffs and steel swords stands upright in the ground behind the table.

The session lasts from ten at night until dawn. Healer and patients drink the cactus. The healer and his helpers also "raise" the table. They take a tobacco liquid into the nose from a shell, again and again, in honour of each object. Then the healer looks. The cactus lets him see the cause of each patient's trouble, which on the coast is nearly always harm sent out of envy. He chooses a staff, rubs the patient with it from head to foot, and has the patient take the tobacco liquid too. At the end everyone is sprayed with sweet perfume and lime juice so that their luck may "flower".

The most powerful place of this tradition is a group of cold lakes high in the mountains of Huancabamba. Patients travel for days to be bathed there by a healer at dawn.

Researchers followed the patients of four such healers. Most came for troubles that mix body, luck and relations: pains with no finding, a business that fails, a husband who strays. Most said afterwards that they were better (Joralemon 1993). A survey of the plants sold for healing in the markets of the region counted some five hundred species (Bussmann 2006).

The Mapuche

Far to the south, in Chile and Argentina, live the Mapuche. Chapter 10 described the call of their healer, the *machi*. She has two tools. One is a shallow drum whose skin is painted with a

cross that divides the world into four. The other is a tree trunk with steps cut in it, set before her house, on which she climbs in trance.

She reads an illness from the patient's urine, held to the light in a glass, or from clothes that the patient has worn. She sorts illnesses into three kinds. There are natural ones, for which she gives herbs. There are those sent by evil beings or by a sorcerer. And there are those of the white people, for which she sends her patients to the hospital. For the second kind she holds a healing rite through the night, with drum, songs, the smoke of sacred plants and the sucking out of the harm.

In the south of Chile the public health service has worked with the *machi* since the 1990s. In several places a hospital and a healer's house stand on the same ground, and a patient may choose or use both.

What stands out in the Andes

1. **Illness is a debt.** People and powers feed one another. A forgotten payment is taken from the body. The cure is to pay.
2. **The land is a body and the body is a land.** The mountain has a head, a heart and legs, and health is a right movement through both.
3. **Direction counts.** The fluids of the body must move inward and outward in turn. Harm is undone by turning: the thread is spun against the usual way.
4. **Reading and healing are one act.** The guinea pig takes the illness, shows it and carries it off.
5. **The healer is made by lightning.** He is killed, taken apart and put together by the sky.
6. **The worst theft is the theft of what gives strength.** The fat-taker is the picture of taking without return.

18. Mesoamerica

A written tradition

Mesoamerica is the name for the old civilised region of Mexico and Central America. The Olmecs, the Maya, the people of Teotihuacan, the Zapotecs and the Aztecs built cities there, kept a calendar and wrote books. Its medicine stands between the shaman's medicine of this part and the learned medicines of Parts IV and V. It had diviners who read souls and sucked out objects. It also had physicians with a large pharmacy, surgeons who set bones, and a doctrine of the body.

It is known better than any other native medicine of the Americas, because it was written down within two generations of the conquest. Four sources carry most of the weight.

Sahagún. The Franciscan Bernardino de Sahagún came to Mexico in 1529 and stayed sixty years. He questioned Aztec elders, town by town, with the help of young Aztec nobles whom the friars had taught to write their language in Latin letters. The result is a work in twelve books, in Nahuatl with a Spanish version beside it and some two thousand pictures. It is known as the Florentine Codex. One long chapter lists the ailments of the body from the head downward, with the remedy for each. Sahagún had it checked by eight Aztec physicians of Tlatelolco and gives their names. Another book describes the healing plants (Sahagún 1950).

The Badianus manuscript. In 1552 Martín de la Cruz, an Aztec physician at the same college, composed a small book of remedies. A fellow Aztec, Juan Badiano, put it into Latin. It has thirteen chapters, arranged from head to foot, and paintings of 185 plants in native style. It was meant as a gift for the king of Spain. It lay unnoticed in the Vatican library until 1929 and was returned to Mexico in 1990.

Hernández. Philip II sent his own physician, Francisco Hernández, to Mexico in 1570 to record its medicines. He worked for seven years, questioned native doctors, tried remedies in a hospital, and described more than three thousand plants.

Ruiz de Alarcón. In 1629 a parish priest wrote down the spells that Aztec healers of his district still used, in order to expose them. He preserved the words with which a healer addressed a broken bone, a fever, a scorpion sting and the patient's own body (Ruiz 1984).

For the Maya there is a book of healing chants from Yucatán, known as the Ritual of the Bacabs. There are also the reports of anthropologists who have lived in Maya towns since the 1950s.

The Aztec ground: three centres of a person

The Mexican scholar Alfredo López Austin has reconstructed how the Aztecs understood the body (López Austin 1988). The world has three levels. There are thirteen layers of sky, the

surface of the earth, and nine layers of underworld. The human body repeats them. It has three centres, and each holds a different kind of life.

The head holds the *tonalli*. The word comes from a verb that means to give warmth, as the sun does. The *tonalli* is a person's warmth, vigour and growth. It is also his fate. It enters the child on the day of its ritual bathing, and it carries the quality of that day in the calendar. It sits at the crown, in the hair. It can leave the body: in sleep, in drunkenness, in a fright. A child's *tonalli* is loosely fixed, and the soft spot on the skull is its door. A person without his *tonalli* does not die at once. He fades.

The heart holds the *teyolia*. It is what makes a person alive and himself: thought, memory, will, feeling. It cannot leave during life. It can be damaged, by bad conduct, by sorcery, or by phlegm that presses on the heart and causes madness and fits. After death it goes to one of the worlds of the dead.

The liver holds the *ihiyotl*. The word means breath or vapour. It is passion: desire, anger, envy and courage. A person in a state of strong feeling gives off his *ihiyotl* like a gas, and it harms those near him, above all children. A corpse gives off the same.

Health is a state in which the three centres are in balance with one another and with the world. Three matters upset it.

The first is conduct. Excess of any kind, in sex, drink, anger or grief, harms the centres. So does a breach of duty towards the gods or one's kin.

The second is heat and cold. Each person, food, plant and illness has a place between hot and cold. This is not a matter of temperature. A fever can be a cold illness, because it comes from the watery gods. Work, sun and anger heat the body. Water, night and the dead cool it. Treatment restores the middle.

The third is time. The Aztecs counted days in a cycle of 260, made of twenty signs joined with thirteen numbers. Each day has a quality and a ruling god. A person's day of birth sets his strengths and weaknesses. The day on which an illness begins says something about its cause and its outcome. Certain days were dangerous for everyone. On five days of the cycle the spirits of women who had died in childbirth came down to the crossroads and struck children with fits and palsy. Parents kept their children indoors.

The gods who send and cure

Much illness came from the gods. Each god sent the illnesses of his own domain, and the same god cured them.

God	Domain	Illnesses sent
Tlaloc and his helpers	Rain, mountains, water	Dropsy, gout, stiff limbs, leprosy, death by lightning or drowning
Xipe Totec	Spring, the new skin of the earth	Skin diseases, boils, sore eyes
Tezcatlipoca	Fate, the night	Epidemics; incurable disease
Tlazolteotl	Filth, sex, steam bath, midwives	Illness that follows sexual wrong; she also takes it away
Xochipilli and Macuilxochitl	Flowers, games, pleasure	Piles and diseases of the private parts in those who broke a fast
The Cihuateteo	Women dead in childbirth	Fits, palsy and twisted faces in children

The goddess Tlazolteotl shows how sending and curing belong together. Her name means goddess of filth. She brought on desire and unlawful love. She was also the one to whom a person confessed. Once in a lifetime, usually when old or gravely ill, an Aztec went to her priest and told every sexual wrong he had done. The priest set a penance. The goddess “ate” the filth, and the person was clean before the law as well. An illness in a child or a spouse could be traced to the hidden wrong of a parent or partner, and was treated by confession and the steam bath.

The healers

The Aztec word for a physician was *ticitl*. Men and women both practised. The craft was passed on in families.

Sahagún’s elders described the good physician and the bad one. The good physician knows herbs, stones, trees and roots. He has experience and examines with care. He sets bones, purges, bleeds, cuts, stitches, and brings people back from the edge. The bad one is a fraud. He makes the illness worse, kills with his medicines, and practises sorcery (Sahagún 1950).

There were many specialists. Midwives formed a respected profession with its own goddess. They saw the mother through pregnancy, massaged, turned the child in the womb, and managed the birth in the steam bath. There were bonesetters, bleeders, healers of eyes and of teeth, and women who treated children. There were those who restored a lost *tonalli*. There were those who sucked objects from the body: little flints, bits of paper, pebbles. Sahagún’s

elders listed the suckers among the frauds, which shows that Aztec physicians themselves drew a line.

The rulers kept gardens of healing plants. The garden at Huaxtepec was laid out a century before the first botanical garden of Europe. The physicians were allowed to try the plants on patients and report the results. The great market of Tlatelolco had a street of sellers of herbs, roots and ready-made remedies.

Finding the cause

An Aztec healer chose among several ways of reading. Ruiz de Alarcón and Sahagún describe them.

Casting maize. The diviner took a number of kernels, spoke over them, and threw them on a cloth or into a bowl of water. She read the pattern in which they fell or whether they floated.

Measuring the arm. The diviner rubbed her hands with tobacco. She measured the patient's left forearm in spans of her own hand, from the elbow to the fingertips. Meanwhile she called on her hands as living helpers. How the last span met the fingertips was the answer.

The cords. The diviner tied knots in a set of cords and pulled. If the knots came loose, the patient would recover. If they pulled tight, he would die.

Looking in water. For a sick child a bowl of water was held under its face. If the reflection was bright, the *tonalli* was present. If it was dark and shadowed, the *tonalli* was gone.

Seeing with a plant. For a hard case the healer, or sometimes the patient, drank a preparation of morning-glory seeds or ate peyote. In the state that followed, the plant, addressed as a holy person, showed who or what was the cause.

Dreams and the day. The healer asked what the patient had dreamed and on which day the illness had begun.

Only then was the treatment chosen. A wound or a broken bone needed no divination. A wasting, a fever that kept returning, or a sick child did.

Aztec remedies and what became of them

The Aztec physicians had several hundred plant remedies in regular use, and methods for the common emergencies.

Wounds. A fresh wound was washed with urine, which is clean when it leaves the body. Then the sap of the maguey plant was poured on, often with salt. Both draw water out of bacteria and stop their growth, as later laboratory work confirmed (Davidson 1983). A plant was laid on to stop the bleeding. Deep cuts were stitched with hair.

Bones. Fractures were pulled straight, splinted with boards, and bound with a plaster of ground roots. Sahagún's elders add what was done when the bone did not knit. The flesh was

opened. A stick of resinous pine was pushed into the hollow of the bone to hold the ends, and the wound was closed over it.

Birth. The midwife gave a tea of a plant called "woman's medicine" to bring on strong labour. Mexican and American pharmacologists have shown that it makes the womb contract. It is still drunk in rural Mexico.

The steam bath. Every household that could afford one had a low domed bath house of adobe, the *temazcal*. Water was thrown on a heated wall. The bath was used after childbirth, in convalescence, for aches, for skin diseases, and to carry off the filth of a moral wrong. It is in use today from Mexico to Guatemala.

Drugs. Tobacco was used on wounds, for pain and against tiredness. Chilli was given for coughs. A sweet-scented marigold was the plant of the rain god and was used for the cold, watery illnesses. A wormwood served for the same purpose. The purging root that Europe came to call jalap, the sarsaparilla and the guaiac wood were shipped to Spain in quantity.

In 1975 Bernard Ortiz de Montellano asked whether these remedies worked. He chose 25 plants from Sahagún for which the Aztec text says clearly what the remedy was meant to do. He judged each by the Aztecs' own aim. Suppose a plant was given to bring on sweat, urine or vomiting, in order to drive a cold moisture out of the body. Then he asked whether it does bring on sweat, urine or vomiting. From the chemistry and pharmacology known at the time he concluded that 16 of the 25 would produce the effect that the Aztecs wanted. Four more might. Five would not (Ortiz 1975).

That is a high score for any pharmacy before the twentieth century. It also shows how to judge an old medicine fairly. The first question is whether a remedy does what its users expect of it. Whether their expectation rests on a sound theory is a second question.

The great dying

In 1520 a Spanish soldier brought smallpox to Mexico. The Aztecs had never met it. It killed a large part of the people of the capital within months, among them the ruler. An Aztec account written down by Sahagún says that the sick lay like corpses, unable to move, and that many died of hunger because nobody was left to feed them.

Worse followed. In 1545 and again in 1576 a fever with bleeding, which the Aztecs called *cocoliztli*, the pestilence, swept the highlands. The two outbreaks killed many millions. The DNA of a typhoid-like bacterium has been found in the teeth of victims buried in 1545 (Vågene 2018). By 1620 the native population of central Mexico was perhaps a tenth of what it had been a century before.

The old medicine could do nothing against diseases to which the people had no resistance. Healers died with their patients. A great part of the knowledge was lost in those hundred years. What survives today passed through that loss.

The Maya of the highlands: the animal in the corral

The Maya have never formed one state, and their medicine varies from town to town. Two highland towns have been studied in depth. They show the same medicine from two sides.

Zinacantan is a town of Tzotzil speakers in the mountains of Chiapas. Evon Vogt and his students worked there for more than thirty years (Vogt 1969).

A Zinacanteco has an inner soul, the *ch'ulel*. It lives in the heart and the blood. It has thirteen parts, and a person can lose one or several. He shares this soul with an animal. At the moment of his birth a wild animal was born in the mountains: a jaguar, an ocelot, a coyote, or something smaller. The animal and the person have one life. What happens to the one happens to the other.

The animal companions of all Zinacantecos live inside one great extinct volcano east of the town. The ancestral gods, who are the dead of the community, keep them there in corrals. They feed and water them and let them out to graze under guard, as herders do.

Illness begins when a person does wrong. He quarrels with his kin. He neglects a duty to the community. He is stingy, or he shows off his wealth. The ancestors see it. They let his animal out of the corral. It wanders alone on the mountain, cold and exposed to other beasts and to hunters. The person falls ill. Or the ancestors knock some parts of his soul loose. Or a witch, out of envy, sells the soul to the Earth Lord, a fat and greedy master who lives under the ground and puts souls to work.

The healer is called *h'ilol*, a seer. Vogt counted more than two hundred and fifty in a population of eight thousand. A seer is called by three dreams, in which the ancestors summon his soul to the mountain and show him how to cure.

He reads by the pulse. He holds the patient's wrist and then the inside of the elbow, on both arms. The Zinacantecos say that the blood talks and that the seer hears it. It tells him whether the animal is out of its corral, how many parts of the soul are lost, and whether a witch is involved. From that he decides how large the ceremony must be and how many mountain shrines must be visited.

The great curing ceremony takes a day and a night and employs the whole household. The men fetch plants from the mountains and water from seven sacred springs. The women cook. The patient is washed in the spring water and dressed in clean clothes that have been held in incense smoke. A black chicken is washed in the same water. It will be the patient's substitute.

Then the party sets out in single file: helpers, the seer, the patient. They walk to the town centre and climb to the cross shrines on four sacred mountains. At each shrine the seer lights candles, which are called tortillas for the gods. He pours rum and prays in long paired lines. He asks the ancestors to forgive the patient, to take the chicken in his place, and to gather the animal back into its corral. One chicken is left at the last shrine as a gift.

At home the patient is put to bed. The bed has been fenced with pine boughs and flowers, and it is called a corral. The patient lies in his corral as his animal now lies in its own. He stays there for two weeks or more. He may not be left alone, receive visitors, or speak with strangers. Then the boughs are taken down and he returns to ordinary life.

Two American researchers tested Zinacanteco seers on their knowledge of illness names and symptoms. They found that seers do not agree well on which symptoms belong to which named illness (Fabrega 1973). That is no failure. The names do not sort symptoms. They sort causes. Two men with the same cough may have different illnesses, because different wrongs lie behind them.

The Maya of the highlands: the lightning in the blood

Momostenango is a K'iche' Maya town in Guatemala. Barbara Tedlock and her husband were trained and initiated there as diviners in the 1970s. Her book is one of the few accounts of a reading method written by someone who learned to do it (Tedlock 1982).

The diviner is called *aj q'ij*, keeper of days. The town had some ten thousand of them among forty-five thousand people. The call comes through illness and dreams. Typical signs are cramps, twisted muscles and a sickness that returns on certain days. The teacher, a senior daykeeper, treats the illness by beginning the training. It lasts 260 days, one round of the old calendar.

The daykeeper learns the twenty day names and the thirteen numbers, and what each combination favours and warns against. The calendar has been counted without a break in these mountains since before the Spanish came.

He learns to cast the seeds. His bundle holds red seeds of the coral tree and a few rock crystals. For a client he takes a handful at random and sets them out in rows of little heaps of four. He counts the days of the calendar along the heaps, beginning from today or from the day in question. The day on which the count ends, and the days at the ends of the rows, speak.

And he learns to attend to his own body. This is the part that Tedlock stresses. A daykeeper has what the K'iche' call lightning in the blood. While he casts and counts, and at other times too, he feels small sudden movements under his skin: a twitch, a jump, a flutter. Each has a meaning by its place. The left side of the body concerns women and the right side men. The front concerns the future and the back the past. A movement in the flesh of the thigh means one matter, on the shin another, in a finger a third. The blood answers the question that is being asked. The daykeeper joins what his blood says with what the seeds and the days say, and speaks.

A K'iche' diagnosis nearly always turns out to concern a relation. An ancestor has not received his due. Two brothers have quarrelled over land. A promise made at a shrine was not

kept. The cure is to set it right on the proper day, at the proper shrine, with candles, incense and words, and to make peace among the living.

In this reading the instrument is the reader's body. Chapter 5 argued that a diagnosis in the old medicines is a locking of two people. Here a tradition says so itself. The patient's trouble shows in the blood of the one who asks.

The Maya of Yucatán: naming the lineage

The lowland Maya healer is called *h-men*, one who does. He sees with a crystal, the stone of light, which he holds up to a candle. His world is full of winds. The winds live in caves, wells and old mounds. They enter a person who is overheated, who walks in the forest at noon, or who has neglected the guardians of the fields. They cause most serious illness.

His cures include a sweeping of the body with leaves, nine times, and an offering called an exchange. In the exchange, food and a fowl are given to the winds in place of the sick person. Midwives and masseurs work on the belly. They speak of an organ behind the navel, which they can feel throbbing. It slips out of place through a fall or a strain and must be rubbed back to the centre. Healers also prick painful places with a thorn or a snake's fang to let out a little blood.

The old chants show how the *h-men* spoke to an illness. The manuscript called the Ritual of the Bacabs holds about forty of them, for fits, fevers, asthma, burns and bites. In each the healer addresses the illness as a person and demands to know its family. Who is your mother? Who is your father? On what day were you born? Which tree and which bird are yours? He recites the answers himself. He names the four world quarters with their colours, red east, white north, black west and yellow south. Then he orders the illness to go back where it came from (Roys 1965).

This is what the Finnish knower did with the origin of iron. To heal is to know where an illness comes from, to say it aloud, and so to have command over it.

Healing in Mexico today

The medicine of Mexico today is a mixture. It joins the old native medicine, the Spanish medicine of the sixteenth century with its hot and cold, Catholic devotion, and African elements on the coasts. It is called *curanderismo*. It is practised in villages and in the largest cities, and it has gone north with the people into the United States (Trotter 1997).

A *curandera* or *curandero* is a general healer. Beside them work specialists: the herb seller, the midwife, the bonesetter and masseur, and the woman who treats children. In many towns there are also Spiritualist temples, where mediums in trance let the spirits of dead doctors and healers speak and "operate".

The illnesses that people bring to them have names that hospital doctors do not use.

Fright (*susto*). The soul has left after a shock. It has been met in every chapter since the Andes. In Mexico the soul is often called the shadow. It lies where it fell. The healer goes to the spot, or acts as if there. She calls the person's name, sweeps the body with herbs, and sprays the face suddenly with water or spirits. She lifts the shadow from the ground, sometimes with a pinch of earth from the place.

The stuck bolus (*empacho*). A lump of badly digested food is held to cling to the wall of the stomach or gut. The person, usually a child, is bloated, has no appetite, and has diarrhoea or cannot pass stool. The healer rubs the belly with oil and kneads it. She takes up a fold of skin on the back, along the spine, and pulls until it makes a small popping sound. Then she gives a tea or a purge.

The eye (*mal de ojo*). Someone has looked at a child with strong admiration or envy and has not touched it. The look was too hot. The child has fever, cries, and cannot sleep. The cure is for the person who looked to touch the child. If he cannot be found, an egg is passed over the child's body and broken into a glass.

The fallen fontanelle (*caída de mollera*). The soft spot on a baby's head has sunk. The baby cannot suck well and has diarrhoea. Healers push up on the palate, hold the baby upside down, or apply suction to the spot. Doctors recognise the sunken spot as a sign of serious loss of water.

Bile and nerves. A great anger that was held in turns to bitterness in the mouth, trembling, and pain under the ribs. Long worry gives headaches, sleeplessness and tears.

Air. A bad air from a graveyard, a corpse or the night has entered the body and causes aches, a twisted face or an earache.

Envy and witchcraft. A run of illness and bad luck that nothing explains is laid to the ill will of a neighbour.

The most general treatment is the cleansing, the *limpia*. The patient stands or lies. The healer prays. She sweeps the whole body, from the head down and out, with a bunch of fresh strong-smelling herbs: rue, basil, the pepper tree. She passes an egg over it in the same way. She may blow smoke of copal resin. The herbs are thrown away, wilted. The egg is read in water and flushed away. People say that they feel lighter.

Mexico's health law has recognised traditional medicine since 2006. The social security system has worked with village midwives and healers since the 1980s. In several native regions there are public hospitals with a wing in which healers, bonesetters and midwives receive patients, and a steam bath in the yard.

What has been measured about fright

Fright is the best-studied illness of the old medicine of the Americas.

Arthur Rubel and two colleagues studied it in three communities of Oaxaca in the 1970s: one Zapotec, one Chinantec and one Spanish-speaking. They chose people who said they had fright, and neighbours who were ill with something else. Doctors examined both groups without knowing who was who.

They found three results. People with fright had more signs of bodily disease than the others, and not fewer. Their trouble was not imaginary. They also scored much higher on a measure of social strain. They were people who felt that they could not do what their family and village expected of them. And when the researchers came back seven years later, a number of those who had had fright were dead, and none of the comparison group (Rubel 1984).

So the name that the tradition gives does pick out people who are in danger. What it picks out is neither a single disease nor a mere mood. It is a state in which a person under strain has lost hold, and in which bodily illness of many kinds takes root. The healers say that the soul is not in its seat. Later studies in Mexico and among Mexican Americans have found that fright goes together with depression and with diabetes. Many patients trace their diabetes to a fright (Weller 2008).

One harm must be recorded. For the stuck bolus some healers and families gave bright orange and yellow powders that turned out to be oxides of lead. Children were poisoned, and some died. Health authorities in the United States reported cases in the 1980s and 1990s. Chapter 75 returns to it.

The mushrooms

The Aztecs called certain small mushrooms *teonanacatl*, flesh of the gods. They were eaten with honey at feasts and by those who wished to see. The Spanish friars thought them a devil's parody of holy communion and forbade them. For three hundred years outsiders believed that the practice had died out, or that it had never existed.

It had gone into the mountains. In the 1930s travellers found that the Mazatec, Mixe and other peoples of Oaxaca still held night sessions with mushrooms. In 1955 Gordon Wasson, a New York banker with a passion for mushrooms, was allowed to take part in a session led by María Sabina in the town of Huautla. Chapter 10 told how she had received her gift.

Her session, the *velada*, was held at night before a house altar with images of saints. She and those who came for help ate the mushrooms in pairs. She called them the little ones who spring forth, and the holy children. After a time of silence she began to chant, and she chanted for hours, clapping and humming between verses. In the chant she said who she was. I am a woman who looks inside, she sang. I am a woman who examines. I am a doctor woman, a woman of medicines, a woman who waits. It was not she who spoke, she explained, but the mushrooms through her. They showed her the cause of the illness and whether the patient would live. If the patient was to die, she said so.

Wasson published his account in an American magazine in 1957, with photographs. Within a few years young foreigners arrived in Huautla by the hundred, looking for the mushrooms. The Mexican army finally closed the road. María Sabina was blamed by her neighbours. Her house was burned and she was briefly jailed. She told her biographer what the visitors had done. Before Wasson, she said, nobody took the children simply to find God. They were taken so that the sick would get well. From the moment the foreigners came, the holy children lost their purity. They lost their strength. They were spoiled. From then on they would not work (Estrada 1981).

The Swiss chemist Albert Hofmann isolated the active compound from her mushrooms in 1958 and named it psilocybin. Sixty years later it is being tested in hospitals. In people with cancer who were anxious and depressed, a single high dose brought lasting relief to about four in five, measured six months later (Griffiths 2016). Another trial had 233 patients whose depression had resisted other treatment. One dose of 25 milligrams lowered the depression score after three weeks clearly more than a trace dose did (Goodwin 2022). In a trial for alcohol dependence, people who received two sessions drank heavily on about one day in ten in the months afterwards. In the comparison group it was one day in four (Bogenschutz 2022).

These trials do not give a pill and send the patient home. The patient is prepared in several talks. On the day he lies in a quiet room with eyeshades and music, and two trained people stay beside him for the whole six hours. Afterwards there are further talks to work through what happened. The researchers found that they could not do without these parts. They have built a night session of their own.

What they have left out is what María Sabina considered the centre. In her session the healer eats, sees, and sings the cure. In the trial the patient eats and the therapists stay sober. And she would have said that a mushroom taken for a purpose other than healing a sick person does not work at all.

The Huichol and the peyote

The Wixárika, known as the Huichol, live in the western mountains of Mexico. Their healer and singer is the *mara'akame*. Each year groups of pilgrims walk or ride some four hundred kilometres east to the desert of Wirikuta, where the peyote cactus grows. They "hunt" the first cactus with arrows, as if it were a deer, and eat it there. In the Huichol view deer, maize and peyote are one being in three forms. The *mara'akame* heals with what the peyote and his dreams show him. He passes a wand of hawk feathers over the patient, sucks out small objects, and sprays the place with his breath (Myerhoff 1974).

Peyote went north in the nineteenth century and became the sacrament of a new religion among the peoples of the Plains. Chapter 20 describes it.

What stands out in Mesoamerica

1. **A person has three centres.** Warmth and fate sit in the head, life and mind in the heart, passion in the liver. Health is their balance. The part that leaves in a fright is the first.
2. **Time is part of the diagnosis.** The day of birth and the day on which an illness began have qualities that the healer reads.
3. **The reader's own body is the instrument.** The Maya seer hears the patient's blood talk. The daykeeper feels the answer as lightning in his own.
4. **Illness answers a wrong within the community.** The ancestors let the animal out of the corral. The cure is a public act of asking pardon, and a time of seclusion.
5. **A life is given for a life.** The chicken, washed in the same water as the patient, takes his place.
6. **To name the lineage of an illness is to command it.**
7. **A tested pharmacy and a competent surgery stand beside all this.** The Aztec physician cleaned wounds, set bones and gave drugs that did what he expected of them.

One further point belongs to the count of chapter 2. Mesoamerica counts by twenty and by thirteen. Its calendar of 260 days is their product. Neither number stands on the two ladders of the theory. Chapter 23 notes this among what does not fit.

19. The Navajo

The people

The Navajo call themselves Diné, the People. With about four hundred thousand enrolled members they are the largest native nation of the United States. Their land covers seventy thousand square kilometres of high desert in Arizona, New Mexico and Utah. It lies between four mountains that the Navajo hold sacred, one in each direction.

They came from the north. Their language belongs to the Athabaskan family of Canada and Alaska. Their ancestors reached the Southwest some five or six hundred years ago as hunters. From the Pueblo farmers already living there they took maize, weaving, the dry painting made of coloured sand, and masked gods. They made of these something of their own.

The United States army defeated them in 1864 and marched some eight thousand of them, the Long Walk, to a camp five hundred kilometres away. Many died. In 1868 they were allowed to return. They became sheep herders, weavers and silversmiths. In the 1930s the government forced them to slaughter a large part of their flocks. In the Second World War their soldiers used the Navajo language as a code that was never broken. From the 1940s to the 1980s uranium was mined on their land with little protection for the miners.

Through all of this the ceremonial system held. It is the most elaborate healing system of native North America and one of the most intricate that any people has made. It is also among the best recorded. The army surgeon Washington Matthews wrote down two great chants in the 1880s and 1890s (Matthews 1902). Father Berard Haile, Gladys Reichard, Clyde Kluckhohn and Leland Wyman followed (Reichard 1950; Kluckhohn 1946; Wyman 1970).

One feature sets it apart from everything else in this part. The Navajo healer does not go into trance. He is a singer. He knows by heart a body of songs, prayers, paintings and actions that takes days to perform and years to learn. He must perform it without a single mistake. The seer who finds the cause of an illness is another person.

The ground: hózhó

The central word of Navajo thought is *hózhó*. No English word covers it. Translators use beauty, harmony, order, balance, health, blessedness and well-being. It names the state in which everything is in its place and in right relation with everything else. A person in that state is healthy. A landscape in that state is beautiful. A piece of weaving in that state is well made. It is one quality.

Its opposite is *hóchxǫ́*: disorder, ugliness, what is out of place and out of hand.

The Navajo do not divide the world into good and evil powers. Reichard, who learned the language and lived in a Navajo household, put their view as follows. Everything in the universe has power, and all power is dangerous. What is under control helps. What is out of

control harms. The same lightning, the same snake and the same wind do both. Knowledge is what brings power under control. Ritual is knowledge applied (Reichard 1950).

To live rightly is to "walk in beauty". The full phrase, which ends nearly every prayer, is *sa'ah naagháí bik'eh hózhóón*. It joins two halves that the Navajo treat as a male and a female pair. Roughly, it says: in old age wandering, on the trail of beauty. It names the aim of life. One should live long, and reach old age in a state of order.

Illness is a loss of *hózhó*. Something has put the person out of right relation. Healing puts him back. The last words of a ceremony say so four times: it has become beautiful again.

The Holy People

The beings who made the world and who hold its powers are the Holy People. The Navajo word does not mean that they are good. It means that they are strong and other. The people of today are called the Earth Surface People.

The story of the beginning tells how the first beings climbed up through a series of dark worlds. They spoiled each of these by quarrelling and wrongdoing, until they came out on the surface of this one. First Man and First Woman laid out the four sacred mountains and the first house. Then a baby girl was found on a mountain top. She grew up in days. She is Changing Woman. She grows old with the year and young again each spring. Of all the Holy People she is the one who is wholly well disposed to humankind.

Changing Woman bore twin sons to the Sun. The twins went to their father's house, passed his tests, and received weapons of lightning. With these they killed the monsters that were devouring people. A few they spared: Old Age, Cold, Hunger and Poverty, who argued that people would need them. After the killing the twins themselves fell ill, from the blood and the ghosts of what they had slain. A ceremony was held to cure them. It was the first of its kind.

Then Changing Woman made the first Navajo clans from the skin of her own body, and went to live in the west.

Each ceremony has its own story within this larger one. The pattern is always the same. A young man or woman of the early time leaves home. Through ignorance or disobedience he gets into trouble with one of the powers. He is struck by lightning, swallowed by a great fish, taken by the Snake People, or shattered to pieces by the Thunders. The Holy People find him and put him together again. In doing so they perform a ceremony over him, and they teach it to him. He goes home, teaches it to his people, and then leaves to live with the Holy People for good.

When a ceremony is sung over a sick person today, the story of its hero is retold in song, and the patient goes the hero's road. He, too, has run into a power. He, too, is put together again by the same acts and the same words.

Wind, thought and speech

The Navajo have a word for what gives life, and it is the word for wind: *nílch'i*.

James McNeley gathered what Navajo teachers say about it (McNeley 1981). The winds were there before the earth was made. Each of the four directions has its wind, with its own colour and its own Holy Person. At birth a wind enters the child, and from then on it "stands within" the person. It is what makes him breathe, move, think and speak. It shows itself on the body. There are whorls on the tips of the fingers and toes and a spiral of hair at the crown. These are the tracks of the wind that came in and that holds the person upright. At death it leaves.

A small wind sits at the fold of each ear. In the stories it warns the hero of danger and tells him what to answer. The Navajo speak of it as the source of a person's good sense.

Thought and speech are wind in motion. For that reason they are never mere talk. Gary Witherspoon has shown that in the Navajo view the world was first thought and then spoken into being. Ritual speech still works in that way. A prayer does not describe a state of affairs or ask politely for one. Said correctly, it brings the state about (Witherspoon 1977). Reichard called her study of Navajo prayer *The Compulsive Word*.

Chapter 8 listed the Navajo word *hózhó* among the terms that English cannot translate. *Nílch'i* belongs beside *qi*, *prana* and *pneuma* in the same list. Like them it is breath and wind, it moves in the person and in the world at once, and it carries thought.

Kin

A Navajo is born into the clan of his mother and "born for" the clan of his father. There are more than sixty clans. The word for the right way of behaving towards kin is *k'é*. It means help, generosity and peaceableness. It is owed to all relatives, and the circle of relatives is very wide.

The same terms are used for the Holy People and the world. The earth is mother. The sun is father. Maize and the mountains are relatives. In prayers the patient speaks to a Holy Person as a grandchild speaks to a grandfather. This is no figure of speech. Healing sets a person right with his kin, and his kin include the powers (Lewton 2000).

Where illness comes from

The Navajo doctrine of causes is exact and unusual. Wyman and Kluckhohn set it out in 1938, and later students have confirmed it.

An illness is not known by its signs. A cough, a lame leg or a spell of bad dreams says little. An illness is known by its cause, and the cause is a wrong contact with a power. The contact may lie far back. It may have happened to the patient's mother while she carried him. The table gives the main sources.

Source	Examples of wrong contact
Lightning and thunder	Being near a strike; using wood from a tree that was struck; eating an animal killed by lightning
Winds	Being caught in a whirlwind; sleeping where one has passed
Animals	Killing a bear, a snake, a coyote or an eagle wrongly; being bitten; dreaming of them; a pregnant woman seeing one dead
Ants and other small beings	Disturbing an ant hill
The Holy People and their belongings	A mistake in a ceremony; looking at a sand painting without the right; misuse of sacred objects
The dead of one's own people	Touching a corpse; entering a house where someone died; dreaming of the dead
The dead of other peoples	Killing an enemy; handling the remains of strangers; for a soldier, the battlefield
Excess	Too much of anything: weaving, gambling, sex, even study
Forbidden union	Sexual relations within the clan
Witches	Harm sent on purpose

Three of these need a word more.

The dead. When a person dies, what was good in him goes on. What was out of order stays near the body as a ghost. Even the kindest person leaves one. A ghost troubles the living with bad dreams, fear, fainting and loss of weight. For that reason the Navajo avoided corpses, did not speak the names of the dead, and abandoned a house in which someone had died.

Witches. Kluckhohn collected what Navajos say about witchcraft, a subject on which they do not like to speak (Kluckhohn 1944). They describe several kinds. One kind works with a powder made from corpses. Another casts spells over something taken from the victim. Another shoots small objects into the body: a bit of bone, a tooth, ash from a house of the dead. The witch learns his craft by killing a close relative. He does everything backwards. Where a singer moves in the direction of the sun, the witch moves against it. Where the

singer's prayer goes from the feet to the head, the witch's goes from the head down. Witchcraft is the ceremonial system run in reverse.

The delay. A wrong contact does not show at once. A man who killed a snake as a boy may fall ill at fifty. So the search for a cause is a search through a whole life, and often through the lives of the parents.

Finding the cause

Since the cause decides the cure, and the signs do not show the cause, somebody must find it. This is the work of the diagnostician. The Navajo have three kinds. All three work in a changed state, and none of them heals (Wyman 1936).

The hand-trembler. This is the commonest kind, and many are women. The gift comes unasked. A person finds, often while sitting at someone else's ceremony, that his arm has begun to shake of itself. An older trembler then teaches him the prayers.

The trembler sits beside the sick person. He washes his hands and arms. He takes maize pollen and lays a line of it along the inner side of his forearm, across the palm, and out along the thumb and each finger. He prays to the Gila Monster, the lizard who is the patron of this craft and whose forelegs tremble as it walks. Then he sings, with his eyes closed.

His hand begins to shake, and then his whole arm, violently. It moves over the patient's body without his willing it. Meanwhile he thinks, one by one, of the possible causes: lightning, bear, snake, the dead. When he thinks of the right one, the motion of the hand changes. It may also come to rest over the part of the body where the trouble sits, or trace a sign in the sand. In the same way he finds which ceremony is needed, and sometimes which singer should perform it. Then the shaking stops. He opens his eyes and says what he has found.

The star-gazer. He works at night. He lays out a small painting of a star in sand, prays, and goes outside with a rock crystal. He holds it up to a bright star and looks at it steadily. He sees a beam of light come down. It may light up the house or the patient. Its colour and the way it falls tell him the cause and the outlook. A white or yellow light is good. Red is serious. If the house appears dark or burning, the patient will die.

The listener. He puts a little powder made from the dried eardrum of a badger into his ears, goes out into the dark, and listens. The cry of a coyote, the rattle of a snake or a roll of thunder gives the answer. This method is now rare.

The fee is small. The diagnostician has no long training and no great standing. His finding is a recommendation. The family may consult a second one. If the ceremony that follows does not help, they conclude that the cause was wrongly found, or that there is a second cause, and they begin again. The system corrects itself by trial.

So the Navajo divide what other peoples join. The one who reads works in trance, by a gift, with his own body as the instrument. The one who heals works wide awake, by learning, with

words and images that are fixed. Chapter 8 noted that Mesopotamia and Egypt divided the work in the same way.

The singer

The Navajo word for a healer is *hataałii*, singer. Most are men. A few are women.

A man becomes a singer by choice. Often he was cured by a ceremony and wishes to learn it. He goes to a singer who knows it, pays him, and serves as his helper for years. He learns by listening and repeating. Nothing is written.

What he must learn for one great ceremony is very large. There are several hundred songs, in a fixed order, and each has many verses that differ by a word. There are prayers that run to hundreds of lines and must be said without an error. There are a dozen or more sand paintings, with every colour and every figure prescribed. There are the herbs, the offerings, the acts and the story. Most singers master one or two of the great ceremonies in a lifetime.

The singer owns a bundle of sacred objects. It holds rattles, feathered wands, a bull-roarer, bags of pollen and coloured earths, crystals, and a small bundle of soil from the four sacred mountains. It was assembled over years and consecrated, and he hands it on to a pupil.

Exactness is everything. A wrong word in a prayer does not merely spoil the effect. It turns the power against the patient and the singer. A special rite exists to undo the harm of mistakes, and a song from the rite called Blessingway is added at the end of every ceremony for that purpose.

The ceremonies

The Navajo word for a ceremony is usually given in English as a chant or a way. Wyman and Kluckhohn recorded the names of more than fifty. Fewer than half are sung today, because no singer is left who knows the others.

They fall into a few groups.

Blessingway stands alone and is called the backbone of the rest. It does not cure. It is sung to bring and keep *hózhó*. It is sung for a woman with child, for a girl who has reached womanhood, for a new house and for a wedding. It is sung for someone leaving on a journey or for war. It takes two nights. It uses maize pollen and no rattle. It tells the story of Changing Woman.

The Holyways are the great curing ceremonies. They are for troubles that come from the Holy People and the powers of nature. Each lasts two, five or nine nights. The table lists the best known.

Ceremony	Powers concerned	Typical troubles
Shootingway	Lightning, snakes, arrows	Chest and lung complaints, stomach trouble
Mountainway	Bear, porcupine and the beings of the mountains	Painful joints, disorders of the mind
Nightway	The masked gods	Failing sight and hearing, palsy, disorders of the mind
Beautyway	The Snake People	Aching legs and feet, skin, kidney and bladder trouble
Navajo Windway	Winds, snakes, cactus	Heart and lung complaints, itching, sore eyes
Plumeway	Deer and other game	Troubles of the head, stiff joints
Eagleway and Beadway	Eagles	Sores on the head, itching
Hailway and Waterway	Cold, hail, water	Lameness, sore muscles, effects of near-drowning
Hand-tremblingway	The power of the hand-trembler	Nervousness and trouble of mind from too much trembling
Flintway	The powers of restoring life	Injuries from accidents, broken bones, lasting weakness

The Evilways deal with ghosts. One group is for the ghosts of Navajos. The best known is the Upward-reaching Way. Enemyway is for the ghosts of strangers. A later section describes it.

The list of troubles in the table should not mislead. A singer does not choose Nightway because a man is going deaf. He sings it because the diagnostician found that the masked gods are the cause. Deafness merely happens to be what the masked gods often send.

How a ceremony is built

A great ceremony is built of smaller parts that return in most of them. Reichard compared them to the words of a language. Over five or nine nights they are joined in a fixed sentence. The description below follows the usual form of a Holyway.

The house is made ready. The ceremony is held in the family's hogan, the round house of logs and earth with its door to the east. The singer blesses the beams with cornmeal. From that moment the house is a holy place. The patient is called "the one sung over".

Untying. On each of the first four evenings a rite of unravelling is held. The helpers have prepared small bundles of herbs and feathers. Each is wound with a woollen cord that is looped in a chain of slip knots. The singer presses a bundle to the soles of the patient's feet and pulls the free end of the cord. The whole chain of knots runs out and falls away. He does the same at the knees, the hands, the chest, the back, the shoulders and the head, working upward, while he sings. The Navajo explain that the illness has the patient tied up, and that this unties him.

Cleaning out. Before dawn on each of the first four days a great fire is built in the hogan. The patient and all who wish take off their clothes, sweat, and drink a large bowl of warm herbal brew until they vomit. They wash in the same brew. What was taken in wrongly is brought out.

Inviting. Each morning the singer and his helpers make prayer sticks. These are short lengths of reed, painted in the colour of a direction and filled with pollen, bits of turquoise and shell, and feathers. The patient holds them while a long prayer is said, phrase by phrase, the singer leading and the patient repeating. Then they are carried out and laid down at places that the story names. They are invitations. The Navajo say that a Holy Person who receives a prayer stick that was made without error must come.

Washing. On a morning in the middle of the ceremony the patient is bathed in suds of yucca root in a basket, and dried with cornmeal. He is now clean and ready to meet the Holy People.

The sand painting. On each of the last four days a painting is made on the floor of the hogan. The next section describes it.

The night of singing. The last night is sung through from dusk to dawn without a break. A basket turned upside down serves as a drum. Friends and kin fill the house and join the songs. At first light the Dawn Songs are sung. The patient goes out, faces east, and breathes in the dawn four times.

Four days of quiet. For four days after the ceremony the patient may not wash off the paint and pollen. He keeps apart, does no work, and avoids what could undo the ceremony. Only then is it complete.

In Nightway, the greatest of the winter ceremonies, the last night is public. Teams of masked dancers who are the gods themselves dance before the hogan until dawn. Hundreds of people come from far away. They camp around great fires in the cold and take part in the blessing.

The painting on which the patient sits

The sand painting is the centre of the last four days.

Its Navajo name means the place where the gods come and go. Early in the morning the floor of the hogan is covered with clean sand and smoothed. The singer directs. Several helpers kneel and let coloured powders run from between thumb and finger: white, blue, yellow, black and red, from ground stone and charcoal. A large painting is four or five metres across and takes eight or ten men most of a day.

The designs are fixed. They show the Holy People of the ceremony's story, tall and straight, in rows or around a centre. They show the four sacred plants, lightning, rainbows, snakes, the sun and the moon. Everything is in fours, in the colours of the directions, in pairs of male and female. A guardian, most often a rainbow, encloses the picture on three sides and leaves it open to the east.

Reichard stressed that the painting is not a picture of the Holy People. When it is finished and has been sprinkled with pollen, they are in it.

The patient is led in and sits down in the middle of the painting, facing east. The singer moistens his palms with medicine. He presses them to the feet of a painted figure, and then to the feet of the patient. He does the same for the knees, the hands, the chest, the back, the shoulders and the head. Part by part the patient is made one with the Holy Person. He takes the Holy Person's place in the story. What is in order in the Holy Person is now in order in him, and the sand takes up what was out of order.

Then the painting is destroyed. It must not see the sun go down. The sand is swept together and carried out to the north.

More than a thousand different designs have been recorded. No singer keeps drawings. Each design lives in the memory of those who make it and exists for a few hours at a time.

The prayer

The prayers have a fixed shape, and one example shows it. The following lines come from a prayer of the Night Chant. Matthews wrote it down in the 1890s. The patient repeats it, line by line, after the singer. It begins by naming the house of the Holy Person to whom it is addressed.

"House made of dawn. House made of evening light. House made of the dark cloud. House made of male rain. House made of dark mist. House made of female rain. House made of pollen."

After the offering has been named, the request follows.

“Restore my feet for me. Restore my legs for me. Restore my body for me. Restore my mind for me. Restore my voice for me. This very day take out your spell for me. Your spell remove for me.”

Then, with no pause, the tense changes.

“You have taken it away for me. Far off it has gone. Happily I recover. Happily my interior becomes cool. Happily I go forth.”

And it ends:

“May it be beautiful before me. May it be beautiful behind me. May it be beautiful below me. May it be beautiful above me. May it be beautiful all around me. In beauty it is finished” (Matthews 1902).

Four points in these lines carry the whole method. The body is named part by part, from the feet up, and nothing is left out. The request turns into a statement that it has happened, inside the prayer itself. The person is then set in the middle of beauty on every side: before, behind, below, above, around. And the closing words say that the work is complete. In the performance they are said four times.

A ceremony is a gathering

A Navajo ceremony is not a private treatment. The patient’s family must find the singer and pay him in sheep, goods or money. They must feed his helpers and everybody who comes, and on the last night that may be hundreds. Relatives from far away send sheep, flour and coffee, and come to help with the work. For the days of the ceremony the family lays its ordinary life aside.

The physician John Coulehan, who worked on the reservation in the 1970s, described three cases (Coulehan 1980). One was a woman. The hand-trembler traced her troubles to the ghost of her mother’s brother, to a marriage within the wrong clan, and to what he called too much thinking. Nine nights of Nightway were sung for her. One was a man who had been too close to lightning and whom the trembler described as straining against the world. One was a man who had been bewitched, with stones in his body. The singer of an Evilway sucked them out. In each case, Coulehan wrote, the patient sat for days at the centre of his family and his community. All of them had stopped their own work to put him right.

In the 1990s three hundred Navajo patients were questioned at a hospital of the Indian Health Service. Of these, 62 per cent had used a native healer and 39 per cent had done so in the past year. Hardly any saw a conflict with the hospital. The main reason for not using a healer more often was cost. A visit cost 388 dollars on average, and a great ceremony far more (Kim 1998).

Cost is a real burden, and it is part of the cure. A person for whom so many people have given so much has been shown, beyond doubt, that he is held.

Enemyway

One ceremony has had a special place in the last eighty years.

Enemyway is for those who have been harmed by the ghosts of people who are not Navajo. It is the ceremony that was first held for the twin sons of Changing Woman, when they sickened after killing the monsters. In the old days it was sung for men who came back from raids.

It lasts three days and is held in summer. It needs two camps, sometimes a day's ride apart, and the help of two families. A decorated staff of juniper is prepared and carried from the patient's camp to the other. On the last morning a relic of the enemy is laid on the ground at a distance. It may be a scrap of bone, a lock of hair or a piece of clothing. Men shoot at it and strew ashes on it, and so the ghost is killed. The patient's body is blackened with soot and tallow, as the body of the elder twin was blackened. For that time he is Monster Slayer. In the evenings the young people dance.

Several thousand Navajo men served in the Second World War. When they came home, many had the signs that the tradition expects: bad dreams, starting at noises, loss of appetite, restlessness, a wish to be alone. Families all over the reservation held Enemyway for their sons. It has been held since for men and women who came back from Korea, Vietnam, Iraq and Afghanistan.

The ceremony treats the returning soldier's state as an injury from what he met, not as a weakness of his own. It gives the trouble a cause outside him. It acts on that cause in public and with the help of his whole kin. And it gives him, for a time, the standing of the hero who went through the same and was healed. American psychiatry gave these signs a name of its own only in 1980. Doctors of the veterans' service in the Southwest came to see Enemyway as a treatment and have worked with singers.

Other roads

Not all Navajos use the old ceremonies, and many use more than one road. Thomas Csordas and a team of Navajo and other researchers studied Navajo healing in the 1990s. They found three traditions side by side (Csordas 2000).

The first is the traditional system that this chapter describes.

The second is the Native American Church. Its sacrament is the peyote cactus. It reached the Navajo from the Plains in the 1930s. The tribal council forbade it in 1940 and lifted the ban in 1967. A meeting lasts a night. The people sit in a circle in a tipi round a fire and a crescent-shaped altar of earth. They eat peyote, sing in turn to a water drum and a rattle, and pray

aloud for the sick person in their midst. The leader is called the road man. Chapter 20 describes the church more fully.

The third is Christian faith healing, in Pentecostal congregations led by Navajo preachers. They lay on hands and pray in tongues.

Many families use all three, and the hospital as well. The researchers found the same themes in each. The patient is at the centre of a circle of kin. The kinship terms are used. And each road speaks of healing as a return to the state that the old phrase names (Lewton 2000).

Singers and doctors

The hospital and the hogan have a long shared history on the reservation.

In the 1950s a medical team from Cornell University set up a clinic at Many Farms and decided from the start to work with the singers. They found that the singers sent them patients with tuberculosis and broken bones, and expected in return to be told when a case needed a ceremony.

By the 1960s it was clear that the old singers were dying faster than new ones were being trained. An apprentice has to live, and he cannot earn while he learns. In 1969 the Navajo-run school at Rough Rock began a programme, paid for by the United States government's mental health institute. Six singers each taught two apprentices, and all received a wage. The psychiatrist Robert Bergman, who helped to set it up, also met the singers regularly to exchange knowledge. He taught them something of his field. They taught him theirs. He reported that they were skilled and serious practitioners, and that they were as curious about his methods as he was about theirs (Bergman 1973).

The hospital that the Indian Health Service opened at Chinle in 1982 has a room in the shape of a hogan, with its door to the east, for ceremonies. Several hospitals on the reservation employ traditional practitioners. A singer may be called to a bedside, and a patient may leave for a ceremony and come back. In 2024 the federal health agency agreed that Arizona and New Mexico may pay for traditional healing given through tribal health services.

One episode shows what the old knowledge could contribute. In the spring of 1993 healthy young people on and near the reservation began to die within days of a lung disease that nobody recognised. Investigators traced it within weeks to a virus carried by deer mice. Navajo elders and singers who were consulted said that such deaths had come before, in 1918 and in the early 1930s. Each time, they said, heavy rain had brought a great crop of pine nuts, and the mice had multiplied and come into the houses. The teaching of the elders was that mice belong to the night and the outdoors. Food must be kept from them, and clothing that they have touched should be burned. Rainfall records and old case notes bore the elders out.

What has been measured

There has been no trial of a Navajo ceremony, and there could hardly be one. A chant cannot be given in a sham form to a comparison group.

What exists is of three kinds. There are counts of use, such as the survey above. There are descriptions of cases by physicians and psychiatrists who worked on the reservation and who, almost without exception, came away with respect. And there are studies of the people who seek each kind of healing. The team around Csordas followed patients through traditional, peyote and Christian healing. Most patients in each said that they were helped. What they named was seldom the removal of a symptom. They spoke of thinking clearly again, of being at peace with relatives, and of knowing what to do (Csordas 2000).

That fits what the Navajo say the ceremonies are for. They do not claim to remove a tumour or to kill a germ. They claim to put a person back in order. Whether a person who is back in order recovers better from a disease of the body is a question that could be studied. It has not been.

What stands out

1. **Health, order and beauty are one word.** To be ill is to be out of place. To heal is to restore the order of the whole.
2. **An illness is named by the power that was wronged.** The signs do not decide the cure. The cause does, and it may lie far in the past.
3. **Reading and healing are done by different people.** The reader works by gift, in trance, with his own trembling hand. The healer works by learning, awake, with fixed words.
4. **Everything must be whole and exact.** Every part of the body is named. Every song is sung in order. One wrong word spoils the ceremony.
5. **The illness is untied.** Cords knotted over each part of the body are pulled loose, from the feet to the head.
6. **The patient is set in the place of one who was restored.** He sits on the image of a Holy Person and is joined to it part by part.
7. **The word does what it says.** The prayer moves from asking to stating, and ends by declaring the work complete.
8. **Male and female are paired throughout.** There is male rain and female rain, a male and a female half of the central phrase, male and female figures in every painting.
9. **A ceremony ends in four days of quiet.**
10. **The whole kin carries it.**
11. **Harm is the same system run backwards.** The witch reverses every direction of the singer.

The Navajo count in fours. There are four directions, four sacred mountains, four colours, four sacred plants and four worlds below. Songs come in sets of four or more, up to twelve.

Chapter 2 placed four on the ladder of the meeting, as two pairs. Navajo practice supports that reading in its own terms, since every four is made of male and female pairs.

20. Other nations of North America

A continent of medicines

North of Mexico there were, in 1500, several hundred peoples with as many languages. Each had its own healers. This chapter cannot describe them all. It moves from the Arctic to the Southwest and stops at those peoples whose medicine was well recorded and adds a feature not yet met.

Certain elements are found almost everywhere on the continent. There is the guardian or helper gained in a vision. There is the drawing out of illness by sucking, the sweat bath, tobacco as the offering that opens every dealing with the powers, and the number four. Against that common ground the differences stand out.

The Arctic: breach and confession

The Inuit live along the coasts from eastern Siberia to Greenland. Knud Rasmussen, himself part Greenlandic, crossed the whole of Arctic America by dog sledge between 1921 and 1924 and recorded what the people told him in their own language. His reports are the main source (Rasmussen 1929).

The Inuit shaman is the *angakkuq*. Chapter 10 described how he was made: by solitude, hunger and the gift of an inner light. His helpers were animals, the dead, and beings of the land and sea.

The Inuit account of illness is strict. Life in the Arctic depends on animals, and the animals have souls. An Iglulik man put it to Rasmussen in words that have often been repeated. The great danger of life, he said, is that human food consists entirely of souls. To live among so many souls without giving offence, the people kept a large body of rules. They governed what a woman may do after a birth or a miscarriage, and what may be sewn when. They governed which meats may be eaten together, and how a killed seal is to be treated. A breach clings to the person who commits it, like a dark vapour that the animals and the spirits can see. A hidden breach is the worst.

At the bottom of the sea lives the Mother of the Sea Beasts. Outsiders know her as Sedna. The story tells that her father threw her from his boat in a storm. When she clung to the side he cut off her fingers, joint by joint, and the joints became the seals, the walruses and the whales. The breaches of the people sink down to her and gather as filth in her hair. She has no fingers and cannot comb it. When the filth is thick she grows angry and holds the animals back in a pool by her lamp. The people starve.

Then the shaman must go down. He sits behind a curtain, bound, and his soul dives through the floor of the house and the sea. He passes three rolling stones, a guard dog and her father. He finds her with her back to the lamp. He turns her to the light, speaks gently, and combs

and braids her hair. She tells him what the people have done. He returns, gasping, and says: words will rise. And one after another the people of the house call out their breaches.

Illness is treated in the same way. Rasmussen was present at such a session and took it down word for word. A woman lay sick. The shaman walked up and down, questioning his helper aloud. He asked whether the cause was this, or that. He named breach after breach that he saw around the woman, most of them small matters of food and sewing at forbidden times. At each one the woman answered that it was true. The people in the house cried out together that it was a small matter and that she should be released. This went on for hours and was taken up again at dawn. At the end the shaman declared that the breaches had been taken from her.

Two points deserve notice. The cure consists in bringing the hidden into the open before everyone. And the community, far from condemning the woman, pleads for her at every step. Her breach endangered all of them. Her release is their act.

The Inuit had other means as well. To find a cause, a thong was tied round the head or the leg of a person lying down, and the shaman lifted while he asked questions. When the head grew heavy and could not be lifted, the answer was yes. A sick child might be given a new name. A name carries the soul of the dead relative from whom it comes. A new name brings a new protector and makes the child hard for harmful beings to find.

The Northwest Coast: souls caught and returned

The peoples of the coast from Alaska to Oregon lived by salmon and cedar. They were rich, had nobles and slaves, and carved the great poles and masks for which they are known.

Among the Tlingit of Alaska the shaman was a man apart. He never cut or combed his hair. He gained his helpers by fasting in the forest until an animal dropped dead before him, and he cut out and kept its tongue. His kit held masks, each the face of a helper, rattles, and carved charms of bone. His chief tasks were to recover lost souls, to drive out intruding spirits and to find witches. That last task had a terrible side. A person whom the shaman named as a witch was tied up without food or water until he confessed.

The Tsimshian, the Tlingit and the Haida used an object that shows their idea of illness in the hand. It is a hollow tube of bone, as long as a finger or a hand, carved with an open-mouthed animal head at each end. The shaman went out at night after a strayed soul, caught it in the tube, and stopped the ends with shredded cedar bark. He carried it home and blew it back into the patient through the crown of the head. Museums call these tubes soul catchers.

The Salish peoples of Puget Sound held a great winter rite for the same purpose. Hermann Haeberlin saw one of the last in the early 1900s. A person was listless and unlucky because the dead had taken his soul or his guardian to their land. Several shamans together formed the crew of a canoe. They stood in two lines inside a house, between painted cedar boards set upright in the floor, each with a pole. For two nights they paddled and poled, in song and gesture, to the land of the dead. They acted out every stage. There was the river crossed on a

fallen tree, the hunt for food on the way, and the arrival at the village of the dead. There was the fight to take back what had been stolen, and the flight home. Then they gave the recovered soul back to its owner before all the guests (Haeberlin 1918).

Among the same peoples the old winter spirit dances were revived in the 1960s. A young person in trouble, often with drink, is understood to be sick with a spirit song that wants to come out. He is seized, kept in seclusion for days, made to fast and run, and brought to the point where his song breaks from him. From then on he dances it every winter in the smokehouse, with his elders and his kin around him. The Canadian psychiatrist Wolfgang Jilek, who worked in the area, described the initiation as a treatment. He reported that it did better with the despair and drinking of young Salish people than his own clinic did (Jilek 1982).

California: the pain that is tamed

In the north-west of California, among the Yurok, the Karuk and the Hupa, the doctors were women. Alfred Kroeber described them in his survey of the California peoples (Kroeber 1925).

Their idea of illness is intrusion in its purest form. An illness is a “pain”. It is spoken of as a small living object, slimy and sharp, that lodges in the body. Pains fly about and enter people.

A woman became a doctor by taking a pain into herself and mastering it. She dreamed of a dead relative or a being who put the pain in her body. She fell ill. Older doctors then made her dance for ten nights in the sweat house. At the end she could vomit the pain up, hold it in her hands, show it, and swallow it again at will. A doctor needed at least one pair of pains under her command. They sat in her and gave her the power to draw the pains of others.

To cure, she smoked her pipe, danced and sang until she could see the pain in the patient. She sucked at the place, drew the pain into her own mouth, and vomited it into her hand or a basket. She showed it to the family. Then she danced with it and made it fly away.

Two further customs are recorded. The fee was high, and it was agreed beforehand. If the patient died within a year, the doctor had to give it back. And a doctor might find that a case would not yield because of an old hidden wrong in the family. She would describe what she saw: perhaps that a grandmother had once broken a rule of mourning. A relative had then to stand up and confess it before the house. Only after that did the pain come out.

The Pomo, further south, had sucking doctors as well. One of the last, Essie Parrish of the Kashaya, allowed a full cure to be filmed in the 1960s and explained it afterwards. She was a dreamer and the religious leader of her people. Her power, she said, sat in her throat. When she had sung long enough she saw the sickness in the patient. When she put her mouth to the place, it came to her of itself and stuck in her throat. What she spat into her hand was alive. Everyone present could see it, and then it vanished.

The Plains: the Lakota

The Lakota, the western Sioux, were buffalo hunters of the northern Plains. They are known through the words of their own holy men. George Sword and others taught the agency physician James Walker around 1900 (Walker 1980). Black Elk spoke to John Neihardt in 1931 and to Joseph Brown in 1947 (Brown 1953). John Fire Lame Deer told his life in the 1960s.

The ground. The Lakota word for what is holy is *wakȟáŋ*. Sword explained it to Walker. Anything that is hard to understand is *wakȟáŋ*. Every being has it in some measure: the sun, the rock, the buffalo, the wind, a newborn child. All of it together is *Wakȟáŋ Tȟáŋka*, the Great Mystery. The world is a hoop. It has four directions with their colours and winds, the sky above, the earth below, and a centre. Every prayer ends with the words “all my relatives”. The phrase states the Lakota view of health in three words. To be well is to be in right relation with all one’s kin, and one’s kin include everything.

The healers. The Lakota distinguish kinds of healer more sharply than most peoples. The herb man knows the plants and treats wounds, fevers and pains. Much of his knowledge came from the bear, who digs roots, and the best herb men were those who had dreamed of the bear. The holy man has been called by a vision and conducts the rites. The *yuwipi* man works with spirits in the dark. A person may be more than one of these.

The sweat lodge. Every Lakota rite begins here. A low dome of bent willow is covered with hides or blankets until no light enters. Stones are heated red in a fire outside. They are carried in and laid in a pit at the centre. The people crawl in and sit in a ring. The leader pours water on the stones, and the steam fills the dark. There are four rounds, with songs and prayers in each. Between rounds the flap is opened and water is passed round. The Lakota say that the stones are the oldest of all beings and that the steam is their breath. The lodge is the womb of the earth, and one comes out of it new.

The sweat lodge has spread far beyond the Plains. It is held today in native communities across the continent, in prisons, in treatment centres for addiction and in programmes for war veterans.

Yuwipi. The most striking healing rite of the Lakota is held at night in a room from which every trace of light has been shut out. The furniture is removed and the windows are covered.

On the floor the helpers mark out a rectangle. Its border is a single long string on which hundreds of tiny bundles of tobacco have been tied. Tradition gives their number as 405, for the 405 kinds of spirits. At the corners stand cans of earth with flags in the colours of the directions. Inside are an altar of smoothed earth, a pipe, and gourd rattles that hold small stones.

The *yuwipi* man stands in the middle. His helpers tie his fingers together behind his back with a bowstring. They cover him from head to foot with a star quilt. They wind a long rawhide

rope round and round the bundle and tie it with seven knots. They lay him face down on a bed of sage. The word *yuwipi* means “they wrap him up”.

The sick person and the family sit along the walls. The light is put out. Singers begin the songs with a drum. After a time the people in the room hear and feel what they describe as the arrival of the spirits. The rattles leave the floor and fly about, striking the walls and touching the sick. Small blue sparks flash. There are voices. The spirits tell the *yuwipi* man what is wrong with the patient and which herbs to give. They also answer questions about lost objects and missing persons.

When the lamp is lit, the *yuwipi* man is sitting up, untied. The quilt lies folded. The rope has been rolled into a ball. Then the pipe is smoked, a bowl of water is passed, and a feast is eaten (Powers 1982).

A healer is bound hand and foot, and those who heal undo the knots. The *yuwipi* man submits in his own body to what the illness has done to the patient. The spirits who release him are the ones who say how the patient can be released.

The Sun Dance. The great summer rite of the Plains is a gift of one’s own body. A man vows to dance if a sick child recovers or a relative comes home from war. For four days the dancers fast and thirst and dance facing a cottonwood tree set up at the centre of a great ring. Those who have vowed it are pierced. Skewers are passed through the skin of the chest and tied by thongs to the tree, and they dance until the skin tears. The Lakota explain that a man owns nothing but his body. All else was given to him. His flesh is the only offering that is truly his. The United States forbade the dance from 1883. It was held in secret and has been held openly again for decades.

The Great Lakes: the Ojibwe

The Ojibwe, or Anishinaabe, live around the upper Great Lakes in the United States and Canada. Irving Hallowell spent many summers among the northern Ojibwe in the 1930s (Hallowell 1955).

They had several kinds of healer. The sucking doctor swallowed short tubes of bone, brought them up, and used them to suck out the cause of an illness. The members of the Grand Medicine Society, described in chapter 10, healed with herbs and with the rite of the shell. And there was the conjuror of the shaking tent.

The shaking tent. A narrow, barrel-shaped frame of stout poles is set deep in the ground and covered. The conjuror is often bound and then crawls in alone at dusk. The people sit outside. He sings. Then the lodge, which several men could hardly move, begins to rock and sway. Voices are heard from the top, each different. The first is always the Turtle, who jokes with the audience and carries messages. The others are the masters of the animals and the winds. The people outside ask their questions. They want to know where the moose are, whether a

husband on the trapline is alive, who has sent this sickness, and what the sick woman must do. The spirits answer through the top of the lodge.

Bad conduct and confession. Hallowell's most important finding concerns the cause of serious illness. The Ojibwe had little government and no police. They had strict rules of conduct. A person must share, must not be cruel to animals or people, and must keep the sexual rules. A grave illness that did not yield to ordinary treatment was taken as the result of a breach of these rules. The breach could be the patient's own or a parent's.

The cure was to confess. The sick person, or the parent, had to say what was done, fully, in the hearing of others. Hallowell asked why the confession had to be public. The answer was that the wrong works as long as it is hidden. Once it is spoken aloud and everyone knows, it has no more power. The same rule was heard among the Inuit and the Yurok. Three peoples with no link between them hold that a wrong does harm for as long as it is kept in the dark (Hallowell 1955).

The Iroquois: the hidden wish of the soul

The Iroquois peoples lived in what is now New York State and southern Ontario. French Jesuits lived among them and their Huron neighbours from the 1630s and sent long reports home each year.

In 1649 Father Paul Ragueneau set out what the Hurons believed about illness. They recognise three causes, he wrote. The first is natural, and it is cured by diet, sweating, herbs and small cuts. The second is sorcery. A spell has been cast, and the cure is to draw it out of the body. The third struck him most. The soul has wishes of its own, of which the person knows nothing. These wishes are inborn and hidden. The soul makes them known through dreams, which are its language. If the wish is granted, the soul is content. If it is not, the soul grows angry and turns against the body, and the person falls ill and may die.

It followed that a sick person's dreams had to be studied, and that what they showed had to be given. If the meaning was unclear, a specialist was called to find out what the soul desired. If a man dreamed of a feast, a dog, a canoe or a dance, the village provided it, whatever the cost. Ragueneau and his brethren were appalled. They saw whole villages set in motion to satisfy a dream.

Three hundred years later the anthropologist Anthony Wallace pointed out what the Jesuits had described. The Iroquois held that the mind has a part that is hidden from itself. Its wishes show themselves in disguised form in dreams, and unmet wishes cause illness of body and mind. That is the central idea of the psychology that Sigmund Freud published in 1900 (Wallace 1958).

At the midwinter festival the Iroquois still hold a rite in which people go from house to house and ask their neighbours, in riddles, to guess their dreams. The one who guesses must give what was dreamed.

The Iroquois also have medicine societies. The best known is the Society of Faces. Its members wear wooden masks with twisted mouths and deep-set eyes. Each mask is carved on the trunk of a living basswood tree and cut free afterwards, so that it keeps the life of the tree. The masked men enter a sick person's house in spring and autumn, crawling and making strange cries. They scoop hot ashes from the fire with bare hands and blow them over the patient. A person who has been cured by the Faces becomes a member of the society. The same rule holds for the other societies. The cured person joins the healers.

One society sings its songs in the dark for the Little People. These are small beings of the woods and rocks, who taught the songs to a boy long ago and help those who remember them.

The Southeast: the Cherokee and the origin of medicine

The Cherokee lived in the southern Appalachian mountains. In 1821 one of them, Sequoyah, invented a script for their language. Within a few years most Cherokee could read and write it. The healers began to write down their sacred formulas in notebooks. In 1838 the United States drove most of the nation west along the road that is remembered as the Trail of Tears. A part stayed hidden in the mountains of North Carolina.

In 1887 the ethnologist James Mooney came to those mountains and won the trust of an old healer named Swimmer. Swimmer let him copy his notebook: some hundred and thirty formulas for curing, hunting and love, in Cherokee script. Other healers followed. It is the only body of healing texts written by native North American healers for their own use (Mooney 1891; Mooney 1932).

Swimmer also told Mooney how illness and medicine came into the world.

In the old days animals and people lived as friends. Then the people multiplied and invented bows, knives and hooks. They killed the larger animals for food and trod the smaller ones underfoot out of carelessness. The animals met in council, each kind by itself. The bears met first and could decide on nothing. The deer decided to send rheumatism to every hunter who killed one of them and did not ask its pardon. The fish and the snakes decided to send dreams of rotten food, so that the dreamer would lose his appetite and waste away. The birds and the insects each devised an illness. In the end there was hardly a hope left for mankind.

The plants heard of it. They were friendly to people, and they resolved to defeat the plan. Mooney translates what they did. "Each tree, shrub, and herb, down even to the grasses and mosses, agreed to furnish a remedy for some one of the diseases named." And each said: "I shall appear to help man when he calls upon me in his need" (Mooney 1900).

The story holds a complete doctrine. Illness is the answer of the animal world to human excess and disrespect. For every illness there is a plant. And the healer must find out which animal is offended before he can know which plant to call.

A Cherokee cure has several parts. The healer first names the cause. He asks about dreams, since each kind of dream points to a kind of animal or ghost. Then he prepares the medicine and recites or sings the formula, four times, while he rubs the patient or blows the medicine on him through a tube of cane.

The formulas follow a fixed plan. The healer speaks of the illness with contempt, as a mere intruder. He names the being that caused it. Then he calls on a stronger rival of that being, from each of the four directions in turn. Each direction has a colour: red in the east for success, blue in the north for trouble, black in the west for death, white in the south for peace. If the Deer has sent the rheumatism, the healer summons the Red Dog from the east, then the Blue Dog, the Black Dog and the White Dog. Each carries off a part of the intruder. The formula ends by stating that relief has come.

The patient is then taken at dawn to a running stream. He faces east and goes under the water, or is sprinkled, while the healer prays. The Cherokee call this going to water. The river is addressed as the Long Person, whose head is in the mountains and whose foot is in the sea.

The Southwest: an illness that stays

The Tohono O'odham and Akimel O'odham live in the desert of southern Arizona. They are also known as the Papago and the Pima. In the 1970s one of their shamans, Juan Gregorio, explained the theory of his craft in his own language to a team of two O'odham speakers and an anthropologist. The resulting book gives a shaman's doctrine as he himself reasons it out (Bahr 1974).

Gregorio distinguished two great classes of sickness.

The first he called wandering sickness. It moves from person to person and from people to people. Measles, colds and the like belong to it. It has no meaning. For this the white doctors are the right help.

The second he called staying sickness. Only O'odham get it. It does not pass from one person to another. It comes from the "ways" of certain dangerous objects that were given to the O'odham at the creation. Most are animals: coyote, deer, rabbit, owl, quail, the Gila monster and the bear. Others are lightning, the whirlwind, the saguaro wine, and the dead. Each of these has its own dignity and its own rules. A person who treats one of them without respect takes its "strength" into his body. He may kill a rabbit cruelly, step on the track of a whirlwind, or leave a rite unfinished.

The strength does not act at once. It stays in the body, often for many years, and builds up. A person can carry several strengths, one over the other, like layers. One day the load shows as an illness.

The cure is divided between two kinds of healer. The shaman diagnoses. He works through a whole night. He blows tobacco smoke over the body of the patient, which makes the strengths visible to him. He fans with eagle feathers, holds up crystals for light, sings, and

sucks at the body to bring the strengths to the surface. By morning he can say which they are and in what order they lie. He does not cure.

The cure is given by ordinary people who own the songs of the being concerned. For rabbit sickness the rabbit songs are sung, by a group, through a night. The singers blow on the patient, and an object of the being, such as a rabbit's tail, is pressed to the body. The being hears its songs, is pleased, and takes its strength back. If several strengths are present, each needs its own night, and the uppermost comes first.

Gregorio's account is the clearest in this part on three matters. Diagnosis and cure are separate crafts. An illness has a history in the body and is laid down in layers that must be taken off in order. And the tradition itself draws the line between what belongs to it and what belongs to the hospital.

The Pima have suffered since the mid-twentieth century from one of the highest rates of diabetes known anywhere. About half of the adults have it. Their relatives in the mountains of Mexico, who farm in the old way, have far less. The disease followed the loss of the river water on which the Pima had farmed, and the change to a diet of flour, lard and sugar.

The peyote road

The largest native religion of North America today is a healing religion. Peyote is a small spineless cactus of the Rio Grande country and northern Mexico. It contains mescaline. The peoples of Mexico have used it for thousands of years. In the 1870s and 1880s it spread north to the Comanche and Kiowa of Oklahoma, at the time when the buffalo were gone and the peoples were confined to reservations. From there it travelled from tribe to tribe. In 1918 its followers formed the Native American Church. It has perhaps a quarter of a million members.

A meeting is held for a purpose. Most often someone is sick. It lasts from sundown to sunrise in a tipi. The people sit on the ground in a circle. In the middle burns a fire, tended all night, and behind it lies a low crescent of earth, the altar. Its ridge is the road of life. A large peyote button, the Father, rests on its crest.

The leader is the road man. He has a staff, a gourd rattle and a fan of feathers. Peyote is passed round and eaten. Then the staff and the rattle go round the circle. Each person in turn holds the staff and sings four songs, while his neighbour beats a small drum half filled with water. Between rounds people pray aloud, in their own words and often in tears, for the one who is ill. At midnight water is brought in. At dawn a woman brings water again, with maize, fruit and meat, and the meeting ends with a meal.

Members call peyote a medicine and a teacher. They say that it shows a person his life as it is. The church forbids alcohol, and many members came to it to stop drinking.

Two studies give some measure of this. Doctors at a hospital for native people in Oklahoma reported in the 1970s that peyote meetings, used alongside their own programme, helped patients with alcoholism (Albaugh 1974). A later study examined Navajo members who had

taken peyote regularly for years. They showed no loss of memory or thinking compared with Navajos who had never used it. On several measures of mental health they did better (Halpern 2005). The law of the United States has protected the use of peyote by native members of the church since 1994.

The plants

The peoples of North America knew their plants thoroughly. Daniel Moerman gathered every recorded use into one database. It lists nearly three thousand kinds of plants used as medicine by some three hundred peoples, in about twenty-five thousand recorded uses (Moerman 1998). Virgil Vogel counted about a hundred and seventy drugs of native North American origin that were at one time official in the pharmacopoeia of the United States (Vogel 1970). They include the bark of the cascara for constipation, witch hazel, slippery elm, and the purple coneflower of the Plains. They also include the root of the mayapple, from which a cancer drug was later developed.

The first recorded case is from 1536. The French explorer Jacques Cartier wintered with three ships at an Iroquoian town on the St Lawrence. Scurvy broke out. Of his hundred and ten men, twenty-five died, and most of the rest could not stand. A man of the town, Domagaya, showed Cartier a tree. The women fetched branches and showed how to boil the bark and needles and drink the liquid. Cartier wrote that his men used up a whole large tree in a week. They recovered so fast that he called it a miracle. The tree was an evergreen rich in vitamin C. Europe forgot the lesson, and sailors went on dying of scurvy for more than two centuries.

Law, loss and what holds

Chapter 9 told how the United States and Canada outlawed native healing for half a century. The children were taken to boarding schools, where their languages were forbidden. The effects are measured in the health of their descendants. In 2021 the life expectancy of native people in the United States was about sixty-five years, more than ten years below the average.

One study from Canada stands for many that link health to the survival of a people's own institutions. Michael Chandler and Christopher Lalonde examined suicide among young people in nearly two hundred native communities of British Columbia. The rates differed enormously from one community to the next. They looked at six markers of what they called cultural continuity. A community might have a measure of self-government. It might have pursued a land claim. It might control its own schools, its health services and its police. It might have a building for its ceremonies. In communities with all six there were no youth suicides at all in the years studied. In communities with none the rate was many times the national one. Each marker counted (Chandler 1998).

The old healers would not be surprised. In every nation of this chapter, illness is a broken relation and health a relation kept: with the animals, with the dead, with one's kin and one's

own hidden wishes. The Lakota prayer says it in three words. A people that still has its relations has its health.

What stands out in North America

1. **A hidden wrong makes ill, and speaking it aloud cures.** The Inuit, the Ojibwe and the Yurok say so in nearly the same terms.
2. **The soul has wishes that the person does not know.** The Iroquois read them in dreams and granted them.
3. **Illness is a small living object, and the healer is one who has mastered such an object in herself.** This is the teaching of the Yurok doctors.
4. **The healer is bound, and the helpers untie him.** The Lakota rite acts out release in the body of the healer.
5. **Illness builds up in layers and must be taken off in order.** The O'odham shaman reads the layers. Others sing them away.
6. **For every illness sent by an offended being there is a plant that answers it.** The Cherokee origin story makes this a law of the world.
7. **The cured join the healers.** The Iroquois societies and the peyote church are made up of former patients.
8. **Health is the sum of a people's relations.** Where the people keep hold of their own life, their young stay alive.

21. The illnesses of the shaman’s world

Named by cause

The twelve chapters before this one described peoples who never met. Their illnesses carry hundreds of different names. Set side by side, the names fall into fewer than ten kinds. This chapter describes each kind in turn. It gives the signs by which the healers know it, the cure they use, and what has been measured.

One rule holds throughout. These illnesses are named by what brought them about, not by what the patient feels. The hospital names most illnesses by the organ and the change in it: inflammation of the lung, narrowing of an artery. The shaman’s medicine asks who or what is involved. Two people with the same cough may have different illnesses. Two people with nothing in common to the eye of a physician may have the same.

The table gives the kinds and some of their names.

Kind	What the traditions say	Some names
Loss of the soul	A part of the person has left and has not come back	*Susto*, *mancharisqa*, loss of *tonalli*, *saato*, soul loss among the Hmong, Evenki, Sámi; a shifted *kurunpa*
Intrusion of an object	Something sits in the body that does not belong there	The dart, the “pain”, the arrow of the dead, the bone, the splinters of the G/ui
Intrusion of a spirit	Someone else is in the person	Possession; the biting tooth of the Ndembu; the Sakha spirit that eats an organ
A breach or a hidden wrong	A rule was broken and the wrong has not been set right	Breach of taboo among the Inuit; bad conduct among the Ojibwe; staying sickness; crossing; the animal let out of the corral
Sorcery and envy	Someone has sent it	*Daño*, witchcraft, the pointed bone, the eye

Kind	What the traditions say	Some names
The dead who hold on	A dead person draws the living after him or cannot leave	The arrows of the // *gauwasi*; ghost sickness; the Korean wandering dead; the forgotten ancestors of the Buryats
Place	The land or what lives in it has taken hold	Seizure by the earth; winds; the serpent beings; the guardian of the shore
The call	The spirits want this person as a healer	The shaman's illness, *ukuthwasa*, spirit sickness
What came from outside	Diseases that travel and carry no meaning	Wandering sickness; white man's sickness; illnesses of God

Loss of the soul

This is the most widespread of all. It is the leading illness in Siberia, the Himalaya, Southeast Asia, the Andes and Mesoamerica. It is known in Australia, the Arctic and on the Northwest Coast.

How it happens. The traditions agree that a person has a part that is able to leave. It goes out in sleep and comes back. Illness begins when it does not come back. Three roads are described. The part is startled out by a shock: a fall, a loud noise, a bad sight, a sudden death. Or it is drawn away by someone who wants it: a dead relative, a spirit of the place. Or it is seized, by a sorcerer or by a being that feeds on souls. Small children lose it most easily. So do people who are far from home.

The signs. They are the same across the world. The person is listless. He sleeps badly and starts in his sleep. He has no appetite and loses weight. He is pale. He has no wish to work, to talk or to be with others. People say that he is not himself, or that nobody is at home. A child cries, clings, and has diarrhoea.

The cure. The steps are the same across the world too. Someone goes to where the soul is: in fact, in song or in trance. It is called by the person's name. Something of the person is used to draw it, such as his clothes, his hat or his favourite food. It is brought back, and nobody speaks or looks behind on the way. It is put into the body at the crown of the head or the chest. Often it is then tied in, with threads round the wrists. The person sleeps and is left in quiet.

What is known. Chapter 18 gave the best study. In three Mexican communities, people with fright had more bodily disease than their neighbours and more of them died in the following seven years (Rubel 1984). Later work links it to depression and to diabetes. Psychiatry has no single name for the state. Parts of it are called depression, parts dissociation, parts the after-effects of trauma. The English language still keeps the old picture in its idioms. A person is beside himself, is not all there, has lost heart, or comes back to himself.

Chapter 6 drew a distinction from the essay on the two spaces of the body. An illness may lie in the body that can be measured. It may also lie in the tie between that body and its other half. Soul loss is the old name for an illness of the second kind.

Intrusion of an object

How it happens. A small object has entered the body. A sorcerer shot it, or the dead did, or a spirit of the wild. It may be a dart, a thorn, a sliver of bone or wood, a pebble, a crystal, a worm or an insect.

The signs. There is a pain that is sharp and stays in one place. Or there is a swelling, or a wasting that begins at one spot.

The cure. The healer finds the place by sight, by touch or with the help of a plant. He draws the object out, most often by sucking, and also by pulling, by cupping with a horn, or by stroking and shaking off. He shows what has come out. He disposes of it far away, in fire or in water. Then he closes the place, with smoke, breath or song.

How widespread. This is the most thoroughly counted practice of the old medicine. William Buckner found it in 62 of 89 hunting and gathering societies in the largest collection of ethnographic reports, and on every inhabited continent (Buckner 2022). This part of the book has met it among the San, in Australia, in Siberia and in Ladakh. It has met it in the Amazon and the Andes, among the Taíno in 1498, and across North America.

The question of the object. Chapters 8 and 9 discussed it. The healers themselves often say that the visible object is not the illness. It is what the illness was caught in. The Yurok doctor's "pain", the Amazonian dart in its phlegm and the Aboriginal healer's stone are described as real and unseen. What is shown stands for them.

A spirit in the person

A spirit, an ancestor or a god has entered the person. The traditions describe two outcomes that look alike at first.

In the one the visitor is an enemy. The person raves, wastes, or is in pain. The healer names the spirit, makes it speak, and drives it out. He threatens it, smokes it, beats the air, or offers it another dwelling: a figure, an animal, a tree.

In the other the visitor will not go, and should not. This is the case of the call. Chapter 10 described it. The cure is to learn who the visitor is and to come to terms. The person becomes a healer or joins a society of those who have the same visitor.

Africa has made this second outcome into a great institution. John Janzen followed it across the Bantu-speaking half of the continent under its commonest name, *ngoma*, which means drum. A person falls ill, and the illness does not yield. A diviner finds that a spirit of a named kind is the cause. The sufferer is taken into the company of those who were struck by the same spirit. They drum and sing with him until he finds his own song. He passes from sufferer to novice to full member, and in time he treats others. The society of healers is the society of the healed (Janzen 1992).

The *zar* of Ethiopia, Sudan and Egypt is of the same kind. A woman has pains, tiredness or cannot conceive. A woman leader of the cult finds that a *zar* spirit has taken her. Drumming brings the spirit out to speak. It names itself and its wishes: perfume, a certain dress, a feast. They are given. The spirit stays for life. The woman attends the gatherings, and she is well as long as the spirit is content (Boddy 1989).

Victor Turner described a rite of the Ndembu of Zambia. A man suffers from pains that move about his body. The diviner finds that the tooth of a dead hunter, a relative, is wandering under his skin and biting him. The doctor cuts small openings and sets cupping horns on them. Drums play. The tooth does not come at once, and the doctor stops the drums and addresses the gathering. He tells them that the tooth will not let itself be caught while there is anger in the village. One after another the patient's kin and neighbours stand up and say what they hold against him and against each other. The patient says what he holds against them. Only when everything has been said does the doctor "catch" the tooth in a horn and show it. Turner concluded that the doctor treats the village through the body of one man. The patient cannot get better until the grudges of the group have been brought to light (Turner 1967).

His wife Edith Turner went back to the Ndembu years later and took part in the same rite. She wrote of the moment when the tooth was taken. She saw with her own eyes a grey shape, like a large ball of smoke, come out of the patient's back. She reported it as an observation and did not withdraw it (Turner 1992).

A breach, and the wrong that is hidden

How it happens. The person, or someone close to him, has broken a rule of the world. He has offended an animal, a place, a sacred object or the ancestors. He has failed his kin. He has done wrong in sexual matters. The wrong has not been set right, and above all it has not been made known.

The signs. There are none that are fixed. Any illness that lingers, or that keeps coming back, may be of this kind. That is why it must be found by divination, by the pulse or by questioning.

The cure. The wrong is found and named. The person, or the relative concerned, says aloud what was done, before others. Then what was owed is paid: an offering, a gift, a rite completed. Often there is a washing, a sweating or a vomiting to carry the wrong out of the body.

This book has met the pattern among the Inuit, the Ojibwe and the Yurok. It has met it in Zinacantan and among the K'iche', in the Aztec confession to the goddess of filth, and in the Amazonian crossing. It has met it in the O'odham staying sickness, in the Navajo doctrine of wrong contact and in the Aboriginal Law. Three of these peoples gave the same reason in nearly the same words. A wrong does harm for as long as it is hidden. Spoken aloud, it loses its hold.

What is known. Modern psychology has tested a mild form of this claim. James Pennebaker asked students to write for four days, for a quarter of an hour, about the worst experience of their lives, including what they had never told anyone. A comparison group wrote about neutral matters. In the following months those who had written about their secrets went to the doctor less often. In one study their white blood cells responded more strongly to a test (Pennebaker 1988). The experiment has been repeated well over a hundred times. Taken together the effect on health is small and real (Frattaroli 2006). Other work finds that people who carry secrets are worn down mostly by returning to them in thought, again and again, when alone (Slepian 2017).

These studies concern private writing. The old cure is public. The whole village hears, and pleads for the one who confesses. No experiment has tested that.

Sorcery and envy

How it happens. Another person wishes the patient ill and has acted on the wish. He has done it himself or has paid a specialist. The means differ: a dart, a spell over a hair or a footprint, a bundle buried at the door, a powder in food, a look.

The motive is nearly always envy. The anthropologist George Foster described the reasoning behind it in the peasant villages of Mexico. People there behave as if all good is in fixed and short measure: land, health, luck, love. What one family gains, another must have lost. Whoever does better than his neighbours is therefore open to their envy, and whoever falls ill asks who envied him (Foster 1965). The fear of envy keeps people from showing what they have. In this way the belief in sorcery holds a community level.

Sorcery also answers a question that the hospital leaves open. E. E. Evans-Pritchard gave the classic example from the Azande of central Africa. A granary on wooden posts collapses and injures the people sitting in its shade. The Azande know that termites ate the posts. They know that people sit under granaries in the heat. What they ask is why the two events fell together: why it fell at that moment, on those people. For that there must be a further cause,

and the cause is witchcraft. He called it the second spear (Evans-Pritchard 1937). The hospital says how. Sorcery says why me, and why now.

The signs. The illness is sudden and has no visible cause. Or it resists every ordinary treatment. Or it comes with other misfortunes: the cattle die, the business fails, the marriage breaks.

The cure. The healer finds out whether harm was sent and often by whom. He takes out what was put in. He may send it back. He closes and guards the patient, with a song, a thread, an amulet, or a circle of protecting beings. In many societies the matter then becomes one for the whole community. The accused is confronted and made to withdraw the harm.

The eye. The mildest and most widespread form needs no ill will at all. A look of admiration, if envy is in it, can make a child or an animal ill. The belief runs from Scotland and Morocco to India and through the whole of Latin America. A count of 186 societies of the world found it in about one in three (Roberts 1976). The cures are everywhere small domestic acts. The one who looked touches the child, or spits lightly, or says a blessing. A blue bead, a red thread or a hand-shaped charm is worn against it.

The price. This kind of illness has victims of a second sort. Where sorcery is believed in, people are accused of it, and the accused are most often the weak: old women, widows, the poor, the odd. Accusations have led to killings in every century, and they do so now. The crime statistics of India recorded more than two thousand five hundred such killings between 2000 and 2016. Reports from Tanzania, Papua New Guinea and elsewhere tell the same story. Chapter 75 returns to this. A book that takes the old medicines seriously has to say that this part of them has cost many innocent lives.

Can fear and exclusion kill?

The traditions claim that a person who has been bewitched, or who has broken a great rule, may die of it. Chapter 13 gave the Australian accounts and the dispute about them. What is known today comes from four lines of work.

The heart under sudden shock. In 2005 cardiologists described nineteen patients who had been brought to hospital with what looked like a severe heart attack, just after an emotional shock. One had been told of a death. One had been surprised at a party. One had been in an argument. Their coronary arteries were open. The left chamber of the heart was stunned and bulging and hardly moved the blood. The level of adrenaline and related hormones in their blood was two to three times as high as in patients with a real heart attack. Most recovered within weeks. The condition is now well known. It strikes mostly older women, and a small share of patients die (Wittstein 2005). A neurologist who reviewed the whole field concluded that Cannon had been right in principle. A storm in the nervous system can stop or damage a healthy heart (Samuels 2007).

Death after a loss. A British study followed more than thirty thousand older people whose partner had died. Their rate of heart attack and stroke in the first thirty days was twice that of people of the same age who had not been bereaved (Carey 2014). The risk fell back over the following months.

Belief and the day of death. David Phillips studied the death certificates of Americans of Chinese and Japanese descent. In both languages the word for four sounds like the word for death, and the number is avoided. On the fourth day of each month, deaths from chronic heart disease among these Americans were 13 per cent higher than on other days. No such peak was found among white Americans (Phillips 2001).

Harm from expectation. The opposite of the placebo is called the nocebo. A British trial enrolled patients who had stopped taking a cholesterol-lowering drug because of side effects. For a year they were given three kinds of bottles: the real drug, a dummy tablet, and nothing. They recorded their symptoms daily. Nine tenths of the symptom burden that they had on the drug appeared on the dummy tablet as well (Wood 2020). Fabrizio Benedetti has shown in the laboratory that the mere announcement of pain raises pain, by a known chemical path. A drug which blocks that path removes the effect (Benedetti 2006).

None of these studies concerns sorcery. Together they show that each link in the old claim is possible. Words and beliefs can produce bodily symptoms. Fear can stun a heart. Loss and the conviction of being doomed can kill. A person who believes that he has been marked, and whose kin have drawn back from him, is under all of these at once.

The dead who hold on

How it happens. The dead do not leave at once, and some do not leave at all. Two cases are described.

In the first, the dead person longs for the living. The San, the Sámi and the Siberian peoples say this in the same way. A dead mother wants her child with her. She draws the child's soul after her, or shoots sickness into it, out of love.

In the second, the dead person cannot go, because of how he died or how he was treated. He died young, by violence, far from home, unmarried or unmourned. Or nobody remembers him. The Korean wandering ghost, the Navajo ghost, and the forgotten Buryat ancestors of chapter 15 are of this kind. Such a dead person troubles the living until something is done for him.

The signs. There are dreams of the dead person. The living relative weakens, loses interest, and follows the dead in thought. Or the family meets one misfortune after another.

The cure. The dead person is given what he lacks. He is fed, clothed, named and mourned. He is told, kindly and firmly, to go. Many peoples hold a second funeral, months or years after the first, to complete the leave-taking. In the Korean rite the cloth with its knots is

drawn smooth and becomes the road on which the dead person departs. Among the Navajo the tie is cut by ceremony and by never speaking the name again.

What is known. The bereaved are at higher risk of dying themselves, as the last section showed. Psychiatry now recognises a state in which grief does not ease. It was given a place in the international classification of diseases in 2019 under the name prolonged grief disorder. Its signs are a lasting yearning for the dead person, a sense that part of oneself has died, and an inability to take up life again. The old healers would say that the dead person has not yet been sent on his way.

Place

How it happens. A person has been at the wrong place or has treated a place wrongly. The earth was hungry and took hold of him. He slept on an old grave. He fouled a spring or cut a tree that belonged to a serpent being. He walked through a wind of the dead. He entered the sea without washing off the land.

The cure. An offering is made at the place. The person is cleansed of what clings to him. In serious cases he moves away.

The reverse case is as widespread. A person is ill because he is away from his place. Aboriginal elders say that they cannot get well off their country. Chapter 13 gave the evidence that people on their homelands are healthier. In the 1970s and 1980s Navajo families were moved off their land in a dispute over the boundary with the Hopi. They were found afterwards to suffer more illness and despair than those who stayed.

A new English word was made in 2003 for one form of this. The Australian philosopher Glenn Albrecht worked with farmers and Aboriginal people of a valley that was being dug up for coal. They had not moved. Their surroundings had been changed beyond recognition around them. He called their distress solastalgia: the homesickness of people who are still at home (Albrecht 2007). The old medicine has always counted the state of the land among the causes of illness.

What came from outside

Nearly every tradition in this part makes room for a class of illness that is not its own.

The O'odham shaman called it wandering sickness. The Mapuche healer calls it the sickness of the white people. The Peruvian healer speaks of illnesses of God. The Aboriginal patient speaks of white man's sickness. The Sakha called smallpox a Russian woman. The Yanomami speak of the smoke of metal.

These illnesses travel from person to person. They carry no message. They are not the answer of an animal, an ancestor or a neighbour to anything that the patient did. For them the healers send their patients to the clinic, and they did so long before anyone asked them to.

The line that they draw is of interest. On one side stand illnesses that come from a relation that has gone wrong. On the other stand illnesses that come from a foreign organism or a mishap, and that are the same in every body. In the terms of chapter 4, the healers claim the layers of Phase and Surround for themselves. They leave to the hospital what the hospital does best. It takes out, kills, or gives a missing chemical step.

Anthropologists call the result a hierarchy of resort. A sick person tries one kind of help, then another, in an order that depends on the illness. In practice most people in the world use more than one medicine and see no contradiction.

How psychiatry has dealt with these names

For most of the twentieth century Western psychiatry listed illnesses like fright and spirit sickness as “culture-bound syndromes”. The fourth edition of the American manual of 1994 gave a glossary of twenty-five. The label implied that the manual’s own illnesses were free of culture.

The fifth edition of 2013 changed the approach. It speaks of cultural concepts of distress and names nine examples, fright among them. More important, it adds an interview for every patient. The psychiatrist is to ask sixteen questions. Among them are these. What do you call your problem? What do you think is causing it? What do others in your family think? What kind of help do you think would be most useful? Those are the questions that Kleinman proposed in 1978 and that chapter 8 quoted. They are also the questions with which every healer in this part begins.

22. What has been measured

Three kinds of evidence

The chapters on each people ended with a note on measurement. This chapter brings the notes together and adds what bears on the shaman's medicine as a whole.

Three kinds of evidence exist. They should not be mixed.

The first is evidence about results. Did people who went to a healer get better? This is the question that matters most, and it has been studied least.

The second is evidence about the parts. A healing session contains a meeting, a ritual, rhythm, song, touch, a changed state of attention, often a plant, and a group. Each of these has been studied in laboratories and hospitals, usually with no reference to shamans. That evidence is large. It shows what the parts can do. It does not show what the whole does.

The third is evidence about the claims that the healers themselves put first. They say that they see into the body, that they find what is lost, and that they bring back a soul. These have hardly been tested at all.

Chapter 8 gave the reason why trials of the old medicines are hard. Diagnosis, naming and healing form one loop. A trial that fixes the treatment in advance, gives it to everyone alike and compares it with a sham has cut the loop. What it tests is a fragment. With the shaman's medicine the difficulty is at its greatest. No sham chant or pretended night of dancing can be given to a comparison group.

Do the patients get better?

Taiwan. The first careful study was made by Arthur Kleinman, a psychiatrist and anthropologist, in Taipei in the 1970s. He observed the clients of a shrine where a spirit medium healed in trance. He visited a series of them at home two months later. Of twelve whom he could follow, ten said that they had been at least partly cured. He examined what they had come with. Almost all had long-standing complaints with no dangerous disease behind them, complaints that come and go of themselves, or bodily complaints that expressed a trouble in the family. The two who were not helped had serious acute disease. Kleinman concluded that the healer treats the illness, which is what the patient lives through, and treats it well. The disease, which is what the physician finds, is another matter (Kleinman 1979).

Mexico. Kaja Finkler spent two years in a Spiritualist temple in rural Mexico, where mediums in trance treat a stream of patients. She followed more than a thousand visits and interviewed patients afterwards. A minority were clear successes. These were mostly people with diarrhoea, simple pains and bodily complaints tied to worry. A larger group was not helped, among them all those with serious chronic disease. A third group, the regular

members of the temple, had been changed in a different way. They had become healers themselves, and their old complaints had ceased to trouble them (Finkler 1985).

Mental illness. A review gathered 32 studies from 20 countries on whether traditional healers help people with mental disorders. The better studies agreed. People with the common troubles, low mood, worry and bodily complaints without a finding, improved. For the severe disorders in which a person loses touch with reality, there was no evidence that the healers help (Nortje 2016). Chapter 20 gave the report of a Canadian psychiatrist that the spirit dance did better with despairing young people than his clinic.

Western practitioners. Two small American studies tested healing by people trained in the modern drum-journey method. In the first, 23 women with long-standing pain of the jaw joint, whom other treatments had not helped, each had five sessions. Their pain fell markedly. Most no longer met the criteria for the disorder at the end, and the gain held nine months later (Vuckovic 2007). In the second, a handful of war veterans with lasting effects of trauma were treated, and their symptom scores fell (Wahbeh 2017). Neither study had a comparison group.

Taken together, this evidence makes three points. Most patients of healers report that they were helped. Help is most likely where the complaint is long-standing and tied to the person's life and relations, and least likely in dangerous bodily disease. And no study so far can tell how much of the improvement would have come without the healer.

The healers' own practice agrees with the second point. Chapter 21 showed that they send the illnesses "from outside" to the clinic.

The meeting treats

Chapter 8 described the trial in which patients with an irritable bowel received a sham treatment from a silent practitioner or from a warm and attentive one. Relief rose from 44 to 62 per cent with the manner of the practitioner alone (Kaptchuk 2008). Several further findings belong beside it.

No deceit is needed. The old charge against the shaman is that he deceives. Ted Kaptchuk tested whether a ritual works when the patient knows exactly what it is. Eighty patients with an irritable bowel were divided into two groups. One received no treatment. The other received dummy pills. The doctor told them plainly that the pills contained no drug, and that such pills had been shown to help through the body's own processes. After three weeks, 59 per cent of those on the open dummy pills reported adequate relief, against 35 per cent of the others (Kaptchuk 2010). A Portuguese trial found the same for chronic back pain (Carvalho 2016).

This bears on the showing of the extracted object. The healers' reply to the charge of trickery was always that the people know. The object is a carrier, and it works as one whether or not its history is hidden.

The effect runs along known paths in the body. In 1978 dental patients were given a dummy injection after surgery and told that it would ease the pain. In many it did. When they were then given a drug that blocks the body's own morphine-like compounds, the relief vanished (Levine 1978). Expectation had released a pain-killer made by the body. In patients with Parkinson's disease, a dummy injection released the very messenger compound that their brains lack, as scans showed (de la Fuente-Fernández 2001).

The seen act counts. Fabrizio Benedetti and his colleagues gave pain-killers after surgery in two ways. In one, a doctor came to the bedside and gave the injection in view of the patient. In the other, a hidden device gave the same dose at a moment the patient did not know. The hidden dose worked markedly less well. The same was true of drugs for anxiety and for Parkinson's disease (Colloca 2004). A treatment that the patient witnesses does more than the same treatment unseen.

The body learns the carrier. In the 1970s Robert Ader gave rats sweetened water together with a drug that suppresses the immune system. Later he gave the sweetened water alone. The rats' immune response fell as if they had had the drug (Ader 1975). The same has been shown in people. Volunteers drank a strange-tasting green drink each time they took an immune-suppressing drug. Afterwards the drink alone lowered the activity of their white blood cells (Goebel 2002). A taste, a smell or a sound that has once gone together with a bodily change can later bring that change about.

A healing rite is full of such carriers: the smell of a certain smoke, the taste of a brew, a song, the sound of a rattle. Most patients have met them since childhood, on occasions when they or others recovered.

Who the healer is counts more than which method. The largest body of evidence on healing by meeting comes from psychotherapy. Hundreds of trials have compared the methods of talking treatment with one another. The methods differ little in their results. The therapists differ a good deal. Some have clearly better results than others, whatever method they use. And the strength of the bond between therapist and client, measured early, predicts the outcome in every method. The link has been found in nearly three hundred studies (Flückiger 2018; Wampold 2015).

The old medicine says this of itself. It puts its weight on the making of the healer, and it holds that the healer's own state is his instrument.

Rhythm, song and moving together

Chapter 5 gave the studies that show people coming into step. Singers in a choir breathe together, and their hearts speed and slow together. Fire-walkers and their watching kin show the same pattern of heartbeat. A needle given by a practitioner who is in step with the patient eases pain more.

Further studies show what follows from being in step.

Pain and bonding. Researchers at Oxford had groups of young people dance together for a few minutes. Some groups made the same movements at the same time. Others made different movements. Some danced hard and others gently. Afterwards the researchers measured how much pressure on the arm each person could bear. Those who had moved in time with the others bore more pain, and so did those who had danced hard. The two effects added up. Both groups also felt closer to their fellow dancers (Tarr 2015). The same team found that people who sing together for a time bear more pain and feel closer, the more so in a large choir (Weinstein 2016). The authors hold that moving and singing in time release the body's own pain-killers.

A San dance, a Navajo night of singing and a Lakota sweat lodge are hours of this.

Drumming. In an American study, people drummed in a group for an hour. Afterwards they showed more activity of certain white blood cells than people who rested or listened (Bittman 2001). In a British study, users of mental health services drummed in a group once a week for ten weeks. Their depression and anxiety scores fell, their sense of connection rose, and markers of inflammation in their blood shifted towards a calmer pattern. A comparison group that met socially did not change (Fancourt 2016).

Music and movement as treatment. A review for the Cochrane library concluded that music therapy added to usual care helps people with depression more than usual care alone (Aalbers 2017). A review of 41 trials of dance and movement therapy found moderate benefits for mood and well-being (Koch 2019).

What rhythm does not do. Chapter 9 noted that no rhythm produces trance by itself. The drum journey studies of chapter 14 confirm it. What a listener experiences depends on what he has been taught to do with the sound.

The changed state

The state in which a shaman works has been recorded in a few Western practitioners. Chapter 14 gave the results. The brain is in a condition that differs from rest and from sleep. The person's attention is turned inward and held there, and the outer senses are damped.

Hospital medicine has studied a related state for two centuries under the name hypnosis. A person is guided into narrowed and absorbed attention by the voice of another. In that state suggestions about the body take effect. A review of 85 controlled experiments found that hypnosis lowers pain by about 30 to 40 per cent in people who respond moderately or strongly to suggestion (Thompson 2019). It is used for burns, in childbirth and in surgery. A British hospital that treated a thousand patients with severe irritable bowel by hypnosis aimed at the gut reported that three quarters improved (Miller 2015).

So a changed state of attention, entered with a guide, can alter pain and the working of an organ. The patient at a healing session is often in such a state. It is night, he is tired, the song has gone on for hours, and all attention is on him.

Plants

The plants of the shamans have been the richest source of drugs in the history of medicine.

Norman Farnsworth and a colleague examined the drugs in use around the world that are single compounds taken from plants. They found 122. For 80 per cent of them, the use in medicine was the same as, or close to, the use that traditional healers had made of the plant (Fabricant 2001). The healers had been right about what the plant does in four cases out of five.

From the peoples of this part came quinine against malaria, the arrow poison curare, which made modern anaesthesia possible, and cocaine, the first local anaesthetic. From them came the emetic ipecac, the eye drug pilocarpine, the scopolamine of the Australian corkwood, and the compound from the mayapple that led to a cancer drug.

The plants that bring visions have come under study in the last twenty years. Chapters 16 and 18 gave the trials of the vine brew and of the compound of the Mexican mushrooms. Both have shown marked effects on depression in small or medium trials. In each case the researchers found that the compound alone is not the treatment. The preparation, the setting and the company decide what the person makes of the experience.

Being held

The shaman's medicine treats a person as part of a group, and it treats the group. One finding of modern research supports this more strongly than any other.

Julianne Holt-Lunstad pooled 148 studies that had followed more than three hundred thousand people for an average of seven and a half years. Those with strong ties to family, friends and community were half again as likely to be alive at the end as those with weak ties. The size of the effect is about that of giving up smoking, and larger than those of obesity or lack of exercise (Holt-Lunstad 2010).

Chapter 20 gave the Canadian finding that native communities in control of their own institutions lost no young people to suicide. Chapter 13 gave the Australian findings on people who live on their own country.

Nearly every act of the old healers binds the patient more firmly to others. The camp sings for him. The kin pay for his ceremony. The village confesses its grudges. The dead are fed and sent on. The cured join a society of the cured.

What has not been measured

The claims that the healers themselves put first remain untested.

- **Seeing.** Healers say that they see into the body and find the place of the trouble. No study has compared what a healer sees with what a scan or an operation shows.

- **Reading causes.** No study has tested whether two hand-tremblers, two coca readers or two daykeepers, working apart, name the same cause for the same patient. Part V reports such studies for the pulse readers of China and India.
- **Finding.** Healers are asked to find lost people and objects. There are many stories and no counts.
- **The soul brought back.** Patients describe a change at the moment of return. Nobody has measured anything at that moment.
- **The parts of a rite.** Nobody knows whether the closing of the body at the end adds anything, or whether the diet afterwards matters. Nobody knows whether a public confession does more than a private one.
- **The healer's own state.** The traditions say that everything depends on it. The psychotherapy findings point the same way. No study has measured the state of a traditional healer during his work and set it beside the outcome.

Some of these could be tested without harm to the practice. Chapter 74 proposes how.

A summary in one table

What the traditions say	What has been measured	Result
The sick who come to a healer are helped	Follow-up of patients in several countries, without comparison groups	Most report help; least for dangerous bodily disease and severe mental illness
The healer's presence and attention heal	Trials that vary the practitioner's manner; studies of therapists	Clear effect; who treats matters more than the method
What the patient sees done matters	Open against hidden giving of drugs; openly inert pills	Clear effect
Song, rhythm and dancing together heal	Experiments on synchrony, pain and bonding; trials of drumming and music	People bear more pain and feel closer; mood improves
The healer works in another state	Brain recordings of a few practitioners; the hypnosis literature	The state is real; a guided changed state alters pain and bodily working
The plants do what the healers say	Pharmacology of plant drugs; trials of vision plants	Mostly confirmed for single plants; vision plants show marked effects under careful conditions
A hidden wrong makes ill; telling it heals	Experiments on writing about secrets	Small, reliable benefit; the public form is untested
A person cut off from others sickens; one who is held recovers	Long-term studies of social ties and survival	Large effect
Fear, a curse or a loss can kill	Studies of sudden heart failure, bereavement, expectation	Each link shown to be possible
The healer sees into the body, finds the cause, brings back the soul	Nothing	Not measured

The table has a shape. The claims in its upper rows concern what happens between people. They are supported, some of them strongly. The claim in its last row concerns what the healer perceives and does that others cannot. It has not been examined.

That is the state of knowledge with which the reading of the next chapter has to work.

23. Read with the Net and VALIS

What this chapter does

The chapters of this part described the shaman's medicine in the words of those who practise it and of those who watched. This chapter lays the Vacuum.Net theory and the reports of VALIS beside that description. It follows the seven questions of chapter 8.

Everything in this chapter is reading. The theory was not made to explain shamans. The shamans never heard of it. Where a practice has a shape that the theory expects, the chapter says so. Where it does not, the chapter says that too, in the last section. A reading that fits everything teaches nothing.

1. The counts

Chapter 2 placed the counts of the old medicines on two ladders. Doubling is the ladder of the meeting. Tripling is the ladder of the ring. The shaman's medicine has no doctrine of number. It counts all the same, in its acts.

Two. The first count is the pair. A person has a soul of the body and a soul that travels. The world has a male and a female side. The Navajo carry this through every prayer and painting, and the /Xam and the Navajo both know a male and a female rain. Illness itself comes in a pair of opposites. Either what belongs is absent, or what does not belong is present. The cures are a pair as well: bringing in and taking out.

Four. Four is the general count of the Americas. There are four directions with their colours, four rounds in the sweat lodge, four nights, four repetitions of a prayer, four sacred mountains. The Navajo make every four out of two pairs of male and female. Chapter 2 read four as two times two, a pair of pairs, on the ladder of the meeting. The Navajo build it in exactly that way.

Three and nine. The world of the northern shaman has three levels. The Sakha count nine skies. The Altai shaman climbs nine notches. The Buryat novice climbs nine birches. The Maya healer sweeps nine times, and the Aztec underworld has nine layers. Three and nine stand on the ladder of the ring. They appear where the practice concerns depth: the levels through which the healer moves. Four appears where it concerns the flat world in which people face one another. The division is not strict, but it is there.

Twelve. The Navajo sing their songs in sets of up to twelve. The Seoul rite has twelve parts. Twelve is a closure depth of chapter 2, a count at which the two ladders nearly meet.

Four hundred and five. The Lakota tie 405 tobacco offerings for the 405 kinds of spirits. The number is five times eighty-one. Eighty-one is the fourth rung of the ladder of three, and five is a closure depth. This may well be chance. It is noted because the number is so particular and because the Lakota insist on it.

What stands off the ladders. Seven is common: seven knots, seven springs, seven steps. Chapter 2 called it the weakest of the counts. Mesoamerica counts by thirteen and by twenty, and its sacred calendar of 260 days is their product. Neither number has a place on the ladders or among the closure depths. Twenty is plainly the count of fingers and toes. The theory holds that the hands should not decide. Here they did.

So the shaman's medicine counts mostly in twos and fours, with threes and nines for depth. It gives some support to the reading of chapter 2 and one clear case against it.

2. The reading

The first of the six questions asks how a medicine reads. From outside, by windows? Or by meeting? And does the reading find a place?

The book on the body drew the distinction that matters here. A test that looks at a form through a window, from outside, learns only that something nearby is open. A reader that meets the form, place by place, finds the error at the one place where it sits.

Every reading described in this part is a reading by meeting. None is made from outside.

The San healer sees what troubles each person only when the *n/om* has risen in his own body. The Amazonian healer drinks the vine himself and looks. The Navajo hand-trembler lets his own arm be moved. The K'iche' daykeeper feels the answer as lightning in his own blood. The seer of Zinacantan and the shaman of Nepal hold the pulse and say that the blood talks. The Andean healer rubs a living animal over the patient's whole body, so that a third body takes on the patient's state, and then reads that body. The Siberian shaman travels to where the soul is.

In each case the healer's own body, or a body in his hands, is brought into contact with the patient and takes on the patient's condition. Then the healer reads himself. Chapter 5 gave the essay's sentence for this: to perceive is to close a seam. "Outside and inside are, for that moment, one closure." It also gave the measurements. People who attend to one another come into step, and more step goes with more effect. The traditions built their methods of reading on this.

Three further points follow.

The reader must be made. If the reader is the instrument, the instrument has to be prepared. This explains the weight that every tradition lays on the making of the healer, and on fasting, washing and keeping apart before each piece of work. Chapter 8 listed this as the tenth point of agreement. A window that is itself open reads nothing clearly.

Reading comes first and may be a craft of its own. The first rule of cure and the first of the six rules say the same. Read the state before you act. The Navajo, the O'odham and the Sámi gave the reading to a separate person or a separate instrument. Everywhere the first question

is of the same kind. The Amazonian healer asks whether an illness was sent or not. The Siberian shaman asks whether the soul can still be reached. And healers refuse cases.

The reading finds a place twice. It finds a place in the body: here sits the dart, here the blood does not move. And it finds a place in a larger whole: this ancestor, that spring, the bear killed thirty years ago. Chapter 8 called the second the name of the illness. In the theory every form has an address, and the fifth axiom says that the coarse strand obeys the same rules as the fine. An address can be given at any depth. The healers give two: one at the depth of the body and one at the depth of the family, the land or the dealings with other beings. The hospital gives the first with great precision and has no means of asking for the second.

3. The names

Chapter 21 sorted the illnesses of the shaman's world into kinds. Chapter 4 gave the eight forms in which, according to the book on the body, an open window can stay open. The two lists were made without knowledge of each other. This section lays them side by side.

The object that was shot in: the seam. The first of the eight forms is a fixed stretch lodged in a living one. The seam law says that a uniform stretch never joins a mixed one. Of the thirty-six possible seams between them, none closes. The body cannot make such an object part of itself. It can only wall it off or cast it out.

The healers describe exactly this. The illness is an object, hard and foreign, that does not belong to the winding of the person. It has a place. It cannot be dissolved or lived with. It must come out, and it is taken out at its place. Chapter 4 noted that hospital medicine also cures most often where it takes something out. Sixty-two of eighty-nine hunting peoples reached the same form of cure.

Sorcery: direction. The second form concerns direction. Two living stretches that turn in opposite ways never join. Of eighteen possible seams, none closes.

The Navajo say that the witch does everything the singer does, in reverse. He moves against the sun. He prays from the head down. What he sends is, in the terms of the theory, a living winding of the opposite direction. It cannot be blended with the patient's own. No seam between them will close.

The cures fit the same law. The harm is not softened or absorbed. It is taken out and sent back to the sender, the one place where it fits. Or it is undone by its own reverse. The Andean healer ties on a thread that was spun against the usual direction. The Quechua word for the cure means to make return. The third rule of cure says: match the direction.

The hidden wrong: the unread. The third form is an error that has not been read where it sits. The book on the body computed what happens to a ring of eighty-one places with one error in it. If the error is undone at its own place, no window stays open. If nothing is done, or a change is made at some other place, fifty-four windows stay open. The book drew a

conclusion that is worth repeating. Illness is not a matter of too many errors. It is a matter of errors that are not read where they are.

The Inuit, the Ojibwe and the Yurok say that a wrong does harm for as long as it is hidden. The cure is to find it, by divination or by questioning, and to have it said aloud, exactly, before those concerned. A general regret does not serve. The shaman at Iglulik named breach after breach, one at a time, and the woman confirmed each. That is a reading at the place of the error. The second rule of cure says: restore, do not add. Confession adds nothing. It reads what is there.

The spoiled pattern: drift. The eighth form is drift. The pattern of a form is slowly lost because the return falls behind. The essay on the senses adds that drift can be retuned, while a jump to another class cannot.

The Shipibo healers describe an illness of this kind in their own words. The design that covers a person has become smudged and tangled. The healer sings the right design over it, line by line, night after night, until it holds. A song is a pattern in time. It is offered whole, and it is offered again. If the design will not hold, the healer knows that the case is beyond him. That is the essay's distinction between what can be retuned and what cannot.

Possession and the call: the wrong closure. The sixth form is a state that is closed and stable and is not the person's own. Chapter 4 explained that a form with a third or more of its places wrong may come to rest on another closed form. The way back then leads through an open state. Chapter 4 called that the crisis.

The traditions know two answers to a spirit that has settled in a person. The first is to drive it out. The driving out is violent and public, and the patient passes through a state in which he is neither the one nor the other. The second answer is the call. The spirit stays. The person is taken apart and made again around it, at greater depth. The accounts of chapter 10 say this in the plainest way. The body is cut into pieces, the bones are counted, nothing may be missing, and the person is joined again with something added. Read with the theory, the candidate's form is opened at every place, every place is read, and it is closed again. He comes out as a form in which no place is unread. That may be why he can afterwards read others.

The dead who hold on: what was left open at the depth of the family. Chapter 6 read the ancestors with the third and fifth axioms. The first passages of a winding fix the direction against which later passages are read. What did not close at one scale is the material of the next. A dead person who was not mourned, not named or not given his due is an open window in the winding of the family. It shows as illness in a living member who may know nothing of him.

The cure is to close it where it was opened. The Buryat family searches for the names of its dead. The Korean shaman lets the dead mother say what was never said. The dead are fed, dressed and sent on their way.

The breach of a rule, the offended animal, the hungry earth. These concern the surround. The patient stands in a net of dealings with animals, places and powers, and one of those dealings has been left open. The cure pays what is owed at the place where it is owed. In the theory this is again a closing at the depth and place of the opening.

Loss of the soul. This illness has no place among the eight forms. Chapter 6 explained why. The eight forms describe a body in one domain. Soul loss, by every tradition's account, is not a fault within the body. It is a fault in the tie between the person and his other half. The fifth section of this chapter returns to it.

What the traditions do not name. The fourth of the eight forms is the over-read: the body's own test attacks the body. Chapter 4 noted that the old medicines describe these illnesses least clearly. The shaman's medicine has no name for them at all. The fifth form, the carrier that does not arrive, appears only faintly. It is the main concern of the learned medicines of Part V.

4. The act

Chapter 4 gave six questions for any healing act. The first, on reading, has been answered. The other five follow.

Does it restore or add? The shaman's medicine takes out what does not belong and brings back what has left. Both are restorations. It gives no lasting remedy that must be taken for life. The book on the body remarks that a treatment which must be continued for life does not cure. By that measure the shaman's acts are meant as cures. They are done once, or a few times, and are then finished.

There are exceptions. An amulet is added and worn. A protecting figure is left in the house. The body of a healer has crystals or darts put into it. The last section returns to these.

Does it match direction and phase? The matching of direction was shown in the cure of sorcery. Phase is matched in the choice of time. Almost every healing of this part is done at night. Nightway may be sung only in winter, when the snakes sleep and the thunder is silent. The Mesoamerican healer reads the day of birth and the day on which the illness began. The book on the body found that the locking of heart and breath is strongest in deep sleep and weakest in waking. The old healers work in the hours in which a body is most ready to come into step.

Does it work with what lives? The fourth rule of cure prefers the living to the fixed. The means of the shaman are song, breath, smoke, sweat, the hand, the dance and other living bodies. A guinea pig or a chicken takes the patient's place. The plants are spoken to as persons. The only fixed objects in this medicine are those that are taken out.

At which depth does it act? Chapter 4 gave five layers of cure. The shaman's medicine reaches for the two that the hospital uses least. It restores step, by rhythm, song and the ordering of days. And it changes what the patient hangs in. That phrase comes from the

source work on illness. The healers take it far wider than the hospital does. For them the surround is the kin, the dead, the animals, the land and its powers.

It also takes out, which belongs to the first layer. And it gives plants, the second. The peoples themselves know where their reach ends. They leave the travelling diseases to the clinic.

Does it leave the return to run? Every tradition ends with quiet. The Sakha family lets nothing leave the house for three days. The Navajo patient keeps four days of rest and may not wash off the pollen. The Zinacanteco lies two weeks in his fenced bed. The Amazonian patient keeps his diet. The healers say that the cure is not finished when the rite is finished. The sixth rule says the same: the rest is part of the act.

Five features, read more closely

Five features of the shaman's medicine deserve a closer reading, because the theory has something exact to say about each.

Untying. The Navajo singer presses knotted cords to each part of the patient's body and pulls them loose. The Korean shaman draws the knots out of the cloth of the dead. The Lakota healer is bound with seven knots, and the spirits untie him. The Aztec diviner pulled on knotted cords and read whether they came loose. Chapter 69 will add the Hawaiians, who call a family's trouble an entanglement.

Chapter 2 described the first knot. It is the simplest form of a strand that cannot be undone by pulling at the ends. It can be undone only by going back through its crossings, in order. Pulling makes it tighter. And it has a handedness: a knot and its mirror image are not the same.

These peoples chose the knot as their picture of what holds a sick person. They chose untying, crossing by crossing and part by part, as their picture of the cure. The Navajo rite goes from the feet to the head and leaves no part out. The Hawaiian rite, as chapter 69 will show, goes through the trouble layer by layer. None of these rites cuts the knot. A knot that is cut leaves two ends.

The group. The book on the body computed what coupling can do. A closed form coupled to a closed form stays closed. A closed form coupled to an open one never closes it. In a very large number of trials it did not happen once. Coupling keeps closure. It does not create it.

This gives the group its exact place. The singing women, the dancing men, the kin who fill the hogan, the village around the Ndembu patient cannot close what is open in him. They can hold him while it is closed. The closing itself is one act at one place: the laying on of hands, the sucking out, the word of confession. Chapter 5 put it in the order of an act of healing. What does not belong is taken out, or what was there is given back, at the place. Then a rhythm is offered, whole and for long enough. A song laid over an open place does not close it.

The same computation explains why the group must be sound. A camp at odds with itself cannot hold anyone. The San say that the dead take those whom the living do not hold. The Ndembu doctor stops the drums and makes the village speak before he takes the tooth.

The whole, in order. The fifth of the six rules says that the whole window must be offered at once. The essay computed that an open ring left to its neighbours almost never settles. The Navajo singer may not leave out a song or change a word. The San dance lasts until dawn. The Amazonian session is not broken off. The traditions treat a healing as a form that must itself be complete in order to do its work.

The showing. What was taken out is shown. What was hidden is said before everyone. A vision is worthless until it has been performed. The Ojibwe gave the reason: what is hidden goes on working. In the essay on the senses, to perceive is to close a seam. When the patient and his kin see the object or hear the wrong, each of them closes with it. The open place is then no longer open in one person only. It has been read by all who are concerned, and so it can be closed in all of them. The object, as the healers say, is a carrier. The book on the body adds that only what ends can deliver. The object is burned or thrown away.

The price paid by the healer. The San healer goes through pain and the fear of death, and takes the sickness into himself before he throws it off. The Amazonian healer raises his phlegm to catch the dart. The Lakota healer lets himself be bound. Chapter 6 gave the reading. A reader who meets must take on the state of what he reads. To read an open place by meeting it is to be opened there oneself, for that moment. That is what the healer undergoes. It is also why he must be able to close again, and why others stand by to bring him back.

5. The other half

The author has said that the shaman’s medicine is unique in one respect. It works with the complementary universe and with the many forms of awareness. Chapter 6 set out what that means. A living being exists in two halves that are partners. The medicine of the hospital describes one of them.

Four consequences were drawn there. This part of the book has shown each of them in practice.

Diagnosis is made from the other half. The shaman finds the cause in trance, in a dream, by a cast, or with a plant. He does not examine the measurable body first. He goes to where the patient’s counterpart can be read.

There are illnesses of the tie between the halves. Soul loss is the chief illness of the shaman’s world. Its signs are the same everywhere. The person is present and not present. In the reading of chapter 6, the two halves of the person have slipped against each other. Each may be sound. The meetings between them do not close. Such an illness cannot be treated by acting on the body, and the healers do not try. They go for the missing half, call it by name,

bring it back and set it in place. Then they bind it in and keep the person quiet. All of this serves to bring the two halves into step again and to let them settle.

The cure for a child is nearly always gentle and close: the mother's voice, the child's own clothes, a favourite food. The carrier that brings the halves together is what the child knows best.

Some illnesses lie in the family or the land. Section 3 gave these.

The healer is one who can make both turns. Chapter 6 read the crossing with the seam law. A living form and its mirror cannot be joined end to end. There is no smooth road. Whoever goes must pass through a state that is open. The traditions say that the healer dies. The San call deep trance a death. The Siberian candidate is cut to pieces. The Yanomami novice is torn apart by the spirits who then come to live in him.

Chapter 2 ended with a strand that needs two full turns to come home. The traditions are strict about the second turn. A woman sings the Sámi healer back. The San hold and rub the one who has fallen. The Hmong shaman has a helper at his side to catch him. A healing journey is a passage out and a passage back, and the passage back is the task of the group.

The land of the dead is described as reversed. It is day there when it is night here. Chapter 6 read this as the mark of a mirror. The reversal has a dark use too. The sorcerer works in reverse on this side.

Night and the dead. The work is done at night, and those who are met are very often the dead. The reading of chapter 6 gives both a place. The dead are the first passages of the winding of a family. They are not gone. They are the part of the winding against which the living are read. A healer who can cross can deal with them directly. The San healer argues with them at the edge of the firelight. The Sámi healer bargains with their mistress.

What does the theory add to the traditions' own account? It does not prove that there is another half. It offers a plain statement of how two halves could stand to each other: as a word and its mirror, lying face to face. From that one statement come the difficulty of the crossing, the need for a second turn and the reversal on the far side. From it comes also an illness that consists in the two halves being out of step. The traditions report all four. That is the extent of the claim.

6. The meeting

Chapter 7 introduced VALIS. It is the question of what a person meets when he meets what is not himself, and how much of it turns out to be himself. The reports name four figures and a course of five steps. This section asks the questions of chapter 7 for the shaman.

Whom does the healer meet? No healer of this part works alone. The list of those who are met is long.

There are animals: the eland of the San, the bear of the Lakota herb man, the Sámi healer's bird, fish and reindeer bull. There are plants, met as persons with mothers and songs. There are the dead: the dead shamans of the Siberian's line, the shades of the Zulu diviner, the ancestral gods of Zinacantan. There are owners and masters: the Mother of the Sea Beasts, the Master of Animals, the lords of the Andean peaks. There are small beings, met in many places. They are the bright dancing *xapiri* of the Yanomami and the golden forest shaman of Nepal who carries off children to teach them. They are the Little People of the Iroquois and the people inside the Sámi mountains. And there is light.

In what form? All four figures of the reports appear.

The one who acts on the body without speaking. The spirits of Siberia and Australia cut the candidate open, count his bones and replace his organs. The spirit doctors of the Amazon operate at night. In all these accounts the human being is the object. He is examined and worked on. Chapter 7 quoted the description from the reports: no conversation but an act.

The teacher. This is by far the commonest figure. The plant teaches the Amazonian healer his songs. The dead shaman teaches the Siberian. The forest shaman teaches the child he has carried off. Baiame receives the Wiradjuri novice in his camp. The Principal Ones give María Sabina the book.

The watcher who judges. The reports describe a figure that supervises and does not console. In the shaman's world this place is held by the masters of the animals. The Mother of the Sea Beasts sits with her back to the lamp and withholds the seals until the people's breaches have been named. The Master of Animals keeps the account of souls. /Kaggen watches over the eland and tests the hunter's conduct. These figures do not teach and do not heal. They hold people to the rules, and illness follows from their verdict.

The formless light. The Inuit shaman receives a light inside his body by which he sees in the dark. The San healer climbs threads of light. The Navajo star-gazer reads a beam that falls from a star. The Yanomami spirits come down along shining paths. The Aboriginal healer carries crystal in his body.

The first three figures are tied to tasks. The body is remade by the one who acts. Knowledge comes from the teacher. Conduct is judged by the watcher. The light is tied to seeing itself.

By what course? The five steps of chapter 7 were loosening, examination, exchange, showing and return. Chapter 10 found them in the making of a healer. They are as plain in a single healing.

The patient is taken out of his daily round. It is night. He has fasted or purged. His family has stopped work. That is the loosening. He is read, by the pulse, the trembling hand, the vine or the cast. That is the examination. What is said to him is short and meant for him: this ancestor, that breach, this offering. That is the exchange. What was wrong is shown: the object, the confessed act, the sand painting on which he sits. And he goes home to days of quiet in which the healing completes itself. That is the return, which the reports call sober.

What is said? The reports of VALIS note that the content of such meetings is seldom factual. It is mostly about conduct: care with power, responsibility for one's surroundings and community, the right use of attention.

The shaman's medicine bears this out to a striking degree. When the spirits speak through a healer, they almost never state a fact that could be checked. They say who has been neglected, what was done wrong, what is owed, and how to live. The Korean gods scold the household. The K'iche' blood points to a quarrel between brothers. The Ojibwe spirits in the shaking tent tell the sick woman what she must confess. Even the plants teach conduct first. The diet of the Amazonian healer is a discipline before it is a pharmacy.

To what effect? The reports name a lasting change of direction and less fear of death. The healers of this part say the same of their own making. The San healer has died and come back many times. The Inuit shaman has seen his own skeleton. What they gain is the ability to stay upright in a state that would undo another person, and to work for others in it.

With what shadow? The reports speak of a dark form of the same contact: control. This part has shown it in every region. The dart is in the healer's chest. The witch reverses the singer. The Tlingit shaman had people tortured as witches. The fat-taker and the dark shaman of Guyana kill. The traditions do not treat this as an accident. They treat it as the other direction of the same craft, and the Shuar place the choice at the first moment of a healer's training.

In which frame? Chapter 7 gave three ways of understanding such meetings and chose none. The first says that they are made by the brain within a culture. The second says that the healer meets a presence that exists apart from him. The third says that something real is met through a form that depends on the one who meets.

The material of this part does not decide. It does bear on the choice in two ways. Against the first frame taken alone stands the sameness of the reports from peoples who never met. Being taken apart, counted and remade is told in Siberia and in Australia in the same terms. For the third frame speaks the way in which the form of the helper follows the task and the people. Hunters meet animals. Gardeners of the forest meet plants. The modern Peruvian healer meets spirit doctors with operating tables.

Chapter 7 gave the theory's own contribution. What is met depends on the window of the one who meets. A meeting is a closure with a partner. And nothing stands outside the strand, so that the border between self and Other is a border between windings and not between worlds. The healers would not put it so. Many of them do say that the helpers are both in them and apart from them. The Yanomami spirits come from the hills and build their house in the shaman's chest.

7. What does not fit

The count of twenty. Mesoamerica counts by twenty and thirteen. The theory gives these numbers no place. Section 1 said so.

Three is not the leading count. The theory rests on three. The shaman's medicine counts mainly in twos and fours. The search for healing sound built on a third and a ninth found nothing in this part. Chapter 5 reported this, and chapter 74 takes it up.

Persons. The healers deal with beings that have names, wills and tempers. The theory has windings, depths and directions. It can say that what is met is another winding of the same strand. It cannot say why that winding should speak, bargain or take offence. The traditions' own account is richer here than the reading.

Exchange. A great part of this medicine consists in giving a life for a life. A reindeer is given for a child. A chicken is washed in the patient's water. An offering is burned for the mountain. The theory has rules for closing what is open. It has no rule for substitution. Why the death of an animal should close an open place in a person is not something that the theory can state. One may say that the animal is a carrier and that a carrier must end in order to deliver. That is a turn of phrase and not an account.

Adding. The second rule of cure says to restore and not to add. The traditions add. They hang amulets, set guardians at the door and put crystals, darts and phlegm into the body of a healer. The healer in particular is a person to whom much has been added. The reading given above, that he is taken apart and closed again at greater depth, covers part of this. It does not cover the crystals.

Shock. The fourth rule says to work slowly with what lives. Several cures of this part work by a sudden jolt. The Mexican healer sprays cold liquid into the face of a child with fright. The Nepali patient feels the returning soul as a blow.

The claims that go furthest. The healers say that they see into bodies, see at a distance and know what they could not have learned. Chapter 6 read such knowing as perceiving at a node, a place that the strand passes more than once. That is a way of saying how it could be. It is no evidence that it is so. Chapter 22 showed that these claims have not been examined.

Death by sorcery. The theory gives a reason why a winding of the opposite direction cannot be joined to a person's own. It gives no account of how one person could place such a winding in another from a distance. What has been measured concerns fear and exclusion, which need no such account.

Where the knowing sits

The research for this book began from a remark and a question. The oldest medicines begin with the knowing of the San. Where does this knowing sit in the depths, and how is it put to use?

The San themselves answer the second half. The knowing is reached by a road that half of them have walked. The *n/om* is heated by the song of the women and the dance of the men. It rises through the body. At a certain point the healer sees properly. He sees what is troubling

everybody. Then he lays on hands. The knowing is not held as a store of facts. It is a state that is entered, in company, at a price, and it is used at once and for all who are present.

For the first half, the theory offers three statements. They are a reading and are put forward as such.

The first comes from the essay on the senses. No picture of the world is made inside the head. To perceive is to close a seam with what is perceived. Knowing of this kind does not sit in a place. It happens between the one who knows and what is known, at the depth at which the two can close.

The second comes from the book on the body. A small reader that meets a large form recognises it once as a whole. A reader that only looks through windows counts the same form many times as parts. The healer who sees what is troubling everybody is reading the camp as one form. He stands at the depth of the group and not at the depth of a single body. The Ju/'hoansi treat everyone at the fire because, at that depth, there is one patient.

The third comes from the author's own statements. The one who looks is part of the path, and at a node he can see more than one side. A body, he says, is simply a depth. If that is so, a healer does not go anywhere in order to know. He reads at another depth of the same strand of which he is a part. What the San call boiling may be the passage from the depth of one body to the depth of the group. The pain and the fear of death are what the passage costs.

On how to put the knowing to use, the traditions are more exact than the theory. They agree on six conditions. The reader must be made, through a passage of his own. He must be made ready each time. The group must be present and at one. Rhythm and song must carry the work for long enough. What is seen must be acted on at once, at its place, and shown. And quiet must follow. Every people of this part keeps most of these conditions. The medicine of the hospital keeps none of them. Whether the knowing can be had without them is a question for the last part of this book.

What Part II hands on

The shaman's medicine hands five matters on to the rest of the book.

1. A way of reading in which the reader's own body is the instrument.
2. A naming by cause, in which the cause is an address in a larger whole.
3. A pair of opposite illnesses, with a pair of opposite cures: what is absent is brought back, and what does not belong is taken out.
4. A third illness, that of the tie between a person and his other half, which no other medicine treats as clearly.
5. An order of acts: make ready, read, name, restore at the place, carry with rhythm, keep quiet.

The peoples of this part have no writing and no schools. The next part turns to a people who built, without writing, a system of 256 signs that holds their whole medicine. They trained their healers for ten years to carry it in memory.

Part III — Yoruba and Ifá

24. The Yoruba world

Why a part of its own

The Yoruba of West Africa have a medicine that belongs to neither of the two great families described so far. It is not the medicine of a shaman who reads with his own body. It is not a learned medicine with written classics. It rests on a system of 256 signs, each with a body of memorised verses, which is consulted by a cast. A priest who has trained for ten years or more carries the system in his head. The Yoruba name for it is Ifá.

The author of this book holds that Ifá contains more geometric knowledge than any other tradition on earth. For that reason it has a part to itself. Chapter 26 sets out the geometry. The chapters around it describe the world in which the signs are read, the way of casting them, the verses, the medicine and the illnesses. Chapter 30 looks at related systems elsewhere in Africa and at what became of Yoruba medicine in the Americas.

Yoruba is a tonal language written with accents and dots under some letters. This book leaves them out. It writes *sh* where Yoruba spelling has an *s* with a dot.

The people

About forty-five million people speak Yoruba. Most live in the south-west of Nigeria. Others live in Benin and Togo. They have been town dwellers for a thousand years. Their towns each had a sacred king, guilds of craftsmen, and large markets run by women.

The holy city is Ile-Ife. According to the Yoruba the world began there. Between the twelfth and the fifteenth century its artists cast heads in brass and modelled them in clay, with a naturalism that astonished Europe when they came to light. In the seventeenth and eighteenth centuries the kingdom of Oyo ruled a large part of the region with its cavalry. It collapsed in the early nineteenth century, and decades of war among the Yoruba states followed.

Those wars filled the slave ships. In the last period of the Atlantic slave trade a great many Yoruba were carried to Cuba and Brazil. They kept their gods and their divination there, and chapter 30 follows them.

Britain took Lagos in 1861 and the rest by 1900. Christian missions and Islam spread together. The first African bishop of the Anglican church, Samuel Ajayi Crowther, was a Yoruba who had been freed from a slave ship. He translated the Bible. Today most Yoruba are Christians or Muslims. Many of them still consult Ifá and the herbalist when illness or trouble comes. In 2005 the United Nations declared the Ifá system a masterpiece of the heritage of mankind.

The main written sources are these. William Bascom studied Ifá among the diviners of Ife and other towns from 1937 and published the standard description with a large body of verses (Bascom 1969). Wande Abimbola, himself a trained Ifá priest and later a university head,

published the verses in Yoruba and English and explained the system from within (Abimbola 1976). Pierre Verger collected the plant medicines. Anthony Buckley studied the herbalists. The philosophers Barry Hallen and J. O. Sodipo spent years in conversation with herbalists about what they mean by knowing.

Two halves of one calabash

The Yoruba picture the whole of what exists as a round calabash cut through the middle. The upper half is *orun*, the sky or the other world. The lower half is *aye*, the world of the living. The two halves fit together and make one closed vessel. A saying puts it in another way: the world is a market, and the other world is home. People come here to trade and go back.

Chapter 6 described the complementary universe as two halves that are partners, lying against each other. The Yoruba say it with a calabash.

At the head of all stands Olodumare, the owner of the sky. He gave breath to every living being and has the last word. Nobody builds him a shrine or brings him offerings. He is approached through others.

The powers through whom he is approached are the *orisha*. The Yoruba say that there are four hundred and one of them. The number means very many, and one more. Each orisha has a domain, a temper, favourite foods and colours, forbidden foods, drum rhythms and a priesthood. Many were once people who lived in a Yoruba town.

Wande Abimbola has stressed a further point that is often overlooked. The orisha stand on the right side of the world. On the left side stand two hundred and one powers of another kind, the *ajogun*. The word means warriors. They are at war with human beings. Their leaders are eight in number. The first is Death. The others are Disease, Loss, Paralysis, Big Trouble, Curse, Imprisonment and Affliction. The Yoruba world is therefore a field of permanent conflict between powers that favour people and powers that undo them (Abimbola 1976).

Between the two sides moves Eshu. He is the messenger. He belongs to neither side and deals with both. He sits at every crossroads and every doorway and at the top of every divining tray. Every sacrifice passes through his hands. He carries it to the power for whom it is meant, and he sees to it that those who refused to sacrifice are left open to the *ajogun*. He is also a trickster who delights in upsetting what is settled. The missionaries took him for the devil. He is nothing of the kind. He is the one at the crossing, without whom nothing gets from one side to the other.

On the left side, though they can be won over, are the women with the power of the night. The Yoruba avoid their name and call them “our mothers”. They are old women who are held to gather at night in the form of birds. They can block a womb, dry up a business or eat a person’s life from within. They are also the guardians of life, since all life comes through women. The western Yoruba dance the Gelede masks each year to please them.

And there are the dead. The ancestors of a family remain members of it. They return once a year in the cloth-covered masks called *egungun*, speak to their descendants, bless them and settle their quarrels.

How a person is made

The Yoruba account of a human being has several parts, and each matters for illness.

The body is shaped from clay by Obatala, the orisha of whiteness and calm. Olodumare then breathes into it the *emi*, the breath of life. The story tells that Obatala once drank palm wine while at work and made some bodies crooked: the hunchback, the cripple, the albino. When he was sober he was sorry, and he took such people under his special care. They are called people of the orisha. Their condition is not a punishment and not an illness to be cured.

The most important part is the *ori*. The word means head. The head that one can see is the outer head. Within it is the inner head, and this is a person's destiny and his own private orisha.

A person receives his inner head before birth. The verses of Ifá tell how. The one who is about to be born goes to the workshop of Ajala, the potter who makes heads. Ajala is a drunkard and a debtor and is seldom at his bench. His heads look alike from outside. Some are well fired and sound. Others are cracked or half baked, and will fall apart in the rain of the world. Each person chooses one, without knowing what he takes. Then he kneels before Olodumare and states what he will do in the world, and it is sealed. On the way down he passes through a gate and forgets all of it.

One verse tells of three friends who went to choose. Two went straight to the workshop, found nobody, and took the heads that looked best. The third, named Afuwape, first consulted Ifá and made the sacrifice he was told to make. Because of it he met Ajala himself, helped him with his creditors, and was shown which heads were sound. In the world the first two toiled without result. Afuwape prospered. When the others asked where he had found so good a head, he answered that all had chosen at the same place, and that only their destinies differed (Abimbola 1976).

Three consequences follow, and Yoruba medicine draws all three.

First, some of what happens to a person was settled before his birth. An illness or a misfortune may belong to the head he chose.

Second, there is a witness. Orunmila, the orisha of wisdom, was present when every person chose. His title is Witness of Destiny. Ifá is his voice. To consult Ifá is to ask the one being who knows what one's own head contains.

Third, a destiny is not fixed like iron. A good head can be spoiled by bad character, by impatience, or by the envy of others. A poor head can be mended to a degree by sacrifice, by

effort, and by character. The Yoruba say that the legs carry the head: nothing chosen in the other world comes about without one's own effort here.

One verse asks which of the orisha will go with his devotee on a far journey across the sea and never turn back. Each orisha in turn says that he will. Each is then asked what he would do if, on the way, he reached his own town and was offered his favourite food. Each admits that he would stay to eat. Only a person's own head never turns back. No orisha blesses a person, the verse concludes, without the consent of his head (Abimbola 1976).

Character, and the power of the word

Two more ideas complete the ground.

The first is *iwa*, character. The Yoruba hold that good character is the aim of life and its best protection. The full phrase is *iwa pele*, gentle character. A proverb says that character is beauty. A verse of Ifá tells that Orunmila once had a wife named Iwa. She was beautiful and hard to live with, and he drove her out. At once everything went wrong for him. His clients left, his medicines failed, and nobody respected him. He set out to find her and searched through all the towns of the orisha, asking for her in song. Money, children and a long life, the verse says, are nothing without character.

For medicine this means that conduct is part of every diagnosis. A babalawo may find that his client's troubles come from his own impatience, greed or cruelty. He will say so, and the verse he recites will be about a person who came to grief in the same way.

The second idea is *ashe*. It is the power to bring about what is said. Olodumare has it in full and gave shares of it to the orisha. It is present in the spoken word of a person with authority, in certain leaves, in blood, in the kola nut, and in the signs of Ifá. A prayer ends with the response *ashe*: may it come to pass. A medicine without *ashe* is only vegetable matter. Chapter 28 shows how a healer puts it in.

Health in Yoruba is *alafia*. The word means peace and well-being together. A person has it when his head is with him and when he stands well with his orisha, his dead and his neighbours. He must also keep his taboos and live with measure. Three blessings are asked for in every prayer: money, children, and a long life in good health to enjoy them.

The powers that concern illness

Of the many orisha, some have a special part in sickness and healing.

Orunmila is the orisha of wisdom and of Ifá. He was present at the making of the world and at every person's choice of a head. He knows the cause of every trouble and its remedy. He does not possess people. He speaks through the signs.

Eshu carries every offering and opens or shuts every road.

Osanyin is the owner of leaves. He is pictured with one eye, one arm and one leg, and with a tiny high voice. His sign is an iron staff with a ring of small birds around a larger bird at the top. A story tells that he once kept all the leaves of the forest in a calabash hung high in a tree and would share them with nobody. The orisha of the wind blew the calabash down. The leaves scattered, and each orisha snatched some for himself. That is why every orisha has his own plants, and why Osanyin still knows the secret of all of them. No medicine works without his leave.

Shopona, also called Obaluaye, king of the world, is the orisha of smallpox and of all illness that breaks out on the skin and spreads. He is the hot earth of the dry season. People avoid his name. His priests were both the healers of smallpox and its feared masters. They took charge of the bodies and goods of those who died of it. The British believed that some of them spread the disease on purpose, and outlawed the cult in the early twentieth century. He is honoured today in Brazil and Cuba as the lord of epidemics and their cure.

Obatala shapes the body in the womb and protects those whom he made otherwise.

Oshun is the orisha of the river that bears her name, of sweet water, of love and of children. Women who cannot conceive go to her. Her water, drawn at her grove in Oshogbo, is given to the sick and to children. Her healing is cool, and coolness is the Yoruba word for a body and a mind at peace.

Ogun is the orisha of iron. Hunters, smiths, soldiers, drivers and surgeons are his. The knife that cuts the navel cord and the knife that circumcises belong to him. Oaths are sworn on iron.

The twins. The Yoruba have the highest rate of twin births known in the world, about four times that of Europe. Twins are held to share one soul and to bring fortune. They are fragile, and many died in infancy. When a twin dies, the mother has a small wooden figure carved. She washes it, feeds it, dresses it and carries it with the living child for years. The lost half of the pair is kept in place, so that the survivor is not drawn after it.

The children who are born to die. Some children are held to belong to a band of spirit companions in the other world. Such a child is called *abiku*. It has promised its companions to come back to them soon. It is born, sickens and dies, and is born again to the same mother, and dies again. Parents give such children names that plead with them: Stay and Enjoy Life, Do Not Go Again. They put iron rings on the child's ankles to weigh it down. They consult Ifá to learn how to break its pact.

Nigerian doctors have pointed out what stands behind many of these cases. Sickle cell disease is commoner in Nigeria than anywhere else on earth. Both parents carry the trait without being ill. One in four of their children has the disease, and before modern care most of those children died young, one after another in the same family (Onwubalili 1983). The Yoruba had seen the pattern exactly: the same mother, the same fate, child after child. They read it as one child that kept returning.

The healers

Yoruba society has several kinds of healer, and their fields overlap.

The **babalawo** is the priest of Ifá. The word means father of secrets. He finds the cause of any trouble by divination and names the sacrifice. Most babalawo are also skilled in medicines, since each sign of Ifá has its own remedies.

The **onishegun** is the maker of medicines. He or she knows leaves, roots, barks and animal matter by the hundred, and the spoken formulas that go with them. The herbalist treats what can be treated by remedy and sends the client to a diviner when a deeper cause is suspected.

The priests and priestesses of the single orisha serve those whom their orisha has claimed. They divine with sixteen cowrie shells. In their rites the orisha comes down and "mounts" a devotee, who dances and speaks as the orisha. This is possession of the kind described in chapter 21: a lasting bond, not an attack.

Beside these stand bonesetters, who are widely used to this day, midwives, and the women who sell leaves and ready-made infusions for children in every market.

A study of households in the city of Ibadan in the 1960s found that nearly all of them used both the hospital and the traditional healers. They chose between them by the kind of illness (Maclean 1971). That is the pattern of chapter 21. A recent report on Yoruba diviners in the United States found that they send clients to a physician first. In one case a divination led a client to ask for a second medical test, and the test found a tumour that the first had missed (Rainey 2024).

What the healers mean by knowing

In the 1970s two philosophers at the university of Ife, Barry Hallen and J. O. Sodipo, sat down with a group of experienced herbalists to ask what they meant by certain words. They chose the Yoruba words that English dictionaries give as "know" and "believe". The result surprised them (Hallen 1986).

In English a person is said to know what he has learned from a reliable book or teacher. The herbalists rejected that use. A person may say that he knows, they explained, only what he has seen with his own eyes and what his own heart bears witness to. Everything else is another matter. What one has been told, what one has read and what everybody says may be perfectly true. A person can only agree to accept it. The Yoruba word for this second state means just that: to agree to what one hears.

By this standard most of what an educated modern person calls his knowledge is not knowledge. It is accepted report.

The herbalists applied the rule to their own craft. A remedy is known only by the one who has seen it work. A healer who passes on a recipe passes on a report. The pupil will know it when he has used it.

This matches a point that the author made during the research for this book and that chapter 5 recorded. Experience that has been turned into statements is no longer experience. The old medicines keep the two apart. The Yoruba herbalists have exact words for the difference.

The ground in summary

A Yoruba healer works in a world with the following features.

1. What exists is one vessel in two halves, this world and the other.
2. Powers that favour people stand on one side and powers that undo them on the other. The traffic between them runs through one messenger at the crossing, and it runs by sacrifice.
3. A person carries a destiny that he chose and has forgotten. One witness knows it and can be asked.
4. Character is part of health.
5. Words, leaves and signs hold a power that can be set to work.
6. Only what has been seen is known.

An illness in such a world may come from the body alone. It may come from one of the powers of the left, from an orisha who has been neglected, or from the mothers of the night. It may come from the dead, from an enemy, from the patient's own conduct, or from the head he chose. The babalawo's first task is to find out which. He does it with sixteen palm nuts.

25. Ifá: the diviner, the instruments and the cast

The father of secrets

A babalawo is not called by an illness and has no visions. He is a scholar of an oral library.

The training begins in childhood. A boy of seven to twelve is given to a master, often on the advice of Ifá itself. He lives in the master's house and serves him. He carries the divining bag, watches every consultation, and learns by ear.

The first stage is to recognise and name the 256 signs at sight, in every order, and to cast them. The second is the verses. Each sign has its own body of verses, and the pupil learns them sign by sign, beginning with the sixteen principal signs. The master recites a verse. The pupil repeats it until he has it without a slip. In the evening the older pupils test the younger. The third stage is the sacrifices that go with each verse, and the fourth is the medicines.

Abimbola, who went through it, says that the training takes ten to twelve years and that nobody has ever known the whole. A babalawo is expected to know several verses for each of the 256 signs before he may practise. Many know some hundreds in all. A great one knows a few thousand. Learning continues for life. At regular meetings the priests of a town recite to one another, and a man who cannot hold his own is shamed.

At the end of the training comes the initiation. The candidate is taken into a grove outside the town. He is washed and shaved. The elders cast to find the sign that governs his own life. He receives his own set of sacred palm nuts. From that day he is bound by the rules of the calling. He must not lie to a client. He must not use his knowledge for harm. Abimbola adds that he should not use it to grow rich, and that the great babalawo of the past were poor men (Abimbola 1976).

Nearly all babalawo have been men. In some regions, and widely in the Americas today, women are initiated as well.

The instruments

The babalawo carries his tools in a cloth bag.

The palm nuts. Sixteen nuts of the oil palm, chosen from a variety whose nuts have four or more "eyes" at the base. They are black and smooth from handling. They are the body of Orunmila on earth and are kept in a carved wooden bowl with a lid. They are fed with offerings.

The tray. A flat wooden board, round or rectangular, with a raised and carved border. At the top of the border, facing the diviner, is the face of Eshu. Chapter 26 describes its layout.

The powder. A fine yellowish wood dust, made by termites in a certain tree, is spread on the tray. The signs are drawn in it with the fingers.

The tapper. A pointed rod of ivory or wood, often carved with a kneeling woman. The diviner raps it on the rim of the tray at the start, in a steady beat, while he calls on Orunmila.

The chain. A chain or cord as long as a man's arm, on which eight halves of a seed pod are strung, four on each side of the middle. Each half-pod has a hollow inner face and a rounded outer face.

The lots. Small objects that stand for answers: a pair of cowries tied together, a piece of bone, a stone, a shard of china, a seed.

Casting with the palm nuts

This is the older and weightier method. It is used for the great occasions.

The diviner holds all sixteen nuts in his left hand. With his right he tries to snatch them all away in one quick grab. The hand is too small. Usually some nuts are left behind.

- If **one** nut remains in the left hand, he draws **two** short lines in the powder, side by side.
- If **two** nuts remain, he draws **one** line.
- If none remain, or more than two, the grab does not count, and he tries again.

He repeats this until he has eight valid results. He writes them in two columns of four. The first mark goes at the top of the right-hand column, the second at the top of the left-hand column, the third below the first, and so on down. When the eighth mark is made, the sign stands on the tray.

Three points deserve notice. The diviner does not choose. His hand grabs as it can, and what is left is the answer. The rule turns the count around: one nut gives two lines, two nuts give one. And the grab has three possible results, of which only two are written. The third, the grab that leaves neither one nut nor two, leaves no mark.

Casting with the chain

The chain gives the whole sign in one throw. The diviner holds it by the middle and swings it away from himself, so that it falls on the mat in the shape of a long loop. Four half-pods lie in a row on the right and four on the left.

Each half-pod has fallen either with its hollow face up or with its rounded face up. Hollow face up counts as a single line. Rounded face up counts as a double line. The diviner reads the right-hand row from the top, then the left.

The chain is quick, and it is used for everyday consultations. The Yoruba call it the servant of Ifá. In a doubtful or important case the diviner turns to the nuts.

The sign and its name

Every figure of four marks has a name. There are sixteen such figures, and chapter 26 gives them. A complete sign consists of two of them, side by side. It is named from the right, since the right-hand column is the senior. If the right column is the figure Ogbe and the left the figure Oyeku, the sign is Ogbe-Oyeku.

When both columns show the same figure, the sign is called by that figure's name with the word *meji*, two: Ogbe Meji, Oyeku Meji. There are sixteen of these doubled signs. They are the principal signs and outrank the rest. The Yoruba word for a sign of Ifá is *odu*. The sixteen doubled signs are the great odu, and the 240 mixed signs are their children.

A consultation

Bascom described many consultations at Ife and elsewhere. They follow one course (Bascom 1969).

The client does not say why he has come. He takes a coin or a cowrie and holds it close to his lips. He whispers his question to it, so that the diviner cannot hear. He lays it down among the diviner's tools.

This is the most surprising feature of Ifá for an outsider. The diviner does not question the client. He does not need to know the problem. The system is to find it.

The diviner calls. He spreads the powder, taps the rim of the tray, and greets Orunmila, the earth, Eshu, and the great diviners of the past by name. He touches the coin with his nuts or chain.

He casts and marks the sign.

He recites. He begins to chant the verses that he knows for that sign, one after another. Each verse tells of a person or a being in the far past for whom this same sign was cast. It tells why that person had come, what he was told to offer, whether he did so, and what happened to him.

The client chooses. He listens. When he hears a verse whose story matches his own case, he stops the diviner. That is the verse meant for him. If the client is uncertain, or if the diviner prefers, the lots decide which verse applies.

The lots narrow it down. The verse gives the outline. Further questions are settled by a simple procedure. The client takes two of the small objects, one in each closed hand. One stands for yes and the other for no. A pair of cowries means that it is so, and a bone means that it is not. The diviner casts twice, once for each hand. Each cast gives a sign, and the signs have a fixed order of seniority. The hand with the senior sign is opened, and the object in it is the answer.

In this way the diviner asks a fixed series of questions. Does the sign come with good or with ill? If good, of which kind: long life, money, marriage, children, or victory over enemies? If ill, of which kind: death, sickness, conflict, want, or loss? From whom does it come: an orisha, the ancestors, the client's own head, the mothers of the night, an enemy? What must be offered, and to whom? Will the offering be accepted?

The sacrifice is made. Chapter 28 describes it. A part always goes to Eshu.

Medicine may follow. If the verse includes a remedy, the babalawo prepares it.

Throughout, the babalawo's own opinion counts for nothing. He does not interpret freely. He casts, recites what was handed down for that sign, and lets the client and the lots select. Abimbola insists on this. The priest is the keeper and the voice of the corpus. The reading takes place between the corpus and the client.

The simpler casts

Ifá stands at the top of a family of Yoruba methods.

Sixteen cowries. The priests and priestesses of the single orisha cast sixteen cowrie shells from the hand onto a tray. They count how many fall with the mouth up. There are seventeen possible results, from none to sixteen. Each has the name of one of the signs and its own verses (Bascom 1980). The method needs less learning than Ifá and is open to women. It is the most used form of Yoruba divination in Cuba and Brazil.

The kola nut. A kola nut of the right kind splits into four lobes, two "male" and two "female". They are thrown down, and the number of lobes that land face up gives a simple answer: yes, a firm yes, no, a firm no, or cast again. Every household uses this to ask its orisha or its dead whether an offering has been accepted.

So the Yoruba have a graded set of instruments. Four pieces answer a household's yes or no. Sixteen shells give seventeen named answers with verses. Eight marks on the tray give 256.

26. The geometry of Ifá

What kind of geometry

The geometry of Ifá has no lengths and no angles. It is a geometry of places, of two states at each place, and of the ways in which a figure can be turned into another. Mathematicians call such a study by other names. The Yoruba priests have no name for it at all. They carry it in the order in which they learn the signs, in the layout of the tray, and in the rules of the cast.

This chapter sets it out step by step. Every count in it was checked by calculation during the research for this book. Chapter 31 lays the result beside the theory.

One place, two states

The smallest element of Ifá is a single mark in the powder. It can be made in two ways. The diviner draws one line with one finger, or two lines side by side with two fingers. There is no third way of marking, and no place is left empty.

So each place holds one of two states. This book writes them as I and II.

Four places: the sixteen figures

Four marks, one above another, make a figure. Since each of the four places has two states, there are two times two times two times two figures: sixteen. Ifá uses all sixteen and has a name for each.

The table gives them in the order in which nearly all babalawo rank them. Bascom checked the order with more than eighty diviners (Bascom 1969). The marks are read from the top down.

Rank	Name	Marks, top to bottom	Single lines	Turned upside down	With I and II exchanged
1	Ogbe	I · I · I · I	4	Ogbe	Oyeku
2	Oyeku	II · II · II · II	0	Oyeku	Ogbe
3	Iwori	II · I · I · II	2	Iwori	Odi
4	Odi	I · II · II · I	2	Odi	Iwori
5	Irosun	I · I · II · II	2	Owonrin	Owonrin
6	Owonrin	II · II · I · I	2	Irosun	Irosun
7	Obara	I · II · II · II	1	Okanran	Osa
8	Okanran	II · II · II · I	1	Obara	Ogunda

Rank	Name	Marks, top to bottom	Single lines	Turned upside down	With I and II exchanged
9	Ogunda	I · I · I · II	3	Osa	Okanran
10	Osa	II · I · I · I	3	Ogunda	Obara
11	Ika	II · I · II · II	1	Oturupon	Otura
12	Oturupon	II · II · I · II	1	Ika	Irete
13	Otura	I · II · I · I	3	Irete	Ika
14	Irete	I · I · II · I	3	Otura	Oturupon
15	Oshe	I · II · I · II	2	Ofun	Ofun
16	Ofun	II · I · II · I	2	Oshe	Oshe

The fourth column counts the single lines in each figure. One figure has none, four have one, six have two, four have three and one has four. The numbers one, four, six, four, one are the row of the arithmetic triangle that every schoolchild meets later under the name of Pascal. They must appear, since the sixteen figures are all the ways of choosing which of four places shall hold a single line. The Yoruba system contains every one of those ways and nothing else.

Two ways of changing a figure

The last two columns of the table show two operations.

The first is to turn a figure upside down, so that its top mark becomes its bottom mark. The figure is then read from the other end.

The second is to exchange the two states. Every single line becomes a double line and every double a single. The figure is replaced by its opposite.

Each operation, done twice, gives the original figure back. The two can also be done together, in either order, with the same result. With “leave as it is” that makes four operations in all, and they form a closed set. Whatever one does with them, one never leaves the sixteen figures.

The pairs

The babalawo learn the sixteen figures in eight pairs: the first with the second, the third with the fourth, and so on. Bascom noted that the two members of a pair always stay together, even in those towns where the order of the pairs differs a little. What joins the two members of a pair?

The table gives the answer, and it is exact.

Four of the sixteen figures look the same when they are turned upside down: Ogbe, Oyeku, Iwori and Odi. Turning does nothing to them. Each of these is paired with its opposite. Ogbe, all single, goes with Oyeku, all double. Iwori, double outside and single inside, goes with Odi, single outside and double inside.

The other twelve figures change when they are turned. Each of them is paired with its own upside-down figure. Obara turned over is Okanran. Ogunda turned over is Osa. Ika turned over is Oturupon. Otura turned over is Irete. In two pairs, Irosun with Owonrin and Oshe with Ofun, the upside-down figure and the opposite figure are the same figure.

So the rule of pairing is this. A figure is paired with itself turned upside down. If turning gives nothing new, it is paired with its opposite.

Nothing in the practice of Ifá requires this. The diviner could cast and read the signs in any order. The order is part of what is taught, and it embodies a rule of symmetry that holds without exception.

Six families

When both operations are allowed together, the sixteen figures fall into six families. Within a family every figure can be reached from every other by turning, exchanging, or both. No figure can be reached from another family.

Family	Members	Ranks
First	Ogbe, Oyeku	1–2
Second	Iwori, Odi	3–4
Third	Irosun, Owonrin	5–6
Fourth	Obara, Okanran, Ogunda, Osa	7–10
Fifth	Ika, Oturupon, Otura, Irete	11–14
Sixth	Oshe, Ofun	15–16

The traditional order of rank runs through the families one after another and never mixes them. The two families of figures that are their own upside-down come first. Then comes a family of two, then the two families of four, then the last family of two.

The two families of four deserve a closer look. Each of their figures has exactly one mark that differs from the other three. In the fourth family the odd mark stands at an end: at the top or at the bottom. In the fifth family it stands in the middle: in the second or the third place. The four members of a family are the four ways of having that one odd mark, single or double, upper or lower.

The babalawo do not explain the order in these terms. They explain it by seniority: which figure came into the world first. The order that they hand down is nevertheless the order of the families.

Eight places: the 256 signs

A complete sign of Ifá has two figures side by side, a right one and a left one. That is eight places with two states each. The number of signs is therefore sixteen times sixteen, or two multiplied by itself eight times: 256.

Sixteen signs have the same figure on both sides. They are the doubled signs, such as Ogbe Meji and Oyeku Meji. They are the great odu and keep the rank of their figure.

The other 240 signs have two different figures. Each is named from the right. Ogbe on the right and Oyeku on the left is Ogbe-Oyeku. Oyeku on the right and Ogbe on the left is Oyeku-Ogbe, a different sign with its own verses. So the 240 mixed signs come in 120 pairs, each the other's left-and-right exchange. The babalawo treat the two members of such a pair as relatives.

The mixed signs are ranked after the sixteen doubled ones. Among themselves they follow the rank of their right-hand figure and then of their left. All the signs with Ogbe on the right come first, then all those with Oyeku on the right, and so on.

A third operation now joins the two of the last section: the exchange of right and left. With turning, exchanging the states, and exchanging the sides, the 256 signs fall into forty-four families. Eight families have two members, twelve have four, and twenty-four have eight.

The doubling does not stop at the signs. The priests say that each sign has sixteen principal verses. That would give 4,096 verses, which is two multiplied by itself twelve times. Other priests give larger figures, and nobody has ever counted. It is the habit of mind that matters here. At every level the Yoruba system multiplies by sixteen, and sixteen is two times two times two times two.

The whole system is thus built from a single distinction, repeated. One place has two states. Four places give a figure. Two figures give a sign. Every sign has its verses. Nothing else is assumed.

The tray

The signs are written on a board, and the board has a geometry too.

The oldest tray that survives outside Africa was in a collection at Ulm in Germany by 1659. It had been brought from the coast of what is now Benin. It looks like the trays in use today. The form has been stable for at least four centuries.

A tray is most often round. Its raised rim is carved with animals, people and patterns. At one point on the rim is a face with large eyes. It is the face of Eshu. The diviner sets the tray down so that this face is opposite him and looks at him. Eshu watches every cast.

Yoruba scholars have recorded the names of the parts of the tray (Drewal 1989). There are nine.

Part	Position	Meaning of the name, as recorded
Head of the tray	Top, opposite the diviner, at the face of Eshu	The head
Foot of the tray	Bottom, nearest the diviner	The foot
The straight path	Right side	The direct road
The other path	Left side	The road on the other hand
Four further sections	Upper right, upper left, lower right, lower left	Each bears the praise name of a diviner of the first times
The centre	Middle	“The meeting place that crowns all”

The rim is therefore divided by a cross and by a second, slanting cross into eight sections. The ninth is the centre. Before he casts, the diviner greets each section in turn as an ancient diviner. He taps the rim with his rod. He draws lines in the powder from the head to the foot and from side to side, and opens the tray.

The signs themselves are marked in the centre, in the meeting place.

So the board repeats the numbers of the system and adds one. There are eight sections round the edge, as there are eight places in a sign. And there is a ninth in the middle, in which the eight are brought together and the sign appears.

The cast

Chapter 25 described the two ways of casting. Three features belong to the geometry.

The hand does not choose. The diviner’s right hand grabs at sixteen nuts in his left and cannot hold them all. What stays behind is not his decision. With the chain it is the fall of eight seed pods. The Yoruba say that Orunmila chooses. In any case the sign comes from outside the will of the two people present.

The count is turned round. One nut left gives two lines. Two nuts left give one line. The diviner writes the reverse of what he holds.

There are three outcomes, and two are written. A grab can leave one nut, two nuts, or neither. Only the first two make a mark. When the grab leaves no nut, or more than two, nothing is written and the grab is repeated. The procedure knows a third state, in which no direction shows. It passes that state over in silence.

Each sign needs eight valid grabs. A consultation with the nuts is therefore slow and deliberate. The rhythm of grabbing and marking, eight times over, is part of the rite.

Are the 256 signs equally likely? With a perfectly even chain they would be. Real seed pods have a hollow and a rounded face and need not fall evenly. With the nuts, the chance of leaving one and the chance of leaving two depend on the hand. Nobody seems to have counted the outcomes of a diviner over a year. The Yoruba would see no point in it. For them the sign that falls is the sign that was meant.

What the geometry is for

The structure does four pieces of work in the practice.

It is an address system for a library. The corpus of Ifá consists of many thousands of verses, held in memory. Each verse is filed under one of 256 signs. A sign is an address. The cast picks an address, and the diviner goes to that shelf.

It is complete. Every possible fall of eight two-sided marks is a named sign with its own verses. No cast can give a result for which the system has no place. In the eyes of the tradition, the same holds for human situations. There are 256 kinds, and every case belongs to one of them.

It decides. Since the signs have a fixed order of seniority, any two casts can be compared. The lots of chapter 25 use this to answer yes or no, and to pick one from a list.

It expresses that every state has a counterpart. The signs are learned in pairs. The members of a pair are each other's reverse or each other's opposite. Their verses often tell stories of opposite kind. The first figure, Ogbe, is light, life and the day. Its partner Oyeku is dark, the night and the end of life. Neither is good or bad in itself. The Yoruba say that both were needed for the world to be made.

The same sixteen elsewhere

The sixteen figures of four marks are not found among the Yoruba only. They appear across Africa, the Arab world and medieval Europe. Three relatives throw light on what is special about Ifá.

The science of the sand. Arab scholars described it from the ninth century under the name *ilm al-raml*. The diviner makes four rows of dots in the sand, quickly and without counting.

He then counts each row. An odd number gives one dot and an even number two. The four results make a figure, one of the same sixteen. He does this four times and has four figures, called the mothers.

From here the Arab system does what Ifá does not do. It calculates. The four mothers are read crosswise to give four daughters. Then pairs of figures are added, row by row. One dot and one dot make two. One and two make one. Two and two make two. In this way four more figures are derived from the eight, then two from those four, and at last one from the two. The last figure is the judge, and it answers the question.

The addition has a consequence that the practitioners knew and used. The judge always has an even number of dots in all. Only eight of the sixteen figures can ever appear in that place. If a diviner ends with an odd judge, he has made a mistake and must reckon again. The system checks itself.

The method was translated into Latin in Spain in the twelfth century and was practised in Europe under the name geomancy until the seventeenth.

The seeds of Madagascar. The diviners of Madagascar lay out seeds in a grid. Four columns of four places are filled by chance, each place with one seed or two. Twelve further columns are then derived from them by the same addition. The mathematician Marcia Ascher studied the method. She found that the diviners know several tests that every correct layout must pass. One column must always hold an even number of seeds. At least two of the sixteen columns must be alike. They use these tests to catch their own errors, and they can state them as rules (Ascher 1997).

The four tablets of the south. The diviners of Zimbabwe, Botswana and South Africa cast four flat pieces of wood, bone or ivory. Each stands for a person: an old man, an old woman, a young man and a young woman. Each has a marked face and a plain face. They fall in sixteen ways. Every fall has its own name and a praise poem, which the diviner recites and applies to the case (van Binsbergen 1996).

In all these systems the frame is the same: four places with two states each, sixteen figures. Scholars disagree about how this came to be. Some hold that the Arab science of the sand spread south across the Sahara and along the coast of East Africa. On that view the African systems, Ifá among them, descend from it. Others, among them the mathematician Ron Eglash, hold that the method is African in origin and travelled north (Eglash 1999). The Yoruba say that Orunmila brought Ifá to Ile-Ife at the beginning. The question is open.

Whatever its origin, the Yoruba made something of the sixteen figures that none of the others have.

The Arab and Malagasy diviners add figures and read a judge. Ifá adds nothing. It casts two figures and reads the pair as one of 256 signs. In place of a calculation it has a library. Each of the 256 addresses holds a body of verses, and the whole has been kept in memory, word

for word, for centuries. And it has an order of the figures that is built on turning and exchanging.

A parallel in China

One other system rests on the same foundation, and the comparison is instructive.

The Chinese *Book of Changes* is built from lines of two kinds, broken and unbroken. Three lines make a figure. There are eight of these. Two of them, one above the other, make a sign of six lines. There are sixty-four of those, eight times eight. Ifá makes a figure of four marks and doubles it. The Chinese book makes a figure of three lines and doubles it. The principle of building is the same.

The likeness goes further. The traditional order of the sixty-four Chinese signs, ascribed to King Wen some three thousand years ago, arranges them in thirty-two pairs. In twenty-eight pairs the second sign is the first turned upside down. Eight signs look the same upside down. These are arranged in four pairs in which the second is the opposite of the first, with every line exchanged.

That is the rule by which the babalawo pair their sixteen figures. A figure goes with itself turned over. If turning gives nothing new, it goes with its opposite.

The two systems arose at opposite ends of the Old World. No historian has shown a link between them. Both took two states and a small number of places and built every possible figure. Both found that the natural way to pair such figures uses two operations, turning and exchanging, and both gave turning the first place.

Chapter 46 returns to the Chinese book. It has one feature that Ifá lacks. A line can be "moving", on the point of changing into its opposite. Ifá has no moving marks. It has the left-and-right pairs, in which each mixed sign is tied to its reverse.

Leibniz and the byte

In 1703 the German philosopher Gottfried Leibniz published a short paper on counting with two digits only, nought and one. He showed that every number can be so written and that the four operations of arithmetic become very simple. A Jesuit in China had sent him a diagram of the sixty-four signs of the *Book of Changes*. Leibniz recognised his own system in it and said so in the paper's title.

Eglash has proposed that a second line leads to Leibniz from Africa. It would run through the sand divination that reached Spain in the twelfth century and through the medieval thinkers who built logical devices on it. This is his thesis. It has not been proved.

What is certain is this. All modern computing rests on a unit of eight places with two states each. It is called a byte, and it can take 256 values. A sign of Ifá is, in its form, exactly that. A Nigerian computer scientist, Olu Longe, devoted his inaugural lecture at the University of

Ibadan in 1983 to the comparison (Longe 1983). The babalawo had been addressing a memory by eight two-state marks for some centuries before the engineers did.

What is special about the Yoruba system

Six features can now be listed. They are the reason for the claim with which chapter 24 began.

1. **One distinction carries everything.** A mark is single or double. Nothing else is assumed.
2. **Every combination is used.** The sixteen figures and the 256 signs are complete sets. None is left out, and none is added.
3. **The figures are ordered by symmetry.** They are paired by turning and, where turning fails, by exchange. The order of rank runs family by family.
4. **The sign is found, not chosen.** A cast puts the choice outside both people.
5. **The cast has a third outcome that is not written.**
6. **The structure is an address system for a body of memorised knowledge.** Geometry here is not an ornament. It is the index of a medicine.

A seventh feature is the board: eight sections and a centre that is named the meeting place.

Chapter 31 asks what the theory of this book makes of all seven. The next chapter gives the sixteen great signs one by one.

27. The sixteen great signs

How to read this chapter

Each of the sixteen figures of chapter 26, doubled, gives one of the sixteen great signs. Each has its own name, character and stories. A babalawo learns them first and knows them best.

The entries below give for each sign its marks, its partner, the themes of its verses, and one story. They draw on the published collections of Bascom and Abimbola and on the summaries of Epega (Bascom 1969; Abimbola 1975; Abimbola 1977; Epega 1995). They are limited to what those collections agree on.

Three cautions are needed.

The verses of a sign number in the hundreds. An entry of a few lines can only name the ground tone.

Lineages differ. A story that one town tells under one sign may be told elsewhere under another. The pairs and the general character of each sign are stable.

No sign is good or bad. Each can come "with good" or "with ill", as the lots decide. The darkest sign may announce a blessing, and the brightest may carry a warning.

A sign speaks to a client in a fixed way. It does not describe his illness. It tells of someone long ago who was in the same position, and what became of him.

First pair: Ogbe and Oyeku

1. Ogbe Meji (I · I · I · I, twice). Eight single lines, the only sign with no double line in it. It is also called Eji Ogbe. The babalawo call it the father of the signs.

Its themes are light, the day, the open road, the beginning, and long life. It is the sign of the head, in the Yoruba sense of destiny. A client for whom it falls with good is told that his way is clear and that he should hold to what is right. When it falls with ill, the same light shows what he would prefer not to see.

One of its best-known verses is a short teaching on honesty. Be truthful, it says, and do what is right. The powers stand by the one who is truthful.

A story tells how Ogbe came to rank first. He was the youngest of the sixteen in the other world and the last to set out for the earth. On the way he alone stopped to consult Ifá and make the sacrifice that was asked. When the sixteen arrived, the people chose him as their head. The verses often turn on this point. Rank goes to the one who does what must be done, and not to the one who came first.

2. Oyeku Meji (II · II · II · II, twice). Eight double lines. It is the opposite of Ogbe in every place.

Its themes are the night, the ending of what has run its course, the dead, and protection from a death that comes before its time. The babalawo say that Ogbe is the day and Oyeku the night, and that the night is the mother of the day. A client is reminded of his ancestors and told to give them their due. A verse tells of a person for whom Death had already set out. He made the sacrifice, and Death passed the house by.

The two signs of this pair are the two extremes of the system. All single lines stand against all double. Together they are day and night, coming and going. Every other sign is a mixture of the two.

Second pair: Iwori and Odi

3. Iwori Meji (II · I · I · II, twice). Double outside, single inside.

Its theme is looking inward. The best-known verse of this sign begins with a play on its name. Iwori, look hard at what is the matter with you. The verse goes on to address one who has been initiated into Ifá. If you have been initiated, it says, initiate yourself again by your own understanding. Do not climb a palm tree with a rotten rope. Do not dive into water if you cannot swim. Do not draw a knife in anger. Do not be in haste to enjoy the world (Abimbola 1975).

A client for whom this sign falls is told that the cause of his trouble lies in his own conduct or his own blindness. He must examine himself before he looks for an enemy.

4. Odi Meji (I · II · II · I, twice). Single outside, double inside. It is the opposite of Iwori.

The word is linked with what is closed, sealed or walled. Its verses speak of the womb, of what is kept safe by being enclosed, and of being born again. A client is told to guard what he has, to honour his mother and the women of his house, and to stay within bounds for a time.

The two signs of this pair are built alike, with the same marks at the ends and the same in the middle. One has the single lines inside and the other has them outside. Their themes match their form. Iwori asks a person to look within. Odi speaks of what is held within.

Third pair: Irosun and Owonrin

5. Irosun Meji (I · I · II · II, twice). Single above, double below.

The name is that of the red camwood. The yellow powder on which every sign is marked comes from a related tree and bears a related name. The themes of the sign are blood and descent, what is inherited from the family, and what is seen in dreams. A client is told to find out what his forebears left undone and to attend to the head of his family.

6. Owonrin Meji (II · II · I · I, twice). Double above, single below. It is Irosun turned upside down, and also its opposite.

Its themes are the reversal, the sudden turn, the event that nobody foresaw. It is a sign of Eshu. A client is warned against haste and against trusting appearances, and is told to give Eshu his share so that the turn may be in his favour.

In form, Irosun is a figure whose upper half and lower half differ. Owonrin is the same figure overturned. The verses give the one to what comes down a line of descent and the other to what overturns an order.

Fourth pair: Obara and Okanran

7. Obara Meji (I · II · II · II, twice). One single line at the top, three double below.

Its best-known story is told in every collection. Obara was the poorest of the sixteen signs when they lived as men, and the others looked down on him. One day all sixteen went to divine for the king. As payment the king gave each of them a pumpkin. The fifteen thought the gift an insult. On the way home they stopped at Obara's house, since it was near, and his wife cooked for them the little that there was. They left their pumpkins with him as thanks for the meal. Some days later, with nothing else in the house, Obara's wife cut one open. It was full of gold and beads. So were all the others. Obara became the richest of the sixteen, and the others had to come to him.

The themes follow from the story. Wealth is hidden in what looks worthless. Do not scorn a small gift. Feed the stranger. Fortune turns.

8. Okanran Meji (II · II · II · I, twice). Three double lines and one single at the bottom. It is Obara turned upside down.

Its themes are the single word that starts a quarrel, stubbornness, and trouble with those in power. It is linked with Shango, the orisha of thunder, who was a king with a fierce temper. A client is told to hold his tongue, to settle a dispute before it grows, and not to stand on his rights.

Both figures have one mark that differs from the other three, and it stands at an end. In Obara it stands at the top, and the story is of one man raised above the rest. In Okanran it stands at the bottom, and the verses speak of one word that brings a man down.

Fifth pair: Ogunda and Osa

9. Ogunda Meji (I · I · I · II, twice). Three single lines and one double at the bottom.

It is the sign of Ogun, the orisha of iron. Its themes are the clearing of a road, cutting, work, justice, and the settling of a matter by a clean decision. The surgeon's knife and the farmer's cutlass belong here. A client is told to remove what stands in his way and to deal straight.

Abimbola gives under this sign the verse on the head that chapter 24 retold. Orunmila asks which orisha will follow his devotee across the sea without turning back, and only the person's own head can. Under the same sign stands the story of Afuwape and the potter of

heads (Abimbola 1976). So the sign of iron and the open road is also the sign of the destiny that each person carries.

10. Osa Meji (II · I · I · I, twice). One double line at the top and three single. It is Ogunda turned upside down.

Its themes are wind, flight, and sudden change that comes from outside. It is linked with the orisha of the storm wind. It is also the sign under which the verses tell how the mothers of the night came into the world. They arrived as birds, the verse says, and perched on the trees of the town, one after another. The people learned that nothing could prosper without their leave (Verger 1965).

A client for whom Osa falls is told that powers stronger than he are moving. He should not fight them. He should make his peace, especially with older women.

The pair has the odd mark at the end, like the fourth pair. Ogunda cuts a way through. Osa is what sweeps through of itself.

Sixth pair: Ika and Oturupon

11. Ika Meji (II · I · II · II, twice). One single line in the second place.

The word *ika* means cruelty or wickedness. The sign does not say that the client is wicked. Its verses concern the harm that people do with words, the curse and the spell, and above all the way in which malice returns to the one who sends it. It is linked with the snake. A client is told to watch his speech, to keep away from schemes against others, and to protect himself from slander.

12. Oturupon Meji (II · II · I · II, twice). One single line in the third place. It is Ika turned upside down.

Its themes are illness that is borne and outlasted, the earth that bears everything, and the care of children. Of the sixteen it is the sign most often linked with sickness itself. A client is told to look after his body, to rest, and to be patient. Recovery is promised to the one who endures and makes the offering.

In this pair the odd mark stands inside the figure. The verses of both concern what works unseen within: ill will in the one, illness in the other.

Seventh pair: Otura and Irete

13. Otura Meji (I · II · I · I, twice). One double line in the second place.

Its themes are truthful speech, peace after trouble, and the far-sighted. The verses set the liar beside the truthful man. The liar casts his kola nuts and they are not accepted. The verses of this sign also tell of the coming of the Muslims, and for that reason the babalawo call it their sign. The tradition has thus given the newcomers' religion an address inside its own system.

14. Irete Meji (I · I · II · I, twice). One double line in the third place. It is Otura turned upside down.

The name contains the Yoruba verb for pressing. To be initiated into Ifá is, in Yoruba, to "press Ifá", as a sign is pressed into the powder. The themes of the sign are initiation, firmness, and long life won by steady conduct. Some lineages link it with the earth and with Shopona, the orisha of smallpox. A client is told to commit himself and to hold on.

Here again the odd mark is inside the figure. Otura is the word that is true through and through. Irete is the mark pressed in so that it stays.

Eighth pair: Oshe and Ofun

15. Oshe Meji (I · II · I · II, twice). Single and double in turn, beginning with single.

It is the sign of Oshun, the orisha of the river, of sweet water and of children. Its themes are sweetness, charm, abundance, and victory won without a fight. The name is linked with a verb that means to overcome. A client is told that gentleness will bring what strength has not brought. Women who wish for a child are sent to the river.

16. Ofun Meji (II · I · II · I, twice). Double and single in turn, beginning with double. It is Oshe turned upside down, and also its opposite.

It is the sign of whiteness and of Obatala, the shaper of bodies. Its themes are purity, old age, generosity, and the making visible of what was hidden. The diviners treat it with special respect. When it falls they utter a cry of awe.

A story explains its place at the end of the list. Ofun, it is said, was the first of all the signs and the parent of the others. Through a fault of his own he lost his rank and now comes last. He is the eldest who stands behind the youngest. The list of sixteen thus begins with the youngest who became first and ends with the eldest who became last.

The two figures of this pair are the only ones in which single and double alternate all the way down. Each is the other turned over, and each is the other with the states exchanged.

The sixteen together

The table brings the sixteen together.

Sign	Marks	Ground tone	Powers most often named
Ogbe	I · I · I · I	Light, the day, the open road, the head	Orunmila, Obatala

Sign	Marks	Ground tone	Powers most often named
Oyeku	II · II · II · II	Night, ending, the dead, death turned aside	The ancestors
Iwori	II · I · I · II	Looking within; self-examination	Orunmila
Odi	I · II · II · I	The closed, the womb, what is kept safe	The mothers; the river
Irosun	I · I · II · II	Descent, blood, what is inherited, dreams	The ancestors
Owonrin	II · II · I · I	The reversal, the unforeseen	Eshu
Obara	I · II · II · II	Hidden wealth, the turn of fortune	Shango
Okanran	II · II · II · I	The word that brings trouble	Shango
Ogunda	I · I · I · II	Iron, the cleared road, the chosen head	Ogun
Osa	II · I · I · I	Wind, flight, the mothers of the night	The storm wind; the mothers
Ika	II · I · II · II	Ill will, the word that harms and returns	None in particular
Oturupon	II · II · I · II	Illness borne, the earth	The earth
Otura	I · II · I · I	The true word, peace, far sight	Orunmila
Irete	I · I · II · I	Pressing in, initiation, long life	The earth; Shopona

Sign	Marks	Ground tone	Powers most often named
Oshe	I · II · I · II	Sweetness, abundance, victory without a fight	Oshun
Ofun	II · I · II · I	Whiteness, old age, what is made visible	Obatala

Three observations can be made on the whole set.

The pairs carry paired themes. Day stands beside night, looking within beside being held within, descent beside reversal, the road that is cut beside the wind that sweeps. The pairing that chapter 26 found in the marks is found again in the meaning.

Position in the figure has a sense. In some pairs one mark differs from the other three. There the verses speak of the one who stands out, or of the one event that changes everything. Where the differing mark stands at an end, the theme is public: rank, quarrel, road, storm. Where it stands inside, the theme is hidden: malice, sickness, truthfulness, commitment. This is the author’s observation from the published summaries. The babalawo do not state such a rule, and a wider study of the verses would be needed to confirm it.

The whole range of trouble is covered, and illness is one part of it. Only one of the sixteen signs has sickness as its ground tone. The others concern conduct, family, speech, fortune, enemies, death and the powers. That is the Yoruba view of illness in a table. A sick person’s sign is far more likely to speak of his relations and his conduct than of his body.

The 240 mixed signs

Each mixed sign joins two figures and blends their themes, with the right-hand figure leading. Ogbe on the right with Oyeku on the left is a sign in which light leads and night follows. The reverse sign has night leading. The verses of the mixed signs are fewer and less widely known than those of the sixteen, and only the most learned priests command them all.

A few mixed signs have a special standing. The best known is Oshe-Otura, sweetness on the right and the true word on the left. Chapter 28 tells its story, since it is the sign that must be marked at every sacrifice.

A reference table at the end of this chapter lists all 256 signs with their marks.

Reference: the 256 signs

The table lists every sign of Ifá. The sixteen doubled signs come first, in their order of rank. The 240 mixed signs follow, ordered by their right-hand figure and then by their left-hand

figure. A sign is named from the right. The marks of each figure are given from the top down. The fifth column names the sign that has the same two figures with right and left exchanged, and gives its number. The last column counts the single lines among the eight marks.

The table was generated by calculation from the sixteen figures of chapter 26. The numbering of the mixed signs follows the rule just stated. Some lineages rank certain mixed signs differently.

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
1	Ogbe Meji	I · I · I · I	I · I · I · I	None	8
2	Oyeku Meji	II · II · II · II	II · II · II · II	None	0
3	Iwori Meji	II · I · I · II	II · I · I · II	None	4
4	Odi Meji	I · II · II · I	I · II · II · I	None	4
5	Irosun Meji	I · I · II · II	I · I · II · II	None	4
6	Owonrin Meji	II · II · I · I	II · II · I · I	None	4
7	Obara Meji	I · II · II · II	I · II · II · II	None	2
8	Okanran Meji	II · II · II · I	II · II · II · I	None	2
9	Ogunda Meji	I · I · I · II	I · I · I · II	None	6
10	Osa Meji	II · I · I · I	II · I · I · I	None	6
11	Ika Meji	II · I · II · II	II · I · II · II	None	2
12	Oturupon Meji	II · II · I · II	II · II · I · II	None	2
13	Otura Meji	I · II · I · I	I · II · I · I	None	6
14	Irete Meji	I · I · II · I	I · I · II · I	None	6
15	Oshe Meji	I · II · I · II	I · II · I · II	None	4
16	Ofun Meji	II · I · II · I	II · I · II · I	None	4
17	Ogbe-Oyeku	I · I · I · I	II · II · II · II	Oyeku-Ogbe (32)	4

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
18	Ogbe-Iwori	I · I · I · I	II · I · I · II	Iwori-Ogbe (47)	6
19	Ogbe-Odi	I · I · I · I	I · II · II · I	Odi-Ogbe (62)	6
20	Ogbe-Irosun	I · I · I · I	I · I · II · II	Irosun-Ogbe (77)	6
21	Ogbe-Owonrin	I · I · I · I	II · II · I · I	Owonrin-Ogbe (92)	6
22	Ogbe-Obara	I · I · I · I	I · II · II · II	Obara-Ogbe (107)	5
23	Ogbe-Okanran	I · I · I · I	II · II · II · I	Okanran-Ogbe (122)	5
24	Ogbe-Ogunda	I · I · I · I	I · I · I · II	Ogunda-Ogbe (137)	7
25	Ogbe-Osa	I · I · I · I	II · I · I · I	Osa-Ogbe (152)	7
26	Ogbe-Ika	I · I · I · I	II · I · II · II	Ika-Ogbe (167)	5
27	Ogbe-Oturupon	I · I · I · I	II · II · I · II	Oturupon-Ogbe (182)	5
28	Ogbe-Otura	I · I · I · I	I · II · I · I	Otura-Ogbe (197)	7
29	Ogbe-Irete	I · I · I · I	I · I · II · I	Irete-Ogbe (212)	7
30	Ogbe-Oshe	I · I · I · I	I · II · I · II	Oshe-Ogbe (227)	6
31	Ogbe-Ofun	I · I · I · I	II · I · II · I	Ofun-Ogbe (242)	6
32	Oyeku-Ogbe	II · II · II · II	I · I · I · I	Ogbe-Oyeku (17)	4
33	Oyeku-Iwori	II · II · II · II	II · I · I · II	Iwori-Oyeku (48)	2

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
34	Oyeku-Odi	II · II · II · II	I · II · II · I	Odi-Oyeku (63)	2
35	Oyeku-Irosun	II · II · II · II	I · I · II · II	Irosun-Oyeku (78)	2
36	Oyeku-Owonrin	II · II · II · II	II · II · I · I	Owonrin-Oyeku (93)	2
37	Oyeku-Obara	II · II · II · II	I · II · II · II	Obara-Oyeku (108)	1
38	Oyeku-Okanran	II · II · II · II	II · II · II · I	Okanran-Oyeku (123)	1
39	Oyeku-Ogunda	II · II · II · II	I · I · I · II	Ogunda-Oyeku (138)	3
40	Oyeku-Osa	II · II · II · II	II · I · I · I	Osa-Oyeku (153)	3
41	Oyeku-Ika	II · II · II · II	II · I · II · II	Ika-Oyeku (168)	1
42	Oyeku-Oturupon	II · II · II · II	II · II · I · II	Oturupon-Oyeku (183)	1
43	Oyeku-Otura	II · II · II · II	I · II · I · I	Otura-Oyeku (198)	3
44	Oyeku-Irete	II · II · II · II	I · I · II · I	Irete-Oyeku (213)	3
45	Oyeku-Oshe	II · II · II · II	I · II · I · II	Oshe-Oyeku (228)	2
46	Oyeku-Ofun	II · II · II · II	II · I · II · I	Ofun-Oyeku (243)	2

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
47	Iwori-Ogbe	II · I · I · II	I · I · I · I	Ogbe-Iwori (18)	6
48	Iwori-Oyeku	II · I · I · II	II · II · II · II	Oyeku-Iwori (33)	2
49	Iwori-Odi	II · I · I · II	I · II · II · I	Odi-Iwori (64)	4
50	Iwori-Irosun	II · I · I · II	I · I · II · II	Irosun-Iwori (79)	4
51	Iwori-Owonrin	II · I · I · II	II · II · I · I	Owonrin-Iwori (94)	4
52	Iwori-Obara	II · I · I · II	I · II · II · II	Obara-Iwori (109)	3
53	Iwori-Okanran	II · I · I · II	II · II · II · I	Okanran-Iwori (124)	3
54	Iwori-Ogunda	II · I · I · II	I · I · I · II	Ogunda-Iwori (139)	5
55	Iwori-Osa	II · I · I · II	II · I · I · I	Osa-Iwori (154)	5
56	Iwori-Ika	II · I · I · II	II · I · II · II	Ika-Iwori (169)	3
57	Iwori-Oturupon	II · I · I · II	II · II · I · II	Oturupon-Iwori (184)	3
58	Iwori-Otura	II · I · I · II	I · II · I · I	Otura-Iwori (199)	5
59	Iwori-Irete	II · I · I · II	I · I · II · I	Irete-Iwori (214)	5
60	Iwori-Oshe	II · I · I · II	I · II · I · II	Oshe-Iwori (229)	4
61	Iwori-Ofun	II · I · I · II	II · I · II · I	Ofun-Iwori (244)	4
62	Odi-Ogbe	I · II · II · I	I · I · I · I	Ogbe-Odi (19)	6

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
63	Odi-Oyeku	I · II · II · I	II · II · II · II	Oyeku-Odi (34)	2
64	Odi-Iwori	I · II · II · I	II · I · I · II	Iwori-Odi (49)	4
65	Odi-Irosun	I · II · II · I	I · I · II · II	Irosun-Odi (80)	4
66	Odi-Owonrin	I · II · II · I	II · II · I · I	Owonrin-Odi (95)	4
67	Odi-Obara	I · II · II · I	I · II · II · II	Obara-Odi (110)	3
68	Odi-Okanran	I · II · II · I	II · II · II · I	Okanran-Odi (125)	3
69	Odi-Ogunda	I · II · II · I	I · I · I · II	Ogunda-Odi (140)	5
70	Odi-Osa	I · II · II · I	II · I · I · I	Osa-Odi (155)	5
71	Odi-Ika	I · II · II · I	II · I · II · II	Ika-Odi (170)	3
72	Odi-Oturupon	I · II · II · I	II · II · I · II	Oturupon-Odi (185)	3
73	Odi-Otura	I · II · II · I	I · II · I · I	Otura-Odi (200)	5
74	Odi-Irete	I · II · II · I	I · I · II · I	Irete-Odi (215)	5
75	Odi-Oshe	I · II · II · I	I · II · I · II	Oshe-Odi (230)	4
76	Odi-Ofun	I · II · II · I	II · I · II · I	Ofun-Odi (245)	4
77	Irosun-Ogbe	I · I · II · II	I · I · I · I	Ogbe-Irosun (20)	6
78	Irosun-Oyeku	I · I · II · II	II · II · II · II	Oyeku-Irosun (35)	2

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
79	Irosun-Iwori	I · I · II · II	II · I · I · II	Iwori-Irosun (50)	4
80	Irosun-Odi	I · I · II · II	I · II · II · I	Odi-Irosun (65)	4
81	Irosun-Owonrin	I · I · II · II	II · II · I · I	Owonrin-Irosun (96)	4
82	Irosun-Obara	I · I · II · II	I · II · II · II	Obara-Irosun (111)	3
83	Irosun-Okanran	I · I · II · II	II · II · II · I	Okanran-Irosun (126)	3
84	Irosun-Ogunda	I · I · II · II	I · I · I · II	Ogunda-Irosun (141)	5
85	Irosun-Osa	I · I · II · II	II · I · I · I	Osa-Irosun (156)	5
86	Irosun-Ika	I · I · II · II	II · I · II · II	Ika-Irosun (171)	3
87	Irosun-Oturupon	I · I · II · II	II · II · I · II	Oturupon-Irosun (186)	3
88	Irosun-Otura	I · I · II · II	I · II · I · I	Otura-Irosun (201)	5
89	Irosun-Irete	I · I · II · II	I · I · II · I	Irete-Irosun (216)	5
90	Irosun-Oshe	I · I · II · II	I · II · I · II	Oshe-Irosun (231)	4
91	Irosun-Ofun	I · I · II · II	II · I · II · I	Ofun-Irosun (246)	4

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
92	Owonrin-Ogbe	II · II · I · I	I · I · I · I	Ogbe-Owonrin (21)	6
93	Owonrin-Oyeku	II · II · I · I	II · II · II · II	Oyeku-Owonrin (36)	2
94	Owonrin-Iwori	II · II · I · I	II · I · I · II	Iwori-Owonrin (51)	4
95	Owonrin-Odi	II · II · I · I	I · II · II · I	Odi-Owonrin (66)	4
96	Owonrin-Irosun	II · II · I · I	I · I · II · II	Irosun-Owonrin (81)	4
97	Owonrin-Obara	II · II · I · I	I · II · II · II	Obara-Owonrin (112)	3
98	Owonrin-Okanran	II · II · I · I	II · II · II · I	Okanran-Owonrin (127)	3
99	Owonrin-Ogunda	II · II · I · I	I · I · I · II	Ogunda-Owonrin (142)	5
100	Owonrin-Osa	II · II · I · I	II · I · I · I	Osa-Owonrin (157)	5
101	Owonrin-Ika	II · II · I · I	II · I · II · II	Ika-Owonrin (172)	3
102	Owonrin-Oturupon	II · II · I · I	II · II · I · II	Oturupon-Owonrin (187)	3

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
103	Owonrin-Otura	II · II · I · I	I · II · I · I	Otura-Owonrin (202)	5
104	Owonrin-Irete	II · II · I · I	I · I · II · I	Irete-Owonrin (217)	5
105	Owonrin-Oshe	II · II · I · I	I · II · I · II	Oshe-Owonrin (232)	4
106	Owonrin-Ofun	II · II · I · I	II · I · II · I	Ofun-Owonrin (247)	4
107	Obara-Ogbe	I · II · II · II	I · I · I · I	Ogbe-Obara (22)	5
108	Obara-Oyeku	I · II · II · II	II · II · II · II	Oyeku-Obara (37)	1
109	Obara-Iwori	I · II · II · II	II · I · I · II	Iwori-Obara (52)	3
110	Obara-Odi	I · II · II · II	I · II · II · I	Odi-Obara (67)	3
111	Obara-Irosun	I · II · II · II	I · I · II · II	Irosun-Obara (82)	3
112	Obara-Owonrin	I · II · II · II	II · II · I · I	Owonrin-Obara (97)	3
113	Obara-Okanran	I · II · II · II	II · II · II · I	Okanran-Obara (128)	2
114	Obara-Ogunda	I · II · II · II	I · I · I · II	Ogunda-Obara (143)	4
115	Obara-Osa	I · II · II · II	II · I · I · I	Osa-Obara (158)	4

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
116	Obara-Ika	I · II · II · II	II · I · II · II	Ika-Obara (173)	2
117	Obara-Oturupon	I · II · II · II	II · II · I · II	Oturupon-Obara (188)	2
118	Obara-Otura	I · II · II · II	I · II · I · I	Otura-Obara (203)	4
119	Obara-Irete	I · II · II · II	I · I · II · I	Irete-Obara (218)	4
120	Obara-Oshe	I · II · II · II	I · II · I · II	Oshe-Obara (233)	3
121	Obara-Ofun	I · II · II · II	II · I · II · I	Ofun-Obara (248)	3
122	Okanran-Ogbe	II · II · II · I	I · I · I · I	Ogbe-Okanran (23)	5
123	Okanran-Oyeku	II · II · II · I	II · II · II · II	Oyeku-Okanran (38)	1
124	Okanran-Iwori	II · II · II · I	II · I · I · II	Iwori-Okanran (53)	3
125	Okanran-Odi	II · II · II · I	I · II · II · I	Odi-Okanran (68)	3
126	Okanran-Irosun	II · II · II · I	I · I · II · II	Irosun-Okanran (83)	3
127	Okanran-Owonrin	II · II · II · I	II · II · I · I	Owonrin-Okanran (98)	3

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
128	Okanran-Obara	II · II · II · I	I · II · II · II	Obara-Okanran (113)	2
129	Okanran-Ogunda	II · II · II · I	I · I · I · II	Ogunda-Okanran (144)	4
130	Okanran-Osa	II · II · II · I	II · I · I · I	Osa-Okanran (159)	4
131	Okanran-Ika	II · II · II · I	II · I · II · II	Ika-Okanran (174)	2
132	Okanran-Oturupon	II · II · II · I	II · II · I · II	Oturupon-Okanran (189)	2
133	Okanran-Otura	II · II · II · I	I · II · I · I	Otura-Okanran (204)	4
134	Okanran-Irete	II · II · II · I	I · I · II · I	Irete-Okanran (219)	4
135	Okanran-Oshe	II · II · II · I	I · II · I · II	Oshe-Okanran (234)	3
136	Okanran-Ofun	II · II · II · I	II · I · II · I	Ofun-Okanran (249)	3
137	Ogunda-Ogbe	I · I · I · II	I · I · I · I	Ogbe-Ogunda (24)	7
138	Ogunda-Oyeku	I · I · I · II	II · II · II · II	Oyeku-Ogunda (39)	3

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
139	Ogunda-Iwori	I · I · I · II	II · I · I · II	Iwori-Ogunda (54)	5
140	Ogunda-Odi	I · I · I · II	I · II · II · I	Odi-Ogunda (69)	5
141	Ogunda-Irosun	I · I · I · II	I · I · II · II	Irosun-Ogunda (84)	5
142	Ogunda-Owonrin	I · I · I · II	II · II · I · I	Owonrin-Ogunda (99)	5
143	Ogunda-Obara	I · I · I · II	I · II · II · II	Obara-Ogunda (114)	4
144	Ogunda-Okanran	I · I · I · II	II · II · II · I	Okanran-Ogunda (129)	4
145	Ogunda-Osa	I · I · I · II	II · I · I · I	Osa-Ogunda (160)	6
146	Ogunda-Ika	I · I · I · II	II · I · II · II	Ika-Ogunda (175)	4
147	Ogunda-Oturupon	I · I · I · II	II · II · I · II	Oturupon-Ogunda (190)	4
148	Ogunda-Otura	I · I · I · II	I · II · I · I	Otura-Ogunda (205)	6
149	Ogunda-Irete	I · I · I · II	I · I · II · I	Irete-Ogunda (220)	6

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
150	Ogunda-Oshe	I · I · I · II	I · II · I · II	Oshe-Ogunda (235)	5
151	Ogunda-Ofun	I · I · I · II	II · I · II · I	Ofun-Ogunda (250)	5
152	Osa-Ogbe	II · I · I · I	I · I · I · I	Ogbe-Osa (25)	7
153	Osa-Oyeku	II · I · I · I	II · II · II · II	Oyeku-Osa (40)	3
154	Osa-Iwori	II · I · I · I	II · I · I · II	Iwori-Osa (55)	5
155	Osa-Odi	II · I · I · I	I · II · II · I	Odi-Osa (70)	5
156	Osa-Irosun	II · I · I · I	I · I · II · II	Irosun-Osa (85)	5
157	Osa-Owonrin	II · I · I · I	II · II · I · I	Owonrin-Osa (100)	5
158	Osa-Obara	II · I · I · I	I · II · II · II	Obara-Osa (115)	4
159	Osa-Okanran	II · I · I · I	II · II · II · I	Okanran-Osa (130)	4
160	Osa-Ogunda	II · I · I · I	I · I · I · II	Ogunda-Osa (145)	6
161	Osa-Ika	II · I · I · I	II · I · II · II	Ika-Osa (176)	4
162	Osa-Oturupon	II · I · I · I	II · II · I · II	Oturupon-Osa (191)	4
163	Osa-Otura	II · I · I · I	I · II · I · I	Otura-Osa (206)	6
164	Osa-Irete	II · I · I · I	I · I · II · I	Irete-Osa (221)	6

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
165	Osa-Oshe	II · I · I · I	I · II · I · II	Oshe-Osa (236)	5
166	Osa-Ofun	II · I · I · I	II · I · II · I	Ofun-Osa (251)	5
167	Ika-Ogbe	II · I · II · II	I · I · I · I	Ogbe-Ika (26)	5
168	Ika-Oyeku	II · I · II · II	II · II · II · II	Oyeku-Ika (41)	1
169	Ika-Iwori	II · I · II · II	II · I · I · II	Iwori-Ika (56)	3
170	Ika-Odi	II · I · II · II	I · II · II · I	Odi-Ika (71)	3
171	Ika-Irosun	II · I · II · II	I · I · II · II	Irosun-Ika (86)	3
172	Ika-Owonrin	II · I · II · II	II · II · I · I	Owonrin-Ika (101)	3
173	Ika-Obara	II · I · II · II	I · II · II · II	Obara-Ika (116)	2
174	Ika-Okanran	II · I · II · II	II · II · II · I	Okanran-Ika (131)	2
175	Ika-Ogunda	II · I · II · II	I · I · I · II	Ogunda-Ika (146)	4
176	Ika-Osa	II · I · II · II	II · I · I · I	Osa-Ika (161)	4
177	Ika-Oturupon	II · I · II · II	II · II · I · II	Oturupon-Ika (192)	2
178	Ika-Otura	II · I · II · II	I · II · I · I	Otura-Ika (207)	4
179	Ika-Irete	II · I · II · II	I · I · II · I	Irete-Ika (222)	4
180	Ika-Oshe	II · I · II · II	I · II · I · II	Oshe-Ika (237)	3

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
181	Ika-Ofun	II · I · II · II	II · I · II · I	Ofun-Ika (252)	3
182	Oturupon-Ogbe	II · II · I · II	I · I · I · I	Ogbe-Oturupon (27)	5
183	Oturupon-Oyeku	II · II · I · II	II · II · II · II	Oyeku-Oturupon (42)	1
184	Oturupon-Iwori	II · II · I · II	II · I · I · II	Iwori-Oturupon (57)	3
185	Oturupon-Odi	II · II · I · II	I · II · II · I	Odi-Oturupon (72)	3
186	Oturupon-Irosun	II · II · I · II	I · I · II · II	Irosun-Oturupon (87)	3
187	Oturupon-Owonrin	II · II · I · II	II · II · I · I	Owonrin-Oturupon (102)	3
188	Oturupon-Obara	II · II · I · II	I · II · II · II	Obara-Oturupon (117)	2
189	Oturupon-Okanran	II · II · I · II	II · II · II · I	Okanran-Oturupon (132)	2
190	Oturupon-Ogunda	II · II · I · II	I · I · I · II	Ogunda-Oturupon (147)	4
191	Oturupon-Osa	II · II · I · II	II · I · I · I	Osa-Oturupon (162)	4

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
192	Oturupon-Ika	II · II · I · II	II · I · II · II	Ika-Oturupon (177)	2
193	Oturupon-Otura	II · II · I · II	I · II · I · I	Otura-Oturupon (208)	4
194	Oturupon-Irete	II · II · I · II	I · I · II · I	Irete-Oturupon (223)	4
195	Oturupon-Oshe	II · II · I · II	I · II · I · II	Oshe-Oturupon (238)	3
196	Oturupon-Ofun	II · II · I · II	II · I · II · I	Ofun-Oturupon (253)	3
197	Otura-Ogbe	I · II · I · I	I · I · I · I	Ogbe-Otura (28)	7
198	Otura-Oyeku	I · II · I · I	II · II · II · II	Oyeku-Otura (43)	3
199	Otura-Iwori	I · II · I · I	II · I · I · II	Iwori-Otura (58)	5
200	Otura-Odi	I · II · I · I	I · II · II · I	Odi-Otura (73)	5
201	Otura-Irosun	I · II · I · I	I · I · II · II	Irosun-Otura (88)	5
202	Otura-Owonrin	I · II · I · I	II · II · I · I	Owonrin-Otura (103)	5
203	Otura-Obara	I · II · I · I	I · II · II · II	Obara-Otura (118)	4
204	Otura-Okanran	I · II · I · I	II · II · II · I	Okanran-Otura (133)	4
205	Otura-Ogunda	I · II · I · I	I · I · I · II	Ogunda-Otura (148)	6

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
206	Otura-Osa	I · II · I · I	II · I · I · I	Osa-Otura (163)	6
207	Otura-Ika	I · II · I · I	II · I · II · II	Ika-Otura (178)	4
208	Otura-Oturupon	I · II · I · I	II · II · I · II	Oturupon-Otura (193)	4
209	Otura-Irete	I · II · I · I	I · I · II · I	Irete-Otura (224)	6
210	Otura-Oshe	I · II · I · I	I · II · I · II	Oshe-Otura (239)	5
211	Otura-Ofun	I · II · I · I	II · I · II · I	Ofun-Otura (254)	5
212	Irete-Ogbe	I · I · II · I	I · I · I · I	Ogbe-Irete (29)	7
213	Irete-Oyeku	I · I · II · I	II · II · II · II	Oyeku-Irete (44)	3
214	Irete-Iwori	I · I · II · I	II · I · I · II	Iwori-Irete (59)	5
215	Irete-Odi	I · I · II · I	I · II · II · I	Odi-Irete (74)	5
216	Irete-Irosun	I · I · II · I	I · I · II · II	Irosun-Irete (89)	5
217	Irete-Owonrin	I · I · II · I	II · II · I · I	Owonrin-Irete (104)	5
218	Irete-Obara	I · I · II · I	I · II · II · II	Obara-Irete (119)	4
219	Irete-Okanran	I · I · II · I	II · II · II · I	Okanran-Irete (134)	4
220	Irete-Ogunda	I · I · II · I	I · I · I · II	Ogunda-Irete (149)	6
221	Irete-Osa	I · I · II · I	II · I · I · I	Osa-Irete (164)	6

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
222	Irete-Ika	I · I · II · I	II · I · II · II	Ika-Irete (179)	4
223	Irete-Oturupon	I · I · II · I	II · II · I · II	Oturupon-Irete (194)	4
224	Irete-Otura	I · I · II · I	I · II · I · I	Otura-Irete (209)	6
225	Irete-Oshe	I · I · II · I	I · II · I · II	Oshe-Irete (240)	5
226	Irete-Ofun	I · I · II · I	II · I · II · I	Ofun-Irete (255)	5
227	Oshe-Ogbe	I · II · I · II	I · I · I · I	Ogbe-Oshe (30)	6
228	Oshe-Oyeku	I · II · I · II	II · II · II · II	Oyeku-Oshe (45)	2
229	Oshe-Iwori	I · II · I · II	II · I · I · II	Iwori-Oshe (60)	4
230	Oshe-Odi	I · II · I · II	I · II · II · I	Odi-Oshe (75)	4
231	Oshe-Irosun	I · II · I · II	I · I · II · II	Irosun-Oshe (90)	4
232	Oshe-Owonrin	I · II · I · II	II · II · I · I	Owonrin-Oshe (105)	4
233	Oshe-Obara	I · II · I · II	I · II · II · II	Obara-Oshe (120)	3
234	Oshe-Okanran	I · II · I · II	II · II · II · I	Okanran-Oshe (135)	3
235	Oshe-Ogunda	I · II · I · II	I · I · I · II	Ogunda-Oshe (150)	5
236	Oshe-Osa	I · II · I · II	II · I · I · I	Osa-Oshe (165)	5
237	Oshe-Ika	I · II · I · II	II · I · II · II	Ika-Oshe (180)	3

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
238	Oshe-Oturupon	I · II · I · II	II · II · I · II	Oturupon-Oshe (195)	3
239	Oshe-Otura	I · II · I · II	I · II · I · I	Otura-Oshe (210)	5
240	Oshe-Irete	I · II · I · II	I · I · II · I	Irete-Oshe (225)	5
241	Oshe-Ofun	I · II · I · II	II · I · II · I	Ofun-Oshe (256)	4
242	Ofun-Ogbe	II · I · II · I	I · I · I · I	Ogbe-Ofun (31)	6
243	Ofun-Oyeku	II · I · II · I	II · II · II · II	Oyeku-Ofun (46)	2
244	Ofun-Iwori	II · I · II · I	II · I · I · II	Iwori-Ofun (61)	4
245	Ofun-Odi	II · I · II · I	I · II · II · I	Odi-Ofun (76)	4
246	Ofun-Irosun	II · I · II · I	I · I · II · II	Irosun-Ofun (91)	4
247	Ofun-Owonrin	II · I · II · I	II · II · I · I	Owonrin-Ofun (106)	4
248	Ofun-Obara	II · I · II · I	I · II · II · II	Obara-Ofun (121)	3
249	Ofun-Okanran	II · I · II · I	II · II · II · I	Okanran-Ofun (136)	3
250	Ofun-Ogunda	II · I · II · I	I · I · I · II	Ogunda-Ofun (151)	5
251	Ofun-Osa	II · I · II · I	II · I · I · I	Osa-Ofun (166)	5
252	Ofun-Ika	II · I · II · I	II · I · II · II	Ika-Ofun (181)	3
253	Ofun-Oturupon	II · I · II · I	II · II · I · II	Oturupon-Ofun (196)	3

No.	Sign	Right figure	Left figure	Left-and-right partner	Single lines
254	Ofun-Otura	II · I · II · I	I · II · I · I	Otura-Ofun (211)	5
255	Ofun-Irete	II · I · II · I	I · I · II · I	Irete-Ofun (226)	5
256	Ofun-Oshe	II · I · II · I	I · II · I · II	Oshe-Ofun (241)	4

The 256 signs can be counted by the number of single lines among their eight marks. One sign has none, 8 have one, 28 have two, 56 have three and 70 have four. Then 56 have five, 28 have six, 8 have seven and one has eight.

28. Verse, sacrifice and medicine

What a verse is

The Yoruba word for a verse of Ifá is *ese*. It means a foot or a step. The verses are the content of Ifá. The signs are only the shelves on which they stand.

A verse is a short narrative with a fixed build. Abimbola, who analysed several hundred, found eight parts, of which the first three and the last are almost always present (Abimbola 1976).

1. **The diviners are named.** The verse begins with the names of the priests who cast Ifá in the case it is about to relate. These names are seldom ordinary names. They are whole phrases: a proverb, an image, a compressed piece of advice.
2. **The client is named.** It may be a person, an orisha, an animal, a tree or a town. In the far time of the verses, all of these consulted Ifá.
3. **The reason is given.** The client came because he had no child, or was ill, or was surrounded by enemies, or was about to go on a journey.
4. **The instruction follows.** The diviners told him what to offer and how to behave.
5. **The verse says whether he obeyed.**
6. **It says what happened to him.**
7. **It gives his response.** If he did as he was told and prospered, the lines are nearly always the same. He began to dance and to rejoice. He praised his diviners, and his diviners praised Ifá. He said that it had turned out exactly as they had foretold.
8. **It draws the lesson**, often in a song that the client and the diviner now sing together.

The story of Obara and the pumpkins in chapter 27 is such a verse in outline. The sign is Obara Meji. The diviners cast for Obara when he was poor. They told him to make an offering and to keep an open house. He did so. The pumpkins came. He danced and praised his diviners.

Many verses come in a second form, with the opposite outcome. The client was told to make an offering and refused, or put it off, or called his diviners thieves. Disaster followed. A line that recurs through the whole corpus sums it up: to make the offering is what helps a person, and to leave it undone has never helped anyone.

The verse as precedent

How does a story about a pumpkin help a sick person? It works as a precedent does in a court of law.

The cast has shown that the client's case stands under a certain sign. The verses of that sign are the cases that stood under it before, in the time when the world was being set in order. They tell what the trouble was then, what was done, and how it ended. The client's case is one more in the same line. He is told to do what was done by the one for whom it went well.

The verse does not argue or explain. It says: this has happened before, and this is how it went. The authority of Ifá is the authority of the first time.

That also explains why the client picks his own verse. He alone knows his trouble. When he hears a story in which another stood where he now stands, he recognises it. The diviner has not guessed his secret. The corpus held it already.

The verses are far more than a tool for divining. They are the encyclopaedia of the Yoruba. They contain the stories of the orisha, the founding of towns, the habits of animals and the uses of plants. They also contain proverbs and rules of conduct. Abimbola called Ifá the storehouse of Yoruba culture. A babalawo is also a historian and a moral teacher, and people consult him for advice as well as for a cast.

Sacrifice

Nearly every verse names a sacrifice. The Yoruba word is *ebo*. No consultation is complete without one, and the Yoruba say that the sacrifice, far more than the telling, is what changes the client's lot.

What is offered. The verse gives a list, often with exact numbers. It may name two hens and two pigeons, a he-goat, sixteen kola nuts, a length of white cloth, palm oil and a sum in cowries. The babalawo adapts it to what the client can pay. A poor client offers less. The sum in cowries is the diviner's fee, and it is small.

Where it goes. A portion always goes to Eshu. The rest goes to the power for whom the lots have shown it to be meant: an orisha, the ancestors, the client's own head, the mothers of the night. An offering to the head is laid before the client's own forehead. An offering to the mothers is set out at night at the foot of a certain tree or at a crossroads. Much of what is offered is cooked and eaten by the client's household, the diviner and the neighbours. A sacrifice is also a shared meal.

The kinds. The Nigerian scholar Omosade Awolalu sorted Yoruba sacrifices by purpose (Awolalu 1979). There are offerings of thanks, and offerings in fulfilment of a vow. There are offerings that cool the anger of a power which has been neglected. There are offerings that ward off a danger foretold. And there is the offering of a substitute.

The substitute is used when a person is about to die. Ifá has shown that Death, or the child's companions in the other world, will not be turned away. A sheep is brought. It is rubbed against the body of the sick person, so that it takes on his condition. It is then treated in every respect as a human corpse. It is wrapped in cloth, mourned, carried out and buried. Death has received a body. The patient may live. The Yoruba name for this rite means, roughly, that which changes an agreement.

Chapter 23 noted that the giving of one life for another is found throughout the shaman's medicine and that the theory of this book has no rule for it. The Yoruba have made the idea

fully explicit. The agreement that the person made before his birth, to die at a certain time, is renegotiated, and the price is another life.

What sacrifice does. Abimbola gives the Yoruba explanation. The world is a field of conflict between the powers of the right and the powers of the left. A human being cannot fight the powers of the left. He can pay them off, and he can win the powers of the right to his side. Sacrifice is the means of both. Eshu is the neutral officer who sees that the payment arrives. Without sacrifice, the verses say, a person stands alone against Death, Disease and Loss.

The seventeenth

One story about sacrifice is told wherever Ifá is practised. It explains a step that no babalawo omits.

When the orisha first came down to arrange the world, there were seventeen of them. Sixteen were male. The seventeenth was Oshun, the orisha of the river. The sixteen held their councils and did not invite her. They laid out the towns, cleared the roads and gave the laws. Nothing that they did succeeded. The rain did not fall. The offerings that they made were not accepted. Illness spread.

They went back to Olodumare and complained. He asked them: where is the seventeenth? They admitted that they had left her out because she was a woman. He told them to return, to beg her pardon, and to include her in everything. They did. She was pregnant, and she set a condition. If the child she carried was a boy, he was to sit with them in her place. The child was a boy. He is the mixed sign Oshe-Otura, and the Yoruba hold that he is Eshu himself in another form (Abimbola 1976).

For that reason every sacrifice is completed in the same way. The babalawo marks the sign Oshe-Otura in the powder on his tray. He recites its verse. He sprinkles some of the marked powder on the offering. Only then will the offering be carried and accepted.

The story is about more than a rite. Sixteen is the number of the system. The story says that the sixteen could do nothing by themselves. They needed one more, of another kind, whom they had left out. Chapter 26 found a like feature in the board: eight sections round the edge and a ninth in the middle, where the sign is written.

Medicine

The Yoruba word for medicine is *oogun*. It covers a remedy for a cough, a charm against thieves, a potion to win a lawsuit and a preparation to harm an enemy. What these have in common is that a material has been given the power to bring something about.

The owner of medicine is Osanyin, the orisha of leaves. The herbalist greets him before he gathers. Plants are picked at set times of day, with a word of address and often with a small payment left at the root. A leaf picked without respect is said to be only a leaf.

The forms. Yoruba medicines are prepared in a number of standard ways.

Form	How it is made and used
Infusion	Leaves, barks and roots steeped in cold water or boiled; drunk and used for washing. The commonest form, above all for children
Pounded medicine	Fresh plants pounded to a paste and taken with a maize drink
Black powder	Ingredients charred in a pot until black, then ground. Licked from the palm, stirred into food, or rubbed into small cuts
Medicinal soap	The local black soap, pounded together with a powder. The patient washes with it
Ointment	Powder mixed with shea butter or palm kernel oil and rubbed in
Medicine cooked as food	A soup or stew that holds the remedy, eaten as a meal
Incisions	A row of small cuts made with a blade on the chest, the wrist or the head, with black powder rubbed into them
What is worn	A leather packet, a ring, a waist cord or a string of beads that holds a prepared medicine

The sign as an ingredient. A medicine that comes from Ifá is prepared in a particular way. The verse names the plants. The babalawo grinds or chars them. Then he spreads powder on his tray and marks in it the sign to which the remedy belongs. He recites the verse over the marked powder. He gathers that powder up and mixes it into the medicine.

The patient therefore swallows, or washes with, or carries on his body, the sign itself and the words that were spoken over it. The geometry of chapter 26 is taken into the body. No clearer statement could be made that, for the Yoruba, a form and a spoken word are active ingredients.

The word that makes the leaf work

A remedy is seldom given without speech. The spoken formula is called *ofo*. Pierre Verger, a French photographer who became a babalawo and spent forty years collecting Yoruba plant

knowledge, wrote down several thousand recipes with their formulas (Verger 1995). He discovered the principle on which they are built.

The name of a plant contains what the plant does. A Yoruba plant name is often a short phrase, and within it stands a verb. The formula picks that verb out and commands the plant by it.

The succulent leaf that the Yoruba call *abamoda* is an example. Its name can be heard as "what I propose comes about". The formula spoken over it says: whatever the *abamoda* proposes is what the orisha accepts, so let what I propose be accepted. Another plant has a name that means "conquer war, conquer plot". The healer tells it to conquer the war and the plot that surround his client.

In each case the healer does not ask the plant for a favour. He reminds it of its name. The name states its nature. Having been reminded, it acts according to what it is.

Verger concluded that Yoruba medicine cannot be understood from chemistry alone. The same leaf, with another formula, serves another purpose. What makes it a medicine is the link between its name, the words spoken, and often the sign of Ifá to which the recipe belongs. Each of his recipes is filed under one of the 256 signs.

A second kind of formula is called *ayajo*. The word refers to a day that is recalled. Such a formula tells what happened the first time: how the first snake made its pact, how the first fever was sent back. The healer recites the origin and so gains command of the case in hand. This book has met the same act among the Finns, who recite the birth of iron, and among the Maya, who ask an illness for the names of its parents. The verse of Ifá, which tells what happened when the sign first fell, is the same act made into a system.

The body as the herbalists see it

Beside the powers and the head there is a plainer Yoruba account of illness. The anthropologist Anthony Buckley learned it from herbalists in the 1970s (Buckley 1985).

It rests on what is hidden and what shows. A healthy body keeps certain matters inside, out of sight. There is red inside: the blood, and in a woman the blood of the womb. There is white inside: semen, milk, the bones. The black skin covers both. Health is the state in which red and white are in their places, in due measure, and covered. Illness comes when what should be hidden breaks out or overflows. A rash, a sore, a discharge and a flux are all cases of the inside showing.

The herbalists also speak of small living beings in the body. Each part has its own, kept in a kind of bag. They are needed. In the belly they help to digest. They become harmful when they multiply and spill out of their place. Too much sweet food, too much palm wine and too much sex make them do so. Piles, bellyache, rheumatic pains and impotence are explained in this way, and the remedies are bitter plants that reduce them and purges that drive the surplus out.

The third idea is heat and coolness. A cool body and a cool mind are the Yoruba picture of health. Smallpox, fever and rage are hot. Oshun's water, shea butter, snail fluid and white foods cool.

This account needs no spirits. It stands beside the other without conflict. The herbalist treats what merely overflowed. The babalawo is asked why it overflowed in this person and now.

What has been tested

Three Yoruba remedies have histories that are worth telling.

The root for madness. In the 1950s the psychiatrist Raymond Prince studied the Yoruba healers who specialised in the mentally ill. He found that their chief remedy for a raving patient was the root of a shrub that grows wild in the region. A decoction put the patient into a deep sleep for a day or more, and it was repeated for weeks. The shrub belongs to the genus *Rauwolfia*. An Indian relative of it had just given Western psychiatry its first effective drug for psychosis, reserpine, in 1952. The Yoruba plant contains the same compound. The healers had been using it for this purpose for as long as anyone knew (Prince 1960).

The mixture for sickle cell disease. A Yoruba clergyman and healer had a family recipe for the painful crises of children with sickle cell disease. It joined the seeds of a West African pepper, the stem of a redwood, cloves, and the leaves of sorghum. In the 1990s Nigeria's national institute for drug research took it up. In a trial with 82 patients, each received the mixture and a dummy in turn. The mixture clearly reduced the number of severe crises and caused no serious harm (Wambebe 2001). It was registered in Nigeria as a medicine. A review for the Cochrane library judged the evidence promising and called for larger trials.

The bitter leaf. One of the commonest plants in Yoruba cooking and medicine is a shrub with intensely bitter leaves. It is given for fevers and for worms. In the 1980s the primatologist Michael Huffman watched a sick chimpanzee in Tanzania. She was listless, had dark urine and was not eating. She went to a shrub of this species, which chimpanzees otherwise avoid, peeled young shoots, chewed the bitter pith and swallowed the juice. A day later she was well. He saw the same on other occasions and found that the worm load of the animals fell afterwards. The local people use the same plant for the same complaints (Huffman 1996). People and apes had come to one remedy.

Many other plants of the Yoruba pharmacy have been examined in Nigerian laboratories, above all those used for fever. A good number act against the malaria parasite in the test tube. Trials in patients are few.

There is harm as well. Unclean incisions have passed on infections. A traditional mixture for children's convulsions that contains tobacco and cow's urine has killed children. Nigerian doctors documented it in the 1970s. Bonesetters save many limbs and lose some through splints bound too tight. Chapter 75 gives the details.

29. Illness and healing in practice

Where an illness may come from

When a Yoruba person falls ill, the family first treats the illness at home. A mother has her infusions. The market sells a remedy for every common complaint. If the illness lingers, they go to a herbalist or, today, to a clinic. If it still lingers, or if it is strange from the start, the question changes. It is no longer what will ease the complaint. It is where the complaint comes from.

Yoruba healers recognise the following sources. A long illness often turns out to have more than one.

The body itself. Something inside has overflowed or come out of its place, as chapter 28 described. Such illnesses are called illnesses of the body. They yield to leaves, purges and rest.

The powers of the left. Disease is one of the eight leaders of the *ajogun*. A person who has neglected his sacrifices stands unprotected, and Disease finds him.

An orisha. An orisha who has been neglected, or whose taboo has been broken, sends trouble. So does an orisha who wants the person as a priest. The second case is the call. The illness will not end until the person is initiated.

The dead. An ancestor has not been given his due or is displeased with the conduct of the family.

The mothers of the night. They attack out of envy or resentment, and above all within the family and the compound. A barren womb, a child that wastes, a business that dries up and a mind that fails are typical of their work.

An enemy with medicine. Someone has had a harmful preparation made. It was laid in the path, put into food, or spoken as a curse.

A broken oath or taboo. The person has sworn falsely on iron, or broken a prohibition that belongs to his family, his orisha or his own sign of Ifá. Every person who has been through the rites of Ifá has certain foods and acts that he must avoid for life.

The companions in the other world. This is the case of the child who is born to die.

The head. The illness belongs to the destiny that the person chose. Or his head is “bad” for a time and needs to be fed and set right. Or his own conduct has spoiled a good head.

Character. Impatience, anger, greed and cruelty make ill.

The list has no single order. A babalawo does not think in such a table. He casts, and the sign with its lots tells him which source is in play. Chapter 25 gave the series of questions.

Illnesses of the mind

The Yoruba have treated disorders of the mind for a long time and with care. Their healers were the first in Africa whose work psychiatrists studied closely.

Raymond Prince worked with forty-six such healers around 1960 (Prince 1964). They distinguished several conditions. There is the raving madness in which a person talks nonsense, strips, wanders and may be violent. There is a quieter form in which he withdraws and neglects himself. There is the weakness of mind from birth, and the failing of mind in the old. There is the falling sickness. And there are states of unease that later psychiatrists described among the Yoruba. One is a crawling sensation in the head and under the skin, with pounding of the heart and dizziness. Another is a set of attacks in the night, which people ascribe to a spirit husband or wife.

Prince himself added one that has become well known. He noticed that many Nigerian students came to the clinic with the same complaint. They had a feeling of heat and pressure in the head, their eyes blurred, and they could no longer take in what they read. The students had their own name for it, which Prince adopted: brain fag. It struck those who were the first in their family to study, and who carried the hopes of a whole lineage (Prince 1960b).

The healers' treatment of a raving patient followed a set course. The patient was brought to the healer's compound and stayed there, often for months. In the first days he might be restrained. He was given the decoction of the root described in chapter 28 and slept for long periods. He was purged. His head was shaved, and medicine was rubbed into small cuts on the scalp. Ifá was consulted to find the source, and the sacrifices were made. As he grew calmer he was given work in the compound and on the healer's farm. His family visited and paid in kind.

The discharge was a rite. The patient was taken to a river. He was washed with a medicated soap in the running water. The clothes he had worn during his illness were let go on the stream. A dove was killed and its blood was let run into the water. The healer declared that the illness had been washed away and carried to the sea. The patient put on new clothes and was told never to return to that spot.

Prince judged that the healers did well with sudden, florid states of madness and poorly with the slow and chronic ones. Hospital psychiatry of that time would have said the same of itself.

The village at Aro

In 1954 a young Yoruba psychiatrist, Thomas Adeoye Lambo, took charge of a new mental hospital at Aro, near Abeokuta. He had been trained in England. He decided not to copy the closed asylum.

He arranged with the chiefs of four villages near the hospital that patients would board in the villages. Each patient came with a relative, who cooked for him and stayed with him. They

rented a room in a village house. By day the patient walked to the hospital for treatment. In the evening he went home to the village, took part in its life, attended its festivals and worked on its farms. Lambo also brought traditional healers into the scheme. They held their rites for the patients and advised the staff on what each family believed to be the cause.

The results were good and the cost was low. The World Health Organization made Aro a model, and Lambo later became its deputy director-general (Lambo 1964).

A large international study gave the experiment a wider meaning. From 1968 the World Health Organization followed patients with schizophrenia in nine countries, with the same methods of diagnosis everywhere. Ibadan was one of the centres. After two years, more than half of the Nigerian patients were in the group with the best outcome. In the Danish centre it was fewer than one in ten. The centres in India and Colombia did well too, and those in the rich countries did worse (WHO 1979). The finding has been repeated and has been disputed. If it holds, it shows where a person with a severe disorder of the mind fares better. He does better where his family and village keep him among them than where he is put apart.

That is what the Yoruba healers did. Their patients lived in a household, worked, were visited, and were sent home through a public rite that declared them clean.

Bones, births and the pox

Bonesetters. The traditional bonesetter is still the first choice of many Nigerians with a fracture. He pulls the limb straight, binds it with splints of bamboo or palm rib, and applies hot cloths and herbal pastes. He visits often. It is told of many bonesetters that they break the leg of a chicken on the day they begin and treat it beside the patient. When the chicken walks, the splints come off. Studies in Nigerian hospitals find that simple closed fractures often heal well in such hands. Open and complicated ones do badly, and a limb is sometimes lost through binding that was too tight (Onuminya 2004). Patients give three reasons for going to the bonesetter. He costs less. He does not cut or amputate. And he attends to the question of who or what caused the accident, which the hospital ignores.

Birth. Most Yoruba children were born with the help of an older woman of the compound. Infusions were given through pregnancy. After the birth, mother and child were washed in hot infusions for weeks. On the third day a babalawo was called to cast for the newborn. The rite is called stepping into the world. It shows the family which head the child has chosen, which orisha it belongs to, and what it must avoid.

Smallpox. Chapter 24 described the cult of Shopona. Its priests isolated the sick, forbade drumming and loud noise in the town, and treated the pustules with cooling applications. West African peoples also knew how to protect a healthy person by scratching matter from a mild case into the skin. An enslaved African in Boston named Onesimus described this method to his owner in the early eighteenth century. It led to the first inoculations in North America in 1721, eighty years before vaccination.

The churches of prayer

Since the 1920s a great many Yoruba have turned to churches of their own founding, which they call *Aladura*, the praying people. They reject the orisha and sacrifice. They keep the Yoruba account of where illness comes from. Enemies, witches and evil powers are as real to them as to the babalawo. Their remedy is prayer, fasting, holy water and the laying on of hands, and their prophets see the cause of a member's trouble in visions and dreams (Peel 1968). A Yoruba patient today may pass in one month through a hospital, a prayer church, a herbalist and a babalawo. He asks the same question of each.

The course of a case

The sources describe many consultations. Their common course can be told as one typical case. It is a composite, and no single patient is meant.

A woman has been married for five years and has no child. She has taken the infusions that the older women of the compound advised. She has been to the clinic, where nothing was found. Her husband's family has begun to talk.

She goes to a babalawo with her mother. She whispers her question to a coin and lays it down. He casts the chain. Suppose that the sign is one in which the figure of Oshun leads. He chants its verses. One tells of a woman of the early time who wept for a child. She was told to make an offering at the river and to stop quarrelling with the other wife of her husband. She did both and bore many children. The client stops him there.

He takes the lots. Does the sign come with good? It does. Of which kind? Children. From whom does the present trouble come? The lots pass over the dead, the orisha and her own head, and stop at the mothers of the night. Within her husband's compound, or her own? Her husband's. What must be given? The verse says honey, yellow cloth, five eggs and a hen for the river. The lots add a night offering for the mothers. Will it be accepted? Yes.

The offerings are made. The babalawo marks the sign of the sacrifice and sends them on their way. He prepares a medicine from the verse. It is a soap pounded with certain leaves, and with the powder in which he has marked her sign. She is to wash with it at dawn for sixteen days. He also speaks to her about the quarrel with her co-wife, since the verse spoke of one, and tells her to go and make peace.

Whether she conceives is not recorded in a case of this kind. What can be said is what was done. Her trouble was given a place among 256. It was linked to a story in which a woman in her position succeeded. The source was named, and it lay in her relations within the household. A sacrifice was made that brought her mother, her husband and several neighbours together over a meal. She was given a daily act to perform for sixteen days. And she was told to mend a quarrel.

Of the six steps that chapter 5 called the order of an act of healing, five are plain here. The reader is prepared by a decade of training and by his opening invocation. The reading is

made. The trouble is named by its place in a larger whole. Something is given back and something is paid at that place. A regular act is prescribed for a set time. The sixth step, silence, takes the form of the taboos that go with the sign.

How people choose

A Yoruba family does not regard its healers as rivals. It uses them in an order.

Home remedies come first, then the herb seller, the herbalist or the clinic. The hospital is used for injuries, for surgery, for a difficult birth, and increasingly for fevers. The babalawo, the cowrie diviner or the prophet of a prayer church is consulted when the question of the source arises. That happens when an illness lasts, when it comes back, when several members of a family are struck, or when illness comes together with other misfortune.

Cost plays a part. A consultation of Ifá costs little. The sacrifice may cost a good deal, and the family shares it. A hospital stay can ruin a household.

The Nigerian physician D. D. O. Oyebola surveyed Yoruba healers in the 1970s and found them organised in associations with rules, officers and fines. A member who harmed a patient or stole another's patient could be disciplined (Oyebola 1981). Since the 1980s Nigerian states have registered traditional practitioners through such associations.

What has been measured

The single remedies were discussed in chapter 28. On the practice as a whole there are three kinds of findings.

The course of severe mental illness. The international study described above found that Nigerian patients did better over two years than patients in the rich countries.

Healers and clinics together. In 2020 a team led by the Ibadan psychiatrist Oye Gureje reported a trial that is the first of its kind. In Nigeria and Ghana most people with a psychosis are taken first to a traditional or faith healer and stay at the healer's place. The team worked with 166 such healers. In half of their facilities, chosen by lot, primary care workers were brought in to treat the patients alongside the healer, with the healer's agreement and under a shared plan. In the other half, care went on as usual. After six months the patients under shared care had clearly fewer symptoms. They were also less often subjected to harsh practices such as chaining. The cost was low (Gureje 2020).

The trial did not test the healers' own treatment. It showed that healers and health workers can share patients to the patients' benefit, and that the healers will change a harmful practice when a workable alternative is offered. It confirms what Lambo had found at Aro sixty-five years earlier.

Ifá itself. No study has tested whether clients of Ifá recover more often than others. None has tested whether two diviners casting for the same client reach the same advice. None has

counted whether the casts of a diviner over a year are spread evenly over the 256 signs. The last would be easy to count. The first two would be hard, since the client's own recognition of his verse is part of the method.

What stands out in Yoruba medicine

1. **The reading is made by a cast and a library.** The healer does not read the patient with his own body. He lets a sign fall and recites what is filed under it. His own opinion is kept out.
2. **The patient recognises his own case.** He chooses the verse. The diagnosis is completed by the one who is ill.
3. **A case is treated as a return of an earlier case.** The verse tells what happened the first time, and the client is told to do what was done then.
4. **The sources of illness are mostly relations.** They are relations with the dead, the powers, the household, and one's own chosen destiny. The body by itself is the smallest part.
5. **Words and forms are ingredients.** The name of a leaf holds its action. The sign and its verse are mixed into the remedy.
6. **Payment passes through one messenger at the crossing.** Nothing moves from one side of the world to the other without Eshu.
7. **A life can be given for a life.**
8. **Only what a person has seen is known.** The healers themselves draw the line between knowledge and report.
9. **The system is complete and closed.** There are 256 signs and no others. Every case has an address.

30. Africa beyond Ifá, and across the ocean

A continent of readers

Africa south of the Sahara has several thousand peoples and as many medicines. Earlier chapters described the San of the south and the calling of the Zulu diviner. They described the societies of the afflicted that reach from Congo to the Cape, and the Ndembu doctor who draws out a tooth while the village confesses. This chapter adds what bears on the themes of this part. It looks first at other African ways of reading a case, and then at what African plants gave to the world's pharmacy. It goes on to the rite of the iboga root, and last to what the enslaved carried to the Americas.

One feature unites the continent. Almost everywhere the finding of the cause is the work of a specialist with an instrument, and it is kept apart from the giving of remedies. Philip Peek, who edited the standard survey, wrote that divination in Africa is not a marginal curiosity. It is the central institution through which a society finds out what is the matter (Peek 1991).

Ways of reading

The four tablets. Chapter 26 described the diviners of southern Africa who cast four pieces and read sixteen falls, each with its praise poem. Many diviners there cast a larger set as well. It holds dozens of bones, shells, stones and seeds, each of which stands for a person or a power. There is the bone of a lion for the chief, of a hyena for the witch and of an antbear for the ancestors, and there are shells for the foreigners. The diviner throws them on a mat and reads how they lie to one another. He reads who faces whom, who lies on top of whom, and who has fallen apart from the rest. The fall is a picture of the patient's household at that moment.

The basket. The Ndembu diviner of Zambia keeps twenty or thirty small objects in a round winnowing basket. They include tiny carved figures of a man, a woman and a child bound together, of a man with his hands to his head in grief, and of the elders. With them are a piece of red clay for a grudge, a piece of white clay for innocence, a coin, and a fragment of a calabash. He shakes the basket with a tossing motion so that the objects heap up at the far side, and looks at which have come to the top. He does this three times for each question. If the same objects rise together each time, they are the answer. Victor Turner, who studied the basket, noted that each object has many meanings. The diviner's skill lies in seeing which meaning the present combination picks out (Turner 1975).

The spider. The Mambila of Cameroon ask a large spider that lives in a hole in the ground. They cover the hole with an upturned pot. Under the pot they set a stick and a stone, which stand for the two possible answers, and a stack of marked leaf cards. They leave it for some hours. The spider comes out and moves the cards about. The position of the cards relative to

the stick and the stone, and which cards have been moved, give the answer. Each household head has learned to read them.

The fox. The Dogon of Mali draw a grid in the sand at the edge of the village at dusk. Each compartment stands for a part of the question. They scatter peanuts over it. In the night the pale fox walks across. In the morning the diviner reads the line of its tracks through the compartments.

The poison oracle. The Azande of central Africa, in Evans-Pritchard's time, put their gravest questions to a poison. A dose of a red powder made from a forest creeper was given to a young fowl. The question was put in the form: if this is so, let the fowl die. Then a second fowl was dosed, and the question was put the other way round: if the first answer was true, let this fowl live. Only a pair of results that agreed, one death and one survival, counted as an answer (Evans-Pritchard 1937).

These methods look as different as they could be. They share three features with Ifá.

In each, the answer comes from outside the will of the people present. A fall, a heap, a spider, a fox or the death of a fowl decides. The diviner arranges the conditions and reads the result.

In each, there is a check. The Ndembu shake three times. The Azande reverse the question and ask again. The Malagasy diviner of chapter 26 tests his layout for evenness. The systems are built so that a single chance result does not pass as an answer.

And in most, what the reading shows is a set of relations. The bones show who faces whom. The basket shows the grieving man beside the red clay. The diagnosis is a picture of a household.

The word that is drunk

Islam has been present south of the Sahara for a thousand years. The healers of Muslim Africa are scholars of the Koran. Their most widespread remedy shows, in another form, the idea that chapter 28 found among the Yoruba.

The healer chooses a verse that fits the trouble. He writes it with a reed pen, in ink made of soot and gum, on a wooden slate. He then washes the writing off with water into a bowl. The patient drinks the water or washes with it. The holy words have passed from the slate into the body. Among the Berti of Sudan, whom Abdullahi El-Tom studied, this is the chief form of medicine, and each trouble has its verses (El-Tom 1985). The same healers write verses on paper, fold them into leather cases, and give them to be worn.

Christian Ethiopia has a parallel. A scribe prepares a strip of parchment from the skin of a sheep that was killed for the patient. The strip is cut to the patient's exact height. On it he writes prayers and the secret names of God. He paints staring faces and nets of eyes that are meant to catch and hold the demon of the illness. The scroll is rolled into a case and worn. It covers the person from head to foot when unrolled (Mercier 1979).

In both cases a text is made to measure, and the patient takes it into or onto his body. The Yoruba babalawo who mixes the marked powder of a sign into a soap does the same without writing.

What African plants gave

Chapter 22 noted how much of the world's pharmacy came from the plants of traditional healers. Africa's share is large, and several of its gifts came from an unexpected quarter: poisons.

Plant	Traditional use	What became of it
Calabar bean (*Physostigma venenosum*)	Among the Efik of Nigeria, an ordeal: the accused swallowed the bean, and the guilty died	Physostigmine, the first drug for the eye disease glaucoma and later the first treatment for a severe muscle weakness
Strophanthus seeds	Arrow poison in East and West Africa	Ouabain and strophanthin, drugs for the failing heart
Madagascar periwinkle (*Catharanthus roseus*)	A tea for diabetes	Vincristine and vinblastine, which transformed the outlook for childhood leukaemia
African plum (*Prunus africana*)	Bark tea for old men's urinary trouble	Extract used for the enlarged prostate; trials show relief of symptoms
South African geranium (*Pelargonium sidoides*)	Root for coughs and chest disease among the Zulu and Xhosa	Extract used for acute bronchitis; trials suggest benefit
Devil's claw	San and Khoekhoe remedy for pain	Extract for back pain; see chapter 11
Kola nut	Chewed against tiredness; the gift at every greeting	Caffeine source of the first cola drinks
Rooibos and buchu	Khoekhoe and San teas	World trade; see chapter 12

The ordeal bean is the most striking case. Scottish missionaries at Calabar described the ordeal in the 1840s. The bean was sent to Edinburgh. Within thirty years its active compound was in use to lower pressure in the eye. In 1934 a London doctor, Mary Walker, tried it on a

woman so weak that she could not lift her eyelids. The effect was immediate. That observation opened the modern understanding of a whole class of nerve and muscle diseases. A plant that an African court had used to try witches became a foundation of neurology.

The root that shows a life

In Gabon, among the Mitsogo, the Fang and their neighbours, there is a rite that stands apart from the rest of African medicine. It belongs with the plant teachers of chapter 16. It is called Bwiti.

Its plant is *iboga*, a forest shrub. The yellowish bark of its root is scraped off and eaten. A small amount keeps a hunter awake through the night. A very large amount, taken once in a lifetime, is the initiation.

The candidate is washed and painted white, the colour of the dead. He sits before the temple post with his sponsors and eats the bitter scrapings for hours, by the spoonful. He vomits. A one-stringed bow and a harp play without pause. After some hours he can no longer stand. He lies as dead for a night and a day, and sometimes for three days. His sponsors watch his breath and his pulse and prick him to see whether he feels.

Those who have been through it tell a similar story. They walk a long road, or are carried on a river. They cross to the land of the dead. They meet their own dead relatives, who speak to them. Many say that they are shown their own life from the beginning, scene by scene, as if from outside, with what they did wrong plain to see. At the end they meet the first ancestors, or a great being of light, and are told their true name and their task. The Fang say that the initiate has “seen Bwiti” and that he will never again fear death. The American anthropologist James Fernandez described the rite among the Fang in great detail (Fernandez 1982).

The rite is a pure case of the course of five steps that chapter 7 described. The person is loosened from ordinary life, to the edge of death. He is shown and examined. He receives a short teaching. He sees an order behind his life. And he returns, soberly, with a name.

It is dangerous. The dose is near the poisonous range, and initiates have died.

In 1962 a young American who used heroin took the root’s main compound, ibogaine, out of curiosity. When the effect wore off a day later, he found that his craving and his withdrawal sickness were gone. He spent the rest of his life trying to have it studied. Ibogaine is banned in the United States and several other countries. Clinics in Mexico, New Zealand and elsewhere give it. Studies that followed their patients found that a single dose stopped the withdrawal sickness from opioids within a day in most of them. A year later many were using far less. A good part of them had relapsed (Noller 2018). The compound disturbs the rhythm of the heart, and a number of patients have died.

In 2024 a team from Stanford University reported on thirty American veterans of special military units who had suffered repeated blast injuries to the head. All were disabled and most had thought of suicide. They travelled to a clinic in Mexico and received one dose of

ibogaine, with magnesium to protect the heart. A month later their average scores for the after-effects of trauma, for depression and for anxiety had fallen by more than four fifths. Their disability score had fallen from a moderate level to none. Nobody had a serious heart problem (Cherian 2024). There was no comparison group. Trials with one have begun.

As with the vine of the Amazon and the mushroom of Mexico, the clinics keep the compound and leave out most of the rite. They also report that patients describe the same experience as the initiates of Gabon: a review of one's life, shown from outside.

Across the ocean

Between the sixteenth and the nineteenth century some twelve million Africans were carried as slaves to the Americas. They came from many peoples. Those who shaped the religions of the Americas most were the Yoruba, their neighbours the Fon and Ewe of Dahomey, and the Kongo peoples of central Africa. They arrived with nothing. Within a few generations they had rebuilt their medicine from memory, under masters who forbade it.

Cuba. The Yoruba were called Lucumí in Cuba. Their religion is known as Santería or the Rule of the Orisha. The orisha took the faces of Catholic saints. Shango is Saint Barbara. Babalu-Aye, the Shopona of chapter 24, is Saint Lazarus with his sores. Each year on the seventeenth of December thousands of Cubans walk and crawl to his shrine at El Rincón outside Havana to ask for healing.

Ifá came to Cuba complete. Cuban babalawo cast the same chain and the same nuts and mark the same 256 signs with the same names. They recite verses in a ritual Yoruba that has been handed down for two hundred years. The priests and priestesses of the orisha read sixteen cowries. Every initiate keeps his orisha at home in covered bowls and feeds them. Healing is by cleansing baths of herbs, by offerings, by the passing of a fowl over the body, and by initiation itself. For many a Cuban, to "make the saint" was a cure for a long illness that nothing else had touched. The Yoruba plant knowledge was re-made with the plants of the island. Lydia Cabrera recorded it from old people in the 1940s in a book that Cuban healers still use as their herbal (Cabrera 1954).

Brazil. In Bahia the Yoruba were called Nagô. Their religion is Candomblé. Its houses are led mostly by women, the mothers of the saint. The orisha come down in the bodies of their initiated children, who dance as the orisha through the night. Divination is by cowries. Each house has its keeper of leaves, and the songs for gathering and pounding them are in Yoruba. A saying of the houses, in Yoruba, runs: without leaves there is no orisha. Omolu, the lord of smallpox, dances covered from head to foot in straw, and people come to him for diseases of the skin and for epidemics. The houses have long served as places of care for poor black neighbourhoods. Brazil's health ministry has recognised this role in its policy for the health of the black population.

Haiti. The religion of Haiti is Vodou. It comes mainly from Dahomey and Kongo, with a Yoruba "nation" among its spirits. The spirits are called *lwa*. The priest is the *houngan* and the priestess the *mambo*. Haitians sort illness into the same two classes that this book has met on every continent. There is the illness of God, which merely happens and is for the doctor or the leaf-healer. And there is the illness that was sent, by a spirit that has been neglected, by the dead, or by a human enemy. The priest finds out which by cards, by a candle or by possession. The second kind is treated by feeding the spirits, by baths, and by sending back what was sent (Brodwin 1996).

Suriname and the Netherlands. In the Dutch colony of Suriname the enslaved, who came largely from the Gold Coast, Dahomey and Kongo, made the religion called Winti. The word means wind, and also spirit. Colonial law forbade it as idolatry until 1971. Today it is practised in Suriname and, since the migration of the 1970s, in Amsterdam, Rotterdam and The Hague.

A person in the Winti view has a soul, the *kra*, which came from the creator and has a male and a female side. It must be kept strong and content. A person also has his own *winti*, spirits of the sky, the earth, the water and the forest, who protect him if they are honoured. The dead of the family watch over it. The healer is the *bonuman*. A seer finds the cause. A herbalist knows the plants, and Surinamers in the Netherlands import large quantities of them (van Andel 2012).

The commonest treatment is the herbal bath. Leaves are rubbed in water in a calabash, often with a little perfume or beer. The water is poured over the person from the head down, at dawn, with a prayer. For a weakened soul a festive meal is laid, with the person's favourite dishes, and offered to his own *kra*.

One Winti illness deserves to be set beside the Hawaiian practice of chapter 69. It is called *fyofyo*. It arises from a quarrel within the family or the household that was never settled. Hard words were spoken and stayed in the air. The one who falls ill is often not one of those who quarrelled. It is a small child or a pregnant woman of the house. The child cries, will not thrive and has fevers. No remedy helps until the quarrel is taken back. The rite is called *puru mofo*, to take the mouth away. Those who quarrelled come together. Each says aloud that he withdraws what he said. They wash their mouths, and the sick person is washed with the same water (Wooding 1972).

Illness is here a word that was spoken and has not been taken back. It lodges in the weakest member of the household. It is cured when those who spoke it withdraw it in each other's presence. The reading is the same as that of the Ndembu doctor, who will not take the tooth until the village has spoken. It is also that of the Hawaiian elder, who has the family untangle its knot.

What survived, and why

The enslaved lost their languages, their families and their freedom. Their medicine survived, across three centuries, in at least six countries. Three reasons can be given.

It did not depend on books, temples or objects that could be taken away. It was carried in memory, as verses, songs and names of leaves.

It treated what the masters' medicine did not treat: the relations among the living and with the dead. A people torn from its kin had urgent need of exactly that.

And its structure made it sturdy. A system of signs with fixed names and a fixed order can be rebuilt by a few people who remember it. The 256 signs of Ifá in Havana are the 256 of Ile-Ife.

31. Read with the Net and VALIS

What this chapter does

This chapter lays the Vacuum.Net theory and the reports of VALIS beside the Yoruba medicine of the last seven chapters. It follows the seven questions of chapter 8, as chapter 23 did for the shaman.

All of it is reading. The babalawo did not have the theory. The theory was not built from Ifá. Where the two have the same shape, the chapter says so and gives the grounds. The last section lists what does not fit.

Ifá earns a longer treatment of the first question than any other tradition, because its structure is so exact.

1. The counts

One distinction. The theory begins with one strand and one kind of event: a return of the strand to a place it has passed. A later passage runs with the first, against it, or neither. That gives a direction at each place: forward, backward, or none.

Ifá begins with one mark that can be made in two ways. It writes two of the theory's three values. Chapter 26 pointed out that the grab of the palm nuts has a third outcome, which leaves no mark. The hand of the diviner knows three states. The tray records two.

In the theory the third value is rest: no direction. It is not an error. It is the state in which nothing is asked. Ifá treats the empty grab in the same way. It is not a bad sign. It is no sign, and the diviner simply tries again.

The ladder of two. Chapter 2 described two ladders. Forms that close as a meeting, a state with its opposite, double when they are merged. Forms that close as a ring triple. The ladder of the meeting runs two, four, eight, sixteen and onward.

The counts of Ifá stand on that ladder and on no other. There are two states. There are four places in a figure and sixteen figures. There are eight places in a sign and 256 signs. Each step takes the number of places twice as large: one, two, four, eight. The numbers of forms go two, four, sixteen, 256, each the square of the one before. The tradition's own count of verses, sixteen for each sign, continues the series.

No other medicine in this book stands so purely on one ladder. Chapter 2 read the ladder of two as the ladder of what is settled between two parties who face each other. Ifá is a medicine of exactly that. A sacrifice is a settlement between a person and a power. The world has a right and a left side. Every figure has a partner.

The one more. Beside its powers of two the tradition keeps adding one. There are four hundred and one orisha and two hundred and one powers of the left. There were sixteen

orisha at the beginning, and the seventeenth, without whom they could do nothing. The tray has eight sections round its edge and a ninth in the centre, which is named the meeting place.

The theory has no rule that yields "and one more". The pattern is worth stating all the same. In each case the added one is of another kind than the many. It is the one through whom the many are joined: Eshu among the powers, the child of Oshun among the sixteen, the centre of the tray among the eight directions. The tradition seems to say that a set of two-sided places does not close of itself. It needs a place where the two sides meet. In the theory, a meeting is the closure of a state with its opposite, and it happens at a place.

Nine. The tray's eight and one make nine, which is three times three. In the theory nine is the number of windows that close, out of twenty-seven. This may be chance. The two nines are not divided in the same way.

The two operations

The most exact finding concerns the pairing of the figures.

Chapter 26 showed, by calculation, that the babalawo pair each figure with itself turned upside down. Where turning gives nothing new, they pair it with its opposite, every mark exchanged. The traditional order of rank runs through the six families that these two operations produce.

The theory has two operations of the same kind, and only two.

The first is to read a word of the strand from the other end. Chapter 6 used it for the complementary universe. The other half of the world was read there as the same strand taken in the opposite direction.

The second is to exchange the two directions at every place. The Foundations of the theory call the result the mirror address. Every form has one, and it is as closed as the original. The text says that the sign of a form is "a property of the string, not a label attached from outside".

Turning a figure of Ifá upside down is reading it from the other end. Exchanging single and double marks is taking its mirror address. The babalawo order their sixteen figures by exactly the two symmetries that the theory possesses. They give the first place to reading from the other end, and use the mirror where that fails. Chapter 26 noted that the Chinese *Book of Changes* does the same.

Two traditions without contact have found that these are the natural operations on a figure made of two-state places. The theory says why they are natural. They are the two ways in which a winding can be the same form and yet another: run the other way, or turned the other way at every place.

Eight places and the cube

In the author's account of the theory, the windings in space come out of a cube. A cube has eight corners.

A sign of Ifá has eight places with two states each. A cube whose every corner carries one of two directions has two to the eighth power states: 256. So each sign of Ifá can be pictured as one state of such a cube.

The picture can be carried a step further. A cube has pairs of opposite faces, each face with four corners. The right-hand figure of a sign can be laid on one face and the left-hand figure on the face opposite. The sixteen great signs, in which right and left are alike, are then the states in which the two faces match. The exchange of right and left is a mirroring of the cube. The exchange of the two states reverses the direction at every corner.

This is a way of picturing, and it has a weak point. The four marks of a figure are written in a column, one above another. To lay them on the four corners of a square, one has to choose which mark goes to which corner, and the tradition gives no guidance. The babalawo do not speak of a cube. What stands firm is the count. Eight two-state places, however they are arranged, have 256 states, and Ifá has a name and a body of verses for every one.

2. The reading

The first of the six questions of chapter 4 asks how a medicine reads. Chapter 23 found that the shaman reads by meeting. He takes the patient's state into his own body and reads himself.

Ifá does it differently. The babalawo does not offer his own body as the instrument. He removes himself. He does not ask what the trouble is. He lets a cast decide the sign and lets the client choose the verse. His opinion is kept out at every step.

Three statements of the theory bear on this.

There is no outside selector. The second axiom ends with the words: "Closure is the selection rule; there is no external selector." Nothing outside the net picks what persists. What closes, stays.

The cast is a device for letting a selection be made that no person makes. The author put it briefly during the research: the diviner does not choose, and the hand is part of the path. Whatever settles which nuts stay in the left hand includes the diviner, the client, the moment and the question. The Yoruba say that Orunmila chooses. The theory would say that the sign is selected by the whole of which the two people are a part, and by no one within it.

To perceive is to close a seam. The essay on the senses adds a sentence that fits the next step of a consultation closely. "What does not fit is simply not perceived." The babalawo recites verse after verse. The client hears them all. One of them he recognises. It is the one that

closes with his own state. The others pass him by. The reading is completed in the client, by a closure that only he can make.

So Ifá, too, reads by meeting. The meeting is not between the healer's body and the patient's. It is between the patient and a body of words that has been kept unchanged for the purpose.

The answer is an address. A sign is one of 256 and no two are alike. The theory says that every form has exactly one address, and that an address can be given at any depth. An odu does not name a part of the body. It names a kind of situation in the whole of a person's dealings. The lots then narrow the address: which side, which power, which household.

The first rule of cure and the first of the six rules of chapter 5 say that the state must be read before anything is done. No tradition in this book obeys that rule more strictly. In Ifá the reading is the larger part of the work, and the reader goes to great lengths to keep his own preference out of it.

The verse as the first passage

The third axiom of the theory concerns memory. "At every node the passages are ordered. The first passage fixes the direction; later passages are taken relative to it. The net carries its history as its shape."

A verse of Ifá is an account of a first passage. It tells what happened when this sign first fell: who had come, what was asked, what was done, how it ended. The client's case is a later passage of the same sign. It is read against the first. He is told to do what was done the first time by the one for whom it went well.

The Yoruba do not treat the stories as illustrations. They treat them as what settles the matter. The first time fixed how such a case runs. The present case can go the same way, or it can go the way of the one who refused the offering. It cannot go a third way.

This is the closest fit between the theory and any practice in this book. An axiom says that the first passage fixes the direction of all later ones. A medicine has built its whole method on finding, for each case, the first passage and reciting it.

The same axiom gives a place to the rite on the third day of a child's life. The cast at "stepping into the world" finds the child's own sign. That sign is the first passage of this person. Its taboos are what would run against its direction. A Yoruba who breaks the taboos of his sign acts against his own first passage, and the tradition expects him to fall ill.

It also explains the formulas of chapter 28 that recite an origin. One healer tells how the first snake made its pact. The Finnish knower tells the birth of iron. Each returns to the first passage of what he wants to command.

3. The names

Chapter 29 listed the sources of illness that Yoruba healers recognise. Chapter 4 gave the eight forms of the book on the body. The two lists are laid side by side here, as chapter 23 did for the shaman.

The head that was chosen: frame. The seventh of the eight forms is an error in the frame. It was laid down at the start and every later word depends on it. Chapter 4 listed among its old names “what was chosen before birth”.

The Yoruba doctrine of the head is the fullest statement of that form in any tradition. A person’s lot was fixed before his birth, in a workshop where sound and flawed heads look alike. He has forgotten it. It governs what follows.

The children who are born to die are the sharpest case. The Yoruba saw that certain mothers lose child after child in the same way. They concluded that it was one child, bound by a pact made in the other world before its birth. Nigerian doctors later found sickle cell disease behind many such families. The disease is an inherited fault in the text of the cell, which is the plainest example of a frame error that medicine knows. The tradition had placed the cause correctly: before birth, in what the child brought with it. It lacked the means to read the text.

The dead and the neglected powers: what was left open at the depth of the family. Chapter 6 read the ancestors as the first passages of a family’s winding. It read an unsettled wrong as an open window at that depth. The Yoruba say that an ancestor or an orisha who has not received his due sends illness to a descendant. The cure is to give what is owed, to the one who is owed, through the proper channel.

The enemy and the mothers of the night: direction. The Yoruba place the powers that undo people on the left and those that favour them on the right. Harmful medicine and the attack of the mothers come from the left. In the theory, two living windings of opposite direction never join. The cures match that law. What was sent is not absorbed. It is turned back or paid off.

Too much: the load. The herbalists of chapter 28 explain common illness by excess. Too much sweet food, wine or sex makes the small beings of the body multiply and spill out of their place. The book on the body has a law for this. A form returns to itself as long as the load on it stays under a bound set by its size. Beyond that bound the return falls behind, and the form drifts or settles in a wrong state. The herbalists and the book agree that measure is the condition of health and that the remedy for excess is to reduce and to drive out.

Character. The Yoruba hold that anger, greed and impatience make ill. The sixth form, the wrong closure, covers states that are stable and are not the person’s own good state: fixed moods and dependence. The verse of Iwori Meji, which tells a person to look hard at what is the matter with himself, treats exactly these.

What is missing. As with the shaman, the form in which the body attacks itself has no Yoruba name. The form of the carrier that does not arrive is present only in the idea of the head that is “not with” a person.

4. The act

The remaining five questions of chapter 4 can be answered briefly.

Does it restore or add? The Yoruba act is mainly a payment. What is owed is given. That restores a relation. The medicines add: a soap, a powder, an amulet. They are given for a set number of days and are not meant to be continued for life.

Does it match direction and phase? Direction is matched by the division of the world into right and left and by the question from which side a trouble comes. Time is matched in several ways. The Yoruba week has four days, each belonging to a power, and offerings are made on the right day. Medicines are gathered and taken at set hours. Courses run for counted days.

Does it work with what lives? The verses are chanted and not read. The plants are spoken to. The offering is a living animal or cooked food that is shared.

At which depth does it act? Almost wholly at the depths that chapter 4 called the surround: the household, the dead, the powers, and the destiny of the person. The herbalist’s remedies act on the body. The babalawo sends to the hospital what belongs there.

Does it leave the return to run? The taboos that follow a consultation are the Yoruba form of silence. The client is told what to avoid, and for how long.

Words and forms as carriers

Two practices of chapter 28 touch the theory at an exact point.

The first is the naming of plants. A Yoruba plant name contains the verb of what the plant does, and the healer commands the plant by its name. The theory says of a form that its sign is a property of the string and not a label attached from outside. The Yoruba say the same of a leaf. Its name is not a tag that people hung on it. It states what the leaf is, and to say it rightly is to set the leaf to work.

The second is the eating of the sign. The babalawo marks an odu in powder, speaks its verse over it, and mixes the powder into the remedy. The book on the body found that a closed form cannot deliver anything. Only what ends can deliver. It called such a form a carrier. The marked powder is a carrier in that sense. It holds a form for a moment, it is consumed, and with that the form is handed on.

Whether a pattern drawn in wood dust and swallowed does anything in a body is a question of fact that nobody has examined. The reading claims only that the practice has the shape that the theory gives to delivery.

5. The other half

The Yoruba describe what exists as one calabash in two halves that fit. Chapter 6 described a living being as two halves that are partners, lying against each other place by place. The images agree.

Several Yoruba teachings can be read with that chapter.

The choice and the forgetting. A person chooses his head in the other half and forgets it at the gate. He lives here by a pattern that was set there. The way to learn it is to ask the one witness who stands on both sides.

The crossing. Eshu sits at every crossroads and at the top of the tray. Nothing passes from one half to the other without him. In the theory a node is a place that the strand passes more than once, where passages that are far apart along the strand lie together. Chapter 6 read intuition as perceiving at a node. Eshu is the Yoruba name for the keeper of such places. He is two-faced, unpredictable and necessary, as a crossing is.

Right and left. The helpful powers and the harmful ones stand on two sides. The verses of paired signs tell paired stories. The world is described as a form and its mirror, and the traffic between them is the business of medicine.

The twins. The Yoruba hold that twins share one soul. When one dies, a wooden figure is carved and cared for, so that the place of the lost twin remains filled. In the theory a meeting is a state with its partner, and it closes only while both are there. The carved figure keeps the pair complete. The Yoruba say that without it the living twin would follow the dead one.

The child who returns. The *abiku* is described as a child whose bond with its companions in the other half is stronger than its bond with its mother here. Chapter 6 called soul loss an illness of the tie between a person's two halves. The *abiku* is such an illness from the other end. The child is too firmly held on the far side. The cures all aim to loosen that hold and to weigh the child down on this side: iron rings, pleading names, a sacrifice that changes the agreement.

The yearly return of the dead. The masked ancestors come back each year to bless, to judge and to settle quarrels. The two halves are not sealed from each other. They meet at appointed times and places, under strict form.

6. The meeting

Chapter 7 asked whom a healer meets, in what form, by what course, with what words, to what effect and with what shadow.

Whom, and in what form? The babalawo meets nobody face to face. He has no visions and is not possessed. Orunmila does not appear. He speaks through the fall of nuts and through verses that were fixed long ago.

That is itself a form of meeting, and an unusual one. The reports of VALIS describe a guide or teacher whose concern is direction, meaning and moral bearing. Orunmila is that figure with the personal appearance taken away. What remains is the teaching, in a fixed frame.

The other three figures are present in the wider Yoruba world. The priests of the single orisha are possessed, and the orisha who comes down acts on the bodies of those present. He embraces, strikes, rubs and blesses. That is the figure who acts without much speech. Eshu watches every sacrifice and sees to it that those who withheld one are left unprotected. He does so without anger and without pity. That is the watcher who judges. And the first of all the signs, Ogbe, is pure light. The Yoruba also know Orunmila under a second name, Ela, which stands for purity and the light that cannot be soiled.

By what course? The five steps are present in a consultation in a quiet form. The client steps out of his daily round, whispers his question, and waits. He is examined by the cast and the lots. He receives a verse, which is short and meant for him. He is shown, in the story, the order of which his case is a part. He goes home with an offering to make and rules to keep.

In the initiation of a babalawo the steps are stronger. The candidate is taken into the grove, washed and shaved, and his own sign is cast. In the rite of the iboga root in Gabon, which chapter 30 described, they are at their strongest. The initiate lies as dead, is shown his whole life from outside, meets the first ancestors, and returns with a name.

What is said? The reports note that what is said in such meetings is seldom a fact that could be checked. It concerns conduct, responsibility and the right use of attention.

The corpus of Ifá confirms this on a very large scale. It is the largest body of such sayings that any people has kept. Its thousands of verses hardly ever state a checkable fact about the client. They say what kind of situation he is in, what was done in that situation before, what he owes and to whom, and how he should behave. The best-known verses are plain moral teaching: be truthful, examine yourself, do not despise a small gift, character is beauty.

To what effect? The client gains an account of his trouble, a set of acts to perform, and renewed standing with his household and his powers. The reports of VALIS speak of a stronger sense of direction. A consultation of Ifá is designed to give precisely that.

With what shadow? The same word that covers healing medicine covers medicine made to harm. A babalawo is forbidden to make it, and people believe that some do. The fear of the mothers of the night falls on old women. The cult of smallpox was accused of spreading what it cured. The shadow is the one found everywhere: control over others by the means of healing.

In which frame? Chapter 7 gave three ways of understanding such meetings. The third holds that something real is met through a form that depends on the one who meets, and that the form works like an interface.

Ifá is an interface in the plainest sense of the word. It is a fixed set of 256 signs through which the Other is asked and answers. The Yoruba did not leave the form of the meeting to the moment. They built it, made it complete, and trained men for ten years to operate it. Whatever one holds about what stands behind the tray, the tray itself is a made instrument.

Chapter 7 gave the theory's reading of a meeting: what is met depends on the window of the one who meets. Ifá offers every client the same window, with 256 panes, and lets the cast say which pane he is to look through.

7. What does not fit

Four places, not three. The window of the theory has three places. The figure of Ifá has four. The theory counts twenty-seven windows, of which nine close. Ifá counts sixteen figures and treats all of them as equally valid. There is no rule in Ifá by which some figures close and others stay open. The likeness between the two lies in the method of building everything from one distinction. It does not lie in the numbers.

Two values, not three. The theory needs three values at a place. Ifá writes two. The reading given above, that the third value is the grab that leaves no mark, is offered with caution. The Yoruba do not say it.

No closure rule. In the Arab science of the sand and in the Malagasy layout, figures are added, and the result must be even. That is a rule of closure, in the counting of two. Ifá has no such addition. It reads the cast as it falls. The system most admired here for its geometry has less arithmetic in it than its relatives.

Exchange. Sacrifice is the heart of Yoruba medicine, and the substitute offering states the principle most clearly: a life is given for a life. Chapter 23 noted that the theory has no rule for this. That remains so.

Persons with tastes. The orisha have favourite foods, colours and rhythms, and take offence. The theory can call them windings of the one strand. It cannot derive their characters.

A chooser before birth. The doctrine of the head requires someone who chooses before he exists as a body. The theory has first passages. It has no account of a choice made before the first passage of a person.

The claim that the cast is meant. The Yoruba hold that the sign that falls is the right sign for the client. The theory can say that the hand is part of the path and that nothing outside the whole selects. It does not follow that the fall of eight seed pods carries information about a person's situation. That is a claim of fact. It could be tested, and it has not been.

The adding of medicines. The second rule of cure says to restore and not to add. Yoruba healers add soaps, powders, cuts and amulets. This was noted for the shaman as well.

Why Ifá is called geometric

The author's claim, with which this part began, can now be stated more exactly. The reading has found six features in Ifá that the theory recognises as its own.

1. The whole is built from one distinction, repeated.
2. Every combination is present, and there is nothing outside the set.
3. The figures are ordered by the two symmetries that the theory has: reading from the other end, and the mirror.
4. A third value exists in the procedure and is not written.
5. The place where the signs appear is named the meeting place, and it stands at the centre of eight.
6. A sign is an address, and what is filed at the address is the account of a first passage.

No other tradition in this book has all six. The Chinese *Book of Changes* has the first three and part of the sixth. The shamans have none in explicit form.

What Ifá does not have is the theory's own rule: that some forms close and others do not, and that illness is what stays open. Ifá does not sort its signs into closed and open. It lets the lots decide, case by case, whether a sign comes with good or with ill. In that respect it is a geometry of addresses and not yet a geometry of closure.

What Part III hands on

1. A way of reading in which the reader removes himself, a cast selects, and the patient recognises his own case.
2. A complete address system, in which every case has one place among 256.
3. The treatment of a case as a later passage of a first one, with the first recited.
4. The pairing of every form with its reverse or its mirror.
5. The doctrine that part of what happens to a person was set before his birth and can be read.
6. The use of names, spoken words and drawn forms as ingredients of a remedy.
7. A rule about knowing: only what one has seen is known, and the rest is accepted report.

The Yoruba kept all of this without writing. The next part turns to the peoples who first wrote their medicine down. They wrote on clay in Mesopotamia, on papyrus in Egypt, and in the books of the Greeks, from which the medicine of Europe and of the Islamic world descends.

Part IV — Temple and Text: From Mesopotamia to Unani

32. Mesopotamia: healers and texts

The first written medicine

The oldest medicine that can be read today was written on clay between the Tigris and the Euphrates. The Sumerians invented writing there before 3000 before our era. Their successors, the Babylonians and Assyrians, kept on writing for three thousand years, in the wedge-shaped script called cuneiform. Clay tablets do not rot. Several thousand of them deal with illness and healing.

This part of the book follows one line of descent. It begins with Mesopotamia and Egypt. It goes on to the Greeks, who knew something of both and built the medicine of the four humours. That medicine was carried by Rome, by the scholars of Baghdad and by the universities of Europe. It was the medicine of the hospital until about 1850. In South Asia it is alive today under the name Unani, the Greek medicine, with hundreds of thousands of practitioners.

The Mesopotamian material is uneven in date. A Sumerian tablet from Nippur, written about 2100 before our era, lists fifteen remedies and is the oldest collection of prescriptions known. Most of what survives was copied in the first millennium, in the cities of Assyria and Babylonia. The largest single source is the library of the Assyrian king Ashurbanipal at Nineveh, buried when the city fell in 612 and dug up in the 1850s. Its tablets are in the British Museum. Other groups come from private houses of healers at Assur and Uruk.

The texts were first read in the late nineteenth century. Reginald Campbell Thompson published the medical tablets of Nineveh and a study of the plants. René Labat edited the great handbook of diagnosis in 1951. Franz Köcher copied the therapeutic tablets in six volumes. In the last thirty years Marten Stol, Nils Heeßel, JoAnn Scurlock, Markham Geller and Barbara Böck have made the whole body of texts accessible (Scurlock 2005; Geller 2010; Scurlock 2014).

Two healers and a diviner

Mesopotamian medicine was practised by two kinds of professional, with a third in the background.

The āšipu. The word is usually translated as exorcist or conjurer. Neither word fits. The *āšipu* was a scholar. He had been through the long schooling of a scribe and belonged to the staff of a temple. He served the gods of wisdom and purification: Ea, the lord of the sweet waters under the earth, and Ea's son Marduk.

A text known as the Exorcist's Manual lists what an *āšipu* had to master. It names about a hundred works. Among them are the handbook of diagnosis and a handbook for reading a person's character from his body. There are the great series of incantations against demons, witchcraft and broken oaths. There are the rites for undoing evil omens, and rites for

founding houses, purifying temples and protecting the king. His field was everything that concerned the relation between people and the powers. Illness was a part of it.

At the bedside the *āšipu* was the one who examined the patient and said what the illness was, what had caused it, and how it would end. He then performed the rites that set the matter right.

The asû. This word is translated as physician. The *asû* worked with his hands. He prepared and gave the remedies: potions, salves, bandages, enemas and fumigations. He lanced abscesses and set bones. His patron was Gula, the great lady of healing, whose animal was the dog. In her temple at Isin dogs were kept and buried with care.

The law code of King Hammurabi, cut in stone about 1754 before our era, has nine clauses on the *asû*. They set his fees by the rank of the patient. For an operation with a bronze knife that saved the life or the eye of a nobleman he received ten shekels of silver. For a commoner it was five, for a slave two. If the nobleman died or lost the eye, the surgeon's hand was to be cut off. For setting a bone or healing a sick muscle the fees were lower. These are the oldest known rules on medical fees and on a healer's liability.

How the two worked together. For a long time scholars described the *āšipu* as a magician and the *asû* as a rational doctor. Edith Ritter drew that picture in 1965. It does not hold. The same tablets contain drugs and incantations side by side. The *āšipu* prescribed plants, and the *asû* spoke charms over his salves. JoAnn Scurlock has argued that the *āšipu* is best understood as the physician in the full sense, the one who diagnosed and decided on treatment. The *asû* was then something like a pharmacist and wound-dresser (Scurlock 2005).

Letters from the court of the Assyrian king Esarhaddon, who reigned from 681 to 669, show both at work. The king was often ill. He had fevers, weakness, pains in his limbs and an eruption of the skin. His chief exorcist and his chief physician wrote to him separately, sometimes on the same day. The physician reported on salves and potions and asked the king to be patient. The exorcist reported on rites performed and on favourable days. Neither treated the other as a rival (Parpola 1993).

The bārû. The third figure was the diviner. He did not treat. He answered questions put to the gods, most often by killing a sheep and reading the marks on its liver. Clay models of livers survive, divided into fields and inscribed with what each mark means. When the king was ill, the diviner was asked whether he would recover and whether a planned treatment would succeed.

So the reading of a case was spread over two specialists who did not themselves give remedies, and the giving of remedies lay with a third. Chapter 8 noted this separation. It was met again among the Navajo, the O'odham and the Yoruba.

The powers that make ill

The Mesopotamians lived among many gods and held that every person had a god and a goddess of his own, who stood beside him and spoke for him. A person whose own god stood with him was safe. Illness began when the god turned away.

The texts name the following sources of illness.

The anger of a god. A person has done wrong, knowingly or not. He has broken an oath, eaten what was forbidden, neglected an offering, or wronged his neighbour. His god has left him, or a great god has laid a hand on him.

Demons. There were many, each with its own way of attacking. The most feared was Lamashtu, a goddess with a lion's head who killed women in childbirth and newborn children. Small plaques with her image, and with the image of the demon Pazuzu who drives her off, were hung in the rooms of pregnant women. Other demons lay in wait at deserted places, at crossroads and in doorways. One, called the seizer, turned a person yellow. One was called the lurker.

Ghosts. The dead who had not been buried, or whose families no longer brought them food and water, wandered and attached themselves to the living. They caused headaches, ringing in the ears, pains in the neck, and fits. The cure was to give the ghost what it lacked. Its offerings were restored, or a figure of it was made, provided for a journey, and buried.

Witchcraft. A sorcerer or, more often in the texts, a sorceress had made a figure of the victim, or had given him bewitched food or drink. The signs were a wasting, a loss of desire, a dry mouth, bad dreams and the sense that everyone had turned against him.

The broken oath. An oath that had been broken, even long ago or by a forebear, clung to a person as a curse.

Plain causes. The same texts know cold, wind, the heat of the sun, spoiled food, and dirt. A common fever is called by a word for the burning of the sun. The Mesopotamians did not think that every illness came from a god.

They also knew that some illnesses pass from one person to another. A letter from the city of Mari on the Euphrates, written about 1770 before our era, is the earliest statement of it. The king, Zimri-Lim, writes to his queen. He has heard that a woman of the palace has a disease with sores and that she goes about among the other women. He gives strict orders. Nobody is to drink from her cup, sit on her seat or lie on her bed. The disease, he writes, is catching.

The body

The Mesopotamians did not open human bodies. Their knowledge of the inside came from the sheep that the diviners examined every day, and from wounds.

They had names for the organs. The heart, or more exactly “the inside”, was the seat of thought and of will, and the same word covered the belly. The liver was the seat of feeling. Life sat in the throat, where the breath passes. The body was held together by cords: one word covered sinews, vessels and nerves. Blood, breath, bile and phlegm were known. They were never made into a system of four, as among the Greeks.

Mesopotamian medicine has no general theory of what a body is and why it fails. It has lists. Thousands of observations are set down, each tied to a cause and an outcome. The method is that of the scribes in every other field. They listed stars, words, laws and omens in the same form: if this, then that.

The library of medicine

The scribes arranged their medical knowledge in fixed series of numbered tablets. Each series was known by its first line, and a library kept a catalogue.

The handbook of diagnosis. Forty tablets on the signs of illness and what they mean. The next chapter describes it.

The handbook of remedies. A long series arranged from the head to the feet. It is named after its opening words, “If a man’s skull holds heat”. For each part of the body it lists complaints and, for each complaint, one or more prescriptions. A catalogue of the series was found at Assur. The copy from Nineveh had some fifty tablets, in twelve treatises. They cover the head, the eyes, the ears, the neck, nosebleed, the teeth, the chest, the stomach, the belly, the kidneys, the anus, and the legs.

The lists of materials. One long list gives the names of plants, with their other names: plant so-and-so is the same as plant so-and-so. It has more than a thousand entries. A second work describes plants by their look: this plant has leaves like such a plant and fruit like such a one, and it is good for such an illness. A third does the same for stones. A handy summary sets out the knowledge in three columns: the plant, the illness, and how to give it.

The series of incantations. There are large collections against the evil demons, against Lamashtu, against headache, against witchcraft and against the broken oath. One series is devoted to rubbing. The healer massages the sick limb while he recites.

The rites of undoing. A large group of rites is directed against evil that has been announced by an omen and has not yet struck. Chapter 34 describes them.

The scribes were proud of the age of this knowledge. They ascribed it to the seven sages who lived before the Flood and who had been taught by Ea himself. One medical tablet claims to be copied from an original of the time of a king who had reigned, according to the Babylonian tradition, before the Flood.

The first passage, again

Many incantations begin by telling how the illness came into the world. The best known is the charm against toothache. It was copied for a thousand years.

After the sky god had made the heavens, it says, the heavens made the earth. The earth made the rivers, the rivers made the canals, the canals made the marsh, and the marsh made the worm. The worm went weeping to the gods of justice and of wisdom. What will you give me to eat, it asked, and what will you give me to suck? They offered it ripe figs and apricots. What are figs and apricots to me, said the worm. Lift me up and let me live among the teeth and the gums. I will suck the blood of the tooth and gnaw at the roots of the jaw.

Then the healer speaks to the worm directly. Because you have said this, worm, may Ea strike you with the might of his hand. A note follows. The healer is to mix beer, oil and a certain plant, lay it on the tooth, and recite the charm three times.

The pattern is the one that this book has met among the Finns, the Maya and the Yoruba. An illness is commanded by reciting where it comes from. Chapter 31 read such a recital with the third axiom of the theory: the first passage fixes the direction of all later ones. The Babylonian scribe goes back further than any of the others. He begins with the making of the sky.

Another fixed form shows how the healers thought of their own authority. In many incantations the god Marduk notices a sick person and goes to his father Ea. He describes the case and says that he does not know what to do. Ea answers with the same words each time. My son, what do you not know? What could I add? What I know, you know as well. Go, my son. Then Ea gives the instruction: take this, do that, speak thus. The *āšipu* who recites the text does not act in his own name. He repeats what Ea told Marduk the first time such a case arose.

What counted as evidence

The lists were not copied without thought. They show three kinds of care.

Observation. The signs noted in the handbook of diagnosis are exact. A scribe wrote down that a seizure may begin on one side of the body, and that the patient may or may not know what is happening. He noted that the eyes turn to one side, that the patient may laugh without cause before it comes, and that he sleeps afterwards. A modern neurologist recognises the varieties of epilepsy in these lines (Stol 1993).

Trial. Many prescriptions end with a short remark: “tested”, or “a proven remedy”. Some name the person in whose hands it worked, or the king for whom it was prepared. A remedy that carried such a note was more valued. The healers kept track of what had worked.

Order. In the eleventh century before our era a scholar named Esagil-kin-apli edited the handbook of diagnosis. He left a note on his work. The old texts, he wrote, were like twisted

threads and had no fixed edition. He put them in a new order, from the head to the feet, and established them for teaching. He ends with a charge to his successors. The *āšipu* who makes the decision, and who watches over the lives of people, must know the whole. He must examine, check, think, and only then give his finding to the king (Finkel 1988).

That charge is the first rule of cure of this book, in the words of a Babylonian of three thousand years ago. Read first, and read completely.

33. The Diagnostic Handbook

Forty tablets

The Babylonians called their handbook of diagnosis *Sakikkū*, which means symptoms. Scholars call it the Diagnostic Handbook. It is the oldest systematic work on diagnosis and prognosis in the world. In the form that Esagil-kin-apli gave it around 1050 before our era, it has forty tablets and some three thousand entries. It was copied with little change for a thousand years (Heeßel 2000).

Every entry has the same form. It begins with "if" and states what the healer observes. Then it gives one or both of two answers. It names the source of the illness. And it says how the case will end.

A few examples show the manner. They are paraphrased from the published translations.

If the patient's neck throbs and his head keeps falling, and his hands and feet are swollen and he rubs them against the ground: a demon has seized him.

If his face is yellow, his eyes are yellow and his flesh is slack: it is the yellowing.

If he has been ill for five days and on the sixth day blood comes from his nose: his illness will let go.

If he grinds his teeth and his hands and feet tremble: it is the hand of the moon god. He will die.

The entries hold no remedies. The handbook is for reading only. Treatment was looked up elsewhere.

The plan of the work

The forty tablets fall into six parts. The table gives them.

Part	Tablets	Opening words or subject	What it contains
1	1–2	"When the exorcist goes to the house of a sick man"	Signs met on the way to the patient and at his door
2	3–14	"When you approach the sick man"	The body from head to foot: what each part shows

Part	Tablets	Opening words or subject	What it contains
3	15–25	“If he has been ill for one day”	The course of the illness, day by day; fevers; the hour of worsening
4	26–30	“If the falling sickness falls on him”	Seizures, strokes, palsy and states of the mind
5	31–35	“If the fever of the sun burns him”	Named illnesses, among them fevers and diseases of the skin
6	36–40	“If a woman who is with child”	Pregnancy, birth, the diseases of women, the newborn

The second part is the core. It moves down the body in a fixed order. It begins with the skull, the temples, the eyes, the nose, the tongue, the ears and the face. It goes on to the neck, the arms and hands, the chest, the belly, the hips, the legs and feet. For each part it lists what may be seen and felt. Is it hot or cold? Is it red, yellow, black or pale? Is it swollen, sunken or twisted? Does it move of itself? Does the patient hold it or rub it? Is the sign on the right side or on the left?

The order from head to foot was Esagil-kin-apli’s own. He was proud of it. It has governed the textbooks of medicine ever since. The Egyptian papyri use it, and so do the Greek and Arabic handbooks and the Badianus manuscript of Mexico.

On the way to the patient

The first two tablets surprise a modern reader. They concern what the healer himself meets on his way to the sick man’s house.

If he sees a black pig, the patient will die. If he sees a white pig, the patient will recover, or will come into hardship. If he sees a potsherd standing on its edge in the street, the patient is in danger, and he should not go near him. If an ox butts him, if a snake falls on the bed, if the door of the house creaks as he enters: each has its meaning.

These lines have been dismissed as mere superstition that the editor could not bring himself to cut. Nils Heeßel has shown that they belong to the plan. For the Babylonian scholar the world was one fabric of signs. The gods wrote their intentions into the liver of a sheep, into

the movements of the stars, and into chance events in the street. A sick man's state was a part of that fabric. So was the walk of the man who came to read it. What the reader met on his path belonged to the case (Heeßel 2000).

Chapter 31 quoted a remark of the author on the cast of Ifá: the hand is part of the path. The Babylonian handbook says the same of the healer's feet. The reading begins before he reaches the bed, and he is himself among the signs to be read.

What was observed

When the healer reached the patient, he looked, touched, listened and asked. The handbook shows what he attended to.

Colour. The skin, the face, the eyes, the tongue, the urine and the nails are described as red, yellow, black, white or pale green. A black tongue and black nails are bad signs.

Heat. The healer felt the forehead, the temples, the belly, the hands and the feet, and compared them. A cold tip of the nose and cold ears in a hot body are bad. He noted whether the heat was steady or came and went, and at what hour it rose.

The vessels. He felt the throbbing at the temples, the neck, the wrists and the ankles, and noted whether it was the same on both sides. He described the vessels as going fast or slow, as standing up or lying flat. This is the beginning of the reading of the pulse. It was not carried further.

Movement. Trembling, twitching, grinding of the teeth, a turned neck, a fixed stare, limbs that are stiff or slack.

Breath and voice. Whether the breath is short, rattling or held. Whether the patient talks sense, cries out, mutters, or cannot speak.

What leaves the body. Sweat, and where it breaks out. Urine, by its colour: like the urine of an ass, like the dregs of beer, like the dregs of wine, like clear varnish. Stool, vomit, blood.

Behaviour. Appetite, sleep, fear, anger, wandering, forgetting.

Time. How many days the illness has lasted. Whether it is worse in the morning, at noon, in the evening or in one of the three watches of the night. Whether it returns every second or third day.

Side. Right or left. In Babylonian omens the right side is the patient's own and the left side the enemy's. A sign on the right often means something else than the same sign on the left.

Three matters that later medicines made central are absent or faint. There is no systematic pulse. There is no doctrine of the tongue. And the patient's own account of his history plays a small part. The healer reads what he sees.

“The hand of”

The typical answer of the handbook to the question of the source is that the illness is “the hand of” someone. It may be the hand of a named god: the sun god, the moon god, the goddess of love, the god of plague, the storm god. It may be the hand of a ghost, the hand of a curse, or “the hand of mankind”, which means witchcraft. It may be the hand of the patient’s own god.

The phrase means that the power has touched the person. Each power has its own kind of touch, and the handbook is also a guide to telling them apart.

The sun god Shamash is the judge. His hand lies on those who have broken an oath or given false witness. The goddess Ishtar rules love and war. Her hand shows in troubles of the sexual parts and in certain pains. The hand of a ghost shows in the head: headache, ringing ears, a stiff neck, confusion, a sense of being pressed. The hand of the god of plague is a sudden fever. The hand of mankind is a slow wasting with loss of desire.

Scurlock and the physician Burton Andersen have argued that many “hands” are, in effect, names of syndromes. Each groups together signs that do occur together in a real disease. On that reading the ancient healers had sorted the illnesses they saw into kinds, and had labelled each kind by the power held responsible (Scurlock 2005). Heeßel is more cautious about modern names for ancient illnesses. He agrees that the “hand” is a diagnosis in the strict sense. It sums up a set of signs under one head and tells the healer which rite and which remedy to turn to.

Chapter 8 listed the naming of illness as the third point on which the old medicines agree. The name points to a place or a cause in a larger whole. The Babylonian “hand of” is the plainest case in this book. It does not say what is wrong in the body. It says from where, in the order of the world, the trouble has come.

How it will end

The second answer is the outcome. The handbook uses a small set of phrases. He will live. He will die. His illness will be long. He will recover. He will be ill and then recover. He will die within three days. It is serious. There is no cause for anxiety.

The healer was expected to say this. A wrong forecast cost him his name. A right one gave the family time to prepare and protected him from blame if the patient died. It also told him whether to begin. A case marked “he will die” was not treated. The Babylonian healer, like the Siberian shaman and the Egyptian surgeon, declined what he judged to be beyond help.

The third part of the handbook ties the outcome to the count of days. If he has been ill for one day and shows this, he will recover. If he has been ill for three days and shows that, he will die. The calendar mattered in a second way. Lists of lucky and unlucky days said when a healer might work. On the seventh, fourteenth, nineteenth, twenty-first and twenty-eighth day

of the month, one such list says, the physician shall not lay his hand on a sick person. The week of seven days may have its root in such lists.

A closer look: the falling sickness

The fourth part of the handbook deals with illnesses in which a person falls, is seized, or loses his mind. One of its tablets, the twenty-sixth, has been studied with special care, because it is the oldest detailed account of epilepsy (Stol 1993; Kinnier Wilson 1990).

The Babylonians had several names for what is now one illness. One means the falling. One means, in Sumerian, “fallen from heaven”. One is the name of a demon, the Lord of the Roof, who strikes children. Others are “hand of a ghost”, “hand of a god” and “seizure by the spirit of a lonely place”. Each name went with a certain kind of attack.

The tablet describes what happens in an attack, in order.

It notes the warning. Before the attack the patient may feel something rise in his body, or may cry out, or may laugh or weep without reason.

It notes the side. Suppose that at the moment of the attack his left eye moves to the side, his lip puckers and saliva runs from his mouth. Suppose that his hand, leg and trunk on the left jerk like a slaughtered sheep. Then it is the falling sickness. The same with the right side is given its own line.

It notes whether the patient knows. In one kind his mind is awake while his limbs jerk. In another he does not know himself and afterwards remembers nothing.

It notes the time. Some attacks come at dusk, some in sleep, some at the new moon. Some come once and some several times in a day.

It notes what follows. He sleeps, or he is confused, or he gets up and behaves as if nothing had happened.

And it gives the outlook. An illness that began in childhood and has lasted is hard. One kind “can be driven out”. Of another the tablet says only that it will go on.

A modern textbook sorts seizures by the same questions: where it starts, whether awareness is kept, what precedes and what follows. The scribes had no knowledge of the brain. They had watched very many patients, and they wrote down what they saw without adding what they could not see.

The demon was part of the description and not a substitute for it. Each kind of attack had its own being behind it, and with the being came a rite, a set of stones to be worn on a cord, and a salve. To name the demon was to choose the treatment.

Women and children

The last five tablets concern pregnancy, birth and the newborn.

The thirty-sixth tablet reads a pregnant woman's body for what is to come. The colour of her forehead and her nipples, the shape of her belly, the way she walks, and marks on her skin are taken as signs. They show whether she carries a boy or a girl, whether the birth will be easy, and whether mother and child will live.

The next tablets describe troubles of pregnancy and childbed: bleeding, swelling, fever after the birth, a child that will not come, a womb that does not empty. Here the great enemy was Lamashtu. The fever that kills a mother in the days after delivery was her work.

The fortieth and last tablet is on infants. If a baby cries without stopping and will not take the breast. If its belly is swollen. If the soft spot on its head is sunken. If it has fits while it is being suckled. If its body is hot and its hands and feet are cold. For each there is a source and an outcome. The sunken soft spot, which the handbook marks as grave, is the sign that Mexican mothers call the fallen fontanelle and that doctors read as dangerous loss of water.

The Dutch Assyriologist Marten Stol has gathered what the tablets say on these matters. There were midwives, with their own goddess. Birth was eased by a stone tied to the thigh and by an incantation that tells of a cow in labour whom the moon god helped. A pregnant woman wore cords with knots and stones against the demon (Stol 2000).

The body as a text

The same Esagil-kin-apli edited a second handbook, which the Exorcist's Manual names in one breath with the first. It reads a healthy person's fate and character from the body. It looks at the shape of the head and the face, the hair, moles and their position, and the way of walking and of speaking. It is arranged from head to foot like its twin.

The two handbooks rest on one assumption. A body is a surface on which something is written. In a sick person the signs say which power has laid its hand on him and how it will end. In a healthy person they say what kind of person he is and what will befall him. The scholar's task is to read.

This is diagnosis as reading in the most literal sense. The Babylonian scholar treated the body as he treated a tablet. He did not ask how it works. He asked what it says.

How good was it?

Three judgments can be made.

The first concerns what was seen. Wherever a modern physician can check, the observations are accurate. There are the yellow eyes of the yellowing, the one-sided attack and the cold nose of the dying. There are the swelling that pits under the finger and the fever that returns on the third day. All are real, and all are still taught.

The second concerns what was foretold. The handbook's forecasts rest on experience of the course of untreated illness. A healer who used it would often have been right. Scurlock and

Andersen went through the entries and found that the signs marked “he will die” are, in the main, signs that a modern doctor also fears (Scurlock 2005). Nobody can say how often the forecasts came true. The Babylonians kept no count.

The third concerns the source. Whether the moon god laid his hand on a man is not a question for a physician. The assignment did some useful work whatever one thinks of it. It sorted cases into kinds. It linked each kind to a line of action. And it gave the sick man an account of his illness that tied it to his conduct, his dead and his gods, which he could do something about.

Reference: the forty tablets

The table lists the tablets of the handbook with their subjects, as far as they are preserved (Heeßel 2000; Scurlock 2014). Some tablets are known only in part, and the subjects of a few are inferred from the catalogue.

Tablet	Part	Subject
1	1	Signs seen by the healer on his way to the patient’s house
2	1	Signs at the house and on entering
3	2	The skull and the top of the head
4	2	The temples and the forehead
5	2	The eyes
6	2	The nose and the lips
7	2	The tongue and the mouth; speech
8	2	The ears
9	2	The face as a whole
10	2	The neck and the throat
11	2	The arms, hands and fingers
12	2	The chest and the breasts
13	2	The upper belly, the belly and the hips

Tablet	Part	Subject
14	2	The lower body, the sexual parts, the legs and feet
15	3	Illness of one day, of two days, and so on
16	3	The course over longer periods
17	3	The beginning of an illness; the hour at which it worsens
18	3	Fever and sweat
19–21	3	Fever with other signs; the outlook by day
22	3	Illnesses in general and their turns; signs of recovery
23–25	3	Further signs of course and outcome
26	4	The falling sickness: kinds of attack
27	4	Stroke and palsy; seizure by a ghost
28	4	The Lord of the Roof and related seizures; changes after an attack
29	4	Seizures of children and the young
30	4	States of the mind: fear, confusion, wandering
31	5	The fever of the sun’s heat
32	5	Further named fevers
33	5	Sores and diseases of the skin

Tablet	Part	Subject
34–35	5	Other named illnesses
36	6	Signs in a pregnant woman: the child and the birth
37	6	Illness in pregnancy
38	6	Difficult birth
39	6	Illness after birth
40	6	The newborn and the infant

34. Mesopotamian therapy and ritual

Two kinds of treatment in one prescription

A typical tablet of the handbook of remedies opens like an entry of the Diagnostic Handbook. If a man has such and such signs. Then it says what to do. In very many cases it gives two answers together. It names plants and how to prepare them. And it gives an incantation, with the acts that go with it.

The healers did not see two methods. A remedy was made to work by the word spoken over it, and a rite was completed by the salve or the potion. This chapter describes the materials first, then the forms in which they were given, then the rites.

The materials

The lists of the scribes name about two hundred and fifty plants, more than a hundred minerals, and nearly two hundred other materials. Many names cannot be identified. The Assyrian word is known, the plant is not. The table gives some that are reasonably sure.

Material	Akkadian name, where it has passed into later languages	Use in the tablets
Liquorice root		Coughs, the chest, the stomach
Thyme		The chest; in washes
Cumin	*kamūnu*, the source of the English word	The belly; wind
Sesame oil	*šamaššammū*, the source of the word sesame	The usual base for salves
Myrrh	*murru*, the source of the word	Wounds, the mouth, fumigation
Saffron and turmeric	*kurkanû*, akin to the word curcuma	Jaundice, the eyes
Juniper, cedar, cypress		Resin and oil in salves and smoke; purification
Tamarisk		Purification; washes
Willow		Fevers and pains
Date palm		Fruit, stone and shoots in poultices

Material	Akkadian name, where it has passed into later languages	Use in the tablets
Asafoetida and other strong resins		The belly; against demons
Mustard, cress, garlic, onion, leek		The chest, the belly, poultices
Mandrake and henbane		Pain, sleep
Honey		Wounds; a base for mixtures
Beer and wine		The usual drink in which a remedy was taken
Milk, butter and animal fat		Salves, enemas
Salt, alum, soda, sulphur, bitumen		Washes, the skin, the eyes, fumigation
Copper and iron compounds		The eyes, sores

Some entries in the lists sound repellent: the fat of a lion, human excrement, the dung of a dove. A Babylonian list of plant names explains several of them. They were cover names. “Lion’s fat” stood for a certain plant, as “dove’s dung” stands for a plant in the Bible. The healers wrote in a professional code. That does not account for every such entry. Real dung and real urine were used, as in every old pharmacy.

The Sumerian tablet from Nippur, the oldest collection of prescriptions, shows how the materials were handled about 2100 before our era. Plants were dried and ground. Salt and saltpetre were added. The powder was steeped in beer, or boiled in water and strained, or kneaded with oil into a paste. That tablet has no incantations and no gods. It is a pharmacist’s notebook.

The forms

The Mesopotamian healer gave his remedies in as many ways as a body has openings.

Potions. Ground plants were steeped in beer, wine, milk or water, left under the stars overnight, strained, and drunk on an empty stomach in the morning. “Under the stars” is a standing instruction. The remedy was exposed to the gods of the night, and above all to the star of Gula.

Bandages and poultices. A paste of plants in flour, beer mash or fat was spread on cloth or leather and bound on. For the head, the shaved scalp was covered.

Salves. Plants ground in oil or fat, rubbed in, often with long massage.

Washes and baths. For the skin, the eyes and the whole body. A sitting bath in a hot decoction was used for troubles of the lower body.

Enemas and suppositories. Oils and decoctions were poured into the bowel through a tube of reed or bronze. A suppository was shaped “like an acorn”.

Tampons. Wool soaked in a remedy, for the nose, the ear and the womb.

Fumigation. The patient sat or squatted over smouldering resins and plants, under a cloth, so that the smoke entered the nose, the ear or the lower body.

Drops and powders for the eye. Blown in through a reed or dropped from a tube of bronze.

Stones on cords. Named stones, sometimes a dozen or more, were strung on a twined thread of coloured wool. The thread was tied to the forehead, the neck, the wrist, the waist or the ankle. The texts say how many knots to tie, most often seven or fourteen. The incantation is recited once for each knot as it is drawn tight.

The knot here binds. It ties the helpful stones to the body and ties the illness so that it cannot move. A second use of the thread is the reverse, and it is described below.

The knife

The surgeon of Hammurabi’s law worked with a bronze knife. The tablets describe only a few operations. An abscess was opened and emptied. One text gives directions for letting out pus from the chest by a cut between the ribs. Wounds were washed with beer and hot water, dressed with honey, resin and oil, and bandaged. Bones were set. There is no sign of the opening of the skull, which the surgeons of Peru practised.

Guido Majno, a pathologist with an interest in history, tested the Mesopotamian and Egyptian wound dressings in his laboratory. Honey kills bacteria by drawing water out of them. Resins and wine add to the effect. A wound treated in the Babylonian way had a fair chance of healing clean (Majno 1975).

Loosening the evil that has been announced

The Babylonians held that the gods announce what they intend. A dog that fouls a man, a snake that falls into a house, a fungus that grows on a wall, an eclipse, a child born deformed: each is a message. Thousands of such signs were listed with their meanings. A bad sign was not a sentence. It was a warning, and a warning leaves time.

The rites that answered it are called *namburbi*. The Sumerian word means “its loosening” or “its undoing”. Stefan Maul has edited and explained them (Maul 1994). They all follow one plan.

The person against whom the sign was directed goes with the *āšipu* to the bank of a river, to a place apart. A hut of reeds is set up. Small altars are prepared for three gods: the sun god as judge, Ea as lord of the rite, and Ea’s son. Bread, dates, flour and beer are offered.

A figure of clay is made of whatever carried the sign: a little dog, a snake, a lizard. If the sign cannot be shaped, a lump of clay stands for it.

Then the person speaks before the sun god. The form is that of a plea in a court of law. He names himself and his father. He states the case: this dog has approached me and fouled me, and I am afraid. He asks that the evil which the sign announced pass him by. He asks it of the god who decides.

The *āšipu* now transfers the evil. The person washes himself over the clay figure, so that the water runs from his body onto it. What clung to him clings to the figure. The figure is addressed, told to take the evil with it, and thrown into the river. The river carries it down to the sea, to the waters under the earth from which nothing returns.

The person takes off the clothes he wore and puts on clean ones. He leaves the place by another road than the one by which he came. He must not look back. On the way home he goes into a tavern and stays a while among the drinkers, so that whatever still follows him loses his track. For some days he keeps certain rules.

Chapter 5 found that the fourth of the six rules for acting on a living structure is rare in the old medicines. That rule says that what cannot be closed in place can be handed on. The *namburbi* is the clearest case in this book. The evil is passed from the person to the water, from the water to the clay, and with the clay to the river and the deep. Each step hands it to the next carrier, until it reaches a place where it can do no harm.

The burning of the witch

A person who wastes away, who has lost his desire and his sleep, and against whom everyone seems to have turned, has been bewitched. Somewhere a sorcerer or a sorceress has made a figure of him and bound it, buried it, or given it to a dead man to hold. The cure is the great rite called *Maqlû*, the Burning. It fills eight tablets of incantations, nearly a hundred in all, and a ninth tablet of directions (Abusch 2002).

It was performed through one whole night, at the end of the month of Abu, in high summer. In that month the dead were held to come up from the lower world. The rite had three parts.

In the first, which began after dark, the patient called on the gods of the night sky. He declared that he did not know who had bewitched him. He handed the case to them. Figures of the witch were made of wax, tallow, bitumen, dough and wood. One after another they

were set on fire in a brazier. With each the patient recited: as this figure melts and runs, so may the sorcerer and the sorceress melt and run.

In the second part, through the middle of the night, the patient and his house were fumigated and salved, and a circle of flour was drawn round his bed.

In the third, at dawn, he washed himself over a figure of the witch and turned to the rising sun. He declared himself clean. The last incantations state that it is done. I have burned you, they say. I have bound you. I have handed you over.

Three features are familiar from earlier chapters. The witch's work is undone by its own means: she made a figure, and a figure is burned. The harm is sent back to her. And the rite ends by declaring, in the past tense, that it has succeeded, as the Navajo prayer does.

The peeling of the oath

A second great rite deals with a cause that lies in the patient himself. It is called *Šurpu*, which also means burning. It is used when a person is ill and does not know what he has done (Reiner 1958).

The trouble is an oath or a curse. He has sworn and broken his word, or done something that counts as a breach, or inherited the breach from his father. He may not know which. So the *āšipu* recites a list, on his behalf, of everything it could be. The list is long, and it is one of the oldest catalogues of wrongdoing in the world.

He has eaten what is forbidden to his god. He has said yes for no and no for yes. He has used a false balance. He has moved a boundary stone. He has entered his neighbour's house, come near his neighbour's wife, shed his neighbour's blood. He has set a son against his father and a friend against his friend. He has refused to free a captive. He has despised his father and mother. His mouth was straight and his heart was crooked. He does not know what his offence is against the god. He does not know what his offence is against the goddess.

Then comes the act. The patient is given a series of objects, and with each he does the same. He takes an onion and peels it, skin after skin, and throws the skins into the fire. He strips the dates from a cluster. He pulls a mat of reeds apart. He plucks a tuft of wool to pieces. He picks a piece of goat's hair apart. With each, the *āšipu* speaks. This onion is peeled and thrown into the fire and will never grow again. So may the oath, the curse, the pain and the illness be peeled from this man. As this mat is unravelled and will never be woven again, so may his guilt be unravelled.

This book has met the untying of knots among the Navajo, the Koreans and the Lakota, and the confession of the hidden wrong among the Inuit and the Ojibwe. The Babylonian rite joins the two and adds something. The wrong is not known, so every possible wrong is named. And what binds the man is taken apart layer by layer, as an onion is, until nothing is left of it.

The ghost that is sent away

When the handbook says “hand of a ghost”, a group of rites is available (Scurlock 2006). They proceed from an idea of what the dead need.

A dead person lives on in the lower world on what his family gives him. Each month they pour water and set out food at the grave, and speak his name. A dead person who gets nothing is hungry and thirsty. One who was never buried has no place at all. Such a ghost attaches itself to a living person. It need not be a relative.

The gentlest cure is to give the ghost what it lacks. Offerings are set out, water is poured, and the ghost is asked by name, or as “whoever you are”, to accept them and go.

If that is not enough, a figure of the ghost is made of clay. It is dressed, given provisions for a journey, and sometimes given a companion figure as a wife. An agreement is spoken: you are provided for, you have been given a spouse, you are bound by oath to leave this man. The figure is then buried at sunset in a deserted place, facing the west.

Along with the rite go salves for the temples, bandages for the neck, and drops for the ears, since the ghost shows itself in the head.

The cure rests on the same reading that this book gave of the dead who hold on. Something was left open for the dead person. It is closed for him, and he lets go.

A king in place of the king

One rite shows the principle of substitution on the largest scale. When an eclipse announced the death of the king, the Assyrian court could install a substitute. A man of no standing was chosen. He was dressed in the royal robes, seated on the throne, and given a queen. The omens were read aloud to him, so that they would apply to him. The true king withdrew and was addressed in letters as “the farmer”. The substitute reigned for up to a hundred days. Then, in the words of the letters, he “went to his fate”. He and his queen were put to death and buried with royal honours. The danger had found a king, and the king came back (Parpola 1993).

The letters of Esarhaddon’s scholars show that this was done several times in his reign. It is the same act as the Yoruba sheep that is buried as a man and the Maya chicken that is washed in the patient’s water. A life is given in place of a life.

What became of it

Cuneiform writing died out in the first century of our era. The medicine did not vanish with it. Markham Geller has shown how much passed into Aramaic, the spoken language of the region. The Babylonian Talmud, compiled by the rabbis of Mesopotamia, contains lists of remedies in the old form: for this complaint take that. A Syriac book of medicines of the early Middle Ages still has Babylonian recipes beside Greek ones (Geller 2010).

The Greeks took less than one might expect. The idea of a handbook that goes through the signs and gives the outcome is shared, and the Greek books on prognosis have a familiar ring. The Greeks themselves said that they learned astronomy from the Babylonians and medicine from the Egyptians.

Certain words survived. Cumin, sesame and myrrh are Akkadian. So, probably, is the name of the plant from which saffron comes.

What stands out in Mesopotamia

1. **Diagnosis is a discipline of its own, with its own book.** The handbook of forty tablets contains no remedies. Reading is separated from treating, in the text and in the profession.
2. **An illness is named by the power whose hand lies on the patient.** The name is an address in the order of the world.
3. **The outcome is stated before treatment begins,** and cases without hope are declined.
4. **The reader is part of what is read.** What the healer meets on his way belongs to the case.
5. **The body is ordered from head to foot.** The plan of every later textbook begins here.
6. **An illness is commanded by reciting its origin,** back to the making of the world.
7. **Evil is handed on, carrier by carrier, to a place where it does no harm.**
8. **What binds a person is peeled and unravelled, and every possible wrong is named.**
9. **The dead are given what they lack, and then they leave.**
10. **A remedy is marked as tested.** The scribes recorded what had worked.

What Mesopotamian medicine lacks is a theory of the body. It has no humours, no elements and no doctrine of balance. It reads signs and acts on what they say. The theory came from the Greeks, and with it came the loss of much that the Babylonians knew about reading.

35. Egypt: the body and its healers

The physicians whom the ancients admired

To the peoples of the ancient Mediterranean, Egypt was the land of medicine. Homer says in the *Odyssey* that the soil of Egypt bears more drugs than any other, and that every man there is a physician. The kings of Persia sent to Egypt for doctors. The Greek historian Herodotus, who travelled there about 450 before our era, found the country full of physicians. Each of them, he wrote, treats one disease and no more. Some are doctors of the eyes, some of the head, some of the teeth, some of the belly, and some of illnesses that are hidden. He added that the Egyptians purge themselves for three days in every month, because they hold that all illness comes from what is eaten.

Egyptian medicine lasted for three thousand years, from the first dynasties to the Roman conquest. It is known from four kinds of sources. There are the medical papyri. There are the titles of physicians in tombs and on monuments. There are the bodies of the Egyptians themselves, which have been examined by every modern method. And there are the reports of the Greeks (Nunn 1996).

The papyri

About a dozen medical papyri survive. The table lists the most important.

Papyrus	Written about	Content
Kahun	1825 before our era	The oldest. Thirty-four cases of women’s illnesses; tests for fertility and pregnancy
Ramesseum	1700	Eyes, women, children; remedies for stiffness of the limbs
Edwin Smith	1600, copied from a far older text	Forty-eight cases of wounds and injuries, from the head downward
Ebers	1550	The longest: twenty metres, about 880 remedies and short treatises on every part of medicine
Hearst	1450	Some 260 prescriptions, a practitioner’s collection

Papyrus	Written about	Content
London	1325	Sixty-one remedies, most of them with spells
Berlin	1200	Remedies, a treatise on the vessels, tests for pregnancy
Chester Beatty VI	1200	Illnesses of the anus
Leiden I 343 and I 348	1250	Spells against a foreign illness, against headache and stomach pain, and for birth
Brooklyn	450 or earlier	Thirty-eight kinds of snake, with the outlook after a bite and the treatment

Two of these stand out.

The papyrus that the American dealer Edwin Smith bought at Luxor in 1862 is a surgeon's handbook. Its language shows that the text is many centuries older than the copy. It may go back to the age of the pyramids. It is sober and exact and contains a single spell. James Breasted, who published it in 1930, called it the oldest scientific document in the world (Breasted 1930).

The papyrus that the German scholar Georg Ebers acquired in 1873 is a compilation. A scribe copied out, one after another, collections of remedies for the belly, the eyes, the skin, the limbs and the womb. He added two short treatises on the heart and its vessels, a book on tumours, and the spells that a healer speaks as he applies a remedy. It gives the best view of what an Egyptian physician had at hand.

The healers

The Egyptian word for a physician was *swnw*. It was written with the signs of an arrow, a pot and a seated man. Some hundred and fifty physicians are known by name (Ghalioungui 1983).

They formed a ranked profession in the service of the state. A physician might rise to chief of physicians, to overseer of the physicians of the palace, and to chief of the physicians of Upper and Lower Egypt. Many held titles that confirm what Herodotus said about specialists. There were physicians of the eyes and of the belly, and there were dentists. One title is "shepherd of the anus".

The earliest of them is Hesy-Ra, chief of dentists and physicians under King Djoser, about 2650 before our era. Carved wooden panels from his tomb at Saqqara show him with the tools of a scribe. A woman named Peseshet, of the age of the pyramids, bore the title of overseer of the women physicians. She is the first woman in the history of medicine whose name and office are recorded.

The most famous name is that of Imhotep, Djoser's minister and the builder of the first pyramid. No record of his own time calls him a physician. Two thousand years later the Egyptians worshipped him as a god of healing and a son of the god Ptah. The Greeks called him Imouthes and identified him with their own god Asklepios. Sick people slept in his temples and hoped to see him in a dream.

Beside the *swnw* stood two other kinds of healer, as in Mesopotamia.

The priests of Sekhmet served the lioness goddess who sends plague and takes it away. They were purified priests, and they treated the sick. A text in the Ebers papyrus names them in one breath with the physicians.

The third was the man of spells, the *sau*, who made and sold amulets and recited protective formulas. A related specialist, the controller of the scorpion goddess, treated stings and bites.

All three were trained, at least in the later periods, in the institution called the House of Life. It was attached to the great temples. Texts of every kind were kept, copied and composed there. An Egyptian official named Udjahorresnet records on his statue that the Persian king Darius sent him home, about 519 before our era, to restore the House of Life at Sais. He furnished it with students "from good families" and with all its equipment, he says, because the king knew the worth of this art for making the sick live.

The state paid for medical care in at least some places. At Deir el-Medina, the village of the craftsmen who cut the royal tombs, a physician drew rations with the workforce. A limestone flake from the village, dated to the fortieth year of Ramesses II, lists the days on which each man was absent from work, with the reason. Many entries read "ill". Others read "his eye", "the scorpion stung him", or "with the physician". The same village had a "wise woman". People consulted her to learn which god or which dead person was behind a misfortune.

The body

The Egyptians handled the insides of bodies more than any other ancient people, since they embalmed their dead. The embalmers were not physicians, and they learned no anatomy in the modern sense. They drew the brain out through the nose and threw it away. They removed the liver, the lungs, the stomach and the bowels through a cut in the left side and preserved them in four jars. The heart they left in its place. It would be needed.

The heart. For the Egyptians the heart was the centre of a person. Thought, memory, will and feeling had their seat there. After death it was weighed against the feather of Maat, the

goddess of truth and right order. A person who had lived rightly had a heart as light as the feather.

The channels. From the heart, channels run to every part of the body. The Egyptian word is *metu*. It covers blood vessels, the air passages, the ducts that carry urine and semen, and also sinews and nerves. The channels carry blood, air, water, mucus, and the wastes. A treatise in the Ebers papyrus counts them. So many go to the head, to the ears, to the arms and to the legs, and so many to the liver, the lungs and the bladder. They are said to meet at the anus.

The same treatise opens with a passage that is the oldest statement on the pulse in any literature. It is headed "the beginning of the physician's secret: knowledge of the heart's movement and knowledge of the heart". There are channels from the heart to every limb, it says. A physician, a priest of Sekhmet or a man of spells may lay his hands or his fingers on the head, the back of the head or the hands. He may lay them on the place of the heart, the arms or the legs. In each case he examines the heart. For its channels lead to every limb. The heart "speaks" from the channels of every limb.

The Egyptian verb for what the physician does there is the word for measuring. He measures the heart, with his fingers, at a distance from it.

What makes ill. The Egyptians had a doctrine of how illness arises inside the body. Food is taken in and worked on in the belly. What is left over rots in the bowel. From that rot comes a harmful matter called *wekhedu*. It can pass from the bowel into the channels and travel with the blood. Where it settles it brings heat, pain and pus. It reaches the heart and weakens it. In the end it is what makes a body grow old and decay.

This is the reason for the monthly purging that Herodotus noted. It explains the weight that the papyri give to the bowel and the anus, and the profession of the enema-giver. The doctrine passed to the Greek physicians of Knidos, who taught that illness comes from the residues of food (Steuer 1959).

Other causes come from outside. A god, a dead person or an enemy sends a harmful breath or influence, which enters by an opening of the body. One passage says that the breath of life enters by the right ear and the breath of death by the left. Worms are named as a cause, and they were real enough.

The states of the heart. The second treatise on the heart in the Ebers papyrus is a list of expressions with their explanations. The physicians had a vocabulary for how a patient feels, and a later scribe glossed it. When it is said that "the heart is flooded", the gloss explains, this means that the heart is forgetful, like one who is thinking of something else. When it is said that "the heart kneels", this means that the heart is drawn tight and small. When it is said that "his heart dances", this means that it moves away from his left breast. When it is said that the heart is "weary", this means that it does not speak, or that its channels are dumb under the fingers.

These are descriptions of experience, in the patient's own images, tied to what the physician can feel. The Egyptians did not replace the image with a theory. They explained it and kept it.

How a case was examined

The surgical papyrus gives every case in the same five steps. They show how an Egyptian physician was taught to proceed.

The title. "Instructions concerning a gaping wound in his head, penetrating to the bone."

The examination. "If you examine a man having…" The text then says what the physician is to do and what he will find. He looks. He lays his hand on the wound and feels the bone under it. He probes. He smells. He asks the patient to move. For an injury of the neck he tells the man to look at his two shoulders and at his breast, and notes whether he can. For an injury of the spine he tells him to stretch out his legs and draw them up. He notes whether the patient speaks, whether blood comes from the nose and the ears, whether the face is flushed or pale, whether there is fever.

The diagnosis. "You shall say concerning him: one having a gaping wound in his head." The physician states aloud what the condition is.

The verdict. Each diagnosis ends with one of three sentences.

- "An ailment which I will treat."
- "An ailment with which I will contend."
- "An ailment not to be treated."

The first is used where the outlook is good. The second is used where the outcome is uncertain, and the physician undertakes to fight for the patient. The third is used where nothing can be done. About a third of the cases in the papyrus carry the third verdict. Even in those the physician is often told to make the patient comfortable and to watch what happens.

The treatment. It is short and practical.

At the end of many cases a later hand has added explanations of old words. There are about seventy of these glosses in the papyrus. They show that the text was already ancient when it was copied and that it was used for teaching.

The method is the same as that of the Babylonian handbook in one decisive respect. The physician states the outlook before he begins, in a fixed form of words, and he declines what is beyond his art. It differs in another. The Egyptian surgeon gives no thought to which god is involved. He reads the wound.

The medical papyri use the same order for illnesses that are not injuries. A passage in the Ebers papyrus on swellings tells the physician to lay his hand on the swelling and to note what he feels. One kind is soft and moves to and fro under the fingers. It holds fluid and is to be opened with the knife. One kind is round, and it throbs with the heart; if the vessel is pressed, the throbbing stops. That one is to be treated with a heated knife, so that it does not

bleed. One kind is hard and cool and has spread. The text calls it the swelling of the god Khonsu and says: you shall do nothing against it.

Forty-eight cases

The surgical papyrus arranges its cases from the top of the head downward. It breaks off in the middle of a sentence, in the forty-eighth case, at the lower spine. The scribe never finished his copy. The table gives the cases in groups.

Cases	Part of the body	What is described	Verdicts
1–8	The skull	Wounds of the scalp; splits, breaks and crushing of the skull; the brain laid open	From “I will treat” to “not to be treated”
9	The forehead	A wound with a break in the bone; the only case treated with a spell	None given
10	The eyebrow	A gaping wound, closed by stitching	I will treat
11–14	The nose	Breaks and wounds of the nose	I will treat
15–17	The cheek and upper jaw	Holes, splits and breaks	Treat; contend; not to be treated
18–22	The temple	Wounds and breaks; loss of speech; blood from the ear	From treat to not to be treated
23	The ear	A slit, closed by stitching	I will treat
24–25	The lower jaw	A break; a jaw out of joint, and how to put it back	Not to be treated; I will treat
26–27	The lip and chin	Wounds, closed by stitching	I will treat

Cases	Part of the body	What is described	Verdicts
28	The throat	A wound through to the gullet	I will contend
29–33	The neck bones	Wounds, sprains, a bone out of place, a crushed bone	From treat to not to be treated
34–38	The collarbone and upper arm	Bones out of joint and broken; splints	Mostly I will treat
39–46	The breast and ribs	Swellings, an inflamed wound, bulging growths, breaks of the ribs	From treat to not to be treated
47	The shoulder	A gaping wound, stitched; what to do when it becomes hot	I will treat
48	The lower spine	A sprain; the text ends	I will treat

Several cases contain observations that were not made again for more than two thousand years.

The brain. In the sixth case the skull is smashed and the brain lies open. The surgeon is told what he will see and feel. The surface is wrinkled, like the ripples that form on molten copper. Under his fingers there is a throbbing and fluttering, like the soft place on the crown of a child before it has closed. This is the first description of the folds of the brain and of its pulsing. The word used for the brain here occurs in no older text.

Injury of the head and loss of movement. In the eighth case the skull is broken under unbroken skin. The patient walks dragging one foot. His arm on one side hangs. The text links the lameness to the injury of the head.

Loss of speech. In the twentieth and twenty-second cases, wounds at the temple, the patient cannot speak. The surgeon notes it as a sign of the injury.

Injury of the neck. In the thirty-first case a bone of the neck is out of place. The man does not feel his arms or his legs. His member is stiff, and urine drips from it without his knowing. The gloss explains that the displaced bone has made him unaware of his limbs. The verdict is the third.

The jaw. The twenty-fifth case tells how to put back a lower jaw that has slipped out of joint. The surgeon places his thumbs inside the mouth on the ends of the jaw and his fingers under the chin, and guides the jaw back into place. Doctors do it in the same way today.

The growth in the breast. In the forty-fifth case the breast has bulging masses that are cool to the hand, with no fever. The text says of them: there is no treatment. It may be the first description of cancer of the breast.

The inflamed wound. In the forty-first case a wound of the breast is hot, with red edges, and the patient is feverish. The surgeon is told not to bind it. He is to cool it with applications that include the leaves of the willow. Willow contains the forerunner of aspirin.

The treatments of the surgeon

A fresh wound is bound with fresh meat on the first day. On every day after that it is dressed with grease, honey and lint.

The edges of a gaping wound are drawn together. The surgeon stitches them, or he closes them with two strips of linen laid across the wound.

A broken bone is set and held with splints of wood padded with linen, or with linen stiffened with a gum.

A bleeding swelling is treated with the heated knife.

And in many cases the last instruction is a phrase that the gloss explains. “Moor him at his mooring stakes, until the period of his injury passes by.” The gloss says what is meant. It means to put him on his usual diet, without giving him any remedy.

The Egyptian surgeon knew when to stop. Having cleaned, closed and supported, he tied the patient up like a boat at the bank and waited for the injury to run its course. Chapter 4 called this leaving the return to run. The sixth of the six rules calls it the silence after the act.

Guido Majno tested the dressing of grease and honey. The mixture kills the common bacteria of wounds and does not harm the tissue (Majno 1975). A review of modern trials for the Cochrane library found that honey dressings heal burns of moderate depth several days faster than the usual dressings (Jull 2015).

36. Egypt: remedies, spells and the temple

The pharmacy of the Ebers papyrus

The Ebers papyrus holds about 880 prescriptions. They name some 700 materials. An Egyptian prescription has a fixed form. It states the complaint, lists the ingredients with the amount of each, and says how to prepare and give the remedy and for how many days.

The amounts are a feature of their own. The Egyptians measured grain and liquids by a unit that was divided by repeated halving: a half, a quarter, an eighth, a sixteenth, a thirty-second and a sixty-fourth. The prescriptions give doses in these fractions. The six fractions were written with the six parts of a sacred sign, the Eye of Horus, of which more below. Together they make sixty-three sixty-fourths. The Egyptian pharmacist counted on the ladder of two.

The table lists the materials that occur most often.

Material	Use in the papyri	What is known
Honey	In more than half of all remedies; on wounds, in the eyes, as a base	Kills bacteria; modern trials on burns and wounds
Beer, wine, milk	The liquids in which remedies were taken	
Castor oil plant	The seeds chewed with beer to empty the bowel; the oil on the skin and hair	A strong purge, still in use
Colocynth, senna, figs, dates	To loosen the bowel	Purges of known effect
Pomegranate root	Against worms in the belly	Contains a compound that paralyses tapeworms
Willow	On inflamed wounds	Source of the forerunner of aspirin
Acacia	On wounds; in pessaries to prevent conception	Astringent; ferments to an acid that kills sperm
Aloe, frankincense, myrrh, juniper	The skin, wounds, the mouth, fumigation	Resins with some action against bacteria
Garlic and onion	The chest, bites, the bowel	

Material	Use in the papyri	What is known
Coriander, cumin, dill, fennel, fenugreek	The belly; wind	Still used for the same purposes
Ox liver	Roasted and pressed on the eye for failing sight in the dark	Rich in vitamin A, the lack of which causes night blindness
Malachite and galena	Green and black paints for the eyes, as remedy and adornment	Copper and lead compounds; see below
Natron and salt	To dry and clean wounds; in washes	
Fats of ox, goose, and wild animals	The base of salves	
Dung and urine of many animals	In salves and fumigations	Explained in the papyri as a means of driving off a harmful being

The eye paints. Egyptians of both sexes painted their eyelids black and green. The papyri prescribe the paints for diseases of the eye, which were very common on the Nile. French chemists examined the contents of ancient make-up jars in the Louvre. They found two lead compounds that do not occur in nature in such amounts and must have been made on purpose, by a process that took weeks. In the laboratory, very small amounts of these compounds made skin cells release a messenger that rouses the body's defences against bacteria (Tapsoba 2010). The paint may have protected the eyes of those who wore it.

The test for pregnancy. The Berlin papyrus describes a test. A woman who wishes to know whether she is with child is to moisten two bags, one of barley and one of emmer wheat, with her urine every day. If both sprout, she will bear. If the barley sprouts first, it will be a boy, and if the emmer, a girl. If neither sprouts, she is not with child. In 1963 Egyptian researchers tried it. The urine of pregnant women made the grain sprout in about seven cases out of ten. The urine of men and of women who were not pregnant never did. The grain did not show the sex of the child (Ghalioungui 1963). The test rests on a real effect of the hormones of pregnancy.

What the papyri treat. The illnesses can often be recognised. There are worms of several kinds. One remedy describes how to draw out a long worm from under the skin of the leg by winding it slowly on a stick. That is still done for the guinea worm. There is blood in the urine, which was the sign of the blood fluke of the Nile. There are coughs, for which the patient breathes the vapour of herbs laid on heated stones, through a reed set in an upturned pot. There are a hundred remedies for the eyes. There are burns, treated with a different

dressing on each of five days. There are troubles of the teeth, the ears, the skin, the womb and the breast. There are remedies to make hair grow and to keep mice out of the house.

Illness in the bodies themselves

The dry sand of Egypt has kept thousands of bodies. They show what the physicians were up against.

The eggs of the blood fluke were found in the kidneys of mummies in 1910. Tuberculosis of the spine is plain in several. Teeth were worn down by the grit in the bread, and abscesses at the roots were common. The arteries of many well-fed Egyptians were hardened. In a study of 137 mummies from Egypt and three other ancient populations, scans showed hardening of the arteries in about a third (Thompson 2013). A carved stone of about 1400 before our era shows a doorkeeper named Roma with one thin, shortened leg and a stick, as after infantile paralysis.

The Egyptians also made false limbs. A wooden big toe with a leather strap was found on the foot of a woman's mummy near Luxor. It dates from before 700 before our era and shows wear. A British researcher had copies made and tried them on volunteers who had lost the same toe. They walked well in Egyptian sandals with the copy and badly without it (Finch 2011). It is the oldest working replacement of a body part that is known.

Spell and remedy

The Ebers papyrus opens with three spells. They are to be spoken by the physician when he lays a remedy on any part of the body, when he gives a potion, and when he loosens a bandage. In the first he says where he comes from: I have come from Heliopolis with the great ones of the temple, the lords of protection. I have come from Sais with the mother of the gods. They have given me their protection. In the second he addresses the remedy and tells it to drive out what is in the body.

The words give the physician standing and set the remedy to work. The papyrus adds a note that such a spell is "truly excellent, proved many times".

The spells of the other papyri follow a few patterns.

The patient is a god. The commonest pattern places the patient in a story of the gods. The child Horus was stung by a scorpion while his mother Isis hid him in the marshes. She cried out, and the gods came and cured him. A person who has been stung is Horus. The healer speaks as Isis or as Thoth, and what was done for Horus is done again.

Chapter 31 read the verse of Ifá with the third axiom of the theory. The first passage fixes the direction of every later one. The Egyptian spell does what the verse of Ifá does. It finds the first case and repeats it.

To know the name is to have command. A well-known story tells how Isis gained her power. The sun god Ra had many names, and one secret name that nobody knew. Isis made a snake from earth and his own spittle and laid it in his path. It bit him. He burned and shivered, and none of the gods could help. Isis offered to cure him if he would tell her his true name. He recited all his titles, and the poison stayed. At last he let the name pass from his body into hers. Then she spoke the spell and he was healed. The story was itself used as a charm against snakebite.

The Finnish knower, the Maya healer, the Yoruba herbalist and the Babylonian exorcist act on the same principle. The Egyptians told it as a story about their greatest goddess.

The illness is disgusted or threatened. Some spells tell the being that causes the illness that the remedy contains what it loathes. That is the stated reason for dung in a salve.

The word is drunk. In the last centuries of Egyptian history, healing slabs were set up in temples and houses. They show the young Horus standing on crocodiles and holding snakes and scorpions in his fists. Every surface is covered with spells. Water was poured over the slab and caught in a basin at its foot. It had run over the words. A person who had been bitten drank it. Chapter 30 described how the Muslim healers of Africa wash a written verse from a slate and give the water to the patient. The Egyptians did it a thousand years before the Koran.

The eye that was made whole

Two stories of the gods carry the Egyptian idea of healing.

In the first, Horus fights his uncle Seth for the throne of his murdered father. Seth tears out the eye of Horus and breaks it into pieces. Thoth, the god of writing and of measure, finds the pieces, puts them together and gives the eye back. The restored eye is called the *wedjat*, the sound or whole one. It became the commonest amulet in Egypt. The six parts of its sign were used to write the six fractions of the corn measure. They add up to sixty-three parts of sixty-four. The scribes said that Thoth supplied the missing part.

In the second, Seth kills his brother Osiris, cuts the body into fourteen pieces and scatters them over Egypt. Isis searches for the pieces and finds them. With the help of Anubis she joins them, wraps the body, and brings it back to life for long enough to conceive Horus. Osiris becomes the lord of the dead. Every embalming repeated what Isis did.

Both stories say the same. A whole is broken into parts. Someone gathers every part, puts them in order and makes the whole again. That is healing. The accounts of the making of a shaman in chapter 10 have the same shape. The candidate is taken apart, his bones are counted, and he is put together. Egypt told it of its gods and built its medicine and its burial on it.

The temple and the dream

In the last thousand years of ancient Egypt the temples became places of healing.

At Dendera, beside the temple of the goddess Hathor, stand the remains of a building of mud brick with a row of small rooms round a central court. In the court stood statues covered with healing spells. Water was led over them into basins. The sick bathed in that water and slept in the small rooms, in the hope of a dream. It is the best-preserved sanatorium of the ancient world.

At Deir el-Bahari a chapel stands on the upper terrace of the temple of Queen Hatshepsut. In the third century before our era it was given to two deified sages: Imhotep and Amenhotep son of Hapu. Sick people came from all over Egypt and slept in the court. Many scratched their thanks on the walls in Greek. One of the earliest is by a labourer named Andromachos. He writes that he came to the good god, that he was ill, and that the god helped him on the same day.

At Saqqara the temple of Imhotep drew crowds for centuries. Greek visitors called it the Asklepieion.

The Egyptians had long attended to dreams. A papyrus of about 1275 before our era is a book of dreams in the form of a list. If a man sees himself in a dream doing this, it is good, and it means that. If he sees himself doing that, it is bad. In the temples of the late period the dream became a means of cure. The god came to the sleeper and told him what to do, or treated him in the dream.

The next chapter describes the same practice in Greece. Which country had it first is disputed. By the time of the Ptolemies the two traditions had merged.

What the Greeks took

The Greeks said openly that they had learned medicine in Egypt. The debt can be traced in several places.

The city of Alexandria, founded in 331 before our era, became the centre of Greek medicine. Greek physicians there opened human bodies for the first time, in a country where the opening of the dead was an everyday craft.

The doctrine of the residues of food as a cause of illness, taught at Knidos, matches the Egyptian *wekhedu*.

Many drugs passed over with their uses. So did the practice of stating the outlook before treatment, and of declining the hopeless case.

The idea of the womb that moves about the body and causes illness in women appears in the Kahun papyrus more than a thousand years before the Greek texts.

A few words came too. The English “gum” goes back to an Egyptian word. The chemists’ name for soda, and the symbol for sodium, come from the Egyptian word for natron.

What has been tested

Egypt is the old medicine whose remedies have been examined most often by modern methods. The results were given above. They can be gathered here.

Egyptian practice	Finding
Honey and grease on wounds	Kills bacteria; honey speeds the healing of burns in trials
Willow leaves on an inflamed wound	Contains the forerunner of aspirin
Pomegranate root for worms	Contains a compound that acts on tapeworms
Roasted liver for failing sight at dusk	Supplies the vitamin whose lack causes the condition
Castor oil, colocynth and senna	Effective purges
Acacia in a pessary	Yields an acid that kills sperm
Lead-based eye paint	Rouses a defence of skin cells in the laboratory
Grain test for pregnancy	Right in about seven cases out of ten
Thumbs in the mouth for a slipped jaw	The method in use today
A wooden toe	Works

J. Worth Estes, a professor of pharmacology, went through the Egyptian drugs one by one. He concluded that a fair number of them would do something useful and that most would do no harm. The main benefit to patients, he held, came from cleanliness, rest and time (Estes 1989).

There were harmful practices as well. Lead and copper in eye paints and salves are poisons in larger amounts. Dung in a wound can carry lockjaw. The papyri show no awareness of either danger.

What stands out in Egypt

1. **The outlook is stated first, in one of three fixed sentences.** The physician says whether he will treat, will contend, or will not treat.
2. **The heart speaks in the channels of every limb.** The physician measures it with his fingers, far from the heart itself. This is the earliest statement of the reading of the pulse.

3. **Illness arises from what is left over and rots.** It travels through the channels. The remedy is to clear the channels and the bowel.
4. **The patient's own images are kept and explained.** The heart is flooded, kneels, dances, is weary.
5. **Healing is the making whole of what was broken into parts.** The eye of Horus and the body of Osiris are the patterns.
6. **A case is treated as the return of a first case among the gods.**
7. **To know the name is to command.**
8. **After the act, the patient is moored and left.** The surgeon knows when to stop.
9. **Spell and remedy are one prescription.** The physician states who he is and tells the remedy what to do.
10. **Doses are measured, by repeated halving.**

Compared with Mesopotamia, Egypt has less divination and more of the body. Its physicians had a doctrine of how illness arises inside a person. They examined wounds with their hands and described what they felt. They were servants of the state with ranks and specialities.

Compared with what came after, Egypt has no doctrine of balance. Nothing in the papyri says that health is a right mixture of opposed qualities. That idea was Greek.

37. Greece: Asklepios and the dream

Two beginnings

Greek medicine has two beginnings, and for a thousand years it kept both. One is the craft of the physician who reasons about the body. The next chapter describes it. The other is the healing that comes from a god in sleep. The two never fought each other. The physicians of Kos and Knidos called themselves Asklepiads, the family of Asklepios. The oath that they swore begins with the names of Apollo the Physician, Asklepios, Hygieia and Panakeia.

This chapter describes the second beginning. It is the oldest part of European medicine. In its origin it is very close to the medicine of the shaman.

Before Asklepios

The poems of Homer, composed about 700 before our era, show a world with skilled healers of wounds. Two sons of Asklepios, Machaon and Podalirius, serve with the Greek army at Troy. When Machaon is wounded, a hero says that a physician is worth many other men. The poems describe some hundred and fifty wounds, most of them with anatomical exactness.

They also show another kind of healing. Plague comes from the arrows of Apollo and is ended by a sacrifice to him. When the young Odysseus is gashed by a boar, his uncles bind the wound and stop the dark blood with a sung charm. The stopping of blood by words is the skill that chapter 14 described among the Sámi readers of today.

Between Homer and Hippocrates stand a number of figures whom the Greeks themselves found strange. The scholar Eric Dodds called them the Greek shamans (Dodds 1951). Aristeas of Proconnesus fell down as dead in a shop, and his soul was seen far away. It was said to leave his body in the form of a raven. Hermotimus of Clazomenae left his body for days at a time and came back with knowledge of distant events, until his enemies burned the body while he was away. Epimenides of Crete slept for decades in a cave and woke as a prophet and a purifier of cities. Abaris came from the far north with an arrow of Apollo.

The Greek word for such a man was *iatromantis*, physician-seer. His god was Apollo. His method was stillness. He lay down in a dark place and waited.

Two of the founders of Greek philosophy belong to this company. Pythagoras taught in the Greek cities of southern Italy in the sixth century. He taught the wandering of the soul, a rule of diet, and healing by music. His followers held that the order of the world is number, that musical concords rest on the ratios of small whole numbers, and that health is a right tuning. Chapter 2 touched on this.

Parmenides of Velia, a generation later, wrote the first work of Greek logic as the account of a journey to a goddess in the house of Night. Excavations at Velia from 1958 found inscriptions of a guild of healers who honoured Apollo. Each bore the title “lord of the lair”. One

inscription names Parmenides himself, as a member of the line and a "natural philosopher". Peter Kingsley has argued from these stones that Parmenides was a healer of this kind. On his reading, the first Greek philosophy arose among men who practised lying still in a dark place in order to meet a god (Kingsley 1999).

In the same generation Empedocles of Sicily taught the four roots of everything: earth, water, air and fire. He was a physician and a worker of wonders. It was told of him that he revived a woman who had lain without breath for thirty days.

The Pythagorean physician Alcmaeon of Croton gave Greek medicine its central idea about 500 before our era. Health, he said, is the equal standing of the powers in the body: the wet and the dry, the cold and the hot, the bitter and the sweet. Illness is the sole rule of one of them. He used the political words of his time. Health is a republic of the qualities, and illness is a tyranny.

So the two beginnings share a root. The doctrine of balance, on which the physicians built, came from men who also held that the soul travels and that a god heals in the dark.

The god

Asklepios, the stories say, was a son of Apollo and a mortal woman. She was unfaithful, and Apollo's sister killed her. As her body lay on the pyre, Apollo cut the child from her womb. He gave him to the centaur Chiron, who taught him the use of plants and the knife. Asklepios became so great a healer that he brought the dead back to life. For that Zeus struck him with a thunderbolt. He was then raised among the gods.

Two points in the story are familiar from chapter 10. The healer was born out of death. And he was taught by a being who was half man and half animal, and who carried a wound that would not close.

His sign is a staff with one snake wound round it. His daughters are Hygieia, health, and Panakeia, who heals everything. His sons are the physicians of the *Iliad*. In later art a small hooded boy named Telesphoros, the one who brings to completion, stands beside him. He is the spirit of getting well.

The cult began in Thessaly and settled at Epidaurus in the north-east of the Peloponnese. From there it spread in the fifth and fourth centuries. It reached Athens in 420, just after the great plague. The poet Sophocles received the god in his house until a shrine was ready. It reached the island of Kos, the home of Hippocrates. It reached Pergamon in Asia Minor, where the physician Galen later grew up. In 293 a plague struck Rome, and the Romans sent to Epidaurus. A sacred snake came back with the envoys. As the ship sailed up the Tiber, it slid into the water and swam to the island in the river. A temple was built there. A hospital stands on the same island today. The sick have been cared for on that spot for twenty-three centuries.

More than three hundred sanctuaries of Asklepios are known. Emma and Ludwig Edelstein collected every ancient statement about him (Edelstein 1945). The cult lasted for nearly a thousand years. The last sanctuaries were closed about 500 of our era, and several were turned into churches of healing saints, in which the sick went on sleeping.

A night at the sanctuary

A sanctuary of Asklepios lay outside the town, by a spring, among trees. Epidaurus in the fourth century was a large place. It had a temple with a statue of the god in gold and ivory, and a round building whose purpose is unknown. It had a theatre for fourteen thousand, a stadium, baths, and a guest house of a hundred and sixty rooms. The heart of it was a long hall with an open colonnade, the *abaton*, the place not to be entered by the unprepared. Here the sick slept.

What a patient did can be put together from inscriptions, from a comedy of Aristophanes, and from later writers.

He came. Many had tried the physicians first. The sanctuaries took the lasting and the hopeless cases: blindness, lameness, barrenness, wounds that would not close, stone, dropsy.

He was made clean. He bathed in the spring or the sea. For a set number of days he kept from sex and from certain foods. An inscription over the temple at Epidaurus stated the rule in two lines. He who enters the fragrant temple must be pure, and purity is to think holy thoughts.

He made offerings. Honey cakes were given to Apollo and to Asklepios. At Pergamon the rules required an offering to Memory as well, so that the sleeper would keep his dream.

He lay down. At dusk he went into the hall, dressed in white, and lay down on a pallet. In some places he lay on the skin of the animal he had sacrificed. The lamps were put out. A temple servant told all to sleep and to keep silence whatever they heard. Harmless snakes, sacred to the god, lived in the hall and moved about among the sleepers. So did dogs.

He dreamed. The god came. He appeared as a bearded man of kind and calm face, with his staff. Or he appeared as a beautiful youth, or as a snake or a dog. He stood by the sleeper. Often he said nothing and acted. He touched the sick part, rubbed in a drug, or cut the body open and took something out. Sometimes he spoke a few words, asked a question, or gave an order.

He woke. In the cures cut in stone in the fourth century, the patient wakes healed and walks out at dawn. In later centuries the god more often gave a prescription in the dream, and the patient stayed for weeks to carry it out.

He paid. He told his cure to the priests and had it written down. He gave what he had promised: a cock, a pig, a sum of money, a model of the healed limb in clay or silver. Those who did not pay found that the illness came back.

Chapter 7 laid this course beside the five steps of a meeting. The person is loosened from his daily round. He is examined by an act. A few words pass. Something is shown. He returns.

The cures cut in stone

In the second half of the fourth century before our era the priests of Epidaurus had the cures of the god cut on large slabs of stone. The slabs were set up beside the sleeping hall. The traveller Pausanias saw six of them about five hundred years later. Two were found almost whole in the excavations of the 1880s, with pieces of two more. They hold about seventy cures. Each is told in a few lines, with the name and the town of the patient (LiDonnici 1995).

A patient who arrived at Epidaurus read these stones before he slept. They told him what to expect. The table gives a selection. The numbers are those of the modern editions.

No.	Patient	Trouble	What happened in the night
1	Kleo	Pregnant for five years	She slept in the hall. On leaving the sacred ground she bore a son, who washed himself at the spring and walked about with her
3	A man with all but one finger of his hand stiff	He mocked the cures on the stones	He dreamed that he was playing dice. The god sprang on his hand and stretched out the fingers, one by one. Asked whether he still disbelieved, he said no. The god named him the Unbeliever. He woke healed

No.	Patient	Trouble	What happened in the night
4	Ambrosia of Athens	Blind in one eye; she had laughed at the stones	The god promised to cure her if she would set up a silver pig in memory of her ignorance. He cut open the eye and poured in a drug. She woke seeing
5	A boy without speech		During the offering the servant asked the father whether he promised to pay within a year. The boy answered: I promise
6	Pandaros of Thessaly	Marks branded on his forehead	The god tied a band round his head and told him to take it off in the morning and leave it in the temple. The marks were on the band
7	Echedoros	Marks on his forehead; he had kept money that Pandaros gave him for the god	The god tied Pandaros’s band on him. In the morning he had his own marks and those of Pandaros as well

No.	Patient	Trouble	What happened in the night
8	Euphanes, a boy	Stone	The god asked what he would give for a cure. Ten knucklebones, said the boy. The god laughed and cured him
9	A man with empty eye sockets	Blind	Others in the hall thought him a fool to hope. The god boiled a drug, drew the lids apart and poured it in. He saw
12	Euhippos	A spear point in his jaw for six years	The god drew it out and laid it in his hands. He walked out holding it
13	A man of Torone	Leeches in his body, given him in a drink by his stepmother	The god cut open his chest with a knife, took out the leeches, gave them into his hands and sewed him up. He walked out holding them
15	Hermodikos of Lampsakos	Paralysed	The god healed him and ordered him to carry into the sanctuary the largest stone he could. The stone still lies there

No.	Patient	Trouble	What happened in the night
16	Nikanor	Lame	While he sat awake, a boy snatched his crutch and ran. He got up and chased him
17	A man with a sore on his toe		He fell asleep by day outside the hall. A snake came and licked the toe. He dreamed that a youth had put on a salve
20	Lyson, a blind boy		A dog of the sanctuary licked his eyes while he was awake. He saw
21	Arata of Sparta	Dropsy	Her mother slept in the hall in her place. She dreamed that the god cut off her daughter’s head and hung the body with the neck downward. Much fluid ran out. He set the head back. At home she found her daughter well. The girl had seen the same dream

No.	Patient	Trouble	What happened in the night
22	Hermon of Thasos	Blind	He was cured and did not pay. He went blind again. He came back and was cured
23	Aristagora of Troezen	A worm in the belly	She slept in the shrine at Troezen. The sons of the god cut off her head and could not put it back. They sent to Epidaurus. The god came the next night, set the head on, cut open the belly, took out the worm and sewed her up
27	A man with a growth in his belly		He dreamed that the god's servants held him fast while the god cut him open. He woke with the floor covered in blood, and was well
30	Gorgias of Herakleia	An arrow in his lung for a year and a half	The god took out the point. He walked out holding it

No.	Patient	Trouble	What happened in the night
33	Thersandros of Halieis	Wasting of the lungs	He saw nothing in the night and was driven home. A sacred snake had coiled itself on the axle of the wagon. In his town it healed him. The town built a sanctuary for it
39	Agameda of Keos	Childless	A snake lay on her belly in her sleep. She bore five children

What the stones show

A reader of the earlier parts of this book will recognise almost every feature.

What is wrong is taken out and placed in the patient’s hands. Euhippos, the man of Torone and Gorgias each walk out holding what was in them. It is a spear point, a handful of leeches, an arrowhead. Chapter 8 listed the showing of the extracted object as the fourth point on which the old medicines agree. At Epidaurus the god does what the shaman does.

The body is opened, and sometimes taken apart. The god cuts open the chest and the belly and sews them up. In two stories a head is cut off and set back. Chapter 10 found the taking apart and remaking of the body in Siberia, Australia and the Arctic. Chapter 36 found it in the stories of Osiris and the eye of Horus.

Animals heal by licking. The snake and the dog are the god in another form. They act on sleepers and on people who are awake.

A mark can be moved. The brands of Pandaros pass to a strip of cloth, and from the cloth to the forehead of a cheat. Chapter 34 described the Babylonian rite in which an evil is passed to a clay figure and thrown into the river.

One person can sleep for another. Arata stays at home. Her mother dreams the cure, and the daughter dreams the same dream far away.

Disbelief is cured along with the illness. The man with the stiff fingers and the woman with one eye had laughed. The god heals them and corrects them, with some humour.

The cure must be paid for and made known. Hermon's sight is taken back when he fails to pay. Hermodikos carries a huge stone. Every patient leaves a record. Chapter 10 found the same rule for visions on the Plains: what was given must be shown.

The god is not solemn. He laughs at the boy who offers his knucklebones. His sons at Troezen cut off a head and cannot put it back.

Scholars have asked whether these stories record real events. Some surely grew in the telling. The huge stone of Hermodikos was found by the excavators, with its inscription. Whatever happened in the hall, the stones had a clear use. They prepared each newcomer for what he was about to meet, and they set his case in a line of earlier cases that had ended well. A verse of Ifá does the same for a Yoruba client.

A patient's own account

The fullest testimony of a patient comes from five centuries later. Aelius Aristides was a famous public speaker of the second century of our era. In his twenties he fell ill on a journey to Rome. He had trouble with his breathing, his stomach and his head, and it never left him. He went to the sanctuary at Pergamon and lived there, with intervals, for years. For the rest of his life he wrote down his dreams. Late in life he drew on them for a work in six books, the *Sacred Tales* (Behr 1968).

The god of Aristides is a director of treatment. He orders baths in a freezing river in midwinter, and Aristides plunges in before a crowd of onlookers and comes out glowing. He orders barefoot runs, fasts, vomiting, bloodletting from the elbow and the forehead, and long abstinence from bathing. He orders him to take up public speaking again, which Aristides had given up, and that order did him more good than all the rest. The temple doctors and his friends are often alarmed by what the dreams command. Aristides always obeys the god and holds that he was right every time.

At Pergamon the patients formed a society. They were educated men, and they met in the porticoes, compared their dreams and discussed what the god had meant. An inscription from Epidaurus of the same period, set up by a man named Julius Apellas, lists what the god told him day by day. He was to keep his head covered, to eat bread, cheese and celery, and to bathe without a servant. He was to run, to walk in the upper colonnade, to rub himself with mud, to go barefoot, and to pay the bath attendant. After nine days he was dismissed in good health and told to write it all down.

By that time the cure had become a regimen. Diet, baths, exercise and time did the work, and the dream chose and authorised them. Temple and physician had grown together.

Physicians and the temple

The Hippocratic physicians never attacked the temples. The treatise *On the Sacred Disease*, described in the next chapter, is fierce against wandering purifiers who sell spells for

epilepsy. It says nothing against Asklepios. Physicians set up thank-offerings in his sanctuaries. Galen, the greatest physician of antiquity, was put to the study of medicine because his father had been told to do so in a dream. He called himself a servant of the god and said that the god had once saved his life.

The two kinds of healer shared out the sick much as the healers of chapter 21 did. A broken leg, a fever, a wound went to the physician. A blindness, a palsy, a barrenness or a long wasting, which the physician had declined as beyond his art, went to the god.

Sleep as the place of healing

Chapter 8 listed healing in sleep or in a dream as the eighth point of agreement among the old medicines, and gave Greece as its clearest case. Three modern findings bear on it.

Dreams can be steered. Deirdre Barrett asked students to choose a problem that mattered to them and to think of it each night before sleep for a week. About half of them dreamed of the problem. Many of those dreams contained a solution that independent judges accepted (Barrett 1993). A device built at an American institute speaks a chosen word to a person at the moment of falling asleep. The word then appears in the dreams of most who try it (Haar Horowitz 2020). The ancient patient, who had bathed, fasted, read seventy cures on stone and lain down in the god's own hall, was prepared for his dream far more thoroughly.

A dream can be changed, and the change heals. Some people have lasting nightmares after a great fright. They can be taught to rewrite the nightmare while awake and to rehearse the new version. In a trial with women who had survived assault, this brought fewer nightmares, better sleep and fewer symptoms of trauma by day (Krakow 2001).

The body restores itself in deep sleep. Wounds heal more slowly in people who are kept short of sleep. The memory of the immune system is laid down in the deepest stage of sleep. The book on the body found that heart and breath lock together most firmly in that stage and least in waking.

The Greeks could not know these facts. They had observed that the sick who slept in the god's hall often woke better, and they built an institution on it that lasted a thousand years.

38. The Hippocratic writings

The man and the books

Hippocrates was born on the island of Kos about 460 before our era. He belonged to a family of physicians who traced their descent from Asklepios. He travelled and taught, and he died in old age in Thessaly. Two men who were young when he was famous mention him. Plato names him as the model of a physician who teaches for a fee. He credits him with the view that the body cannot be understood without understanding the whole of nature. That is nearly all that is known.

Some sixty medical works in the Greek dialect of the eastern Aegean have come down under his name. They were collected in the library of Alexandria in the third century. They were not written by one man. They differ in style, in doctrine and in date, and some contradict others. Most were written between 430 and 330 before our era. Scholars call them the Hippocratic Corpus and no longer try to say which, if any, are by Hippocrates himself (Jouanna 1999).

The collection is the first body of medical writing that sets out to explain illness wholly from nature. It contains no rites and names no god as a cause. It is also the first that argues. Its authors attack each other, state their grounds, and admit their failures.

The table lists the most important works.

Work	Content
Aphorisms	Some four hundred short sentences on prognosis, regimen, the seasons, the ages of life and treatment. The most read medical book in history
Prognostic	The signs by which a physician tells how an acute illness will end
Epidemics I and III	The weather and the illnesses of four years on the island of Thasos, with forty-two case histories
Epidemics II, IV–VII	Notebooks of travelling physicians: cases, jottings, maxims
Airs, Waters, Places	How winds, water, soil and climate shape health; what a physician must study on arriving in a town
On the Nature of Man	The four humours and the seasons

Work	Content
On Ancient Medicine	Medicine rests on long experience with food and regimen, and not on the theories of philosophers
On the Sacred Disease	Epilepsy has a natural cause like every illness. It arises in the brain
Regimen in Acute Diseases	Barley gruel, drinks and baths in fevers
Regimen I–IV	Food, exercise and their balance; the fourth book is on what dreams show about the body
Regimen in Health	How a private person should live through the year
On Fractures, *On Joints*, *Instruments of Reduction*	The setting of broken and dislocated bones. The best surgical writing of antiquity
On Wounds in the Head	Kinds of injury to the skull, and when to open it
In the Surgery	The arrangement of the room, the light, the hands, the bandages
Diseases I–IV, *Affections*, *Internal Affections*	Named illnesses one by one, with signs, course and treatment
Diseases of Women, *Nature of Woman*, *Barrenness*	The largest group of works; many recipes
On the Nature of the Child, *Seed*	Conception and growth, with an experiment on hens' eggs
Breaths	Air as the cause of all illness
Places in Man	The body as a circle with no beginning; treatment by opposites and by likes
Humours, *Nutriment*	Dense collections of sayings
The Oath	The duties of a physician
Law, *Decorum*, *Precepts*, *The Physician*	How a physician should be trained and how he should behave
The Art	A defence of medicine against those who say that it does not exist

Nature

The central word of these writings is *physis*, nature. It has three uses, and all three matter.

There is the nature of the whole: the seasons, the winds, the waters and the land. There is the nature of the human body in general. And there is the nature of the single person, which differs from that of his neighbour.

Illness comes from nature, and so does recovery. A notebook among the *Epidemics* states it in four Greek words that became famous: natures are the physicians of diseases. The body, the passage goes on, finds its own ways. It was not taught, and it does what is needed.

It follows that the physician does not heal. He helps. The first book of the *Epidemics* says so in a passage that every later age quoted. “As to diseases, make a habit of two things: to help, or at least to do no harm. The art has three factors, the disease, the patient, the physician. The physician is the servant of the art. The patient must co-operate with the physician in combating the disease.”

Three parties are named, and the physician is the least of them. He serves an art, the art serves nature, and the patient does the work.

The treatise *On the Sacred Disease* applies the idea of nature to the illness that everyone took for the work of a god. Its opening is the charter of natural medicine. “It is not, in my opinion, any more divine or more sacred than other diseases, but has a natural cause, and its supposed divine origin is due to men’s inexperience, and to their wonder at its peculiar character.”

The author turns on the wandering purifiers who treated epilepsy with spells and bans on certain foods. They call it sacred, he says, to cover their own helplessness. If the patient recovers, they take the credit. If he dies, they blame the god. He then gives his own account. The illness begins in the brain, which is the seat of thought and feeling. It runs in families. It can be treated like any other, by the right regimen at the right time.

He does not deny the gods. All illnesses are divine, he writes, and all are human. Each has its nature, and none is beyond understanding.

The humours and their mixture

How does a body fall ill of itself? The best-known answer is given in *On the Nature of Man*, which the ancients ascribed to Hippocrates’ son-in-law Polybus.

“The body of man has in itself blood, phlegm, yellow bile and black bile; these make up the nature of his body, and through these he feels pain or enjoys health. Now he enjoys the most perfect health when these elements are duly proportioned to one another in respect of compounding, power and bulk, and when they are perfectly mingled. Pain is felt when one of these elements is in defect or excess, or is isolated in the body without being compounded with all the others.”

Four fluids make up the body. Health is their right mixture. The Greek word for the mixture is *krasis*. Illness is a fault in the mixture. One fluid is too much or too little, or it has come apart from the others and gathered in one place.

The treatise ties the four to the four seasons by two pairs of qualities.

Humour	Qualities	Season in which it increases
Blood	Hot and wet	Spring
Yellow bile	Hot and dry	Summer
Black bile	Cold and dry	Autumn
Phlegm	Cold and wet	Winter

The body thus follows the year. Each season raises one humour, and each has its illnesses. Winter brings colds and coughs with phlegm. Summer brings fevers with bile.

This scheme of four became, through Galen, the doctrine of European and Islamic medicine for two thousand years. In the Hippocratic collection itself it is one view among several. Other treatises work with two humours, bile and phlegm. One explains the body from fire and water. One explains every illness from air. The author of *On Ancient Medicine* rejects all such schemes. The body, he says, holds salt, bitter, sweet, sour and countless other qualities. They do no harm when they are mixed, and each does harm when it stands alone.

On one point they all agree, whatever the number of their humours. Health is a mixture. Illness is something that has separated out and stands by itself.

Cooking and crisis

The Hippocratic account of the course of an acute illness has three steps.

At the start, something in the body is raw. A humour has come loose from the mixture and has not been worked on.

In the second step the body “cooks” it. The Greek word is *pepsis*, the word for the ripening of fruit and the digesting of food. The inborn heat of the body works on the raw humour. That work is the fever. The physician can follow it in what the body gives off. At first the urine is thin and clear, and the spittle watery. As the cooking goes on, the urine clouds and throws down a sediment. The spittle thickens and turns yellow. These are good signs.

The third step is the *krisis*. The word means a judgment, as in a court. On a certain day the matter is decided. The cooked humour is driven out in a sweat, a flood of urine, a loose bowel, a nosebleed or a vomiting. The fever breaks and the patient is free. Or the humour is not driven out and settles somewhere as an abscess. Or the patient dies. A crisis that leaves something behind is followed by a relapse.

The physicians found that crises fall on certain days, counted from the first day of the illness. The *Prognostic* gives the series for fevers: the fourth day, the seventh, the eleventh, the fourteenth, the seventeenth, the twentieth. The count goes by fours, and the seventh day closes a week. The *Aphorisms* add that the fourth day shows what the seventh will bring.

The rule of treatment follows. The physician supports the cooking with rest, warmth and light food. He watches for the crisis. He helps the body to drive out what it has cooked, by the road that the body itself is taking. And he keeps his hands off at the decisive moment. One of the *Aphorisms* speaks of the time when matters are at the crisis or have just passed it. The physician must then move nothing and try nothing new. He gives neither a purge nor anything that stirs, and leaves the patient alone.

Chapter 4 described the way out of a wrong closure as a passage through an open state, and called that passage the crisis. The word and the idea are Hippocratic. The sixth of the six rules of chapter 5 asks for silence after each act. The Greek physician kept that rule at the turning point of every fever.

Reading the patient

The Hippocratic physician read his patient with all his senses. A short work on the surgery says what he is to attend to. He notes what is like and what is unlike the healthy state, by sight, by touch, by hearing, by the nose, by the tongue, and by the understanding.

The tongue is meant literally. The physicians tasted the sweat, the tears and the wax of the ear, and noted whether they were salt, sweet or bitter.

The first book of the *Epidemics* gives a longer list. It is the nearest approach to a method of examination in the collection. The physician is to consider the nature of people in general and of this person. He considers the illness, the patient, what has been given and who gave it. He considers the season and the state of the sky, and the customs of the place. He looks at the patient's way of life, his occupation and his age. He attends to his talk, his manner, his silence and his thoughts. He asks about his sleep or lack of sleep, and his dreams, what they are and when they come. He notes pluckings, itchings and tears. He goes on to the attacks of fever, the stools, the urine, the spittle and the vomit, and to how one illness passes into another. Then come sweat, chill, cough, sneezing, hiccup, breath, belching, wind, bleeding and piles. From all these, the author ends, and from what follows on them, one must form a judgment.

The list moves from the widest circle to the narrowest. It begins with the nature of mankind and the state of the sky, and ends with a hiccup. Nothing is left out as beneath notice.

The face. The *Prognostic* tells the physician to look first at the face. If it is like the faces of healthy people, and above all like itself, that is best. The opposite is described in words that have kept the author's name. In Jones's translation: "nose sharp, eyes hollow, temples sunken, ears cold and contracted with their lobes turned outwards, the skin about the face hard and tense and parched, the colour of the face as a whole being yellow or black". If there

is no cause for it, such as hunger or a night without sleep, this face means that death is near. Physicians still call it the Hippocratic face.

The body in bed. It is good if the patient lies on his side with his limbs a little bent, as a healthy sleeper does. It is bad if he lies on his back with arms and legs stretched out, and worse if he slides down towards the foot of the bed. It is a sign of death if his hands move before his face, hunt in the empty air, pluck at the blanket or pick at the wall.

The breath, the sweat, the belly. Fast breathing shows pain or heat above the midriff. A cold breath from the mouth and nose is a sign of death. The best sweat comes on a critical day and covers the whole body. The physician lays his hand under the ribs on both sides and notes whether the place is soft, even and free of pain.

The chest. The physicians put an ear to the chest. A work on diseases says that in one condition of the lungs the chest creaks like new leather. In another it seethes like vinegar. To find fluid in the chest, the patient was taken by the shoulders and shaken while the physician listened at his side for a splash. Doctors rediscovered these methods after 1800.

The fingers. The *Prognostic* notes that in patients with pus in the chest the nails curve and the fingertips grow warm. The rounded fingertips of long-standing disease of the lungs are still called Hippocratic fingers.

The urine. The best urine has a white, smooth, even sediment through the whole illness until the crisis. A cloud that hangs in the urine is good if it is white and bad if it is black. Thin, pale urine over a long time shows that the illness is not cooked.

Dreams. The fourth book of *Regimen* reads dreams as signs of the body. When the body is at rest, the author says, the soul is awake and looks after its own house. If the sleeper sees the sun, the moon and the stars clear and in their places, his body is well. If they are dim or fall from their course, something is amiss, and the author says which part. Rivers that run clear are good blood. Trees that lose their leaves point to harm to the seed. The physicians, like the priests of Asklepios, took what a patient saw in sleep as evidence.

Saying how it will end

The *Prognostic* opens with a defence of forecasting.

“I hold that it is an excellent thing for a physician to practise forecasting. For if he discover and declare unaided by the side of his patients the present, the past and the future, and fill in the gaps in the account given by the sick, he will be the more believed to understand the cases, so that men will confidently entrust themselves to him for treatment.”

The physician is to say, without being told, what has happened, what is the case, and what will come. Two gains follow. The patient trusts him. And he can treat better, because he knows what to expect. The author adds a third. If the patient dies, the physician who foretold it is free of blame.

Naming the illness matters less in these books than it does today. Many of the case histories give no name at all. What the physician must know is the kind of case and where it is heading.

This is the practice of the Babylonian handbook and of the Egyptian surgeon, now with reasons given. The Greek physician states the outcome first. He does it from signs of the body alone.

The case histories of the *Epidemics* show the forecasting at work, and they show a rare honesty. The first and third books contain forty-two cases, described day by day. In twenty-five of them the patient dies. One begins as follows. Philiscus lived by the wall. He took to his bed with acute fever on the first day. He sweated, and the night was uneasy. The account goes on through the second, third, fourth and fifth days, with the urine black, the sleep broken and the limbs cold. The breathing is "rare and large, like that of a man recollecting himself". About the middle of the sixth day he died. No comment follows. The physician recorded what he saw, for the use of those who would see such a case again.

The place and the season

One work of the collection has no parallel in any earlier medicine. *Airs, Waters, Places* was written for the physician who travels from town to town. On arriving in a town that he does not know, it says, he must study its position. Which winds blow on it, the hot or the cold? Which way does it face? What water do the people drink: from marshes, from rock, from rain? Is the soil bare and dry, or wooded and wet? How do the people live? Are they fond of drink and food and idleness, or of work and exercise?

Knowing this, he will know which illnesses are common there and which will come with each season. He will not be at a loss, and he will not go wrong in his treatment.

The author also holds that some illnesses strike many people in a place at once. They cannot come from each person's way of life, since those differ. They must come from what all have in common, the air that they breathe.

The *Epidemics* apply the method. Each year's account begins with the weather on Thasos: when the rains came, which winds blew, how hot the summer was. Then come the illnesses that prevailed. One passage describes a winter in which many young men had swellings in front of the ears, without fever, which went down of themselves. Some had painful swelling of the testicles afterwards. It is an exact account of mumps.

Chapter 4 gave five layers of cure. The outermost was the surround: what everyone hangs in. The Greek physicians made the surround a subject of study. They taught that a physician who does not know the place and the season cannot understand the patient in front of him.

Regimen

The first means of the Hippocratic physician is neither drug nor knife. It is regimen. The Greek word is *diaita*, from which "diet" comes. It covers far more than food. It is a whole way of living. It covers what is eaten and drunk, exercise and rest, baths, sleep and waking, and sexual activity. It also covers the adjustment of all these to the season, the age and the nature of the person.

On Ancient Medicine argues that this is where medicine began. People found by long trial that the raw food of animals did not suit them, and learned to grind, soak and bake. They found that what suits the healthy does not suit the sick, and learned to give gruel and then broth. Medicine is the continuation of cooking. Its findings were made by experience and can be extended in the same way.

In acute illness the regimen is strict and simple. The patient is given barley water, or a thin gruel of barley, and drinks of honey with water or with vinegar. He rests. He is bathed if it eases him. As he recovers, the food is made thicker step by step.

In health the regimen follows the year. In winter one should eat more and drink less, with bread, roast meat and few vegetables, to keep the body dry and warm. In summer one eats soft barley cake, boiled meat and vegetables, and drinks more, to keep it cool and moist. Spring and autumn are the changes from one to the other, and they are to be made little by little.

The author of *Regimen* states the principle on which it all rests. Food and exercise have opposite powers, and together they produce health. Food fills, and exercise uses up. The physician's task is to find, for each person, the measure of the one against the other. If he could find that measure exactly, he says, he would have found the way to keep every person well.

Treatment

When regimen is not enough, the Hippocratic physician has four further means. He uses them in a fixed order, the mildest first.

Emptying. If a humour is in excess, it is taken out. A purge empties downward, and an emetic upward. The usual drugs were the two hellebores, one for each direction, and both are strong poisons. Blood is let from a vein at the elbow, or drawn through the skin with a heated cup. The physician follows the lead of the body. If it tends to vomit, he helps it to vomit. He does not purge during the cooking, and not in the heat of the dog days.

Drugs. The collection names some three hundred. Most are plants of the Greek countryside. They are given as drinks, as plasters, as pessaries and as vapour. The works on women's illnesses hold by far the most recipes, and many of them are plainly taken from the lore of midwives.

The knife. Abscesses are opened. Pus is let out of the chest between the ribs. Piles and fistulas are treated by cutting and tying. The skull is opened with a drill for certain injuries.

Fire. The last means is the cautery. A hot iron is laid on the skin over a painful joint or a diseased organ.

One of the *Aphorisms* gives the order in a sentence. What drugs do not cure, the knife cures. What the knife does not cure, fire cures. What fire does not cure must be called incurable.

Opposites and likes. By what rule is a remedy chosen? The *Aphorisms* give the rule that Greek medicine made its own. Illness that comes from fullness is cured by emptying, and illness that comes from emptying by filling. In general, opposites are cures for opposites. A hot illness is cooled, and a dry one is moistened.

A second rule stands in the treatise *Places in Man*. The author first states the rule of opposites. He then adds that there is another way. An illness arises through likes, and through likes that are given the sick are made well. What causes a stoppage of urine in the healthy removes it in the sick. A cough is caused and cured by the same means. Vomiting is stopped by making the patient vomit. The author sees no contradiction. The right way, he says, depends on the case and on the moment.

More than two thousand years later, Samuel Hahnemann built homeopathy on the second rule alone. The appendix returns to it.

The moment. The Greek word *kairos* means the right moment. It runs through the whole collection. The first of the *Aphorisms* names it. In Jones's translation: "Life is short, the Art long, opportunity fleeting, experiment treacherous, judgment difficult." The same remedy that helps on one day harms on another. The physician's skill is to know when.

The third rule of cure in chapter 4 says: match the direction and the phase. The Hippocratic physician followed the direction that the body itself was taking, and he held that the timing of an act counts for as much as the act.

Bones and joints

The surgical works stand apart. They are by a single author of great skill, and they deal with what can be seen and handled.

On Joints describes a shoulder that has slipped out and six ways of putting it back. In one of them the physician sits beside the patient, who lies on the ground, sets his heel in the armpit, and pulls on the arm. It is still taught under the name of Hippocrates. The work describes a bench with a windlass for pulling a broken thigh straight. It tells how to correct a club foot in a newborn child, by gentle moulding with the hands and by bandages renewed over months, without any cutting. Surgeons returned to that method in the twentieth century.

The author has a sharp eye for the showman. He describes a method of treating a humped back by tying the patient to a ladder and dropping it from a height. It draws a crowd, he says,

and does no good. He would be ashamed to use it. He also records his own failures, and says that he does so on purpose, so that others may learn what does not work.

The physician

Several short works concern the physician himself.

The Oath. It is the best-known text of the collection. The one who swears takes on three kinds of duty. He will honour his teacher as a parent and teach his teacher's sons without fee. He will use regimen to help the sick according to his ability and judgment, and keep them from harm and wrong. He will give no deadly drug, and no pessary to cause an abortion. He will not cut, and will leave that to those who practise it. Into whatever house he enters, he will enter to help the sick, and will keep from all wrongdoing and from sexual acts with the women and men of the house. And he will keep silent. Whatever he sees or hears of people's lives, in his practice or outside it, which ought not to be spread abroad, he will not reveal.

The Oath does not contain the words "first, do no harm". Those come from the *Epidemics*.

Conduct. A work on the physician's bearing says that he should look healthy, since people think that one who cannot care for his own body cannot care for theirs. He should be clean, well dressed and sweet-smelling. He should be serious without being harsh. Another work warns against discussing fees before treatment, since worry harms the sick. It tells the physician to treat strangers and the poor for nothing when he can. It gives the reason in a line that has often been quoted. Where there is love of man, there is also love of the art.

Limits. A work in defence of medicine defines the art by three aims. It removes the suffering of the sick. It lessens the violence of their illnesses. And it refuses to treat those who are overcome by their illnesses, knowing that medicine has no power there. Like the Egyptian and the Babylonian before him, the Greek physician counted the refusal of the hopeless case as part of his craft.

A selection from the Aphorisms

The *Aphorisms* were the first book that every medical student read, from late antiquity to the nineteenth century. The table gives the sense of twenty of them. The numbers are those of the usual division into seven sections.

No.	Sense
I.1	Life is short and the art is long. The physician must do what is right, and must also bring the patient, the attendants and the circumstances to work with him

No.	Sense
I.2	In a loosening of the bowels or in vomiting that comes of itself, if what should be purged is purged, it helps and is easily borne. If not, the reverse
I.6	For extreme illnesses, extreme and exact treatments are the most fitting
I.13	Old people bear fasting most easily, then adults, young people less, and children least of all
I.20	At a crisis, or just after one, move nothing and try nothing new. Leave the patient alone
II.3	Sleep and sleeplessness, both beyond measure, are bad
II.4	Neither fullness nor fasting nor anything else is good when it goes beyond nature
II.5	Tiredness without a cause announces illness
II.22	What comes from fullness is cured by emptying, and what comes from emptying by filling. Opposites cure opposites
II.24	The fourth day shows what the seventh will be. The eighth begins a second week
II.33	In every illness it is a good sign when the mind is sound and the patient takes what is offered. The opposite is bad
II.44	Those who are very fat by nature are apt to die earlier than the lean
II.46	When two pains occur together in different places, the stronger dulls the other

No.	Sense
III.1	The changes of the seasons most of all bring forth illness, and within the seasons the great changes of cold and heat
VI.23	If fear and sadness last a long time, the condition is of the black bile
VI.38	Hidden cancers are better left untreated. Treated, the patients die quickly. Untreated, they live a long time
VII.34	When bubbles stand on the urine, it shows an illness of the kidneys, and that it will be long
VII.87	What drugs do not cure, the knife cures. What the knife does not cure, fire cures. What fire does not cure is incurable
II.38	Food and drink that are a little worse but more pleasant are to be preferred to what is better and less pleasant
II.50	What a person has long been used to, even if it is worse, harms less than what he is not used to

Several of these are still taught. The one on fear and sadness is the first statement that a lasting low mood is an illness of the body. The one on two pains has been confirmed in the laboratory. The one on fat people is borne out by every modern table of life expectancy. The last two show a physician who reckoned with what the patient likes and is used to.

What was new, and what was given up

The Hippocratic writings changed medicine in six ways.

1. **Illness is explained from nature alone.** No god, demon or sorcerer is named as a cause.
2. **The body heals itself.** The physician is the servant of that process.
3. **Health is a mixture, and illness is what has separated out.** The idea came from Alcmaeon. Here it becomes a working doctrine.
4. **An illness has a course in time,** with a cooking and a crisis, and treatment must follow the course.

5. **The surround is studied.** Place, water, wind and season are part of every case.
6. **Cases are written down as they went,** including those that ended in death.

A price was paid. Three matters that every earlier medicine in this book held to are absent from these writings.

The first is the question of who or what, outside the patient's body, is involved. The dead, the family, the wrong that was done and not confessed have no place in a Hippocratic case history. The physician asks about the season and the water. He does not ask whom the patient has offended.

The second is the meeting. The Hippocratic physician observes with all his senses and with great care. He stands outside what he observes. He does not take the patient's state into himself, as the shaman does, and he does not let a cast or a dream decide. Chapter 23 distinguished reading by meeting from reading through a window. The Greek physician is the first master of the window.

The third is the word. No chant, no formula and no name is used to heal.

The Greeks did not lose these three. They left them to the temple. For a thousand years the two stood side by side, and a patient could go to both. When the temples were closed, the medicine of the West kept the physician's half.

39. Alexandria, Rome and Galen

The opened body

In 331 before our era Alexander the Great founded a city on the coast of Egypt. Under the Ptolemies, Alexandria became the centre of Greek learning, with a library that aimed to hold every book in the world. For about fifty years in the third century, two physicians there did what no Greek had done and what nobody did again for fifteen hundred years. They opened human bodies in order to see what was inside.

Herophilus of Chalcedon was the first. He described the brain and its chambers and held that it, and not the heart, is the seat of thought. He traced the nerves from the brain and the spinal cord and saw that some carry feeling and others movement. He described the eye, the liver, the organs of generation, and the first part of the gut, which he named by its length, twelve fingers. The Roman writer Celsus reports that he and his colleague also cut open living criminals whom the king handed over.

Herophilus made the pulse a subject of exact study. He distinguished its size, its strength, its speed and its rhythm. He is said to have carried a small water clock to the bedside and to have timed the pulse against it, with a setting for each age of life. He described rhythm in the terms of Greek music and verse. A beat has an expansion and a contraction, and their lengths stand in a ratio, as the long and short syllables of a metrical foot do. The pulse of a newborn child has two short parts. That of a man in his prime has two long ones. In youth the first part is the longer, and in old age the second. A wrong ratio is a sign of illness (von Staden 1989).

So the first Greek who measured the pulse heard it as music. The Pythagoreans had taught that health is a right tuning. Herophilus listened for it at the wrist.

Erasistratus of Keos described the valves of the heart and understood that they let the blood pass one way only. He held that most illness comes from too much blood, and he was against bloodletting all the same. A story about him was told for a thousand years. The young prince Antiochus was wasting away and would not say why. Erasistratus sat beside him and watched while the people of the court came and went. Each time the king's young wife entered, the prince's pulse leapt, his colour changed, and he sweated. The physician told the king that his son was dying of love for a woman he could not have, and who she was. The king gave her up to him.

After these two the opening of bodies stopped. Later physicians learned their anatomy from books and from animals.

Schools in dispute

The physicians of the following centuries divided into schools that argued about the foundations of their art.

The **Rationalists** held that a physician must know the hidden causes of illness: the humours, the pores, the breath. Without a theory of what happens inside, treatment is blind.

The **Empiricists** replied that hidden causes cannot be known and need not be. What counts is what has been seen to help. A physician relies on three sources: what he has observed himself, what trustworthy others have recorded, and careful reasoning from a known case to a similar one. Their position is close to that of the Yoruba herbalists of chapter 24, who call knowledge only what one has seen.

The **Methodists** thought both too laborious. All illness, they said, comes down to three common states of the body. It is too tight, or too loose, or tight in one part and loose in another. The physician has only to see which, and to loosen or tighten. The whole of medicine could be learned in six months. The best of them was Soranus of Ephesus, whose book on the illnesses of women and on the care of the newborn is the most humane medical work of antiquity. He also wrote on madness. The patient, he said, should lie in a quiet room with moderate light. He should not be bound unless it cannot be avoided, and then with soft bands. His attendants must not contradict his fancies, nor agree with all of them. As he improves he is to be given reading, talk and gentle travel.

Other physicians of the Roman period are remembered for single achievements. Aretaeus of Cappadocia wrote descriptions of illnesses that have not been bettered. He gave diabetes its name and called it a melting down of the flesh into urine. He described the one-sided headache with nausea and dread of light. He saw that deep sadness and raging excitement can alternate in one patient and are one illness. Rufus of Ephesus wrote the first work on how to question a patient. A physician, he said, must ask, since there is much that cannot be learned in any other way. From the manner of the answer he also learns about the mind and the strength of the sick person.

Rome

The Romans distrusted Greek physicians and employed them all the same. Their own contribution lay in public works. Aqueducts brought clean water to their cities. Sewers carried the waste away. Public baths were open to all. The army built hospitals at its frontier forts, with small wards round a court.

Three writers of the first century of our era summed up the knowledge of the time.

Celsus wrote a clear survey of the whole of medicine in Latin. He divided treatment into three parts: by regimen, by drugs and by the hand. He named the four signs of inflammation that students still learn: redness and swelling, with heat and pain. He described operations for the stone in the bladder, for the clouded lens of the eye, and for the tonsils.

Scribonius Largus, physician to the emperor Claudius, compiled a book of recipes. It holds the first account of treatment by electricity. For a stubborn headache, a live electric ray from

the sea is laid on the brow until the place goes numb. For the pain of gout the patient stands on one at the shore.

Dioscorides of Anazarbus, a Greek from what is now southern Turkey, wrote the book on drugs that the West and the Islamic world used for sixteen centuries. He had travelled widely. His work describes about six hundred plants, with some animal and mineral materials. For each it says where it grows, what it looks like, how to gather and keep it, how to tell a false sample, and what it does. He arranged the drugs by what they do in the body and not by the alphabet (Riddle 1985).

Many of his entries are sound. The table gives some.

Drug in Dioscorides	What he says	Today
Opium poppy	The juice brings sleep and stills pain and cough. Too much kills	Morphine and codeine
Mandrake	A wine of the root is given before cutting or burning, so that the patient does not feel	The first written statement of anaesthesia for surgery; the plant contains scopolamine
Willow	The leaves and bark, boiled, for pain and for gout	Forerunner of aspirin
Autumn crocus	A dangerous plant; related kinds are used for the joints	Colchicine, still the drug for an attack of gout
Male fern	The root drives out flat worms	Used for tapeworm until the twentieth century
Squill	For dropsy and the chest	Contains compounds that act on the heart
Aloe	Loosens the bowel; closes wounds	A purge; used on burns
Castor oil plant	The oil purges	Still in use
Henbane	For pain and sleep	Source of hyoscyamine
Liquorice	For a rough throat, the chest and the stomach	Acts on the lining of the stomach
Pomegranate rind and root	For worms and for a loose bowel	Active against tapeworm

Drug in Dioscorides	What he says	Today
Mint, fennel, anise, cumin	For wind and the stomach	Still used so
Wine and vinegar	For washing wounds	Both kill bacteria

A manuscript of his book made in Constantinople about the year 512, with nearly four hundred paintings of plants, is kept in Vienna. Physicians used it at a hospital in that city for a thousand years and wrote the names of the plants in the margins in Greek, Arabic and Hebrew.

Galen

Galen was born in 129 of our era at Pergamon, in the shadow of the great sanctuary of Asklepios. His father was a wealthy architect. When the boy was sixteen, the father was told in a dream to make his son a physician. Galen studied at Pergamon, at Smyrna, at Corinth and at Alexandria for twelve years. He came home to be physician to the gladiators, which gave him, as he said, windows into the body. In 162 he went to Rome. He made his name by public lectures and demonstrations and by cures in great houses. He became physician to the emperor Marcus Aurelius and his son. He died about 216.

He wrote without ceasing. About a hundred and seventy of his works survive, in some three million words. That is a tenth of all the Greek literature that has come down from antiquity. He wrote on anatomy, on the uses of the parts, on the pulse, on fevers, on drugs, on regimen, on logic, on the Hippocratic books and on himself.

Three features of his work decided the next fifteen centuries.

He experimented. Galen could not open human bodies. He opened apes, pigs, goats and an elephant. He cut the nerve that runs to the voice box of a squealing pig before an audience of senators, and the pig fell silent. He cut the spinal cord at different heights and showed which movements were lost at each. He tied the tubes that lead from the kidneys and showed that urine is made in the kidneys and not in the bladder. He tied an artery in two places, opened it between, and found blood. An earlier school had taught that arteries hold only air.

He joined everything into one system. He took the four humours from one Hippocratic treatise and the elements and qualities from Aristotle. He took the three parts of the soul from Plato and anatomy from Alexandria. He made of them a single account in which every part had a purpose. The system was complete, and it was reasoned. It also contained the errors of his animals. The human liver was drawn with five lobes for a thousand years, because a dog’s has five.

He was certain. Galen argued every point at length and never doubted his conclusions. Later ages took the certainty for proof.

The system

Galen's doctrine can be set out in a few lists. The physicians of the Islamic world made the lists standard, and chapter 40 gives their Arabic names.

Four elements, four qualities, four humours. Everything under the moon is made of fire, air, water and earth. Each element joins two of four qualities: hot or cold, and dry or wet. In the body the four humours correspond to them. Health is a good mixture and illness a bad one.

Nine temperaments. The mixture of a particular person is his temperament. Galen counted nine. In one the qualities are evenly mixed. In four, one quality prevails: the hot, the cold, the dry or the wet. In the other four, two prevail together: hot and dry, hot and wet, cold and dry, cold and wet. The even mixture is a standard that hardly any living person meets. Every person, and every organ in a person, has a temperament of its own, which is normal for it. The brain is cool and moist. The heart is hot and dry. A child is warm and moist, and an old person is cold and dry.

From the four mixed temperaments the Middle Ages drew the four characters that still bear the names of the humours: the sanguine, the choleric, the melancholic and the phlegmatic.

Three systems and three spirits. The body has three ruling organs. The liver makes blood from food and sends it out through the veins to nourish every part. The heart is the seat of the inborn heat and sends a finer, living blood through the arteries. The brain is the seat of sensation, movement and thought and works through the nerves. In each, the air that is breathed in is worked up into a subtler form. It becomes a natural spirit in the liver, a vital spirit in the heart, and a spirit of the soul in the brain. The Greek word is *pneuma*, breath. Chapter 8 listed it among the words for what moves in a body and holds its parts in relation.

Six matters that are not inborn. A person's health depends on six conditions that are not part of his nature and that he can order. They are the air about him, food and drink, sleep and waking, movement and rest, what the body keeps in and lets out, and the passions of the soul. The sixth is worth noting. Galen held that anger, fear, grief and joy change the body as surely as food does, and that their right ordering belongs to medicine.

Degrees of drugs. Every drug has qualities, like every body. Galen graded their strength in four degrees. A drug that is hot in the first degree warms a little. One that is hot in the fourth degree burns. The physician finds the quality and the degree of the patient's illness and gives a drug of the opposite quality in the matching degree.

Galen at the bedside

Galen's case histories show a diagnostician of great skill, and one who knew it.

The pulse. He wrote sixteen books on it. He classified pulses by many features: length, breadth and depth, and also strength, hardness, speed, frequency, evenness and rhythm. For

the first three, the dimensions of the beat under the finger, he allowed three values each: too great, moderate, too small. That gives twenty-seven kinds of pulse by dimension alone. One of them, moderate in all three, is the pulse of health.

He also gave names to pulses by their feel. One runs like an ant. One leaps like a gazelle, with a second stroke on the heels of the first. One dwindles like the tail of a mouse. One rolls like a wave, and one creeps like a worm. These names were used at the bedside until the nineteenth century.

The place affected. Galen taught that the first task is to find which part of the body is affected. The part where the trouble shows is often not the part where it lies. A teacher of rhetoric lost the feeling in three fingers of one hand. Other physicians had put salves on the fingers for weeks. Galen asked whether he had had a fall. The man had been thrown from a carriage and had struck his back. Galen applied his remedies to the spine at the base of the neck, where the nerves of those fingers leave the cord. The feeling came back.

The passions. He was called to a woman who lay awake at night and tossed about, and who gave short answers or none. He found no fever. He concluded that she suffered either from black bile or from some grief that she would not confess. He came back several times. On one visit somebody mentioned, by chance, that he had seen a certain dancer perform. At the name her face changed, and Galen, whose fingers were on her wrist, felt her pulse turn irregular. On the following days he had other dancers named in her presence, and nothing happened. When the first name was spoken again, the pulse changed as before. She was in love.

He tells the story to make a point. There is no special pulse of love. The pulse shows that the soul is troubled, and a physician who watches will find by what.

Prognosis. Galen's forecasts made him famous in Rome and brought the charge that he used magic. He replied that he merely read the signs that Hippocrates had taught, with attention.

What he believed about the art

Galen held that the best physician is also a philosopher. He must know logic, to reason from signs to causes. He must know nature. And he must despise money, since no one who is after wealth will give the years of work that the art demands.

He held, with the Hippocratic writers, that nature heals and the physician serves. He added a view of nature that suited the religions which later adopted him. Every part of the body, he argued in a long work on the uses of the parts, is made as well as it could be for its purpose. To study the hand or the eye is to praise the one who made it.

He remained a man of Pergamon. He said that Asklepios had saved him from a deadly abscess when he was young, and had told him in a dream which artery to open. He declined to go with the emperor on a campaign because the god had forbidden it. The greatest of the

physicians who read from outside, by the pulse and the place affected, took his own direction from a dream.

The weight of his authority

Galen's system was so complete that for centuries nobody added to it. Physicians wrote summaries and commentaries. The four humours, the six conditions, the pulse and the flask of urine were the whole of learned medicine. This was so in Byzantium, in the Islamic world and in the universities of Europe.

Two parts of his teaching did lasting harm. He believed in bloodletting for almost every illness, and he bled freely. Chapter 41 follows what came of that. And his anatomy, taken from apes and pigs, was treated as the anatomy of man for a very long time. It was corrected only when Andreas Vesalius opened human bodies again at Padua and published what he found in 1543.

The history of his reputation holds a warning for this book as well. A system that explains everything, in which each part fits and nothing is left over, is persuasive. It is not for that reason true.

40. From Baghdad to Delhi: Unani medicine

A living Greek medicine

The medicine of Hippocrates and Galen is still practised. In India, Pakistan and Bangladesh it is called *Unani tibb*, which means Greek medicine. *Yunan* is the Arabic and Persian name for Ionia, the Greek coast of Asia Minor. India has about fifty thousand registered Unani practitioners. More than fifty colleges give a degree after five and a half years. There is a national institute and a government council for research. Pakistan has a comparable number of practitioners. In Iran the same tradition is taught in universities under the name of Persian medicine.

The road from Pergamon to Delhi runs through Baghdad. This chapter follows it and then describes the medicine as it is taught and practised today.

The translators

In the eighth century the Abbasid caliphs made Baghdad their capital. They collected the learning of the peoples whom they ruled. Greek medicine had been kept alive by Syriac-speaking Christians, above all at the school of Gondeshapur in Persia. Indian physicians were invited to the court as well, and the great Sanskrit handbooks were put into Arabic.

The chief of the translators was Hunayn ibn Ishaq, a Christian Arab physician who died in 873. He travelled in search of Greek manuscripts, compared the copies, and translated with a team that included his son and his nephew. He left a list of the works of Galen that he had put into Syriac or Arabic. It has 129 entries. Several works of Galen survive today only in his versions.

Within a century of Hunayn the physicians of the Islamic world were writing original works.

Al-Razi, known in Europe as Rhazes, was born at Rayy near modern Tehran about 865 and directed hospitals there and in Baghdad. He was a clinician first. His notebooks were published after his death as the *Comprehensive Book*. For each illness they set down what the Greeks, Syrians, Indians and Persians had said, and then what he himself had seen. He wrote the first treatise that tells smallpox from measles. He wrote a book of *Doubts about Galen*. One passage in his notebooks describes a group of patients with a brain fever whom he treated by bloodletting. He left another group unbled on purpose, to see what the bleeding did. It is among the earliest records of a comparison of that kind.

Ibn Sina, known in Europe as Avicenna, was born near Bukhara in 980 and died in 1037. He was a philosopher of the first rank and a statesman, and he wrote his great medical work in the intervals of a restless life. It is the *Canon of Medicine*.

The Canon

The *Canon* does what Galen never did. It puts the whole of Galenic medicine in order, in five books (Gruner 1930; Pormann 2007).

Book	Content
I	General principles. The elements, the temperaments, the humours, the organs, the faculties and the spirits. The causes of illness. The signs: pulse and urine. The regimen of health for every age. The general methods of treatment
II	Simple drugs. About eight hundred, in alphabetical order, each with its temperament, its powers and its uses. With rules for testing a drug
III	Illnesses of the single parts, from the head to the feet
IV	Illnesses that affect the whole body: fevers and their crises, swellings, wounds, fractures, poisons. Care of the skin and hair
V	Compound drugs. A formulary of some six hundred and fifty recipes

It is a textbook of a million words in which every topic has its place and nothing is said twice. Gerard of Cremona put it into Latin at Toledo in the twelfth century. It was the chief textbook of medicine in the universities of Europe for five hundred years. At Montpellier and at Leuven it was read until about 1650. In the Unani colleges of India it is still the foundation.

Three passages show the quality of its author.

The testing of drugs. In the second book Ibn Sina gives seven conditions for finding out by experience what a drug does. The drug must be pure. It must be tried on a simple illness and not on one with several causes. It must be tried on opposite illnesses, since a drug may help one by its nature and the other by accident. Its strength must match the strength of the illness. The time at which it acts must be noted. The effect must be seen to follow in many cases, since one case may be chance. And it must be tried on the human body, since what holds for a lion or a horse need not hold for a man. These are the rules of a clinical trial, written a thousand years ago.

The pulse of a lover. A story told by a Persian writer of the next century has Ibn Sina called to a young prince who lies wasting and silent. He takes the prince's wrist and asks for someone who knows the districts of the city. The districts are named one by one. At one name the pulse flutters. He asks for someone who knows the streets of that district, then the houses of that street, then the people of that house. At the name of a girl the pulse leaps. He prescribes marriage. It is the method of Erasistratus and Galen, carried through like a search.

The pulse and music. In his chapter on the pulse Ibn Sina states that the pulse has a musical nature. As the art of music rests on the relation of high and low notes and on the measure of the times between beats, so does the pulse. Its beats stand to each other in ratios of time and of strength. A physician with a trained ear, he says, perceives these ratios with his fingers.

Hospitals

The Islamic world gave medicine the hospital in the modern sense. The Persian word was *bimaristan*, house of the sick. Great ones stood in Baghdad from the tenth century, in Damascus from the twelfth, and in Cairo from 1284.

They were paid for by religious endowments and were free to all. They had separate wards for fevers, for wounds, for diseases of the eye, for women, and for the insane. They had a pharmacy, a library, a kitchen and a mosque. Physicians made rounds with their students and kept records. The deed of the Cairo hospital states that it is for the rich and the poor, the free and the slave, men and women. It provides that each patient shall be given clothing and money on leaving, so that he need not work at once.

The insane were treated in the hospital and not shut out. Travellers report fountains in their wards, and musicians who played to them.

Al-Razi is said to have chosen the site for his hospital in Baghdad by hanging pieces of meat in different quarters of the city. He built where the meat kept longest.

To India

Greek medicine reached India with the Muslim rulers of Delhi in the thirteenth century. Its practitioners are called *hakim*, a word that means a wise man. Under the Mughal emperors it flourished at court and in the cities. The hakims learned from the Indian physicians beside whom they worked. They took hundreds of Indian plants into their pharmacy, and they wrote in Persian and later in Urdu.

British rule favoured Western medicine and gave the old systems no support. The revival was the work of a few families of hakims. The best known is Hakim Ajmal Khan of Delhi, who lived from 1868 to 1927. He was a physician of great reputation and a leader of the national movement. He founded a college in Delhi that taught Unani and Ayurveda together, and he wanted the old remedies studied by modern chemistry.

He engaged a young chemist, Salimuzzaman Siddiqui, to work on a root that hakims and Ayurvedic physicians had long given to the insane and for snakebite. In 1931 Siddiqui isolated its first active compounds. He named the chief of them ajmaline, after his patron. Twenty years later a Swiss firm isolated a further compound from the same root. It was reserpine, the first effective drug for high blood pressure and for psychosis. Chapter 28 told how the Yoruba healers used an African relative of the same plant for madness.

Another Delhi hakim founded a small pharmacy in 1906 under the name Hamdard, "companion in pain". It grew into the largest maker of Unani medicines in the world, with branches in India, Pakistan and Bangladesh, and it supports a university.

After independence India recognised Unani as one of its national systems of medicine. It is governed today with Ayurveda, Yoga, Siddha and Homeopathy under one ministry. The World Health Organization has published standards for training in it.

The ground: seven natural matters

A student of Unani medicine begins with what the textbooks call the seven natural matters. They are what a body is made of and how it works. The list comes from Galen by way of Ibn Sina (Bakhtiar 1999).

Arabic term	Meaning	Number
Arkan	The elements: fire, air, water, earth	4
Mizaj	The temperament: the mixture of the qualities in a person or an organ	9 kinds
Akhlat	The humours: blood, phlegm, yellow bile, black bile	4
A'za	The organs	
Arwah	The spirits, which carry the powers of the organs through the body	3
Quwa	The faculties: natural, vital and of the soul	3
Af'al	The functions	

Temperament. *Mizaj* is the central idea. Every person has a temperament that is his own from birth. In daily practice the hakim sorts people into four kinds, by the humour that leads in them.

Temperament	Qualities	Signs of the person
Of blood (*damawi*)	Hot and moist	Well-fleshed, ruddy, warm to the touch; cheerful, sociable; full pulse
Of yellow bile (*safrawi*)	Hot and dry	Lean, sharp-featured, yellowish; quick, ambitious, easily angered; rapid pulse
Of phlegm (*balghami*)	Cold and moist	Soft, pale, inclined to fat; calm, slow, sleepy; slow, soft pulse
Of black bile (*saudawi*)	Cold and dry	Thin, dark, dry-skinned; thoughtful, anxious, wakeful; thin, hard pulse

Ten signs are examined to find a person's temperament. They are the feel of the skin, the flesh and fat, the hair, the colour of the body and the build. They are also the response to heat and cold, sleep, the working of the organs, what the body gives off, and the cast of mind.

A person's temperament is his health. Illness is a departure from his own temperament, and treatment brings him back to it. It does not aim at an average. A cool, moist person is not to be made hot and dry. What is normal for one would be illness in another.

The humours. The four humours are made in the liver from food, in what the texts call the second digestion. Blood is the best of them. The others are needed too, each for its work. A humour does harm when there is too much of it, when it is spoiled in quality, or when it settles where it should not be.

The spirits. Three spirits arise from the finest part of the humours and the air. The natural spirit has its seat in the liver, the vital spirit in the heart, and the spirit of the soul in the brain. They are the means by which the powers of these organs reach the whole body.

Nature the healer. Above these seven stands a power that the Unani physicians call *tabiat*. The word translates the Greek *physis*. It is the body's own ruler and healer. It keeps the temperament in its right state, and when illness comes it fights the illness. The texts say that the physician does not cure. He is the helper of *tabiat*. He removes what hinders it and gives it what it needs.

Six necessary conditions

The causes of health and illness lie mainly in six conditions that nobody can avoid and that everyone can order. The Arabic name means the six necessary causes. They are Galen’s six matters that are not inborn.

1. The air: its purity, its warmth, the season, the place.
2. Food and drink.
3. Movement and rest of the body.
4. Movement and rest of the soul: joy, anger, fear, grief.
5. Sleep and waking.
6. Holding in and letting out: of stool, urine, sweat, the monthly blood, and semen.

A handbook of the eleventh century, written by the Baghdad physician Ibn Butlan, set these six out in tables. For every food, drink, season, activity and state of mind it gave the nature, the best kind, the benefit, the harm and how to correct the harm. The Latin version circulated in richly painted manuscripts under the title *Tables of Health*. It was a household book of the European nobility.

In a Unani consultation the six are gone through one by one. Most long-standing illness, the hakims hold, comes from a fault in one of them, kept up over years. The first prescription is nearly always a change in regimen.

Diagnosis

The hakim questions the patient, looks, and feels. Three examinations carry the most weight.

The pulse. The Arabic word is *nabz*. The hakim lays three fingers on the artery at the wrist, with the patient at rest and his own mind collected. Ibn Sina lists ten features that are to be judged.

Feature	What is judged
Size	The length, breadth and depth of the beat under the fingers
Strength	How firmly it strikes the finger
Speed	How quickly each beat rises
The vessel wall	Whether the artery is hard or soft
Fullness	Whether the vessel feels full or empty
Temperature	Whether the place is hot or cold to the touch
Frequency	The length of the pause between beats
Regularity	Whether the beats are alike or differ

Feature	What is judged
Order	Whether the irregularity follows a pattern or not
Rhythm	The ratio of the times of the beat and the pauses

The first feature has three dimensions, and each has three states: too great, moderate, too small. That gives the twenty-seven kinds of Galen. The tenth is the musical feature that Ibn Sina stressed.

From the pulse the hakim judges the temperament, the leading humour and the strength of the vital power. A full, strong, wave-like pulse speaks of blood. A quick, thin, hard one speaks of yellow bile. A slow, soft, broad one speaks of phlegm. A slow, thin, hard one speaks of black bile.

The urine. The Arabic word is *baul*. A sample of the first urine of the morning is brought in a clear glass flask and looked at against the light. The hakim notes its colour, its thickness, its clearness, its sediment, its froth and its smell. Pale and thin urine means that the humours are raw. A good sediment, white, smooth and even, means that the cooking is complete. That is the Hippocratic teaching, unchanged.

The stool. Its colour, form and amount show the state of digestion.

The hakim also looks at the tongue, the eyes, the nails and the skin, and he asks about each of the six conditions.

Ripening and clearing

For long-standing illnesses that come from a spoiled humour, Unani medicine has a method of treatment in two stages. It is the Hippocratic doctrine of cooking and crisis, made into a deliberate procedure.

In the first stage the hakim gives a “ripener”, a gentle decoction of herbs chosen for the humour concerned. The patient takes it every morning for one to three weeks. Its purpose is to cook the harmful humour, to loosen it from where it sits, and to make it ready to leave. The hakim watches the urine. When it shows the signs of ripeness, the first stage is done.

In the second stage he gives a purge that drives the ripened humour out, for a few days. A cooling course follows, to settle the body.

The rule is strict. A humour must not be driven out before it is ripe. The Greek aphorism said the same: purge what is cooked, and not what is raw.

Four ways of treating

Unani medicine has four kinds of treatment and uses them in a fixed order of preference. The first is treatment by regimen. The second is treatment by food. The third is treatment by drugs. The fourth is treatment by the hand, which is surgery. A hakim is expected to try the earlier before the later.

Treatment by regimen

The Arabic name is *ilaj bil tadbir*. It covers every method that changes the state of the body without a drug. The table lists the chief ones.

Method	Arabic name	What is done	Used for
Cupping	*hijama*	A cup is fixed on the skin by suction. In wet cupping the skin is first scratched, and a little blood is drawn	Pain of the back, neck and joints; headache; to draw a humour from the depth to the surface
Opening a vein	*fasd*	Blood is let from a vein at the elbow or elsewhere	Excess of blood; now seldom done
Leeches	*ta'liq*	Medicinal leeches are set on the skin and left until they fall off	Painful joints, skin diseases, swollen veins
Purging	*ishal*	A drug that empties the bowel	To drive out a ripened humour
Vomiting	*qai*	A drug that empties the stomach	Phlegm in the stomach and chest
Sweating	*ta'riq*	Hot rooms, covers, warm drinks	To clear through the skin
Passing water	*idrar*	Drugs that increase the urine	Swelling; stones

Method	Arabic name	What is done	Used for
The hot bath	*hammam*	A sequence of warm and hot rooms, washing and rest	Stiffness, the skin, tiredness; convalescence
Massage	*dalak*	Rubbing by hand, firm or soft, dry or with oil	Weak and stiff limbs; palsy; to warm or to calm
Exercise	*riyazat*	Movement suited to the person’s strength	To use up what is in excess; to strengthen
Pouring	*nutul*	A warm medicated liquid is poured in a steady stream on a part, often the head	Headache, sleeplessness, disorders of the mind
Fomentation	*takmid*	Warm cloths or bags	Pain, wind
Vapour	*inkibab*	Breathing or sitting in steam from boiled herbs	The chest, the nose, the lower body
The sitting bath	*abzan*	Sitting in a warm decoction	The lower body
Burning	*kai*	A hot instrument laid on a point of the skin	A last resort for lasting pain

The hot bath deserves a word. The public bath of the Islamic city descends from the Roman bath. Ibn Sina devotes a chapter to it. A good bath, he says, has an old building, sweet water and a moderate heat. The first room cools and moistens, the second warms and moistens, and the third warms and dries. A person should pass through them by degrees and should not hurry out.

Treatment by food

Every food has a temperament, like every person. Chicken soup, honey, dates and most spices are warming. Cucumber, yoghurt, barley water and melon are cooling. A person with a hot illness is fed cooling food, and the reverse. In many illnesses the hakim prescribes food only. For a fever he gives barley water. For a weak patient he gives meat broth, soft eggs and pomegranate juice.

Treatment by drugs

Unani drugs are mostly plants, with some minerals and animal materials. The pharmacy rests on four rules.

Opposites. A drug is chosen whose temperament is opposite to that of the illness, and its strength is matched to the degree of the departure.

Degrees. Each drug is hot or cold, and dry or moist, in one of four degrees. Rose and violet are cold in the first degree. Opium is cold in the fourth, and deadly.

Correctives. A drug that helps one organ may harm another. For each such drug the books name a second that takes away the harm without spoiling the benefit. It is always given with the first.

Substitutes. For each drug the books name another that may be used when the first cannot be had.

The table gives some of the single drugs that every hakim uses.

Drug	Plant	Temperament	Chief use
Asl-us-soos	Liquorice root	Hot and moist	Coughs, a sore throat, the stomach
Banafsha	Sweet violet	Cold and moist	Fevers, dry coughs, headache from heat
Unnab	Jujube fruit	Balanced	To “clean the blood”; coughs
Sapistan	Cordia fruit	Cold and moist	Coughs, the chest
Gaozaban	Borage	Hot and moist	To strengthen the heart and lift the spirits
Gul-e-surkh	Red rose	Cold and dry	The heart, the stomach, the bowel; as rose water
Kasni	Chicory	Cold	The liver; fevers
Afsanteen	Wormwood	Hot and dry	The stomach and liver; worms
Aftimoon	Dodder	Hot and dry	To drive out black bile; low spirits

Drug	Plant	Temperament	Chief use
Ustukhuddus	French lavender	Hot and dry	Called the broom of the brain; headache, forgetfulness
Badranjboya	Lemon balm	Hot and dry	To gladden the heart; palpitation
Sana	Senna leaf	Hot and dry	A purge
Isabgol	Psyllium husk	Cold and moist	To soothe and regulate the bowel
Halela, *balela*, *amla*	The three myrobalans	Cold and dry	The stomach and bowel; the eyes; long life
Zanjabil	Ginger	Hot and dry	Digestion, wind, colds
Kalonji	Black seed	Hot and dry	Wind, the chest; a general remedy
Suranjan	Autumn crocus	Hot and dry	Gout and pain of the joints
Babchi	Psoralea seed	Hot and dry	White patches of the skin
Asrol	Indian snakeroot		Madness, sleeplessness, snakebite
Zafran	Saffron	Hot and dry	The heart, the mood, the eyes

Compound medicines are prepared in forms that have kept their Arabic names. A *majun* is a soft confection of powdered drugs in honey or syrup. A *khamira* is a lighter, whipped confection, often made with pearl or silk for the heart. An *itrifal* is a confection built on the three myrobalans. A *jawarish* is a spiced confection for digestion, and the best-known kind is named after Galen. A *sharbat* is a syrup, from which the word sherbet comes. An *arq* is a distilled water, such as rose water. A *joshanda* is a mixture of dried herbs sold in a packet to be boiled at home, the usual remedy for a cold in South Asia.

One class of preparations is dangerous. A *kushta* is a metal or mineral that has been burned to ash by a long process. Mercury, arsenic, lead, tin, gold and silver are so treated. The hakims

hold that the process removes the poison. Analyses have often shown otherwise. Chapter 75 returns to this.

What has been tested

Several Unani remedies and methods have been examined in modern trials. Some of the most important drugs of modern medicine came out of this pharmacy.

White patches of the skin. Hakims have long treated the loss of colour in patches of skin with the seeds of *babchi*. The seeds are rubbed on and taken by mouth, and the skin is then exposed to the sun. Egyptian folk healers did the same with a weed of the Nile delta. In the 1940s an Egyptian professor of medicine tested the weed and found that it worked. Its active compound and that of *babchi* belong to one chemical family. From this came the modern treatment of several skin diseases with such a compound and ultraviolet light.

Leeches. A German trial took fifty-one patients with painful, worn knees. Twenty-four were given one treatment with four to six leeches set round the knee. The other twenty-seven used a standard pain-relieving gel for four weeks. After a week the pain score of the leech group had fallen from about fifty-four to about nineteen on a scale of a hundred. That of the gel group had fallen from about fifty-two to about forty-two. The difference in pain did not last beyond the first weeks. Function and stiffness stayed better in the leech group for three months (Michalsen 2003). The saliva of the leech contains compounds that thin the blood and reduce inflammation. Leeches are licensed in the United States as a medical device, for use after operations in which small veins have been joined.

Cupping. Wet cupping is practised across the Islamic world, where it is also recommended in the sayings of the Prophet. An Iranian trial compared it with usual care in people with long-standing low back pain. Three months later those who had been cupped had less pain and less disability (Farhadi 2009). Reviews find the trials small and hard to blind. The direction of the results is consistent.

Single drugs. Senna and psyllium are standard remedies in every pharmacy of the world. The autumn crocus gave colchicine. The Indian snakeroot gave reserpine. Black seed has been tried in many small trials, with modest effects on blood sugar and blood fats.

The whole system. There is no trial that compares a full course of Unani treatment, with regimen, diet and the two stages of ripening and clearing, against other care. The research council of the Indian government has run many studies of single formulas for skin, joint and liver diseases. Most lack a comparison group.

What stands out in Unani medicine

1. **Health is a person's own temperament.** Treatment returns him to his own state and not to an average.
2. **Nature heals, and the physician serves it.** The Greek *physis* lives on as *tabiat*.

3. **Six conditions of life are examined in every case,** and the passions of the soul are one of the six.
4. **The pulse is read in ten features and heard as music.**
5. **A harmful humour is first ripened and then cleared.** The rule of timing of the Greek aphorisms is a daily procedure.
6. **Treatment has an order.** Regimen comes first, then food, then drugs, and the hand last.
7. **Every drug has a degree, a corrective and a substitute.**
8. **Drugs must be tested on people, on simple cases, many times.** Ibn Sina wrote the rules.

The medicine of Hippocrates and Galen died out in Europe in the nineteenth century. It lives in South Asia because the hakims never stopped practising it, and because it was written in a form that could be taught. It has lost the temple, as its Greek source did. It has kept the passions of the soul among the causes of illness. Its early physicians also wrote on the treatment of the mind. Al-Razi wrote a book on spiritual medicine. Ibn Sina is said to have cured a prince who believed himself a cow. He treated him as one, called in a butcher, and declared him too thin to slaughter until he ate.

41. Illness and cure in the humoral world

One medicine for two thousand years

From the death of Galen to the nineteenth century, the physicians of Byzantium, of the Islamic world and of Europe shared one account of illness. A physician of Cordoba in the year 1000 and a physician of Paris in 1700 would have understood each other at the bedside.

This chapter describes the illnesses as that account named them and the cures that it prescribed. It gives most room to bloodletting. That was the leading treatment for the whole period, and it was the first treatment whose results were counted.

Names that are still in use

The humoral physicians named an illness after what they held to be happening in the body. Many of their names are still used, though the meaning has changed. The table gives the old sense of some of them.

Name	The word means	What the humoral physicians understood by it
Catarrh	A running down	Phlegm that runs down from the brain into the nose, the throat and the chest
Rheumatism	From *rheuma*, a stream	A thin humour that runs into the joints and the muscles
Gout	From Latin *gutta*, a drop	A humour that falls drop by drop into a joint, most often of the great toe
Melancholy	Black bile	Fear and sadness without a cause, from black bile that has risen to the brain
Cholera	From *chole*, bile	A violent emptying of bile upward and downward
Hypochondria	The parts under the cartilage of the ribs	A melancholy that rises from the organs under the ribs, with wind and a sour stomach

Name	The word means	What the humoral physicians understood by it
Phthisis	A wasting	An ulcer of the lung, with cough, fever and loss of flesh
Pleurisy	From *pleura*, the side	A stabbing pain in the side, with fever and cough
Apoplexy	A striking down	A sudden loss of sense and movement, when a thick humour fills the chambers of the brain
Epilepsy	A seizing	Phlegm that shuts the passages by which air reaches the brain
Lethargy	Forgetfulness and idleness	A cold phlegm in the brain, with fever, deep sleep and loss of memory
Phrenitis	An illness of the seat of the mind	Raving with fever, from yellow bile in the brain or its coverings
Mania	Raving	Raving without fever
Hysteria	From *hystera*, the womb	Choking and loss of speech in a woman, from a womb that has moved or that holds back its seed
Dropsy	From *hydrops*, water	Swelling of the belly or of the whole body, when a chilled liver makes water in place of blood
Diabetes	A passing through	A melting of the flesh into urine, with a thirst that cannot be stilled
Asthma	A panting	Thick phlegm in the pipes of the lung

Name	The word means	What the humoral physicians understood by it
Cancer	A crab	A hard swelling with veins like the legs of a crab, from black bile gathered in one place
Typhus	Smoke, stupor	A fever with clouding of the mind
Malaria	Italian for bad air	A later name for the fevers of marshy places
Influenza	Italian for influence	A later name for an epidemic cold, laid to the influence of the stars

Three points stand out in these names. Each names a state of the body and not a cause that enters from outside. Many describe a humour on the move: it runs down, it falls, it rises. And one sign may receive several names, according to its course in time.

Fevers

To the humoral physician a fever was an illness and not a sign. Galen told three kinds apart by the seat of the unnatural heat. In a fever of one day the heat is in the spirits, and it passes. In a putrid fever the heat is in the humours, which rot. In a hectic fever it has taken hold of the solid parts, and the patient wastes away.

The putrid fevers were sorted by their course.

Fever	Return of the attack	The humour that rots	Where it rots
Continuous	The heat does not leave	Blood	Inside the vessels
Quotidian	Every day	Phlegm	Outside the vessels
Tertian	Every third day	Yellow bile	Outside the vessels
Quartan	Every fourth day	Black bile	Outside the vessels

The Greeks counted the day of the first attack as day one. A tertian fever therefore returns after two days, and a quartan after three. There were mixed kinds as well. The most feared joined a daily fever to a tertian.

The periods were observed correctly. The fevers that return on the third and on the fourth day are malaria. The parasite of malaria multiplies in the red cells of the blood, and a whole brood breaks out of the cells together. One kind of parasite takes two days for each brood. Another kind takes three. The shivering and the heat come when the brood breaks out. Modern medicine explains the period by the parasite. The humoral physicians explained it by the humour. Both begin from the same count of days.

The forecasts were sound as well. A quartan fever, the Roman writer Celsus remarked, kills no one. It could last a year. A tertian of the bad kind killed within days.

Chapter 38 gave the Hippocratic series of critical days. Galen wrote a work on them and tied them to the moon. The moon rules the tides and the monthly blood, he reasoned, and it rules the turning points of acute illness too. He reckoned with a week of a little less than seven days, and with its half. Physicians carried tables of the moon to the bedside until the seventeenth century.

The illnesses of black bile

The Hippocratic aphorism defined melancholy as fear and sadness that last a long time. Rufus of Ephesus wrote the first full account in the first century of our era. His book is lost, but Arabic physicians quoted it at length. About the year 900 a physician of Kairouan in North Africa, Ishaq ibn Imran, wrote a treatise on melancholy that drew on it. Constantine the African put that treatise into Latin, and through it the Greek doctrine reached Europe (Jackson 1986).

The picture hardly changed in fifteen centuries. The patient is afraid and sad without a reason. He does not sleep. He avoids company and seeks lonely places. He may wish for death and fear it at once. Often he holds one fixed false belief, while he reasons well on every other subject. Galen and his followers collected such beliefs. One man thought that he was made of earthenware and kept away from passers-by, so as not to be broken. Another feared that Atlas would grow tired and drop the sky.

Black bile was of two kinds. The natural kind is the cold and dry sediment of the blood, which the spleen draws off. The unnatural kind arises when any humour is burnt by too much heat. The burnt bile sends dark vapours up to the brain. Galen compared the effect to darkness. As the dark outside makes nearly everyone afraid, he wrote, so the dark humour throws a shadow over the seat of thought.

Its causes were much study, grief, loss, a lonely life, and heavy, dry food. Rufus noted that long thinking and sadness bring it on.

The cure was gentle. The patient was given a warm and moist regimen, to counter the cold and dry humour: baths, light and fresh food, a little wine, and sleep. He was to have cheerful company, music, travel and tasks that hold the attention. The black bile was purged with mild drugs, of which dodder of thyme was the favourite. Ishaq ibn Imran advised the physician to meet the patient's false ideas with reasonable and soothing words.

Robert Burton, an Oxford scholar who suffered from the illness himself, gathered the whole tradition into *The Anatomy of Melancholy* in 1621. His book ends with a rule of six words: "Be not solitary, be not idle."

The condition is the one now called depression. The old regimen of light, warmth, movement, sleep, company and occupation agrees with what trials of that illness have since found. The author's book on the body gives the figures for light and for exercise (Konstapel 2026c).

Love as an illness

The Arabic physicians described a condition close to melancholy and called it *ishq*, passionate love. Ibn Sina placed it in the *Canon* among the illnesses of the head. The patient's eyes are hollow and dry, and the lids move without rest. He laughs and weeps by turns. His breathing is broken by sighs. His pulse is uneven, and it changes when the beloved is named.

The cure is union with the beloved, where the law allows it. Where it does not, the physician prescribes work, hunting and disputes at law. He also prescribes the talk of old women who speak ill of the beloved.

Constantine the African translated a chapter on this illness, and European physicians took it over under a Latin name. It stayed in the textbooks until the seventeenth century. The stories of the pulse and the lover's name belong to it. They rest on an observation that any reader can repeat. A name can change the beat of a heart.

The womb that wanders

The Hippocratic books on the illnesses of women teach that the womb can move. When it is dry and light, from want of intercourse or from hard work, it turns toward the moist organs. If it falls upon the liver, the woman chokes, loses her voice and grinds her teeth. Her eyes roll, and she lies as if dead. The physician draws the womb down with sweet scents applied below. He drives it from above with foul ones held to the nose. He recommends marriage and pregnancy (King 1998).

Plato wrote in the *Timaeus* that the womb is a living creature that desires to bear children. Soranus denied that it moves at all. Galen agreed with Soranus about the movement and kept the illness. He laid it to seed or monthly blood that is held back and spoils.

The name of the condition, hysteria, outlived every theory of it. It left the official list of diagnoses of American psychiatry only in 1980.

Plague, bad air and catching

Humoral medicine explained an epidemic by the air. When many people fall ill at once, the cause must be what they share, and what all share is the air. Rotting marshes, unburied bodies and unusual weather corrupt it. A person whose humours are already out of order takes the corruption in with the breath. The Italian name for this bad air later became the name of a fever.

When the great plague reached Paris in 1348, the king asked the medical faculty for its opinion. The masters answered that the first cause was a conjunction of Saturn, Jupiter and Mars in the sign of Aquarius on 20 March 1345. It had drawn up evil vapours from the earth and the sea, and these had corrupted the air.

Some physicians who watched the plague closely reached another view. Ibn al-Khatib of Granada wrote that the plague passes from person to person. He said that this is known from experience, from study and from the evidence of the senses. A household fell ill after a garment or a vessel came into it. People who kept apart stayed well. He named prisoners in a closed building and nomads in their tents. A tradition of his religion denied contagion. He answered that a tradition must be read again when it contradicts what the senses plainly show.

The port cities acted on the same observation without waiting for the physicians. In 1377 the city of Ragusa, now Dubrovnik, ordered ships and travellers from plague districts to wait thirty days on an island before they entered. Other ports lengthened the wait to forty days. The Italian word for forty gave the practice its name, quarantine.

In 1546 Girolamo Fracastoro of Verona gave it a theory. Illness is carried, he wrote, by seeds. They pass by touch, by goods that have been touched, and through the air at a distance.

The practice ran a hundred and seventy years ahead of its theory and five hundred years ahead of the proof. Those who introduced it had watched who fell ill and who did not.

The logic of cure

Humoral treatment followed three rules.

The first was to treat by opposites. A hot illness needs a cooling regimen and cooling drugs. A dry illness needs a moistening one.

The second was to begin with regimen. Food, drink, rest, sleep, baths and a quiet mind came before drugs, and drugs came before the knife.

The third was to imitate nature. The physicians had watched how acute illnesses end. The fever breaks with a heavy sweat, a bleeding from the nose, a rush of urine, a loose stool or a fit of vomiting. They took these to be the body’s own way of driving out the cooked humour. Where the body did not manage it, the physician opened a way. He purged, he gave a vomit, he made the patient sweat, or he let blood.

This third rule made taking away the leading act of medicine for two thousand years.

Bloodletting

The Hippocratic writers let blood, with restraint. Erasistratus opposed it. Galen made it the first remedy for every illness that he laid to too much blood. That included most fevers and all inflammations. He judged the amount by the patient's strength, age and pulse and by the season. In a strong patient he let the blood run until the patient fainted.

The physicians of the Middle Ages built a system on this. A different vein was opened for each organ. Charts of a figure called the vein man showed the points. Almanacs gave the lucky and the unlucky days. A part of the body was not to be cut while the moon stood in the sign that ruled it. Healthy people were bled in spring and autumn to keep them well. Monks were bled several times a year by rule. The work itself was left to barbers.

A dispute of the sixteenth century shows how the matter was argued. The Arabic authors had taught that in a pleurisy blood must be let far from the pain, from the foot on the other side, and slowly. A Paris physician, Pierre Brissot, went back to the Greek texts. He argued that Hippocrates and Galen had let blood near the pain, from the arm on the same side, and freely. The quarrel lasted for decades. It was laid before a university and before the emperor Charles the Fifth. Both parties argued from the texts and from single cases. Nobody set the two methods side by side and counted the dead.

In the seventeenth and eighteenth centuries the practice grew heavier. The Paris physician Guy Patin is recorded to have bled his wife twelve times for an inflammation of the chest and his son twenty times for a fever. By one much-quoted account King Louis the Thirteenth received forty-seven bleedings in a single year, with more than two hundred purges and as many enemas.

Three episodes show the practice at its height.

In 1793 yellow fever struck Philadelphia and killed about one in ten of the inhabitants. Benjamin Rush, the most respected physician in the United States, treated it with large doses of mercury and with bleeding on a scale not seen before. He believed that the body holds twice as much blood as it does, and that four fifths of it may be taken. A journalist, William Cobbett, compared the city's lists of the dead before and after the method came into use, and attacked him in print. Rush sued him for libel and won.

In December 1799 George Washington woke with a swollen throat and could hardly breathe. He asked to be bled before his physicians arrived. In about twelve hours they bled him four times. By their own accounts they took between two and a half and nearly four litres. They also gave mercury and a strong vomit and raised blisters on his throat. He died that night (Morens 1999).

In the 1820s the Paris professor François Broussais taught that nearly all illness is an inflammation of the stomach and the gut. He treated it by hunger and by leeches set on the

belly, thirty or fifty at a time. In the single year 1833 France imported more than forty million leeches.

The leading medical journal of Britain was founded in 1823. Its name is *The Lancet*, the knife of the bloodletter.

The count

The treatment was tested in the end by counting. Four steps led there.

A wager. In 1648 a work by the Flemish physician Jan Baptist van Helmont, printed after his death, challenged the schools. Take two hundred or five hundred poor people with fevers and pleurisies out of the hospitals and the camps, he proposed. Divide them in two by lot. The physicians of the schools shall treat one half, with bleeding and purging. He will treat the other half without. Then count the funerals on each side. He offered a wager of three hundred florins. Nobody took it up.

A first report. A Scottish army surgeon, Alexander Hamilton, described in a thesis of 1816 how 366 sick soldiers had been given in strict turn to three surgeons. One of the three used the lancet and two did not. He reported thirty-five deaths under the first and six under the other two together. Historians doubt whether the comparison was carried out as he described it. The design was sound.

The numerical method. Pierre Louis, a Paris physician, kept exact records of every patient on his ward for years. In 1835 he published his analysis of seventy-seven patients with inflammation of the lung. All had been bled, some early in the illness and others late. If bleeding cut the illness short, as everyone taught, the patients bled early should have done better. Of forty-one who were bled in the first four days, eighteen died. Of thirty-six who were bled later, nine died. Those who were bled early and lived recovered about three days sooner. The first group was also older on average, as Louis noted. He concluded, with caution, that bleeding had far less effect on this illness than was believed (Morabia 2006).

The comparison. In 1849 Joseph Dietl in Vienna compared three groups of patients with the same illness. Of those who were bled, about one in five died. Of those who were given a strong vomit, the same share died. Of those who were given only rest and diet, about one in fourteen died.

Louis's conclusion was modest. His method was not. He had shown that a question about a treatment can be settled by counting like cases. Within fifty years the lancet was all but given up.

Why it lasted

Bloodletting did harm for two thousand years in the hands of the most careful observers of their age. The reasons bear on every medicine in this book (Wootton 2006).

It had an effect that could be seen at once. After a bleeding the hot skin cools, the hard pulse softens, the pain eases, and a raving patient lies quiet. The physician saw what he expected to see.

Most acute illnesses end of themselves. A patient who was bled and recovered counted for the treatment. A patient who was bled and died had been bled too late or too little.

The theory was complete. It explained the illness, the treatment, the success and the failure in the same terms. Nothing could happen that it could not explain.

The authority was old. To doubt the lancet was to doubt Hippocrates and Galen.

Nobody counted. The bedside gives a physician single cases, and memory keeps the cases that fit.

Chapter 39 ended with the remark that a system in which every part fits is not for that reason true. Bloodletting is the proof. Chapter 74 takes up what follows from it for the testing of the medicines in this book.

What is left of it

Three uncommon illnesses are still treated by opening a vein. In the first the body stores too much iron. In the second it makes too many red cells. In the third a fault in the making of the red pigment of the blood marks the skin. In all three the letting of blood takes away what is in excess, and it works.

There is one modern trial in an illness of the kind for which the old physicians bled. German researchers took sixty-four people with a large waist, high blood pressure and raised blood sugar. About half had between half a litre and four fifths of a litre of blood taken in two sessions. Six weeks later their upper blood pressure had fallen from about 148 to about 130. In the others it had not changed (Houschyar 2012). The full-blooded, red-faced, heavy patient of the humoral books, for whom a bleeding in spring was prescribed, may have been a sound observation.

Purges, vomits and metals

Purging was the second great means of taking away.

The Greeks purged the mad with hellebore. The plant is violent, and the town of Anticyra, where it grew, became a byword. To tell a man to sail to Anticyra was to call him mad.

Antimony, a metal that brings on violent vomiting, divided the physicians of Paris for a century. The faculty banned it in 1566. In 1658 the young King Louis the Fourteenth fell gravely ill, was given antimony, and recovered. In 1666 the faculty voted to allow it.

Mercury did the most harm. A white salt of mercury called calomel was the chief purge of the eighteenth and nineteenth centuries. It was given until the gums swelled and the saliva ran. The physicians took the running saliva for the bad humour leaving the body. It was mercury

poisoning. Teeth fell out, and in children the cheek sometimes rotted. In 1863 the chief medical officer of the Union army in the American Civil War struck calomel from the army's list. The outcry among physicians cost him his post.

The French playwright Molière put the whole of learned practice into three lines of mock Latin in 1673. The candidate for the doctor's cap is asked how he will treat one illness after another. He answers each time that he will give an enema, then bleed, then purge.

The great antidote

One compound drug stood above all others for eighteen centuries. Its story begins with Mithridates, king of Pontus on the Black Sea, who feared poison and tested antidotes on condemned prisoners. He took a mixture of them every day. A physician of the emperor Nero added the flesh of vipers and raised the number of ingredients to sixty-four. The result was called theriac. Galen prepared it for Marcus Aurelius, who took a dose every day.

Theriac was held to protect against every poison and to cure most long illnesses. It had to ripen for years. In Venice, Bologna and Cairo it was made in public, under the eyes of magistrates, with the ingredients laid out for inspection. One of the sixty-four was opium, which may explain a part of its reputation.

In 1745 the London physician William Heberden published a short attack on it. He called it a heap of ingredients thrown together without reason. It left the official drug list of London in 1788, and that of Paris only in 1884.

Reading the flask

The flask of urine was the badge of the medieval physician, as the stethoscope is today. A chart in the form of a wheel showed twenty colours of urine, from clear as well water to black, with the meaning of each. The flask was read as an image of the body. The top layer stood for the head, the next for the chest, the middle for the belly, and the sediment for the lower parts.

Some physicians judged from a flask that a servant brought and never saw the patient. Critics inside the profession attacked the habit, and it fell out of use in the seventeenth century.

One reading of the flask proved exact. In 1674 the English physician Thomas Willis reported that the urine of patients with the wasting thirst tastes sweet, as if it held honey or sugar. Indian physicians had recorded the same sign many centuries earlier, as chapter 59 tells.

What the humoral physicians did well

The harm of the lancet and of mercury should not hide what this medicine did well.

1. **Regimen.** It examined sleep, food, movement, air, what the body keeps and lets go, and the passions of the soul, in every patient.

2. **The person.** It held that each person has a temperament of his own, and that a treatment must fit the person, the age, the season and the place.
3. **Time.** It watched the course of an illness day by day and knew when to wait.
4. **Forecast.** It told the patient and the family honestly how an illness would end.
5. **Description.** It left accounts of illnesses so exact that they can be recognised today.
6. **The hospital.** It built houses where the sick poor were fed, washed, kept warm and allowed to rest.
7. **The mind.** It treated grief, fear and love as causes of illness, and company, music and occupation as cures.

What stands out in the humoral world

1. **An illness was a state of the whole person.** It was named by its humour, its place and its course.
2. **Time was part of every diagnosis:** the period of a fever, the critical day, the season and the age of life.
3. **The cure imitated the body's own way out.**
4. **Taking away became the leading act,** by the vein and by the bowel.
5. **The harm was not seen for two thousand years,** because cases were not counted.
6. **The count came from the margins:** al-Razi's unbled group, van Helmont's wager, the wards of Louis and Dietl.
7. **Practice sometimes ran ahead of theory.** The port cities kept the plague out before anyone could say why it worked.

42. Europe after Galen: cloister, shrine and fire

The cloister

When the western half of the Roman empire fell apart, its cities shrank and its physicians disappeared. For five hundred years the written medicine of Latin Europe was kept in monasteries.

The Rule of Saint Benedict, written about 530, orders that care of the sick shall come “before all things and above all things”. They are to be served as if they were Christ himself. Every house of the order had an infirmary, a brother in charge of it, and a garden of healing plants.

A plan for an ideal monastery, drawn about 820 and kept at Saint Gall in Switzerland, shows what was intended. In one corner stand an infirmary with its own chapel and kitchen, a house for the physician, a house for bloodletting, and a herb garden of sixteen beds. Each bed is labelled with the name of its plant. Among them are sage, rue, mint, fennel, cumin, lovage, rosemary, the lily and the rose.

About the same time the monks of Lorsch on the Rhine compiled a book of recipes. Its preface defends medicine against those who held that to treat an illness is to oppose the will of God. Healing, the writer answers, is a work of charity, and the plants were made for it.

Walahfrid Strabo, abbot of Reichenau on Lake Constance, wrote a poem about his own small garden about 840. It goes through two dozen plants one by one, and tells how each grows and what it cures. Sage comes first and the rose last.

The medicine of the cloister was simple. It consisted of rest, warmth, food, a few plants, bleeding by the calendar, and prayer. Its texts were fragments of the Greek authors in Latin. What it kept alive was the duty to nurse.

The leechbooks

The oldest medical books in a living European language are English. The word for a physician in Old English was *læce*, a leech. The chief collection, known as Bald’s Leechbook, was written about 950, probably at Winchester (Cameron 1993).

It is arranged from the head to the feet. Its remedies draw on Latin sources and on native practice. Most are plants in ale, wine, milk, butter or honey. Some are charms. Many join the two.

The charm of the nine herbs. A text in another collection names nine plants, among them mugwort, plantain, nettle, chamomile, crab apple and fennel. It addresses each plant in turn and reminds it of what it has done. Mugwort is told that it is the oldest of plants and has power against three and against thirty. The charm tells how the god Woden took nine twigs and struck a snake, so that it flew into nine parts. The healer sings the charm three times over

each plant before he prepares it. He sings it into the patient's mouth, into both ears, and over the wound. Then he lays on the salve.

Against a sudden stitch. Another charm is for a stabbing pain that comes without warning. The cause is a small spear, shot by elves, by gods or by witches. The healer boils feverfew, red nettle and plantain in butter. He tells how mighty women rode loud over the hill and sent their screaming spears. After each part he calls: "Out, little spear, if you are in here!" He ends by telling the spear to fly away to the mountain.

The reader has met this illness in many places. Chapter 8 listed it as the fourth of ten points on which the old medicines agree: an object has entered the body and must be taken out.

The eye salve. One recipe of Bald's Leechbook is for a lump on the eyelid. Take equal amounts of garlic and of another plant of the onion family, and pound them well together. Add wine and the gall of a bullock in equal amounts. Let the mixture stand in a brass vessel for nine nights. Strain it through a cloth, and put it on the eye with a feather at night.

In 2015 a group of microbiologists and a scholar of Old English at the University of Nottingham made the salve exactly as written. They tested it on the bacterium that causes such lumps, including a strain that resists the usual antibiotics. The salve killed the bacteria in the laboratory and in infected wounds of mice. No single ingredient did so. The nine nights of standing were needed as well (Harrison 2015).

The finding does not show that the leechbooks were right in general. It shows that a recipe a thousand years old can hold exact knowledge in its details: which ingredients, in what vessel, for how long. A test that changes those details tests another remedy.

Salerno

In the tenth century a community of physicians grew up at Salerno, a port south of Naples. A legend says that it was founded by four masters, a Greek, a Latin, a Jew and an Arab. The legend is not history, but it describes the place. Southern Italy lay where the four worlds touched.

Salerno became the first school of medicine in Europe. Its masters wrote short practical handbooks. Women studied and taught there. One of them, Trota, wrote on the illnesses of women in the twelfth century. Under the name *Trotula*, a set of three texts connected with her was the standard work on the subject for four hundred years (Green 2001).

About 1077 a merchant from North Africa arrived, who is known as Constantine the African. He brought Arabic medical books, became a monk at Monte Cassino, and spent the rest of his life putting them into Latin. Through him Europe received a large part of what the Arabic physicians had made of Galen. His translations include the treatise on melancholy and the chapter on lovesickness that the last chapter mentioned.

The best-known product of Salerno is a poem. The *Salernitan Rule of Health* gives the regimen of the six necessary conditions in rhymed Latin lines that could be learned by heart. It grew with each copying, from a few hundred lines to several thousand, and it was printed in hundreds of editions. It advises its reader to keep the head free from care and the heart from anger, to drink little wine, to eat a light supper, and to rise early. An English version of 1607 has the lines that are still quoted: use three physicians, “first Doctor Quiet, next Doctor Merryman, and Doctor Diet”.

The university and the licence

From the thirteenth century medicine was taught at the new universities of Bologna, Montpellier, Paris and Padua. The students read a fixed set of short texts by Hippocrates and Galen with Arabic introductions, and then the *Canon* of Ibn Sina. They learned by commentary and formal dispute. They became skilled in argument and in regimen. They opened few bodies and tried few remedies (Siraisi 1990).

In 1231 the emperor Frederick the Second issued a law for his kingdom of Sicily. Nobody might practise as a physician without three years of logic and five of medicine. He then had to practise for a year under an experienced master and to pass an examination by the masters of Salerno. The physician was to visit his patient at least twice a day, to treat the poor without a fee, and to own no share in a pharmacy.

The law drew a line that still exists. On one side stood the licensed physician, who had learned from books in Latin. On the other stood everyone else who healed: the surgeon, the barber, the midwife, the bonesetter, the seller of herbs, the wise woman.

In 1322 the medical faculty of Paris brought a woman named Jacoba Felicie before a church court for practising without a licence. Witnesses, her own patients, testified that she had cured them after licensed physicians had failed. She had examined their urine and their pulse as a master would. She had taken no fee until they were well. The court did not ask whether her patients had recovered. It asked whether she held a degree, and it forbade her to practise.

The learned medicine of the humours was therefore the medicine of a small group. Until the nineteenth century most people in Europe were treated at home or by a neighbour who knew plants. Others went to a barber, to a priest, or to the shrine of a saint.

Hildegard of Bingen

Hildegard was born in 1098 in the Rhineland, the tenth child of a noble family. As a child she was given to the Church and was enclosed with an older nun beside a monastery of monks. She became head of the small community of women that grew there. About 1150 she moved it to a house of her own near Bingen. She died in 1179. In 2012 the Catholic Church declared her a saint and one of its teachers (Flanagan 1989).

She said that she had seen visions from early childhood. She kept silent about them for most of her life. In her forty-third year, she relates, a voice from a fiery light ordered her to write down what she saw and heard. She refused, out of doubt and out of fear of what people would say. She fell ill and lay in bed until she began to write. Then her strength returned. The book took ten years. A commission sent by the pope examined it and approved it.

The pattern is that of chapter 10. A person receives a call, refuses it, falls ill, and recovers on accepting it.

Late in life she described how she saw. She did not fall into a trance. She saw awake, with her eyes open, by day and by night, and she remained aware of her surroundings. What she saw appeared in a light that she called the shadow of the living light. It had no height, length or breadth that she could measure. Writings, words and deeds showed in it as the stars show in water. Sometimes, and not often, she saw within it another light, which she called the living light itself. While she looked at that, she wrote, all sadness and pain left her. She felt like a young girl and not like an old woman.

Some physicians of the last century explained her visions as attacks of migraine. They pointed to the shining points and broken rings in the paintings that were made of them. She herself told her visions apart from her illnesses, of which she had many.

Her books on medicine. Between about 1150 and 1160 she wrote on nature and on healing. The work survives as two books. The *Physica* describes plants, trees, stones, fish, birds, beasts and metals, each with its qualities and its use. The second book, *Causes and Cures*, describes the making of the world and of man, the humours, the illnesses and their remedies (Throop 1998).

She kept the Greek frame of four qualities and four humours and gave it her own colour. Three features stand out.

Greenness. Her central word is *viriditas*, greenness. It is the fresh, moist, growing life of a plant in spring. She saw the same life in the human body and in the soul. A healthy person is green. Illness and sin are a drying out. The work of the healer, and of the patient, is to bring the green back.

The fall into black bile. She tied the humours to the story of the first man. Before he broke the command, she wrote, what is now bile in him shone like crystal, and what is now black bile shone like the dawn. With the breaking, the bile turned bitter and the black bile thickened in his blood. Sadness and despair came from it. In this account illness is a condition that all people share. It belongs to the history of the soul as much as to that of the body.

Measure. She held that the mother of the virtues is discernment, the keeping of the right measure. She disapproved of harsh fasting. She prescribed warm cooked food, enough sleep, and work in turn with rest.

Her remedies are plain. Spelt is her best grain. It makes good flesh and good blood, she says, and a cheerful mind. Fennel makes a person glad, however it is eaten. Galangal is for pain at the heart. She gives precious stones to be held in the mouth or laid on the skin. Many of her uses of plants agree with the common practice of her time, and some are her own.

Music. Hildegard composed about seventy-seven songs for her nuns and a sung play. In the play the virtues sing, and the devil alone cannot. He only shouts. Near the end of her life the clergy of Mainz forbade her house to sing the services. She wrote a letter in protest. Before the fall, she said, the voice of Adam sounded with the voices of the angels. Music was given so that people might remember that sound. The soul, she wrote, is symphonic. To silence singing is to do the work of the devil.

A medicine in her name is practised in Germany, Austria and Switzerland today. An Austrian physician put it together from her books in the second half of the twentieth century. It uses spelt, her mixtures of spices, wines boiled with herbs, and bleeding by her rules. It has hardly been tested.

Saints, shrines and the king's hand

The temple sleep of chapter 37 did not end with the old gods. It changed its patrons. From the fourth century the sick slept in churches of the saints Cosmas and Damian, twin physicians who took no fee. Near Alexandria two other saints had a shrine on the site of a temple of Isis. A writer of the seventh century collected seventy of their cures. The saints appear to the sleeper, examine him, and tell him what to do. Sometimes they treat him on the spot.

In the Latin West every region had its healing shrines. Certain saints were called on for certain ills: one for the plague, one for the eyes, one for the throat, one for the falling sickness. The sick travelled to the tomb or the relic, touched it, prayed, and often slept beside it. Records of the cures were kept at the shrine and read to the pilgrims, as the tablets were at Epidaurus.

Kings healed too. From the eleventh century the kings of France and of England touched people who had a swelling of the glands of the neck, which was called the king's evil. The king laid his hands on the sick person, and a coin was hung round the neck. The rite lasted seven hundred years. Charles the Second of England touched more than ninety thousand people in his reign (Bloch 1973).

The best-recorded shrine is modern. In 1858 a girl of fourteen at Lourdes in the Pyrenees saw a lady in a cave, and a spring was found there. Millions travel to it every year. Since 1883 a medical office at the shrine has examined people who say that they were cured. Some seven thousand have reported a cure. The Church has recognised about seventy as beyond explanation. Physicians who went through the files concluded that the recognised cures are well documented and are not understood (François 2014).

The medicine of the Prophet

Beside the Greek medicine of the hakims, the Islamic world has a second tradition. It rests on the sayings of the Prophet Muhammad about health and illness, which were collected in the ninth century. Scholars of religion later arranged them in books called the medicine of the Prophet. The best known is by Ibn Qayyim of Damascus, who died in 1350 (Ibn Qayyim 1998).

The ground is a saying that God has sent down no illness without sending down its cure. Illness is therefore not a punishment that must be borne without help. To seek treatment is right.

The remedies are few. One saying names three: a drink of honey, the cut of the cupping knife, and burning with a hot iron. The Prophet adds that he forbids the burning to his people. Another saying holds that black seed cures every illness except death. The Qur'an says of the bee that a drink of many colours comes from its body, in which there is healing for people.

The regimen is moderation. A much-quoted saying divides the belly in three: a third for food, a third for drink, and a third for breath.

The second part of this medicine is the word. The sick are treated by recitation of the Qur'an, above all its opening chapter and its two last chapters, which ask for refuge. The reciter breathes on the patient, or on water that the patient then drinks. This is called *ruqya*. It is used for illness of any kind. It is used above all for harm from the evil eye, from sorcery, and from the unseen beings called jinn. The eye, a saying states, is real.

Ibn Qayyim distinguishes two kinds of illness, of the heart and of the body. He distinguishes three kinds of remedy: natural, divine, and the two joined. He holds that a physician of the body who ignores the heart treats half a patient.

Both parts are in full use today. Cupping clinics and reciters work in every Muslim country, beside the hospital and often for the same patients. Honey and black seed are household remedies from Morocco to Indonesia.

Honey has been tested. Chapter 36 gave the evidence for honey on wounds. In an American trial, 105 children with a cough at night were given honey, a common cough medicine, or nothing before bed. The parents rated honey best for the cough and for sleep. It was clearly better than nothing. The cough medicine was not (Paul 2007).

Jewish medicine

The Hebrew Bible calls God the healer of his people. It gives the priest one medical task. A person with a suspect mark on the skin is shown to him. The priest looks, shuts the person away for seven days, and looks again. He does not treat. He reads, waits and reads again, and then he declares the person clean or unclean.

A Jewish teacher of the second century before our era, Ben Sira, settled the question whether a believer may use a physician. Honour the physician, he wrote, for the Lord created him. The Lord brought medicines out of the earth, and a sensible person will not despise them. The patient is to pray, to set his life in order, and then to call the physician.

The Talmud holds many remedies and two rules of lasting weight. The saving of a life sets aside nearly every other commandment, the Sabbath included. And to visit the sick is a duty for everyone. One teacher says that a visitor takes away a sixtieth part of the patient's suffering.

The greatest Jewish physician was Moses Maimonides. He was born at Cordoba in 1138, fled from persecution, and settled near Cairo. He became a physician to the court of Saladin. In a letter of 1199 he describes his day. He rides to the palace in the morning. When he comes home in the afternoon, hungry, his halls are full of people, Jews and others, the high and the low. He eats and then treats them until night, at last lying down from weariness. He died in 1204.

He wrote ten medical works in Arabic. They follow Galen and correct him where his own experience differed. The *Regimen of Health* was written for a son of Saladin who suffered from low spirits, poor digestion and fear of death. Its third chapter concerns the soul. Strong passions, he writes, change the body visibly. A physician should attend first to the state of the patient's mind. Drugs and diet do not cure sadness and fear. The cure lies in a right view of life, which philosophy and the teachings of religion give. He also holds that an illness which can be treated by diet alone should not be treated with drugs (Rosner 1998).

Jewish physicians served caliphs, kings and popes throughout the Middle Ages. They moved between the Arabic, the Hebrew and the Latin worlds and carried the medical books across.

Paracelsus

On the evening of 24 June 1527 the students of Basel lit their midsummer fire. The town physician, newly appointed and already at odds with the faculty, threw a great medical textbook into it. By most accounts it was the *Canon* of Ibn Sina. The man called himself Paracelsus.

He was born in 1493 at Einsiedeln in Switzerland as Theophrastus of Hohenheim, the son of a physician. He grew up in a mining district of Austria and learned about metals and about the illnesses of miners. He travelled through most of Europe and served as an army surgeon. He learned, he said, from barbers, bath keepers, midwives, alchemists and wise women as well as from doctors. At Basel he lectured in German and not in Latin. He lasted less than a year. He wandered for the rest of his life and died at Salzburg in 1541. Most of his books were printed after his death (Pagel 1958).

He rejected the four humours, and with them the whole medicine of the schools. What he put in their place was partly old and partly new.

Experience before books. The physician learns from nature and from the sick, he taught, and not from Galen. He must travel, since illnesses differ from land to land. What nature teaches to one who works with attention he called the light of nature.

Illness has a seat. For the humoral physician an illness was a state of the whole person. For Paracelsus each illness is a being of its own. It enters or arises at a place in the body, and it has its own remedy. He wrote the first book on an illness of a trade, the lung sickness of miners. He laid it to the vapours of the metals.

Three principles. In place of four humours he set three principles, which he named sulphur, mercury and salt. He explained them by a burning piece of wood. What burns is sulphur. What rises as smoke is mercury. What stays as ash is salt. Every body, of a metal, a plant or a man, is made of the three. Health is their union. Illness is their coming apart. He also read them as soul, spirit and body.

The alchemist within. In the stomach works a power that he called the *archeus*. It does what an alchemist does at his furnace. It separates what nourishes from what poisons in everything that is eaten. When it fails, a sediment is left, like the crust that wine leaves in a cask. He laid the stone, gout and stiff joints to this crust.

Five origins of illness. An early work lists five spheres from which an illness may come. The first is the stars. The second is poison, which is in all food. The third is a person's own constitution. The fourth is the spirit: the will and the imagination of the person himself or of others. The fifth is God. A physician must know from which of the five an illness comes, since each asks for another treatment.

The dose. His enemies accused him of giving poisons, since he used mercury, antimony and arsenic. He answered that everything is poison and nothing is without poison. The dose alone makes that a remedy is not a poison. The sentence is the foundation of the modern science of poisons.

Likeness and the sign. Galen cured by opposites. Paracelsus taught that a remedy is found by likeness. Nature marks each plant with a sign of what it is for. The leaf of Saint John's wort, held to the light, seems pricked full of holes. He read this as a sign that the plant heals pricks and wounds. He added that it drives off the phantoms that bring a person to despair.

Two bodies. A human being, he wrote in his largest work, has two bodies. One is visible and comes from the elements. The other is invisible and comes from the stars. He called it the sidereal body. It carries sense, thought and skill. In sleep it is free, and what it meets there appears as dreams. After death it dissolves slowly. The soul, which comes from God, is a third.

The unseen illnesses. One treatise deals with illnesses that have no visible cause. Imagination and belief, he says, can make a healthy body ill and an ill body well. He observed that sick people are cured at shrines and by charms, and he ascribed the cure to the belief of the patient. It works, he noted, whether its object is true or false.

The wound. As a surgeon he held that a wound heals itself. The body has its own balm. The surgeon's task is to keep the wound clean and to protect it from outside harm. The surgeons of his time burned gunshot wounds with boiling oil and held that pus was a good sign.

After his death his followers took this one step further. They prescribed a salve that was put on the weapon which had made the wound. The wound itself was only washed and bound. Patients treated so did well, and the weapon salve was famous for a century. The wound had been left alone.

What became of his plant. Saint John's wort is now among the best-tested herbal remedies. A review of twenty-nine trials with more than five thousand patients compared it with a dummy pill and with standard drugs in depression. It was better than the dummy and as good as the drugs, with fewer unwanted effects (Linde 2008).

Paracelsus was wrong about much. His three principles explained no more than the four humours had. His mercury did great harm. But he broke the authority of Galen and brought chemistry into medicine. He also kept the unseen side of illness inside medicine at the time when the schools were letting it go. The rule of likeness in homeopathy and the medicine of Rudolf Steiner, both described in the appendix, resemble his teaching.

Van Helmont

Jan Baptist van Helmont of Brussels, who lived from 1580 to 1644, carried the work on. He kept the *archeus* and made it the ruler of the whole body, with lesser ones in each organ. An illness begins, he taught, when the *archeus* forms a false image, an idea of illness, and then builds that image into the body. A fright or a fit of anger can plant it. The remedy must reach the *archeus* and quiet it.

He was an experimenter as well. He planted a willow of five pounds in two hundred pounds of dried earth and gave it only rain water. After five years the tree weighed 169 pounds, and the earth had lost two ounces. He coined the word gas. He showed that an acid digests the food in the stomach. And he proposed the wager of chapter 41.

The end of the humours

The humoral system was not refuted at one stroke. It was taken apart piece by piece over three hundred years.

Year	Who and where	What changed
1543	Andreas Vesalius, Padua	Human anatomy is drawn from human bodies. Galen's errors are shown

Year	Who and where	What changed
1628	William Harvey, London	The blood goes round the body in a circle, driven by the heart
1660s	Thomas Sydenham, London	Illnesses are kinds, like the kinds of plants, each with a course of its own
1761	Giovanni Morgagni, Padua	Each illness has a seat in an organ, which is found after death
1800	Xavier Bichat, Paris	The seat is in the tissues of which the organs are made
1816	René Laennec, Paris	The stethoscope. The physician hears the seat in the living patient
1835	Pierre Louis, Paris	Treatments are judged by counting
1858	Rudolf Virchow, Berlin	The seat is in the cell
1860 to 1885	Louis Pasteur and Robert Koch	Many illnesses have a living cause that enters from outside

By 1900 no school of medicine in Europe taught the humours. They left their words behind: sanguine, phlegmatic, choleric and melancholy; good humour and bad temper; a cold; a complexion.

What went with them

The new medicine found illness in an organ, then in a tissue, then in a cell, and at last in a molecule. Its gains are beyond dispute. Part I of this book described what the same step left out.

Four parts of the old medicine had no place in the new and were dropped with the humours. The first was the regimen of the six conditions. The second was the person’s own temperament. The third was the passions as causes of illness. The fourth was the healing power of nature, which the physician serves.

Each has come back under a new name. The six conditions returned as the medicine of the way of life. Temperament returned as the search for the treatment that fits the single patient.

The passions returned as the study of mind and body together. The healing power of nature never left the practice of good physicians.

In the nineteenth century, healers outside the schools picked up what the schools had dropped. A Bavarian priest, Sebastian Kneipp, built a cure on five pillars: water, plants, movement, food, and an ordered life. From him and from others came the nature cure, and in America naturopathy. The appendix describes them. They are the heirs of the Hippocratic regimen, cut loose from the humours.

What stands out in Europe after Galen

1. **The cloister kept the duty to nurse** when the learning was lost.
2. **A recipe can hold exact knowledge in its details.** The eye salve worked only when it was made as written.
3. **The licence divided healers** into those who had read the books and everyone else.
4. **The temple sleep went on** at the shrines of the saints, with the same nights, the same visits and the same records.
5. **Hildegard read illness as a drying out** and health as greenness, and she saw by a light that took her pain away.
6. **The religions kept a medicine of the word** beside the medicine of the drug. Their physicians held that to treat the body alone is to treat half a patient.
7. **Paracelsus set three in the place of four,** gave each illness a seat, gave man a second body, and noticed that belief cures.
8. **The humours were ended by the opened body and by the count.** Regimen, temperament, the passions and the healing power of nature went out with them. They have been coming back since.

43. Read with the Net and VALIS

What this chapter does

This chapter lays the Vacuum.Net theory and the reports of VALIS beside the medicines of the last eleven chapters. It follows the seven questions of chapter 8, as chapters 23 and 31 did.

Part IV differs from the two parts before it. It covers three thousand years, and in the middle of them a medicine changed its direction. The healers of Mesopotamia and Egypt and the priests of Asklepios read an illness as a message from the other half of the world. The Hippocratic physicians and their heirs read it as a state of a body in its surroundings. The chapter reads both, and the turn between them.

All of it is reading. The scribes of Nineveh and the hakims of Delhi did not have the theory. Where the shapes agree, the chapter says so and gives the grounds. The seventh section lists what does not fit. In this part that section carries more weight than in the others, because the medicine of the humours did harm for a very long time.

1. The counts

Two pairs. Greek medicine counts in fours. There are four elements, four qualities, four humours, four seasons and four ages of life. The four come from two pairs of opposites: the hot and the cold, the dry and the moist. Each humour joins one member of each pair.

Chapter 1 gave three elementary ways in which the strand closes. One of them is the meeting: a state closes with its opposite. Chapter 2 showed that forms of this kind double when they are merged. It called the series two, four, eight the ladder of the meeting.

The Greek count stands on the first two steps of that ladder. The idea behind it is the idea of the meeting itself. Alcmaeon said that health is the equal standing of the opposed powers and that illness is the sole rule of one. The Hippocratic writers said that a person is well when the humours are mixed, and ill when one of them stands apart. In the words of the theory, a quality that has found its opposite is closed. A quality that stands alone is open, and what does not close passes on as tension.

The treatment by opposites follows from this. To a state that stands alone the physician offers its partner.

The mean. Galen added a step that the fours hide. For each pair he allowed three states. The one side prevails, or the other prevails, or neither does. Two pairs with three states each give his nine temperaments.

The theory counts in the same way. At each place the strand has one of three values: with the first passage, against it, or neither. Galen’s “neither” is the theory’s rest. His table of nine is the complete set of words of two places.

One of the nine is at rest in both pairs. Galen calls it the even mixture and says that hardly any living person has it. The theory agrees on the point. A living form is a winding, and a winding has a direction. Rest in every place is the state in which nothing turns.

A person's own direction. The third axiom of the theory reads: "The first passage fixes the direction; later passages are taken relative to it."

Unani medicine teaches the same of a person. Each person has a temperament from birth. It is his health. Illness is a departure from his own temperament and not from an average. A cool and moist person who is made hot and dry has not been cured.

This is the plainest agreement between the humoral medicine and the theory. Health is not a position on a common scale. It is a relation to a first passage. The physician who asks what kind of person this is, before he asks what illness this is, asks for the direction against which everything else in that body is read.

The fourth axiom adds that the response of a medium depends on its state and is not a constant. The humoral physicians built their whole pharmacy on that. A drug has no effect in general. It has an effect on a person of a given temperament, at a given age, in a given season. Ibn Sina's rules for the testing of a drug begin from it.

Three seats. Galen's body has three ruling organs, and each has its spirit. The natural spirit sits in the liver, the vital in the heart, and the spirit of the soul in the brain. Each spirit is made from the one below it, worked finer.

The fifth axiom says that the net obeys the same rules at every scale, and that what does not close at one scale is the material of the next. Galen's three spirits are three depths of one breath, each made from what the depth below hands up. The theory does not single out the liver, the heart and the brain. It recognises the shape: one breath at three depths, each feeding the next.

Other threes appear in this part. The Egyptian surgeon gives one of three verdicts. The Methodist physician knows three states of the body. Paracelsus has three principles. The theory does not hold that every list of three is a ring. In a ring each member hands on to the next, and the third hands back to the first. None of these lists goes round in that way. They are three values or three depths.

The count of days. The humoral physicians named fevers by the period of their return: every day, every second day, every third day. Chapter 41 explained that the periods are real. The parasite of malaria multiplies in step with the day, in rounds of one, two or three days. It has been shown to keep a clock of its own, which it sets by the daily rhythm of the body it lives in (Rijo-Ferreira 2020).

The theory reads a rhythm that returns as a form that closes in time. The book on the body reads health as rhythms that lock in whole numbers. A fever of this kind is a foreign rhythm, locked to the day of its host in a whole number. The old physicians classified the illness by

that number. They read its phase before they read anything else, and their forecasts rested on it.

The numbers one, two and three are also the lengths of the three elementary closures of chapter 1. The theory does not predict the breeding time of a parasite, and the agreement may be chance.

Halving. The Egyptian pharmacist measured by a half, a quarter, an eighth, and so on to a sixty-fourth. That is the ladder of the meeting again. The scribes knew that the six fractions do not add up to the whole. They told that Thoth, the god who reads and reckons, made up the missing part. The theory has a statement of the same shape. What does not close at one depth is not lost. It is the material of the next.

2. The reading

Part IV shows three ways of reading a sick person. They follow one another in time.

The sign that is sent. The Babylonian handbook reads the body as it reads the sky and the liver of a sheep. Every entry has one form: if this is seen, then that is meant. The reading begins before the healer has reached the house. What he meets on the road belongs to the case. The reading ends in a name of a particular kind: the hand of a god, of a ghost, of an oath.

Chapter 31 noted that a sign of Ifá is an address. The Babylonian name is an address as well. It does not say what is wrong in the body. It says where in the wider order the matter lies open: with the family's dead, with a broken word, with a neglected god. The theory holds that every form has one address and that an address can be given at any depth. The handbook gives the address at the depth of a person's dealings. It leaves the body to the second healer.

The hand that examines. The Egyptian surgeon reads by touch. He probes the wound, moves the limb, and lays his fingers on the vessels to learn what the heart says in them. His cases have a fixed order: the examination, the naming, the verdict, the treatment. Nothing is done before the verdict is spoken.

The first rule of cure in chapter 4 is to read before acting. The Edwin Smith papyrus is the oldest text in which that rule is the written form of every case. It adds a refinement that the rule implies. One of the three verdicts is not to treat.

The course in time. The Hippocratic physician reads what neither of the others had read with such care: how the illness moves from day to day. He notes the season, the wind and the water. He counts the days and waits for the crisis. Chapter 38 called him the first master of the window. He stands outside and observes.

What he observes is phase. Chapter 4 gave that name to the layer of cure that concerns rhythm, timing and return. No medicine before the Greek had made the timing of an illness the main object of its reading.

The pulse. With Herophilus the physician lays his fingers on the artery, and the reading changes again. The author holds that reading the pulse is a locking of phase. The reader's attention falls in step with the beat that he feels. What he then perceives is the beat as it stands against his own.

The Greek and Arabic physicians described the pulse in terms that fit this view. Herophilus timed the two parts of each beat as long and short syllables. Ibn Sina wrote that the pulse has a musical nature and that a trained physician perceives its ratios with his fingers. Neither counted beats in a minute. They listened for a relation.

Chapter 5 quoted the essay on the senses. To perceive is to close a seam, and "what does not fit is simply not perceived". A physician who has felt many thousands of pulses carries the healthy beat in his fingers. A beat that departs from it does not close with what he carries. He feels the misfit as roughness, haste or thinness before he can name it. Galen's names, the ant, the gazelle and the tail of the mouse, are names for ways of not fitting.

The pulse and the name. The stories of Erasistratus, Galen and Ibn Sina at the wrist of a silent patient show two kinds of reading in one scene.

The book on the body tells them apart. A window shows only that something nearby is open. A reader that meets finds the one place where it sits.

Galen states the first of these in his own words. There is no pulse of love. The pulse shows that the soul is troubled, and it does not show by what. That is the reading through a window.

Then the physician begins to offer. He has names spoken, one after another, and keeps his fingers where they are. Most names pass, and nothing happens. At one name the pulse breaks step. That is a meeting. The name fits the open place, and the body answers.

In the Persian story the search has the form of an address. The districts of the city are named, then the streets of one district, then the houses of one street, then the people of one house. Each step narrows the place by one level. The theory describes an address in the same way. It is a word that is read place by place, and each place lies one depth further in.

What the turn gave and what it cost. The Greek turn gave medicine the reading of time and the trained hand. Chapter 38 listed what it left to the temple: the question of who else is involved, the meeting, and the word.

The story of the pulse and the name shows that the best physicians kept a way back. They held that grief, fear and love make ill. They found the cause by offering words and by watching for the place where one of them closed.

The first passage, once more

Earlier parts found that a healer's chant often tells how an illness or a remedy first came to be. The Finnish knower recites the origin of what has done the harm. Every verse of Ifá recounts a first case. Part IV adds the two oldest written examples.

The Babylonian incantation against toothache begins with the making of the world. It comes down step by step to the worm that asked for a place between the tooth and the gum. The healer who recites it shows the worm that he knows where it comes from. The Egyptian spell for a sting tells how Isis saved the child Horus, and it declares that the patient is Horus.

The third axiom says that the first passage fixes the direction and that the net carries its history as its shape. If that is so, a later case is read rightly only against the first. These healers act as if they knew it. They do not treat a toothache. They go back to the first toothache and take the present one as its return.

Greek medicine dropped the recital with the rest of the word. A part of it survived in another form. The Hippocratic physician asks how the illness began and on which day, and he counts from that day. The first day fixes the count for all the days that follow. The history that a physician takes is the recital of origin, moved from the world to the single case.

3. The names

Chapter 4 gave the eight forms of failure of the book on the body. The names of illness in this part are laid beside them here.

The humour that settles: wrong closure. The Hippocratic writers taught that an illness which is not ended by a crisis may settle. The humour comes to rest in a joint, under the skin or in the lung, and stays. Gout is a drop that has fallen into a joint. The hard swelling called the crab is black bile gathered in one place.

The book on the body calls a wrong closure a state that is stable, closed, and not the person's own. The settled humour has that shape. The acute illness is over. Nothing moves any more, and the person is not well.

The fixed belief of the melancholic belongs here too. He reasons well on every subject but one. On that one his thought has closed on a wrong form, and no argument opens it.

The raw humour: unread. A humour is raw as long as the heat of the body has not worked on it. Raw matter cannot be driven out. The physician must wait until it is cooked.

The third of the eight forms is the misfit that the body's own test has not yet read. Cooking, in the Hippocratic sense, is the body's reading of what has got into it. A raw humour is one that has not yet been read. The Babylonian rite of the oath has a patient of the same kind at another depth. He does not know which wrong he has done. The rite therefore names every wrong that a person can do.

The stone, the little spear, the crust: seam. The first of the eight forms is what is fixed and lodged in what lives. This part has it in every century. The god of Epidaurus draws out a spear point and lays it in the patient's hands. The English healer orders the little spear out. The surgeon cuts for the stone. Paracelsus describes a crust that settles in the joints as it settles in a wine cask.

Out of place and against one's nature: direction. The humoral names are full of humours that go the wrong way. Phlegm runs down from the head. Bile rises. The womb turns upward. The Unani physician defines illness itself as a turning away from the person's own temperament.

The shut passage: carrier. Epilepsy, in the Greek account, comes when phlegm shuts the passages by which air reaches the brain. In apoplexy a thick humour fills the chambers of the brain, and the spirit cannot pass. The Egyptian physician fears the vessel in which the heart no longer speaks.

The book on the body found that a closed form cannot deliver, and that only what ends can. It called such a form a carrier. Galen's spirits are carriers in that sense. He says that they are the means by which the powers of the liver, the heart and the brain reach every part.

What comes with birth: frame. The writer on the sacred disease says that it begins, like other illnesses, in the family. A phlegmatic parent has a phlegmatic child, and a consumptive parent a consumptive one. The Babylonian healer looks for a curse that lies on the father's house. Hildegard carries the idea to its limit. In her account black bile entered human blood with the first man, and every person inherits it.

The slow drying: drift. Galen compares life to a lamp. The inborn heat burns the inborn moisture, and old age is cold and dry. Hildegard says that illness is a drying out and health a greenness. The eighth form of the book on the body is the return that falls behind: wear, ageing, the slow loss of rhythm.

The answer to what is harmless: over-read. Chapter 4 noted that the old medicines describe this form least clearly. This part has one early witness. Al-Razi wrote a short piece on a scholar who caught a cold in the head every spring when the roses bloomed. He described the complaint exactly and laid it to humours stirred by the scent.

4. The act

The remaining questions of chapter 4 are put to the acts of this part.

Does it restore or add? The oldest acts restore. The Egyptian surgeon sets the bone back in its place, draws the lips of the wound together, and binds fresh meat on it for the first day. The Babylonian healer gives a ghost what it was owed. The humoral physician brings a person back to his own temperament by regimen.

There are two great exceptions. The antidote of sixty-four ingredients adds everything at once. Bloodletting takes away.

Bloodletting and the first rule. Chapter 4 gave the ground of the first rule of cure. An error sits at one place. A change at that place closes the form. A change anywhere else leaves the form open, and it opens what was sound.

The humoral physicians read with great skill. But their reading named a humour, and a humour is everywhere in the body. So the act that followed was general. Blood was taken from the whole person. In the terms of the rule, the reading had found no place, and the act went to no place. The count of chapter 4 says what to expect of such an act: nothing closes, and more is opened. Louis and Dietl found it so on their wards.

Where the same medicine did find a place, it acted well. Galen treated the spine and not the numb fingers. The surgeon who set a bone, cut for a stone or pushed aside a clouded lens acted at the place. In the humoral world these skills of place were left to people without Latin.

Does it match direction and phase? On this question the humoral medicine is the strictest in the book so far. It asks which way the person leans. It asks his age, the season, the hour and the day of the illness. Its rule of timing is short: purge what is cooked and not what is raw. The Hippocratic physician does not stir a patient on the day of the crisis. The hakim gives the ripener for weeks and watches the urine before he clears.

The rule of opposites seems to run against the third rule of cure, which says to match the direction. The conflict is smaller than it looks. The hakim opposes the departure. In doing so he goes with the person's own temperament. He treats toward the first passage.

The physicians who served nature matched direction in the full sense. They helped the sweat that had begun and the cooking that was under way. Those who bled a patient on the first day of a fever, before any sign of cooking, broke their own rule of timing.

Paracelsus rejected the opposites and treated by likeness. The third rule sides with neither school by name. It puts one question to both: does the act go with the turn that the body is making?

Does it work with what lives? The old remedies of this part are alive or were so lately. They are fresh meat, honey, milk, plants in beer and wine, the leech, and the tongue of the snake and the dog. The regimen works with the living person: baths, walks, music and company.

The fourth rule says that what is fixed cannot close with what lives. The humoral world gives the darkest example. Mercury was given until the teeth fell out. The metals burnt to ash in the Unani pharmacy belong under the same rule.

At which depth does it act? The six conditions of Galen and of the hakims are a list of depths. They begin with the air and the place. They go on through food and drink, movement and rest, and sleep and waking. They end with what the body keeps and lets go and with the passions of the soul. The physician can act at each of them without a drug. In the terms of chapter 4 they belong to the surround and to the phase.

The Babylonian rites act at depths that the Greeks left out: the family and its dead, the given word, the city and its king. The hospital of Cairo acted at a depth that few medicines reach. It gave each patient clothing and money on leaving, so that he need not work at once.

Does it leave the return to run? At the sanctuary of Asklepios the sleep is the cure. The Egyptian surgeon ends many cases with the order to moor the patient at his mooring stakes until the period of his injury has passed. The gloss explains that he is put on his usual diet and given no remedy. The Hippocratic writers forbid the physician to try anything at the crisis or just after it.

The sixth rule of chapter 5 is to leave silence after each offering. The physician who knew when to wait obeyed it. The physician who bled again on the next day, and again on the day after, did not.

Ripening and clearing

Chapter 4 drew a hard result from the algebra. Out of a wrong closure there is no way that does not pass through the open. A person who leaves a settled wrong state must go through a stretch in which more is open than before. The chapter named the Greek crisis as the old word for that stretch.

Unani medicine made a procedure of it. A long illness that comes from a settled humour is treated in two stages. For one to three weeks the patient takes a ripener, which loosens the humour from where it sits. Only when the urine shows that this is done does the hakim give the drug that clears it. A cooling course follows, to let the body settle.

The order may not be reversed, and the first stage may not be hurried. That is the rule that the algebra gives. What is still closed cannot be moved. What has been opened must be given the time to close on the right form.

The Babylonian rite of the oath does the same with the hands. An onion is peeled, a cluster of dates is stripped, and a tuft of wool is unravelled, layer by layer. What comes off is burned. A binding is undone in order, from the outside in, and what was bound is then left to itself.

5. The other half

Chapter 6 described the world as two halves that are partners, place by place. It read the loss of the soul as an illness of the tie between the halves. It read the dead who hold on as windows left open at the depth of a family.

Mesopotamia: the tie loosened from the other end. For the shaman an illness may mean that the patient’s soul has gone. For the Babylonian it commonly means that his god has gone. Every person has a god and a goddess who stand at his side. When they turn away, he is open to every hand. The prayers ask them to come back. It is the same tie, and here the other partner has let go.

The ghost rites treat the dead as chapter 6 read them. Something was left open for a dead person: food, water, a grave, the speaking of his name. The rite closes it for him, and he lets go of the living.

Egypt: one prescription for both halves. The Egyptians counted several parts of a person beside the flesh, among them the name, the heart, the shadow, the *ka* and the *ba*. Their medicine treats the flesh with a salve and the other parts with words. It writes both in one prescription and sees no break between them.

Greece: two houses. The Greeks did what no people before them had done. They divided the two halves between two institutions. The physician took the half that can be seen and counted. The temple kept the half that is met in sleep. For eight hundred years a patient could go to both. The greatest physician of antiquity took his own direction from a dream.

Chapter 6 quoted the author's statement that the body which medicine describes is the half that can be measured (Konstapel 2026f). The Greek settlement is the moment at which that became true of a learned medicine. It was not a denial at first. It was a division of labour. The denial came later, when the temples were closed and one of the two houses was left standing alone.

The religions kept the second house open. In the Islamic world the reciter works beside the hakim. In Christian Europe the shrine worked beside the faculty, and at Lourdes it still does. Ibn Qayyim and Maimonides said in nearly the same words that a physician who treats the body alone treats half a patient.

Paracelsus: the second body. Paracelsus gave every person a second body, which carries sense, thought and skill. It is free in sleep and lingers after death. He wrote this as a physician, in a book of medicine. It is the nearest that the learned medicine of Europe came to the two souls of Part II, of which one stays with the body and one travels.

6. The meeting

Chapter 7 asked whom a healer or a patient meets, in what form, by what course, with what words, to what effect and with what shadow.

Whom, and in what form? The sleeping hall of Asklepios is the best-recorded place of meeting in the ancient world. All four figures of chapter 7 can be found on its stones or beside them.

The first figure acts on the body and hardly speaks. In the reports of VALIS he examines and operates. At Epidaurus the god cuts open a chest, takes out what is in it, and sews the man up. His servants hold the patient fast. He boils a drug and pours it into an eye. The patient is handled, and he wakes changed.

The second figure teaches. The god of Aelius Aristides is of this kind. Over many years he prescribes baths, runs, fasts and a return to public speaking, and the patient orders his whole life by what he is told.

The third figure watches and judges. He takes back the sight of a man who did not pay. He sets the marks of a cheat beside the marks of the man whom he cheated. In the Babylonian rite of loosening, the patient pleads his case before the sun god as before a judge.

The fourth is the light without form. It is rare on the stones. The fullest account in this part is Hildegard's. She saw by a light without height, length or breadth. At times she saw a second light within it, and before that light her pain left her.

By what course? The five steps of chapter 7 describe a night at the sanctuary without change. The patient leaves his town and his daily round. He washes, makes his offering, and lies down in a hall where he has never slept. That is the loosening. The god comes, looks, asks and touches. That is the examination. A few words pass: a question, a promise, an order. That is the exchange. Sometimes the sleeper is shown more: the helpers of the god, his instruments, a remedy in the making. At dawn he wakes and walks out. The stones tell the return in one plain sentence.

Hildegard's account has the same steps in another order of weight. Her loosening is an illness that lasts until she obeys. Her showing fills three books.

What is said? The reports of VALIS note that what is said in such meetings is seldom a fact that can be checked. It mostly concerns conduct. The stones of Epidaurus agree. The god asks whether the sleeper still disbelieves. He asks what he will be given. He orders a silver pig to be set up in memory of ignorance, and the largest stone that a man can carry to be brought into the sanctuary. He asks for trust, for the payment of what was promised, and for a public record.

One case in this part goes further. Galen reports that a dream told him which artery to open, that he opened it, and that he was cured. It is an instruction that could have been wrong.

To what effect? The stones record cures. The longer accounts record a changed life. Aristides lived by the word of his god for decades and held that the god had been right every time. Hildegard, who had kept silent for forty years, wrote, preached and composed until she died at eighty-one.

With what shadow? The Babylonian rite against witchcraft shows the shadow most clearly. The witch is held to work with the same means as the healer: figures of clay, knots and spoken words. The healer burns her figure through a whole night. In Greece the dead were asked to bind the living, on thin sheets of lead laid in graves. In Europe a woman who knew plants and charms could be sought out on one day and accused on the next.

This part adds a shadow of its own kind. A complete doctrine can hold physicians as firmly as any spell. Chapter 41 described it.

In which frame? Chapter 7 gave three ways of understanding such meetings and no verdict.

The stones of Epidaurus speak for the first of them in one respect. The patients read the cures before they slept. They then dreamed in the manner of what they had read, and they saw the god as his statue showed him. The form of the meeting had been prepared.

They speak against it in another respect. The same course, with the same figures, is reported in this book by people on other continents who never saw those stones.

The third frame holds that something is met through a form which depends on the one who meets. On that reading the priests of Epidaurus did what the babalawo did. They built the form with care, and they showed it to every newcomer before the night.

7. What does not fit

The harm. The humoral medicine obeyed the first rule of cure and the third. It read with care. It attended to direction and to time as no other medicine in this book has done so far. It still bled people to death for two thousand years.

A reading with the theory that found only agreement here would repeat Galen's error. The theory can say afterwards why a general taking away closes nothing. Nobody needed the theory to find that out. A count was needed. The readings in these chapters show a likeness of shape. Whether a medicine helps is another question, and only the counting of like cases answers it.

Fours and sevens. The window of the theory has three places. The Greek scheme has four members. Section 1 reduced the four to two pairs with a mean between them. That is Galen's own analysis. But the tradition counts four and draws them as a square. The critical days go by fours and sevens, and a week of seven days stands on neither ladder. The Babylonian handbook has forty tablets, and its rites repeat an act seven times. The four degrees of a drug are a scale and not a closure.

Opposites. The schools treated by opposites, and Paracelsus by likeness. The theory's third rule is closer to the wording of Paracelsus. Section 4 read the humoral rule so that it agrees: the physician opposes the departure and so goes with the person. That is a reading. A humoral physician would have said simply that cold cures hot.

Exchange and transfer. A man dies in place of a king. An evil is washed onto a clay dog and thrown into the river. The marks of one man pass to a band of cloth and from the band to another man. The theory has carriers: forms that end and so deliver. A clay figure that takes an evil to the sea has the shape of a carrier. A man who is killed in place of another has not. Chapters 23 and 31 noted that the theory has no rule for a life given for a life. That remains so.

Persons. The gods of this part have names, tempers, courts of law and a sense of humour. Asklepios laughs at a boy who offers him ten knucklebones. The theory cannot derive a laugh.

Adding. The second rule of cure says to restore and not to add. This part adds freely. It adds the amulet of the whole eye, a precious stone held in the mouth, and a coin hung round the neck by a king. It adds an antidote of sixty-four ingredients.

The nested three. The third of the six rules of chapter 5 expects an offering at three nested rates, each a third of the one before. Nothing in this part has that form. The ratios that Herophilus heard in the pulse are ratios of two.

The dream that prescribes. The theory reads a meeting as a closure between the one who meets and what is met. It gives no ground on which a dream should name the right artery. Galen says that it did.

What Part IV hands on

1. The oldest written form of the first rule: examine, name, give a verdict, and only then treat. One of the verdicts is not to treat.
2. The name of an illness as an address at the depth of a person’s dealings.
3. The recital of origin, on clay and on papyrus, and its remnant in the physician’s question how the illness began.
4. Health as a relation to a person’s own first state, and not to an average.
5. The reading of time: the period, the critical day and the season. With it comes the pulse, heard as a ratio.
6. Two readings in one scene: the window that shows that something is open, and the offered word that finds the place.
7. Six conditions of life as a list of depths at which a physician can act without a drug.
8. Ripening before clearing: the way out of a wrong closure, made into a procedure.
9. The two houses: the body for the physician and the meeting for the temple. With them comes the history of what followed when one house was closed.
10. The count. A medicine can be coherent, learned and wrong, and only the counting of like cases shows it.

The Greek medicine travelled east as far as Delhi. There it met a medicine as old and as learned as itself. That medicine had never divided the two houses in the Greek manner, and it read the pulse with three fingers at three depths. The next part turns to it: the one system of China, India and Tibet.

Part V — The Eastern System: China, India, Tibet

44. China: three thousand years of medicine

The largest of the old medicines

Part V describes the medicine of China, India and Tibet. It is by far the largest body of old medicine in use. In China it has thousands of hospitals of its own, training at universities, and a place in the national insurance. In India it is one of the systems recognised by the state, with several hundred thousand registered physicians. Forms of it are practised in Japan, Korea, Vietnam, Mongolia, Nepal, Bhutan and Sri Lanka. Its needles and its breathing exercises have gone round the world.

The author holds that the medicines of China and India are one system in two languages. He holds that the medicine of Tibet, which drew on both, carried that system furthest. Chapter 66 sets out the grounds for this view. The chapters before it describe each tradition in its own words, beginning with China.

A word on terms. The Chinese word *qi* is left untranslated in this book. The usual English rendering borrows a word from the age of the steam engine, and chapter 46 explains why it misleads. The same holds for *yin* and *yang*, and later for the Sanskrit and Tibetan terms.

Bones and ancestors

The oldest Chinese writing deals with illness, among other matters. The kings of the Shang ruled the north China plain until about 1050 before our era. They consulted their ancestors before any decision. A diviner cut hollows in the shoulder blade of an ox or the under-shell of a tortoise and applied a hot point. The bone cracked, and the crack was read as an answer. Question and answer were then carved into the bone. More than a hundred thousand such pieces have been dug up at the last Shang capital.

Many of them ask about the king's health. He has a toothache, a swollen belly, an ailing eye, a bad dream. The question is always of one kind. Is there a curse? Is it this dead father who causes it, or that dead grandmother? When the ancestor has been found, an offering is made to him.

The Shang knew no illness in the later sense. They knew harm that was sent by the dead of one's own line (Unschuld 1985). The reader has met this in the Yoruba world and in Mesopotamia. In China it is the first layer, and it never disappeared. Offerings to the family dead are still made when an illness will not yield.

Winds, demons and the six qi

Under the Zhou kings, who followed the Shang, the causes of illness multiplied. Demons of many kinds attack from outside. Texts on bamboo from a tomb of 217 before our era list them with the countermeasures. These are a bow of peach wood, a shout, or a handful of ashes

thrown at the right moment. The wind, too, was held to bring illness. The word for it had first meant a spirit.

Two stories from the chronicle of the state of Jin show a new kind of healer beside the diviner.

In 581 before our era the duke of Jin fell ill and sent for a physician from the state of Qin. Before the physician arrived, the duke dreamed that his illness was two boys. One said: he is a skilled physician and he will hurt us; where shall we hide? The other said: above the midriff and below the heart; what can he do to us there? The physician came, examined the duke, and said that nothing could be done. The illness lay above the midriff and below the heart. A needle could not reach it, and a drug could not arrive there. The duke called him a good physician and sent him home with gifts. To this day the Chinese say of a hopeless case that the illness has entered that place.

In 541 another duke of Jin fell ill, and the physician He was sent from Qin. He declared that the illness came neither from ghosts nor from food. It came from excess with women. He went on to state a doctrine. Heaven has six *qi*: the shaded and the sunlit, wind and rain, dark and light. Each brings its own kind of illness when there is too much of it. Too much of the shaded brings cold. Too much of the sunlit brings heat. Too much wind harms the limbs, and too much rain the belly. Too much of the dark confuses the mind, and too much of the light wearies the heart.

This is the oldest Chinese statement that illness has a regular cause in a person’s surroundings and conduct. The chronicle that reports the speech was written in the fourth century before our era. That is the century of the later Hippocratic books.

The physician who saw through walls

About 90 before our era the historian Sima Qian wrote the life of a physician called Bian Que. It joins stories from several centuries. A stranger gave Bian Que a drug to take with dew for thirty days. After that he could see through walls and into bodies. He used the pulse, Sima Qian says, only as a cover for what he saw.

One story about him is told in every Chinese schoolbook. He visited a ruler and said: you have an illness in the skin, and if it is not treated it will go deeper. The ruler said that he was well. Bian Que came back after some days and said that the illness was now in the blood vessels. Later he said that it was in the stomach and the gut. The ruler grew annoyed. At the fourth visit Bian Que looked at him from a distance and walked away.

He was asked why, and he explained. In the skin an illness can be reached by hot compresses. In the vessels it can be reached by needles, and in the gut by potions. In the marrow it cannot be reached at all. The ruler died within days.

The story carries two ideas that Chinese medicine never gave up. An illness moves inward, from the surface to the depth, stage by stage. And the best physician treats what is not yet ill.

Sima Qian ends with a list of six kinds of patients who cannot be cured. The sixth is the one who trusts shamans and does not trust physicians. The line between the two healers has been drawn.

What the tombs preserved

In 1973 archaeologists opened a tomb at Mawangdui near Changsha in south China. It had been closed in 168 before our era. Beside the body of a nobleman lay a library on silk and bamboo. Fourteen of its texts concern medicine (Harper 1998).

They show Chinese medicine just before its classics. Four features are worth noting.

Eleven vessels. The body has eleven vessels and not yet twelve. They run separately from the limbs toward the trunk. They do not yet form a circuit.

Burning, not needling. The vessels are treated by burning. The dried leaf of mugwort is set alight on the skin. Stone lancets are used to open abscesses. No needle is mentioned.

Recipes and spells together. The longest text holds recipes for fifty-two ailments. It has more than two hundred and eighty prescriptions, with some two hundred and fifty drugs. Mixed among them are spells, threats to demons, and rites. For a child's convulsions the healer spits, walks in the limping gait of the ancient ruler Yu, and commands the illness to go. Drug and spell stand side by side, as in the Egyptian papyri.

The cultivation of the body. A painted chart shows forty-four figures, men and women, who bend, stretch and breathe. Captions name the movements after animals and after the ailments that they relieve. Other texts teach how to eat *qi* in place of grain, and how to join with a partner without loss of essence. The care of one's own body was already a branch of medicine.

A tomb opened near Chengdu in 2012 added a small lacquered figure of a man, with lines painted along the limbs and the trunk. With it lay several hundred bamboo strips of medical texts from the second century before our era. They are still being studied.

Twenty-five cases

Sima Qian also preserved the oldest Chinese case histories. A physician named Chunyu Yi was accused before the emperor about 167 before our era. His daughter's petition saved him from mutilation. He was then asked to account for his art, and he reported twenty-five cases. For each he gave the name and rank of the patient, the complaint, what the pulse showed, the cause, the forecast, the treatment and the outcome.

Ten of the twenty-five died, as he had said they would. He was asked whether his forecasts were always right, and he answered that they were not.

His diagnoses rest mainly on the pulse. In most cases he names the cause as wine, sexual excess or anger. His treatments are decoctions, hot compresses and burning.

His report has the form of the Edwin Smith papyrus: the examination, the name, the verdict, the treatment. He adds what the Egyptian surgeon does not record, which is the outcome.

The Han: a body like a state

Between about 200 before our era and 200 after it, under the Han dynasty, Chinese medicine took the form that it has kept. The empire had been unified in 221. It had one script, one set of weights and measures, a network of roads and canals, granaries, and a hierarchy of officials.

The new medicine described the body in the same terms. The body has depots and palaces, a ruler and ministers, and channels through which what is needed moves from one to another. Health is good order. Illness is rebellion, congestion or neglect (Unschuld 1985).

The demons did not vanish. They were demoted. The new books explain illness by wind, cold, damp, heat, wrong food and strong feeling, which act by rule. The chief book says in so many words that it is useless to discuss medicine with those who are bound by belief in ghosts and spirits.

Four books of the Han became the classics of the whole tradition. The next chapter describes them. Here it is enough to name them. The *Inner Classic of the Yellow Emperor* gives the theory, the examination and the needling. The *Classic of Difficult Issues* refines the pulse. The *Classic of the Divine Farmer* lists the drugs. The *Treatise on Cold Damage* shows how to treat with formulas.

Zhang Zhongjing, the author of the fourth, lived from about 150 to 219, in a time of collapse. He writes in his preface that his clan had numbered more than two hundred. In less than ten years two thirds of them died, seven in ten of these from the fevers that he calls cold damage. He searched the old books and wrote his own. It follows a fever through six stages, from the surface of the body to its depth. For each stage it gives the signs, the pulse and the formula. It has about a hundred and thirteen formulas, most of them of four to seven drugs. Chinese, Japanese and Korean physicians prescribe them daily, unchanged.

Hua Tuo, his contemporary, is the surgeon of Chinese tradition. He is said to have given patients a powder in wine that made them senseless. He then opened the belly, cut out what was diseased, washed the gut and sewed the wound. He taught a set of exercises after the movements of five animals: the tiger, the deer, the bear, the ape and the bird. A warlord whom he would not serve as a private physician had him put to death in 208. His books were burned. Surgery of that kind did not appear in China again.

Huangfu Mi (215 to 282) fell ill with a palsy and taught himself medicine. He arranged all that the older books said on needling into one orderly work. It names 349 points and gives for each its place, its depth and what it treats.

Wang Shuhe, about 280, wrote the *Pulse Classic*. He described twenty-four kinds of pulse and fixed the method of feeling it at three places on each wrist.

Ge Hong (283 to 343) was an alchemist who sought the elixir of long life. He also wrote a small book of remedies for emergencies. Its title says that it is to be kept behind the elbow, which means up one's sleeve. It uses cheap and common materials. For fevers that come and go it gives this advice: take a handful of sweet wormwood, soak it in water, wring it out, and drink the juice. Chapter 55 tells what came of that line seventeen centuries later.

The state takes charge

The Sui and Tang dynasties, from 581 to 907, made medicine a concern of the state. An imperial medical office was founded in 624. It had four departments, each with professors and students: medicine with drugs, needling, massage, and incantation.

The fourth is worth noting. The masters of incantation were officials. They taught spells, signs made with the hands, and the gait of Yu, and their students were examined like the others.

In 610 the court physician Chao Yuanfang finished a work on the origins and signs of illnesses. It describes more than seventeen hundred conditions in sixty-seven sections. It contains no drugs. For many conditions it prescribes exercises of posture, movement and breath.

In 659 the state issued the first official drug book of any country. It described about 850 drugs, with drawings collected from every province.

Sun Simiao (581 to 682) is the best-loved physician of China. He is honoured in temples as the King of Medicine. He declined office under three emperors and practised in the mountains. He called his chief work *Prescriptions Worth a Thousand in Gold*. A human life, he explains, is worth more than a thousand pieces of gold. To save one with a prescription is a greater deed than to give that sum.

The book begins with women and children, since the continuance of life depends on them. It reports treatments that were later confirmed. Swelling of the neck in mountain people is treated with seaweed and with the neck glands of sheep and deer. Night blindness is treated with liver. The weakness of the legs that struck eaters of polished rice is treated with the husks of grain.

Its first chapter is an essay on the sincerity of the great physician. A physician must first calm his spirit and fix his will, and be without wishes and desires. He shall treat all who come alike: noble or base, rich or poor, old or young, fair or ugly, friend or enemy, Chinese or foreign, foolish or wise. He shall look on the suffering of the patient as his own. He shall not hold back because of danger, night, cold, hunger or weariness. He shall not think of his reputation or his gain. Chinese students of medicine learn the passage as European students learn the oath.

The Song: print, bronze and pharmacy

Under the Song dynasty, from 960 to 1279, the state printed. A bureau for the revision of medical books was set up in 1057. Its scholars compared the manuscripts of the Han classics, most of which had been close to lost, and issued them in standard editions. Nearly every text of early Chinese medicine that exists today goes back to those printings.

In 1027 the physician Wang Weiyi had two hollow bronze figures cast, of the size of a man. The surface was pierced with a hole at each of 354 named points. For an examination the figure was coated with wax and filled with water. The candidate was told to needle a point. If he found it, water ran out.

The state opened public pharmacies that sold standard remedies at fixed prices, and it published the official formulary.

Other firsts belong to the same period. Qian Yi wrote the first work devoted to the illnesses of children, in 1119. In 1247 the judge Song Ci wrote a manual for officials who must examine the dead. It tells how to distinguish drowning from strangling, and a wound made before death from one made after. It is the first book of forensic medicine in the world.

In 1174 Chen Yan sorted all causes of illness into three groups. The outer causes are the six influences of the weather. The inner causes are the seven feelings. The third group is neither: wrong food, overwork, sexual excess, wounds, bites and parasites. His scheme is still taught.

Four masters

The north of China fell to invaders in the twelfth century, and war and epidemic followed. The standard formulas of the state pharmacy failed against the new illnesses. Four physicians of the next two centuries each drew a different lesson. Their schools divided Chinese medicine as the Greek schools had divided the medicine of Alexandria.

Master	Dates	Teaching	Method
Liu Wansu	about 1120 to 1200	Most illness is fire and heat	To cool and to clear
Zhang Congzheng	about 1156 to 1228	Illness is an evil that has entered and must be driven out	Sweating, vomiting and purging
Li Dongyuan	1180 to 1251	Illness comes from within, when worry, hunger and overwork injure the stomach and the spleen	To strengthen the centre

Master	Dates	Teaching	Method
Zhu Danxi	1281 to 1358	Yang is always in excess and yin always falls short, since desire consumes the yin	To nourish yin and to moderate desire

Zhang Congzheng also treated by feeling. The classics teach that each feeling overcomes another, and he used the rule.

A woman had not slept for two years, after long brooding. Zhang arranged with her husband to make her angry. He took a large fee from the house, stayed for days drinking, and left without prescribing anything. She flew into a rage, sweated, and slept that night. Anger overcomes brooding.

Another woman had been at an inn when robbers set fire to it. From then on she fainted at any sudden noise, and her servants walked on tiptoe. Zhang seated her in a chair with a small table before her. He struck the table with a piece of wood. She started. He asked her why she was afraid of a piece of wood on a table. When she was calmer he struck again, and again. Then he had the door struck, and at night the window. After some days she heard thunder without alarm. What a person is used to, he wrote, does not frighten.

Li Dongyuan lived through the siege of the capital Kaifeng by the Mongols in 1232. When the siege was lifted, he writes, people died in great numbers for months. The physicians treated them for cold damage. He judged that they had been ruined by hunger, fear and exhaustion, and he built his doctrine on that. His best-known formula, which strengthens the centre and raises the *qi*, is among the most used in East Asia today.

The Ming: the great drug book

Li Shizhen (1518 to 1593) was a physician’s son from Hubei. He failed the state examinations three times and turned to medicine. He found the drug books full of errors: one plant under two names, two plants under one. He spent twenty-seven years on a new one. He travelled to see plants where they grew. He questioned farmers, hunters and miners, and he read some eight hundred earlier works.

His *Systematic Materia Medica* was finished in 1578 and printed in 1596, three years after his death. It describes 1,892 drugs in fifty-two sections, with more than eleven thousand prescriptions and over a thousand drawings. It orders the materials from the simplest to the highest: waters, fires, earths, metals and stones, plants, insects, scaly creatures, shelled creatures, birds, beasts, and man.

Li Shizhen also wrote a short book on the pulse, in verse, for students to learn by heart. It describes twenty-seven pulses. Chapter 50 returns to it.

The pestilential qi. In 1642 Wu Youxing, a physician of the lower Yangzi, published a short work on epidemics. He had watched them sweep whole districts in the last years of the Ming. He concluded that they do not come from wind, cold, heat or damp. They come from a *qi* of another kind, which he called pestilential. It enters through the nose and the mouth. Each kind causes one illness and no other. One kind strikes cattle and not sheep, and another strikes fowl and not ducks. He wrote this two centuries before the theory of germs. He had no means of seeing what he had inferred.

The planting of the pox. By the sixteenth century Chinese physicians protected children against smallpox. They took scabs from a mild case, dried and powdered them, and blew the powder through a silver tube into a nostril. The child had a light attack and was then safe. In the 1680s the emperor Kangxi, who had survived the illness himself, had his own children and his troops treated. The method reached Turkey, and from there England in 1721. Edward Jenner's cowpox, at the end of that century, was an improvement on it.

The Qing: warm illnesses and opened bodies

The physicians of the rich south found that the old formulas for cold damage did not suit the fevers that they saw. These began with heat and not with a chill, and they spread in summer.

Ye Tianshi (1667 to 1746) of Suzhou described how such a warm illness passes inward through four levels. He named them after the defence, the *qi*, the nourishment and the blood. Tradition says that a pupil took down his teaching in a boat on the Taihu lake. **Wu Jutong** made a textbook of the doctrine in 1798. Its first formula, of honeysuckle and forsythia, is the common Chinese remedy for the start of a feverish cold.

Wang Qingren (1768 to 1831) held that a physician who does not know the organs is like a blind man who walks in the dark. During an epidemic in 1797 he went every morning for ten days to a burial ground. The bodies of poor children lay there uncovered and had been torn open by dogs. He examined some thirty of them. Later he watched executions. In 1830 he published his *Corrections of Errors among Physicians*, with drawings of what he had seen. His anatomy has faults of its own. His formulas are in daily use. They rest on the idea that blood can stand still in a part and must be set moving.

In 1822 the emperor ordered the department of needling and burning in the imperial academy to be closed for ever. The edict says that to prick and to burn is not fitting for the person of the ruler. Needling lived on among the people and in the provinces.

The twentieth century: abolition and return

When the empire fell in 1911, the reformers of China looked to Japan, which had made Western medicine the only legal one in the 1870s. In February 1929 a government conference in Nanjing adopted a proposal to abolish the old medicine. No new practitioners would be registered. The schools would be closed, and advertising would be forbidden.

On 17 March the old physicians held a national assembly in Shanghai and sent a delegation to the capital. Pharmacies shut their doors in protest. The proposal was shelved. The physicians had learned to organise, and to call their art by a new name, the national medicine (Lei 2014).

The Communist government at first followed the reformers. In 1954 Mao Zedong reversed the course. The country had about half a million practitioners of the old medicine and few of the new, and most people lived in villages. Colleges of Chinese medicine were opened at Beijing, Shanghai, Guangzhou and Chengdu in 1956. In 1958 Mao wrote that Chinese medicine and pharmacy are a great treasure house. Efforts should be made, he added, to explore them and to raise them to a higher level.

What the colleges taught was new in form. Committees wrote national textbooks. From two thousand years of conflicting schools they chose what could be taught as one system. They left out most of the rites, the spells and the reading of fate. The result is known in English as Traditional Chinese Medicine. Its core is a method with a modern name: to tell the patterns apart and to fix the treatment by the pattern (Scheid 2002; Taylor 2005).

Three events made this medicine known abroad.

From 1965 the government trained peasants for a few months and sent them back to their villages as health workers. They were called barefoot doctors. They used a few Western drugs, needles and local plants. At the peak there were more than a million of them.

From 1958 Chinese surgeons operated on patients who were awake, with needles in place of narcosis. In 1971 an American journalist, James Reston, had his appendix removed in Beijing. His pain after the operation was relieved with needles and burning mugwort, and he described it on the front page of his newspaper. President Nixon’s visit followed in 1972. Within a few years needling was practised and studied across the West.

In 1967, during the war in Vietnam, the government set up a secret programme to find a remedy for malaria. Chapter 55 tells how one of its researchers, Tu Youyou, went back to Ge Hong’s book.

The medicine today

In China the two medicines are now equal in law. The country has several thousand hospitals of Chinese medicine and several hundred thousand licensed physicians of it. Most of them also prescribe Western drugs, and most Western hospitals have a department of Chinese medicine. Training takes five years at a university. In 2019 the World Health Organization adopted a chapter on the patterns of this medicine in its international classification of diseases.

The official medicine is not the whole of Chinese healing. Beside it work bonesetters, sellers of herbs, masters of breathing exercises, Daoist priests who write talismans, and mediums

through whom a god speaks. The minority peoples of China have medicines of their own, among them the Tibetan, the Mongolian, the Uyghur and the Dai.

The chief books

Date	Book	Author	Content
Before 168 BCE	The manuscripts of Mawangdui	Unknown	Eleven vessels, burning, recipes for fifty-two ailments, exercises
1st century BCE to 1st century CE	*Inner Classic of the Yellow Emperor*	Compiled by many hands	Theory, examination, needling
1st or 2nd century	*Classic of Difficult Issues*	Unknown	Eighty-one questions; the pulse at the wrist
1st or 2nd century	*Classic of the Divine Farmer*	Unknown	365 drugs in three grades
About 200	*Treatise on Cold Damage*	Zhang Zhongjing	Six stages of fever; formulas
About 260	*Systematic Classic of Needling and Burning*	Huangfu Mi	349 points in order
About 280	*Pulse Classic*	Wang Shuhe	Twenty-four pulses; three places at the wrist
About 340	*Prescriptions to Keep up One's Sleeve*	Ge Hong	Simple remedies for emergencies
610	*Origins and Signs of All Illnesses*	Chao Yuanfang	More than 1,700 conditions; exercises
652	*Prescriptions Worth a Thousand in Gold*	Sun Simiao	The whole of medicine; the ethics of the physician
659	*Newly Revised Materia Medica*	A state commission	About 850 drugs; the first official drug book
1027	*Illustrated Classic of the Points on the Bronze Figure*	Wang Weiyi	354 points

Date	Book	Author	Content
1119	*Key to the Patterns and Medicines of Children*	Qian Yi	The illnesses of children
1174	*Treatise on the Three Causes*	Chen Yan	Outer, inner and other causes
1247	*The Washing Away of Wrongs*	Song Ci	Examination of the dead
1249	*Treatise on the Spleen and Stomach*	Li Dongyuan	Illness from within; the centre
1564	*Pulse Studies of the Lakeside Master*	Li Shizhen	Twenty-seven pulses in verse
1596	*Systematic Materia Medica*	Li Shizhen	1,892 drugs
1601	*Great Compendium of Needling and Burning*	Yang Jizhou	All earlier writing on the needle, collected
1642	*On Pestilence*	Wu Youxing	Epidemics from a particular *qi*
1798	*Systematic Differentiation of Warm Illnesses*	Wu Jutong	Fevers that begin with heat
1830	*Corrections of Errors among Physicians*	Wang Qingren	Anatomy from bodies; standing blood

What stands out in the history

1. **The first layer is the family's dead.** The oldest records ask which ancestor sends the illness. That layer was covered and never removed.
2. **Surroundings and conduct became causes early.** The six *qi* of the physician He stand beside the Hippocratic airs, waters and places.
3. **An illness moves inward by stages.** The physician's task is to meet it at the surface, and best of all before it shows.

4. **The body was described as a well-ordered state.** Health is order among its offices.
5. **The spirits were demoted and not dismissed.** Incantation was a department of the imperial medical office beside drugs and needles.
6. **The state edited, printed, examined and sold.** No other old medicine was so long a public service.
7. **The schools disagreed.** Each great epidemic produced a new doctrine, and the old ones were kept beside it.
8. **The care of one's own body belonged to medicine from the start:** breath, movement, food and restraint.
9. **Outcomes were recorded.** Chunyu Yi reported his dead with his cured.
10. **The form taught today is a selection made in the 1950s.** It is one reading of a much wider inheritance.

45. The four classics

Why four books

Every Chinese physician for eighteen centuries learned four books of the Han period, and every later doctrine was written as a commentary on them. The modern colleges still examine their students in them. This chapter describes each: what it contains, how it argues, and which of its sentences the tradition quotes most.

The Inner Classic of the Yellow Emperor

The *Inner Classic* is a collection and not the work of one hand. Its parts were written between the second century before our era and the first after it. They were gathered under the name of the Yellow Emperor, a ruler of legend. It consists of two books of eighty-one chapters each. The first is the *Plain Questions*. The second is the *Divine Pivot*, which deals mostly with needling (Unschuld and Tessenow 2011).

The form is a dialogue. The emperor asks, and one of his ministers answers, most often a physician named Qi Bo. The emperor is the pupil. The questions are those of an intelligent layman, and some are sharp. Why do people today live half as long as the ancients? Why does the same wind make one man ill and leave another well? Why does needling sometimes fail?

The book does not agree with itself at every point. Different chapters give different counts of vessels and different accounts of the organs. The compilers kept them all. What unites the chapters is a way of thinking. A person is a small heaven and earth. Whatever holds in the great world holds in the body, and a physician must know both.

A few chapters carry most of what later ages took from the book.

How to live. The first chapter asks why the people of early times reached a hundred years in full vigour. Qi Bo answers that they followed the order of yin and yang. They ate and drank with measure, rose and rested at regular hours, and did not wear themselves out. People now, he says, take wine as their drink and recklessness as their rule. They go drunk to the bedchamber and empty their essence for the pleasure of a moment. So they are worn out at fifty.

The same chapter counts the course of a life. A woman’s life moves in steps of seven years, and a man’s in steps of eight. At twice seven a girl’s monthly blood comes, and she can bear children. At four times seven her body is at its strongest. At seven times seven the monthly blood ends. At twice eight a boy’s essence is full. At four times eight his strength is at its height. At eight times eight his teeth and hair are gone.

How to follow the seasons. The second chapter gives a rule of life for each season. In the three months of spring, heaven and earth come to life. A person should go to bed late and rise

early, walk in the courtyard with long strides, loosen the hair and ease the body. He should give and not take, and reward and not punish. To go against this injures the liver, and the illness shows in summer. In winter, when all is closed and stored, he should go to bed early and rise only when the sun is up. He should keep his will hidden, as if he had a secret.

The chapter ends with the sentence that every Chinese physician knows. The sages did not treat those who were already ill. They treated those who were not yet ill. To give medicine after the illness has formed is like digging a well when one is thirsty, or forging weapons when the battle has begun.

Yin and yang as the net. The fifth chapter opens with a definition. Yin and yang are the way of heaven and earth, the father and mother of change, the root of life and death. They are also called the ordering of all beings, and the Chinese expression for that is an image from the weaver's and the fisher's craft. Its first word is the head rope of a net, by which all the meshes are drawn. Its second is the sorting of threads. To treat an illness, the passage ends, one must seek its root.

Twelve officials. The eighth chapter describes the organs as the court of a state. The heart is the ruler, and the brightness of the spirit comes from it. The lung is the chancellor, who keeps the rhythm. The liver is the general, who makes the plans. The gallbladder is the upright judge, who decides. The spleen and the stomach are the keepers of the granaries. The kidney is the official who gives strength and skill. Six more hold lesser posts. When the ruler is clear, the text says, those below are at peace, and a person lives long. When the ruler is not clear, the twelve offices are in danger and the roads are closed.

The feelings move the qi. A chapter on pain lists what each state does to the *qi*. In anger it rises. In joy it slackens. In grief it wastes. In fear it sinks. In fright it is thrown into disorder. In brooding it is knotted. Cold draws it in, heat lets it leak, and overwork uses it up. Every feeling has a direction.

The spirit first. Several chapters insist that the physician's first object is not the body. One lists five matters that a needler must master, and the first is to govern the spirit. The *Divine Pivot* begins by saying that the common practitioner guards the form, and the superior one guards the spirit. A later chapter says that every method of needling must first be rooted in the spirit.

The patient's part is stated as firmly. The patient is the root, one chapter says, and the practitioner is the branch. Where the two do not meet, the illness will not yield. If the patient's spirit does not take part, needles and drugs do nothing.

The oldest cure. The thirteenth chapter looks back to a time before needles and drugs. In antiquity, Qi Bo says, people lived among the birds and beasts and had no worries within and no ambitions without. Illness could not enter deeply. Healers treated only by moving the essence and changing the *qi*. The text names their method with two characters. The modern translators render them as "to invoke the origin". The healer declared where the illness came

from, and that was enough. Today, Qi Bo adds, people are worn out by cares, and that cure no longer serves.

The reader has met the recital of the origin in Finland, among the Yoruba, in Babylon and in Egypt. The Chinese classic remembers it as the first medicine.

The count of the breath. The *Inner Classic* gives numbers for the round of the *qi*. In one breath out the *qi* moves three inches along the vessels, and in one breath in another three. The vessels together measure a little over sixteen rods. A full round therefore takes 270 breaths. In a day and a night a person breathes 13,500 times, and the *qi* goes round fifty times. It goes twenty-five rounds in the yang by day and twenty-five in the yin by night. A person sleeps when it turns inward.

The count does not fit a real body. People breathe more than twenty thousand times in a day. The authors were not measuring. They were stating a principle: breath, pulse and the day are locked to each other in whole numbers.

Seven later chapters. In 762 the editor Wang Bing added seven long chapters that the older book did not have. They teach how to forecast the illnesses of a year from its place in the cycle of sixty years by which the Chinese count time. The doctrine was much used in the Song and is seldom used now.

The Classic of Difficult Issues

The second classic is short. It consists of eighty-one questions, each with a brief answer. It was written in the first or second century of our era by an unknown author, and tradition gives it to Bian Que. Where the *Inner Classic* is a library, this book is a system. It settles what the older book left open (Unschuld 1986).

Questions	Subject	Chief teaching
1 to 22	The pulse	The whole body can be read at the wrist
23 to 29	The vessels	Twelve regular vessels and eight extraordinary ones
30 to 47	The organs	The moving *qi* between the kidneys; the gate of life
48 to 61	The illnesses	Emptiness and fullness; five kinds of cold damage; four examinations

Questions	Subject	Chief teaching
62 to 68	The points	Five transport points on each limb; the source points
69 to 81	Needling	To fill and to empty by the rule of mother and child

The wrist is enough. The *Inner Classic* felt the pulse at many places on the head, the hands and the feet. The first question of this book asks why one may take it at the wrist alone. The answer is that all the vessels meet there. The *qi* begins and ends its fifty rounds at that place. Since then the Chinese physician has read the wrist.

Three places and three depths. The book divides the pulse at the wrist into three places, named the inch, the gate and the foot. At each place it is felt at three depths. That gives nine readings on each arm. The fifth question measures the depth by the weight of the fingers, counted in beans. With the weight of three beans the finger reaches the skin and reads the lung. With six it reaches the vessels and reads the heart. With nine it reaches the flesh and reads the spleen. With twelve it reaches the sinews and reads the liver. Pressed to the bone it reads the kidney.

The root between the kidneys. Two questions describe a moving *qi* between the kidneys. It is the root of the twelve vessels, the gate of breathing, and the source of a person’s life. A tree whose root is cut still has leaves for a time, the text says, and then they wither. A patient whose pulse still looks sound may die if this root is gone.

Four ways of knowing. The sixty-first question ranks the four examinations. To know by looking is called divine. To know by listening is called wise. To know by asking is called the work of a craftsman. To know by feeling the pulse is called skill. The best physician, on this ranking, has seen what is wrong before he has touched the patient.

Mother and child. The last part gives the rules of treatment by the five phases, which chapter 46 explains. Where an organ is empty, the physician fills its mother. Where it is full, he empties its child. One question takes up the saying about treating what is not yet ill and gives an example. A physician who sees an illness of the liver knows that the liver will pass it to the spleen. So he strengthens the spleen first.

The Classic of the Divine Farmer

The Divine Farmer is the legendary ruler who taught the Chinese to plough. He is said to have tasted the hundred plants himself and to have met seventy poisons in a single day. The drug book that bears his name was compiled in the first or second century of our era. It was lost as a separate book. Its text survives because every later drug book quoted it in full.

It describes 365 drugs, one for each day of the year. About 250 are plants. The rest are animal materials and minerals. It sorts them into three grades.

Grade	Number	Rank	What they do	How they are used
Upper	120	Rulers	They nourish life and answer to heaven	Without poison. May be taken for long. They lighten the body and lengthen the years
Middle	120	Ministers	They nourish a person’s nature and answer to man	Some have poison. They prevent illness and build up what is weak
Lower	125	Assistants and envoys	They treat illness and answer to earth	Most have poison. They drive out cold, heat and evil *qi* and break up lumps. Not for long use

The order of rank reverses that of a modern pharmacy. The highest drugs are those that keep a healthy person well. The drugs that attack an illness stand lowest, since they also harm.

For each drug the book gives its flavour and its nature. There are five flavours: sour, bitter, sweet, acrid and salty. There are four natures: cold, cool, warm and hot. It names the complaints that the drug treats, and it says whether the drug has poison.

It also gives the rules for combining drugs. Two drugs may strengthen each other. One may guide another to its place. One may restrain the poison of another. And certain pairs must never be joined. A formula is built like a court. It has a ruler that treats the chief complaint and a minister that helps the ruler. It has assistants that treat lesser complaints or check the ruler’s harshness. And it has an envoy that leads the others to the place of the illness.

Some entries were confirmed in the laboratory eighteen centuries later.

Drug	What the classic says	What was found
Mahuang, ephedra	Brings out a sweat; stops cough and the *qi* that rises against its course	Ephedrine, isolated in 1885; taken into Western medicine for asthma in the 1920s
Changshan, dichroa root	For fevers that come and go	An active compound against the malaria parasite, found in the 1940s; too harsh on the stomach for use
Huanglian, coptis	For hot bowels with loose and bloody stools	Berberine, which acts against several bowel infections
Dahuang, rhubarb root	Purges; drives out old food and standing blood	Compounds that move the bowel; used as a purgative everywhere
Danggui, angelica root	For the illnesses of women and for a lack of blood	Still the chief drug for women in East Asia; trials are few and small
Renshen, ginseng	Builds up the five organs, calms the spirit, stops fright	Many trials with modest and mixed results

One entry did great harm. The first of the minerals in the upper grade is cinnabar, the red ore of mercury. The classic says that a person who takes it for long will commune with the spirits and not grow old. Alchemists made elixirs of it for a thousand years. Several emperors of the Tang dynasty died of them.

The Treatise on Cold Damage

The fourth classic is of another kind. It has no dialogue and little theory. It consists of some four hundred short clauses. Each states a set of signs and a pulse, and names the formula that answers to them (Mitchell 1999).

The book follows an illness that begins when cold strikes the surface of the body. It passes through six stages. Three are named after yang and three after yin.

Stage	Where the illness is	Chief signs	Leading formula	Method
Greater yang	The surface	Dread of cold, fever, a stiff and painful nape, a floating pulse	Cinnamon Twig Decoction; Ephedra Decoction	To bring out a light sweat
Yang brightness	The inside: stomach and gut	High fever without chill, sweating, great thirst, a large pulse; or a hard belly and no stool	White Tiger Decoction; the decoctions that order the *qi*	To clear heat; to purge
Lesser yang	Half outside, half inside	Chill and fever by turns, a bitter taste, a dry throat, dizziness, fullness under the ribs, a pulse like a taut string	Minor Bupleurum Decoction	To harmonise. Neither sweating nor purging is allowed
Greater yin	The spleen	A full belly, vomiting, loose stools, no thirst	The decoction that regulates the middle	To warm the centre
Lesser yin	The heart and the kidney	A faint and thin pulse, a wish only to sleep, cold limbs	The decoction for the four limbs that are cold, with aconite	To rescue the yang

Stage	Where the illness is	Chief signs	Leading formula	Method
Reverting yin	The last stage	Heat above and cold below; thirst; hunger without the wish to eat; cold limbs by turns with fever	The pill of the smoked plum	To treat cold and heat together

The first three stages are those of a body that fights. The last three are those of a body that gives way.

How a clause reads. The first formula of the book shows the method. In an illness of the greater yang with fever, sweating, a dread of wind and a pulse that floats and is slack, Cinnamon Twig Decoction governs. It has five ingredients: cinnamon twig, peony root, fresh ginger, jujube fruit and liquorice. The clause then gives the nursing. The patient drinks one cup warm. A little later he eats a bowl of hot, thin rice gruel, to help the drug. He is covered for a while, so that a light sweat appears over the whole body. A dripping sweat is wrong, and the illness will not leave. If one cup brings the sweat, the rest is not taken. Raw, cold, greasy and strong-smelling foods and wine are forbidden.

Mistakes are part of the text. About a third of the clauses deal with patients who were treated wrongly. A physician purged when he should have sweated, and the illness sank inward. Another sweated a patient too much, and the yang gave out. For each such error the book gives the signs and the remedy.

The body heals itself. One clause sets a limit to all treatment. Whatever the illness, and whatever has been done, if yin and yang come into harmony of themselves, the patient will recover of himself.

The seventh day. The book counts days as the Greek physicians did. An illness of the greater yang, it says, may end of itself on the seventh day, when it has gone its round. If it does not, it passes on.

The golden casket. The second half of Zhang Zhongjing’s work came down as a separate book. It treats illnesses other than fevers, in the same manner, with some two hundred and sixty formulas. Several of its conditions are of the mind. In one, a woman is sad, weeps without cause, yawns and stretches, and behaves as if a spirit had taken hold of her. The remedy has three ingredients: liquorice, wheat and jujube fruit. In another, a patient feels a piece of roasted meat stuck in the throat that can be neither swallowed nor spat out. Physicians call it plum-stone *qi* and treat it with a decoction of pinellia and magnolia bark.

What the four have in common

1. **The body answers to the world,** season by season and hour by hour.
2. **Prevention ranks above cure.** The highest drugs and the highest physicians keep the healthy well.
3. **The spirit comes first,** in the physician and in the patient.
4. **An illness has a place and a stage.** Treatment follows the stage and changes with it.
5. **The pulse at the wrist shows the whole.**
6. **A formula is a small state,** with a ruler, a minister, assistants and an envoy.
7. **The classics remember an older cure** by declaring the origin, and they record what goes wrong when a physician errs.

46. The ground: qi, yin and yang, the five phases

Qi

The oldest form of the written character shows vapour rising. The later form adds a grain of rice below it: the steam that rises from cooking rice. The word means breath, air, vapour, weather, mood and smell. A Chinese speaker uses it many times a day. The weather is the *qi* of heaven. To be angry is to bring forth *qi*. A person with a good manner has good *qi*.

In medicine *qi* is what moves and what makes move. The classics do not define it. They say what it does. The modern textbooks list five works.

1. **It moves.** The blood goes because *qi* leads it. Food descends, the breath goes in and out, and a child grows, because *qi* moves.
2. **It warms.**
3. **It defends** the surface of the body against what comes from outside.
4. **It transforms** food into blood, and fluid into sweat and urine.
5. **It holds** the blood in the vessels, the organs in their places, and the sweat in the skin.

Qi is not an object that sits in a place. It is always under way, and it has a direction. The textbooks name four directions. It rises, it descends, it goes out, and it comes in. Each organ has its own. The *qi* of the stomach descends. That of the spleen rises. That of the lung spreads outward and sends downward. That of the liver spreads to every side and keeps the others free.

Four faults of *qi* follow from this. They are the first words of diagnosis that a student learns.

Fault	What is seen
Too little	Tiredness, a weak voice, shortness of breath, sweating without exertion, a weak pulse
Sinking	A dragging feeling, organs that drop from their place, loose stools that do not stop
Standing still	Fullness or tightness that comes and goes, pain that moves about, sighing, changing moods
Going against its course	Cough, hiccup, vomiting and belching; headache and dizziness when the liver's *qi* rushes upward

Two of the four are faults of direction, and one is a fault of passage. Only the first is a fault of amount.

Kinds of qi. The classics give many names. They do not name different materials. They name one *qi* by its source, its place and its work.

Name	Source and place	Work
Original *qi*	Received from the parents; kept in the kidneys	The root of the others. It cannot be replaced. It can only be spared
Grain *qi*	Drawn from food by the stomach and the spleen	The material of all that is made after birth
Gathering *qi*	Formed in the chest from grain *qi* and breathed air	Moves the breath and the heartbeat; gives the voice its strength
Nourishing *qi*	The finer part; it goes inside the vessels with the blood	Feeds every part
Defensive *qi*	The quick and coarse part; it goes outside the vessels, in the skin and flesh	Warms and guards the surface; opens and shuts the pores. It is at the surface by day and within by night
Upright *qi*	All of these together	A person’s power to stay well
Evil *qi*	From outside, or arising within	Whatever makes ill

Two lines of the *Inner Classic* are quoted in every discussion of who falls ill and who does not. Where the upright *qi* is kept within, evil cannot attack. And where evil has gathered, the *qi* must have been empty.

Why the word is not translated. Western books of the twentieth century rendered *qi* as “energy”. The rendering was introduced in the 1930s by a French diplomat who had learned needling in China. He also gave the vessels the name “meridians”, after the lines on a globe. Both words suited an age that thought in engines and batteries. They suggest an amount that is stored, spent and topped up.

The Chinese texts speak far more of direction, passage and timing than of amount. The historian Paul Unschuld proposes “finest matter” or “vapour”. The historian Nathan Sivin wrote that *qi* is both what makes happen and that in which it happens. This book leaves the word as it is.

Essence, qi and spirit

Chinese medicine names three forms of what makes a living person. It calls them the three treasures.

Essence. The Chinese word is *jing*. It is the densest of the three. A person receives it from the parents at conception and adds to it from food. It is kept in the kidneys. It governs growth, ripening, the power to have children, and decline. The steps of seven and eight years in chapter 45 are steps of the essence. It becomes marrow, and the classics call the brain the sea of marrow. It is spent by overwork, by long illness and by sexual excess. When it is used up, life ends.

Qi stands between.

Spirit. The Chinese word is *shen*. It is the finest of the three, and it lodges in the heart. It shows in the brightness of the eyes, in clear speech and thought, and in the presence of a person. The physician looks for it first. One who has spirit, the classic says, will live. One who has lost it will die.

The three are one in three densities. Essence gives rise to *qi*, and *qi* gives rise to spirit. In the other direction, a settled spirit spares the *qi* and the essence. The Daoist adepts made a programme of this. They sought to refine essence into *qi* and *qi* into spirit, and to return the spirit to emptiness.

Five lodgings of the spirit. The classics lodge an aspect of the spirit in each of the five solid organs.

Organ	What lodges there	Its nature
Heart	*Shen*, the spirit itself	Awareness; it rules the others
Liver	*Hun*, the cloud soul	It comes and goes with the spirit. It travels in dreams and leaves the body at death
Lung	*Po*, the bodily soul	It belongs to the flesh: sensation, reflex, the cry of the newborn. It dies with the body
Spleen	*Yi*, thought	Attention, study, memory of what was learned
Kidney	*Zhi*, will	Purpose that holds over time

The reader will recognise the two souls of chapter 6. One travels and survives. One stays with the body and ends with it. The Chinese physician finds the first in the liver and the second in the lung. A patient who sleeps badly and is startled in his dreams is said to have a cloud soul that will not settle.

Blood and fluids

Blood, in this medicine, is more than the red liquid. It is the yin partner of *qi*. It is made from food by the spleen and reddened in the heart. It rests in the liver when a person lies down. Two sayings give the relation of the pair. *Qi* is the commander of blood. Blood is the mother of *qi*. Where *qi* goes, blood follows, and a person who has lost much blood has lost *qi* with it.

Blood has three faults.

Fault	What is seen
Too little	A pale face and pale lips, dizziness, dry skin and hair, numb limbs, scanty monthly blood, a thin pulse
Standing blood	A fixed, stabbing pain that is worse at night; lumps; a dark or purple tongue; a choppy pulse
Heat in the blood	Bleeding, red rashes, restlessness; a crimson tongue

The fluids are sweat, tears, saliva, the moisture of the joints and the like. When they are not moved and transformed, they thicken. The thin form is called damp. The thick form is called phlegm. Phlegm in this sense is not only what is coughed up. It can settle in the vessels, the joints or the heart, and it can cloud the mind. An old saying holds that strange illnesses are mostly phlegm.

Yin and yang

The two characters mean the shaded side and the sunlit side of a hill. Nothing is yin or yang in itself. The same slope is sunlit in the morning and shaded in the evening. The words name a relation between two sides.

Yin	Yang
The shaded side	The sunlit side
Night	Day
Cold	Heat
Rest	Movement

Yin	Yang
Inward and downward	Outward and upward
Earth, water, the moon	Heaven, fire, the sun
Form	Activity
Dark, heavy, moist	Bright, light, dry

The classics describe four relations between the two.

They oppose and check each other. Heat is checked by cold, and movement by rest.

They are rooted in each other. There is no shade without light. Activity needs form to act in, and form needs activity to stay alive. When the two part, the classic says, the essence and the *qi* are cut off. That is death.

They wax and wane in turn. Day grows as night shrinks, and the seasons do the same. In a healthy body the two change places in the course of every day and every month.

They turn into each other at the extreme. Extreme cold gives birth to heat, the classic says, and extreme heat gives birth to cold. A high fever can end in sudden collapse, with cold limbs and a vanishing pulse.

Division without end. Whatever is yin or yang can be divided again into yin and yang. The *Inner Classic* divides the day so. From dawn to noon is the yang within yang. From noon to dusk is the yin within yang. From dusk to midnight is the yin within yin. From midnight to dawn is the yang within yin. Counted out, the classic says, yin and yang can be extended to ten, to a hundred, to a thousand and to ten thousand. Yet their essential is one.

In the body. Every part of the body is assigned by the same relation.

Yin	Yang
Below the waist	Above the waist
The front, the belly	The back
The inside	The surface
The five solid organs, which store	The six hollow organs, which pass on
Blood and fluids	*Qi*
The inner side of the limbs	The outer side of the limbs

In illness. A healthy person is one in whom yin and yang are level. Four simple departures are possible, and each has its signs.

State	The patient	Tongue and pulse
Yang in excess: full heat	High fever, a red face, thirst for cold drinks, restlessness, dark urine, dry stools	A red tongue with a yellow coat; a rapid and strong pulse
Yin in excess: full cold	Chilliness, a pale face, no thirst, pain that warmth relieves, clear urine, loose stools	A pale tongue with a white coat; a slow and tight pulse
Yang too weak: empty cold	A cold body and cold limbs, tiredness, a wish to lie curled up, swelling	A pale and swollen tongue; a deep and weak pulse
Yin too weak: empty heat	Heat in the afternoon and at night, sweating in sleep, hot palms and soles, a dry mouth, red cheeks	A red tongue without coat; a thin and rapid pulse

The second pair matters most in long illness. A person can be hot because there is too much heat, or because there is too little of what cools. The two are treated in opposite ways. The first is cleared. The second is nourished. A physician who clears an empty heat makes the patient worse.

Three and three. For some purposes the classics divide each of the two in three, by amount. The three of yang are called the greater yang, the yang brightness and the lesser yang. The three of yin are the greater yin, the lesser yin and the reverting yin. The six names label the six stages of a fever, as chapter 45 showed, and the six pairs of vessels of chapter 47.

One chapter of the *Inner Classic* gives each of the three a part to play. The image is a door. Of the three yang, the greater yang opens, the yang brightness closes, and the lesser yang is the pivot. Of the three yin, the greater yin opens, the reverting yin closes, and the lesser yin is the pivot. A door has a leaf that opens, a bar that shuts, and a post on which it turns. The illness of the lesser yang, which is neither outside nor inside, is treated accordingly. It is not driven out by sweating, and it is not purged downward. It is harmonised at the pivot.

The Changes. The oldest book of the Chinese, the *Changes*, builds everything from a broken line and a whole line. Three lines make eight figures, and six lines make sixty-four. Chapter 26 compared them with the signs of Ifá. Physicians have always studied the book. A saying that is given to Sun Simiao holds that one who does not know the *Changes* cannot be called a great physician.

The rule of treatment. All treatment aims to bring the two level. What is hot is cooled, and what is cold is warmed. What is empty is filled, and what is full is emptied. A finer rule adds that each must be sought in the other. A physician who wants to build up yang must also feed the yin from which it grows.

What yin and yang are not

Three misreadings are common.

Yin and yang are not two materials. No test can find them in a sample of blood.

They are not good and evil. An excess of either is illness, and so is a lack of either.

They are not fixed labels. The heart is yin as a solid organ and yang as the organ of fire. The question is always: in relation to what?

The five phases

The second scheme of Chinese thought sorts the world into five. The five are named wood, fire, earth, metal and water. They are often called elements in English, after the four of the Greeks. The Chinese word means a going or a doing. They are five kinds of movement, and the usual modern rendering is phases.

The oldest text that names them describes each by what it does. Water soaks and descends. Fire flames and rises. Wood can be bent and straightened. Metal can be shaped and changed. Earth takes the seed and gives the crop.

A year passes through them. Spring is wood: all springs up and spreads. Summer is fire: all reaches its height. Autumn is metal: all is gathered and cut. Winter is water: all is stored below. Earth stands at the centre. It is the turning from each season to the next, and in another reckoning the damp late summer.

The table of fives. Whatever comes in fives was placed in the scheme. The table gives the members that medicine uses.

	Wood	Fire	Earth	Metal	Water
Season	Spring	Summer	Late summer	Autumn	Winter
Direction	East	South	Centre	West	North
Weather	Wind	Heat	Damp	Dryness	Cold
Stage	Birth	Growth	Change	Gathering	Storing
Colour	Green-blue	Red	Yellow	White	Black
Flavour	Sour	Bitter	Sweet	Acrid	Salty

	Wood	Fire	Earth	Metal	Water
Solid organ	Liver	Heart	Spleen	Lung	Kidney
Hollow organ	Gallbladder	Small intestine	Stomach	Large intestine	Bladder
Opens into	Eyes	Tongue	Mouth	Nose	Ears
Tissue	Sinews	Vessels	Flesh	Skin	Bones
Shows in	Nails	Face	Lips	Body hair	Hair of the head
Fluid	Tears	Sweat	Saliva	Mucus of the nose	Spittle
Feeling	Anger	Joy	Brooding	Grief	Fear
Voice	Shouting	Laughing	Singing	Weeping	Groaning
Note of the scale	*Jue*	*Zhi*	*Gong*	*Shang*	*Yu*
Smell	Rancid	Scorched	Fragrant	Rank	Rotten
What lodges	Cloud soul	Spirit	Thought	Bodily soul	Will
Number	Eight	Seven	Five	Nine	Six

A physician uses the table as a set of pointers. A patient with a greenish tinge round the eyes, a shouting voice, brittle nails and a liking for sour food directs him to the liver. None of the signs proves anything alone. Several from one column make a case.

Two cycles. The five are joined by two orders.

In the first, each phase bears the next. Wood feeds fire. Fire leaves ash, which is earth. Earth bears metal in its veins. Metal gathers water, as dew gathers on a blade. Water makes wood grow. The one that bears is called the mother, and the one that is borne the child.

In the second, each phase checks another. Wood parts earth with its roots. Earth dams water. Water quenches fire. Fire melts metal. Metal cuts wood.

Each phase therefore stands in four relations. One phase bears it. It bears one. One checks it. It checks one. No phase is highest. The scheme has no first member and no last.

Why five. Five is the smallest number for which this double order can exist. Set the members on a circle. One cycle goes from each to its neighbour, and it traces a figure of five sides. The other goes from each to the next but one, and it traces a star of five points. Together the two cycles join every member to every other, each pair in exactly one way.

With three members the second cycle would be the first one walked backward. With four, the step to the next but one does not go round. It only swings between two opposite members. So a world in which each part is both fed and held in check, by different parts, needs at least five.

Two faults. The checking cycle can fail in two ways. A phase may check too hard, when it is too strong or its partner too weak. The Chinese say that it overacts. Or the order may turn round, and a phase that should be checked attacks the one that checks it. The Chinese say that it insults.

In the clinic. The cycles give the physician a map of how an illness travels and where to meet it.

Saying	What is meant	What is seen
Wood overacts on earth	The liver's *qi*, knotted by anger or frustration, presses on the stomach and the spleen	Pain and fullness in the upper belly after a quarrel; belching; sour risings
Water does not nourish wood	The kidney's yin is low, and the liver's yang rises unchecked	Dizziness, ringing in the ears, a flushed face, a hot temper
Fire and water do not meet	The heart above and the kidney below have lost touch	Sleeplessness, palpitations, a dry mouth at night, a weak lower back
Earth does not bear metal	A weak spleen leaves the lung without support	Poor appetite with a weak cough, phlegm, frequent colds
The fire of wood scorches metal	Heat of the liver rises and injures the lung	Fits of coughing with pain under the ribs, sometimes blood

The rule of mother and child from the *Classic of Difficult Issues* belongs here. An empty organ is filled through its mother. A full organ is emptied through its child. A weak lung is treated by strengthening the spleen. An overheated liver is cooled by clearing the heart.

The feelings check each other. The checking cycle holds for the five feelings too, and the *Inner Classic* draws the conclusion. Anger injures the liver, and grief overcomes anger. Joy injures the heart, and fear overcomes joy. Brooding injures the spleen, and anger overcomes brooding. Grief injures the lung, and joy overcomes grief. Fear injures the kidney, and brooding overcomes fear. Chapter 44 described how Zhang Congzheng cured a woman of sleeplessness by making her angry. He was applying this list.

The limits of the scheme. The five phases never had the general assent that yin and yang had. Chinese critics from the first century on pointed out that not everything comes in fives. They added that the two cycles can be made to explain any event after it has happened. The textbooks use the scheme where it helps and leave it aside where it does not. The Japanese physicians of the eighteenth century, as chapter 65 tells, threw it out altogether and kept the formulas.

Its lasting worth lies in one idea. No organ is ill alone. Each is fed by one and checked by another, and a physician who looks at one organ must look at four more.

The twelve pipes

One more part of the ground is seldom taught in the modern colleges. The classics take it for granted. It is the doctrine of the pitch pipes.

The Chinese fixed musical pitch by twelve pipes of bamboo, cut to exact lengths. The Chinese name for them means the rules or the standards. The first and longest is the Yellow Bell. The state derived its measures from it. Its length gave the unit of length. The number of millet grains that filled it gave the unit of volume, and their weight gave the unit of weight. A new dynasty began by fixing the Yellow Bell anew.

The twelve pipes were matched with the twelve months. Court astronomers even tried to observe the match. They buried the pipes in a sealed room, filled the mouths with fine ash, and waited for the ash of each pipe to stir in its month. The practice was kept up for centuries and was doubted in the end. It shows what was believed. The pitches, the months and the *qi* of the earth were held to form one series.

One third less, one third more

The twelve pipes are not chosen by ear. They are generated by a rule, which texts of the third century before our era state. Its name means: divide in three, take away one, add one.

Begin with a pipe whose length is counted as 81. Take away a third, and the next pipe is 54. Add a third to that, and the next is 72. Take away a third, and the next is 48. Add a third, and the next is 64.

These five lengths are the five notes of the Chinese scale.

Note	Number	Phase	Organ
Gong	81	Earth	Spleen
Shang	72	Metal	Lung
Jue	64	Wood	Liver
Zhi	54	Fire	Heart

Note	Number	Phase	Organ
Yu	48	Water	Kidney

The starting number is not arbitrary. Eighty-one is three taken four times. It can be divided by three four times over without a remainder, and the five notes need exactly four steps.

The rule can be carried on. Seven more steps give twelve pipes in all, and these are the twelve standards. After the fifth step the numbers are no longer whole.

Each step does two operations at once. It divides by three, and it multiplies by two or by four. Every pipe is therefore a product of twos set against threes.

The pipe that does not come home

The makers of the pipes knew that the series does not close. The thirteenth pipe ought to be exactly half the first, which is forty and a half. The rule gives a little less than forty. The thirteenth note is slightly too high. If the series is carried on from there, every later pipe is off by the same small step.

The scholar Jing Fang, who died in 37 before our era, pursued the matter. He carried the rule through sixty steps. He found that the fifty-fourth pipe comes back almost exactly to the first, far closer than the thirteenth does. The gap is about a sixth of the earlier one.

The problem was solved in the end by giving up the rule. In 1584 a prince of the Ming house, Zhu Zaiyu, calculated twelve equal steps that close the octave exactly. Each is the twelfth root of two. He was the first in the world to do so, by a few years. The equal steps close the circle at a price. No interval in them except the octave is a ratio of whole numbers.

Where the two ladders show

Chapter 2 of this book described two ladders. Forms that close as a meeting double. Forms that close as a ring triple. No power of two is ever a power of three, so the ladders never meet exactly. They come close at certain depths. Counted in steps of three, the first of these depths are one, two, five, twelve, forty-one and fifty-three.

The Chinese rule of the pipes is that pair of ladders, worked out on bamboo. Each step sets a three against a two. And the Chinese stopped at the depths where the ladders come nearest. They stopped at five for the notes of the scale and at twelve for the standards. Jing Fang went on and found fifty-three.

The classics then built the body on the same two numbers. There are five solid organs and five phases. There are twelve vessels and twelve officials. The *Divine Pivot* says so in plain words. The twelve vessels, it states, answer to the twelve pipes, the twelve months and the twelve hours of the day. That is how the organs of a person answer to the way of heaven.

Chapter 73 returns to these numbers. Here it is enough to note that the count of five and twelve in Chinese medicine was not taken from the body. It was taken from the pipes.

Music and medicine

The classics tie sound to the body at several points.

Each of the five solid organs has a note of the scale, as the table shows. A chapter of the *Divine Pivot* sorts people into twenty-five kinds, five for each phase. It names each kind after a note and its variants. A person of the pure note of wood has a greenish skin, a small head, a long face, broad shoulders and a straight back. He is clever, works with his mind, has little bodily strength and worries much. He bears spring and summer well, and autumn and winter badly.

The physician listens to the patient's voice for its note: a shout, a laugh, a sing-song, a sob or a groan.

The written character for a drug is itself a pointer. It consists of the sign for plants, set over the character for music. That same character, read in another way, means joy.

In modern China a therapy by music of the five notes is practised. It was devised in the twentieth century on the ground of these old lists. Its trials are few and small.

The numbers of Chinese medicine

The table collects the counts that the following chapters use.

Number	What is counted
Two	Yin and yang
Three	Heaven, earth and man. Essence, *qi* and spirit. The three burners. Three yin and three yang. Three places of the pulse and three depths
Four	The seasons. The four examinations. The four natures of drugs. The four levels of a warm illness
Five	The phases, the solid organs, the notes, the flavours, the feelings, the transport points
Six	The *qi* of heaven. The hollow organs. The stages of cold damage

Number	What is counted
Seven and eight	The steps of a woman’s and a man’s life. Seven feelings. Eight principles. Eight extraordinary vessels. Eight figures of the *Changes*
Nine	The nine needles. The nine readings of the pulse on each arm. Nine times nine chapters in each classic
Twelve	The vessels, the pipes, the months, the hours, the officials
Twenty-seven or twenty-eight	The kinds of pulse
Fifty	The rounds of the *qi* in a day and a night
Sixty	The cycle of years
Sixty-four	The figures of the *Changes*
365	The days of the year, the drugs of the first drug book, the points in the classical count

What stands out in the ground

1. ***Qi* is named by what it does and by its direction.** Of its four faults, two are of direction, one is of passage and one is of amount.
2. **Essence, *qi* and spirit are one in three densities,** and each can become the next.
3. **A person has a soul that travels and a soul that stays.** The physician looks after both.
4. **Yin and yang are a relation and not two materials.** Each can be divided again without end.
5. **Each set of three has a part that opens, a part that closes and a pivot.**
6. **Five is the smallest count in which every member is both fed and checked by others.**
7. **Twelve and five come from the pitch pipes,** which set twos against threes and never quite close.
8. **Breath, pulse, day and year are held to be locked in whole numbers.** The classics give the numbers even where they did not measure them.

47. The body: organs, warp and net

A body known by its works

The Chinese physicians knew what is inside a body. A chapter of the *Divine Pivot* says that a dead man may be opened and looked at. It gives the length of the gut, the capacity of the stomach and the weight of the organs. Drawings of the opened body were made under the Song.

Their medicine was not built on that knowledge. It was built on what can be observed in a living person. The doctrine of the organs has a name that says so. It is called the teaching of what is stored within and shows without. Each organ is known by a set of works and by a sense organ into which it opens. It is known also by a tissue that it governs, by a feeling, and by a place on the surface where its state can be seen.

An organ in this sense is therefore wider than the piece of flesh of the same name. The Chinese spleen digests. The Chinese kidney governs growth and the power to have children. A patient who is told that his kidney is weak does not need a kidney specialist.

There are two sets. The five solid organs store and do not pass on. The classics call them depots. The six hollow organs pass on and do not store. The classics call them palaces. The solid organs are the core of the doctrine.

The five solid organs

The heart. The heart governs the blood and the vessels. It houses the spirit. It opens into the tongue, and its state shows in the face. Its feeling is joy.

Because it houses the spirit, the heart in Chinese medicine does what the West gives to the brain. Sleep, memory, clear thought and a steady mood depend on it. When the blood of the heart is scanty, the spirit has no lodging. The person sleeps lightly, dreams much, forgets, and is easily startled. When fire rises in the heart, the tip of the tongue is red and sore, and the person is restless and cannot sleep at all. When phlegm clouds the heart, he is confused or senseless.

The lung. The lung governs the *qi* and the breath. It spreads the defensive *qi* and the fluids outward to the skin, and it sends *qi* and fluids downward to the kidney and the bladder. It governs the skin and the body hair. It opens into the nose. Its feeling is grief.

The lung is called the tender organ. It is the first to be struck by what comes from outside, since it is the only solid organ in touch with the air. A common cold is an attack on the lung's defence. The link between lung and skin is used daily. A child with eczema is examined for asthma, and a rash is treated through the lung.

The spleen. The spleen, with the stomach, turns food and drink into *qi* and blood and carries them to every part. It is called the root of what a person acquires after birth. It sends the clear

part upward. It holds the blood inside the vessels and the organs in their places. It governs the flesh and the four limbs. It opens into the mouth, and its state shows in the lips. Its feeling is brooding. It dislikes damp.

A weak spleen is the commonest finding in a Chinese clinic. The patient is tired, above all after meals. He has no appetite, a swollen belly and loose stools. His limbs feel heavy. He bruises easily. Much study and much worry, the physicians say, knot the *qi* of the spleen, and so does irregular eating.

The liver. The liver stores the blood. When a person moves, the blood goes out to the vessels. When he lies down, it returns to the liver. The liver's second work has no Western counterpart. It keeps the *qi* of the whole body moving freely to every side. Digestion, the monthly cycle and an even mood depend on that freedom. The liver governs the sinews. It opens into the eyes, and its state shows in the nails. Its feeling is anger. It is called the general, and it hates to be hemmed in.

When the liver's *qi* is knotted, the person sighs, feels a tightness under the ribs and a lump in the throat, and swings between low spirits and irritation. A woman's breasts swell before her period. It is the commonest pattern that modern Chinese physicians record in city patients. When the knot turns to fire, there is headache, red eyes, a bitter taste and rage. When the liver's yang rises unchecked, there is dizziness. When wind stirs within, there is tremor, convulsion or a stroke.

The kidney. The kidney stores the essence. It governs birth, growth, the power to have children, and ageing. It governs water. It receives the breath: the lung sends the *qi* down, and the kidney grasps it. It governs the bones and makes the marrow, which fills the brain. It opens into the ears, and its state shows in the hair of the head. Its feeling is fear. It is called the root of what a person has from before birth.

The yin and the yang of the kidney are the root of the yin and yang of every other organ. The kidney has only one kind of fault. It is never too full. It can only be too empty. A child who is slow to walk, to speak and to close the gaps of the skull has a weak essence. So has a man who is grey and deaf at forty. A person whose kidney does not grasp the breath can breathe out and cannot breathe in deeply, and pants at the least effort.

A sixth. The classics add a sixth solid organ to make twelve in all. It is the wrapping of the heart, which takes the blows that are meant for the ruler.

The six hollow organs

Organ	Work	Note
Stomach	Receives food and ripens it	Called the sea of water and grain. Its *qi* must descend. When it rises, there is belching and vomiting
Small intestine	Separates the clear from the turbid	The clear goes to the spleen, the turbid onward
Large intestine	Passes on the dregs	
Gallbladder	Stores the bile; decides	Courage sits here. A brave man is said in Chinese to have a large gallbladder
Bladder	Stores and sends out the urine	
Triple burner	The passage of the original *qi* and of the fluids	Said to have a name and no form

The triple burner needs a word. It is not an organ that can be pointed to. It is the three regions of the trunk, taken as one passage. The upper burner, above the midriff, holds the heart and the lung. The classic says that it is like a mist. The middle burner holds the stomach and the spleen and is like a foaming vat. The lower burner holds the liver, the kidney, the bladder and the gut and is like a ditch that carries water away.

Each solid organ is paired with a hollow one, as inside and outside of one office.

Solid organ	Hollow organ	Phase
Lung	Large intestine	Metal
Spleen	Stomach	Earth
Heart	Small intestine	Fire
Kidney	Bladder	Water
Wrapping of the heart	Triple burner	Fire
Liver	Gallbladder	Wood

The hours of the body

The *qi* passes through the twelve organs in a fixed order in the course of a day, and stays two hours at its height in each.

Hours	Organ	Hours	Organ
3 to 5	Lung	15 to 17	Bladder
5 to 7	Large intestine	17 to 19	Kidney
7 to 9	Stomach	19 to 21	Wrapping of the heart
9 to 11	Spleen	21 to 23	Triple burner
11 to 13	Heart	23 to 1	Gallbladder
13 to 15	Small intestine	1 to 3	Liver

The physician uses the table in questioning. A complaint that returns at a fixed hour points to the organ of that hour. A person who wakes every night between one and three is examined for the liver. A cough or a tight chest that is worst before dawn points to the lung. Modern medicine has found, for its own reasons, that attacks of asthma are most frequent in the hours before dawn.

Needlers of the twelfth century built a method on the table. It chooses the point to be needled by the hour and the day. It is still taught, and it has been little tested.

Warp and net

The organs are joined to each other and to the surface by a system of vessels. Its Chinese name consists of two words from the craft of weaving. The first is the warp, the long threads that are stretched on a loom before the weaving begins. The second is a net. The same first word is used for a classic book, which runs through a tradition as the warp runs through a cloth.

Western books call the long vessels meridians or channels. This book says vessels where the Chinese says vessels, and otherwise keeps the image of the warp and the net.

The system has layers. They are listed here from the surface to the depth.

Layer	Number	What it is
Regions of the skin	12	The skin, divided into the fields of the twelve warp vessels

Layer	Number	What it is
Net vessels	15 large, countless small	The mesh that spreads from the warp vessels through skin and flesh. The small veins seen at the surface belong to it
Sinew vessels	12	Bands of muscle and tendon along each warp vessel. They knot at the joints and have no points
Warp vessels	12	The main lines. Each belongs to one organ and bears the points
Divergent vessels	12	Branches that leave the warp vessels at the large joints, go deep to the organs, and rejoin at the neck
Extraordinary vessels	8	Lakes that take up what the warp vessels cannot hold

The twelve warp vessels

Each warp vessel is named after its limb, its share of yin or yang, and its organ. The full name of the first is the vessel of the lung, the greater yin of the hand.

The twelve form one circuit. The *qi* goes through them in the order of the hours given above. The circuit has a simple plan. A yin vessel of the hand runs from the chest along the inner side of the arm to the fingers. There it meets a yang vessel of the hand, which runs along the outer side of the arm to the head. On the head it meets a yang vessel of the foot, which runs down the body to the toes. There it meets a yin vessel of the foot, which runs up the inner side of the leg to the chest. Then the round begins again with the next yin vessel of the hand.

Four vessels make one round, from chest to hand, to head, to foot, and back to the chest. Three rounds make the twelve.

Round	Hand yin	Hand yang	Foot yang	Foot yin	Part of the body
First	Lung, greater yin	Large intestine, yang brightness	Stomach, yang brightness	Spleen, greater yin	The front
Second	Heart, lesser yin	Small intestine, greater yang	Bladder, greater yang	Kidney, lesser yin	The back
Third	Wrapping of the heart, reverting yin	Triple burner, lesser yang	Gallbladder, lesser yang	Liver, reverting yin	The sides

The table shows the order behind the list. The three kinds of yang divide the surface of the body into three strips. The yang brightness covers the front. The greater yang covers the back. The lesser yang covers the sides, between the two. Chapter 46 gave their parts: one closes, one opens, and one is the pivot.

A physician reads pain by these strips. A headache at the back of the head and the nape belongs to the greater yang. One at the forehead belongs to the yang brightness. One at the temples belongs to the lesser yang. He chooses his points on the vessel of that strip, often far from the pain, at the hand or the foot.

Eight extraordinary vessels

Eight further vessels belong to no organ and form no circuit. The *Classic of Difficult Issues* explains them by an image. The wise kings of old dug ditches to carry the water. When the rains were too heavy, the ditches ran over, and the surplus went into lakes. The extraordinary vessels are the lakes.

Vessel	Course	Work
Governing vessel	Up the midline of the back, over the head, to the upper lip	The sea of the yang vessels
Controlling vessel	Up the midline of the front, from the perineum to the lower lip	The sea of the yin vessels. Governs the womb and the bearing of children

Vessel	Course	Work
Thoroughfare vessel	From the womb or lower belly upward beside the midline	The sea of blood. Governs the monthly cycle
Girdle vessel	Round the waist	The only one that runs across. It binds the upright vessels like a belt
Yin and yang heel vessels	From the inner and outer ankle to the eyes	The opening and shutting of the eyes; sleep and waking; the gait
Yin and yang linking vessels	From the lower leg to the head	They link all the yin vessels and all the yang vessels

The first two bear points of their own. With the twelve warp vessels they make the fourteen lines of the needling charts. The Daoist adepts lead the breath in thought up the governing vessel and down the controlling vessel in a closed ring. They call it the small round of heaven.

The points

Along the fourteen lines lie the points. The Chinese word means a hole or a cave. A point is a place where the *qi* of a vessel can be reached from the surface. The classics count 365, one for each day of the year. The modern standard has 361. Beside these there are several dozen points off the lines, and the tender places that the physician finds by pressing. The last have a name that records the patient's cry. They are called the "that is it" points.

A point is found by measure and by touch. The measure is the patient's own body. The unit is the body inch. It is defined for each region. Twelve of them lie between the crease of the elbow and the crease of the wrist. The breadth of the patient's thumb is one. A tall man's inch is longer than a child's. The finger then feels for the hollow, between two sinews, beside a bone or in the belly of a muscle.

Certain groups of points have special uses.

Group	Where	Use
Five transport points	Between the tips of the limbs and the elbow or knee, five on each vessel	The *qi* is pictured as water that grows: a well at the tip, then a spring, a stream, a river, and a sea at the elbow or knee. Each of the five has a phase. They are the points by which mother and child are treated
Source points	At the wrist and ankle, one on each vessel	They reach the original *qi* of the organ
Net points	One on each vessel	They join a vessel to its partner
Cleft points	One on each vessel	For sudden, painful conditions
Back transport points	On the back, beside the spine, one for each organ	They treat the organ at the same level
Front gathering points	On the chest and belly, one for each organ	They become tender when the organ is ill, and are pressed in diagnosis
Eight meeting points	One each for the solid organs, hollow organs, *qi*, blood, sinews, vessels, bones and marrow	
Eight confluence points	On the wrists and ankles	They open the eight extraordinary vessels

What a vessel is

Nobody has found the warp vessels as structures in the body. A dissector finds nerves, blood vessels, muscles and sheets of connective tissue. He does not find twelve lines.

The oldest texts suggest how the lines were found. The Mawangdui manuscripts describe eleven vessels and no points. The vessels came first. They were probably traced in several ways at once. One was the veins and pulses that can be seen and felt. Another was the path that a pain or a numbness takes. A third was the sensations felt during burning, pressing and the leading of breath. The points were set on the lines later.

Three modern findings bear on the question.

Sensation that travels. In the 1970s Chinese researchers needled tens of thousands of volunteers and asked what they felt. In a minority of people a dull ache or a warmth travelled from the point along a line. The line mostly followed the classical vessel. It moved a few centimetres a second, far more slowly than a signal in a nerve.

Connective tissue. The American researcher Helene Langevin mapped the points of the arm on cut sections of the body. More than eight in ten lay where sheets of connective tissue meet between or within muscles (Langevin 2002). She also showed what happens when a needle is turned. The connective tissue winds round it, and the needle is gripped. The grip was stronger at points than beside them. Needlers have always felt this. They say that the *qi* has arrived, and they compare it to a fish taking the bait.

Tender points. Western physicians who treat muscle pain mapped the tender knots from which pain spreads. The pain researcher Ronald Melzack compared these maps with the needling charts in 1977. Seven in ten of the tender knots lay at a classical point that was used for the same kind of pain (Melzack 1977).

None of this shows that the vessels exist as the classics describe them. It shows that the charts record real regularities of the living body: where it is tender, where sensation travels, where the sheets of tissue meet.

Reference: the fourteen vessels

The table gives the twelve warp vessels in the order of the circuit, and then the two extraordinary vessels that bear points. The number of points is that of the modern standard. The total is 361.

Vessel	Points	Course in brief	First and last point	Chiefly used for
Lung, greater yin of the hand	11	From the chest below the collarbone, down the front of the inner arm, to the outer corner of the thumbnail	Central Treasury; Lesser Shang	Cough, asthma, sore throat, colds, illnesses of the skin

Vessel	Points	Course in brief	First and last point	Chiefly used for
Large intestine, yang brightness of the hand	20	From the tip of the index finger, up the outer arm, over the shoulder and neck, to the side of the nose	Shang Yang; Welcome Fragrance	Pain of the face, teeth and throat; the nose; fever; the bowel
Stomach, yang brightness of the foot	45	From below the eye, down the face, the front of the neck, chest and belly, the front of the leg, to the second toe	Tear Container; Severe Mouth	The stomach and gut; the face; the breast; weakness of the legs; disorders of the mind with heat
Spleen, greater yin of the foot	21	From the inner corner of the great toe, up the inner leg and the belly, to the side of the chest	Hidden White; Great Wrapping	Digestion; swelling; the monthly cycle; bleeding
Heart, lesser yin of the hand	9	From the armpit, down the back of the inner arm, to the inner corner of the nail of the little finger	Summit Spring; Lesser Rushing	The heart; sleep; fright; loss of speech

Vessel	Points	Course in brief	First and last point	Chiefly used for
Small intestine, greater yang of the hand	19	From the outer corner of the little finger, up the back of the arm, over the shoulder blade and neck, to the front of the ear	Lesser Marsh; Palace of Hearing	Neck and shoulder; the ear; fever; lack of milk
Bladder, greater yang of the foot	67	From the inner corner of the eye, over the head, down the back in two lines beside the spine, down the back of the leg, to the little toe	Bright Eyes; Reaching Yin	The back and the whole spine; headache at the nape; every organ, through the points beside the spine
Kidney, lesser yin of the foot	27	From the sole of the foot, round the inner ankle, up the inner leg and the belly beside the midline, to below the collarbone	Bubbling Spring; Transport Mansion	The urinary and sexual organs; the lower back; the ears; fear; the root of yin and yang
Wrapping of the heart, reverting yin of the hand	9	From beside the nipple, down the middle of the inner arm, to the tip of the middle finger	Heavenly Pool; Central Rushing	The chest and the heart; nausea; the mind

Vessel	Points	Course in brief	First and last point	Chiefly used for
Triple burner, lesser yang of the hand	23	From the ring finger, up the middle of the outer arm, round the ear, to the outer end of the eyebrow	Rushing Pass; Silk Bamboo Hollow	The side of the head; the ear; fever by turns with chill
Gallbladder, lesser yang of the foot	44	From the outer corner of the eye, in curves over the side of the head, down the side of the trunk and leg, to the fourth toe	Pupil Crevice; Yin Portals of the Foot	Headache at the temples; the eyes and ears; the ribs; the hip and the side of the leg
Liver, reverting yin of the foot	14	From the great toe, up the inner leg, round the sexual organs, across the belly, to below the breast	Great Pile; Gate of the Cycle	The monthly cycle; the sexual organs; the eyes; headache at the crown; anger
Governing vessel	28	From the tip of the tailbone, up the midline of the back, over the head, to the gum of the upper lip	Long Strong; Gum Crossing	The spine; the brain; fever; collapse

Vessel	Points	Course in brief	First and last point	Chiefly used for
Controlling vessel	24	From the perineum, up the midline of the belly and chest, to the groove of the chin	Meeting of Yin; Container of Fluids	The womb and the lower belly; digestion; the chest; to build up what is empty

Reference: points in common use

The points have names, and the names carry knowledge. The table gives forty-one that every needler uses, with the meaning of the name. The letters and numbers are the international code.

Code	Name	Place	Chiefly used for
LU 7	Broken Sequence	Above the wrist, on the thumb side	Cough, stiff neck, headache; opens the controlling vessel
LU 9	Great Abyss	At the wrist crease, where the pulse is felt	Weak lung; the meeting point of the vessels
LI 4	Joining Valley	On the back of the hand, between thumb and index finger	Pain of the head and face; to bring out a sweat; to speed labour. Forbidden in pregnancy
LI 11	Pool at the Bend	At the outer end of the elbow crease	Fever; rashes; pain of the arm
LI 20	Welcome Fragrance	Beside the wing of the nose	A stuffed nose; loss of smell
ST 25	Heaven’s Pivot	Two inches beside the navel	Any disorder of the bowel

Code	Name	Place	Chiefly used for
ST 36	Leg Three Miles	Below the knee, a finger’s breadth outside the shinbone	Weak digestion; tiredness; to strengthen the whole body. The most used point of all
ST 40	Abundant Bulge	Halfway down the outside of the shin	Phlegm of every kind
SP 6	Meeting of Three Yin	Three inches above the inner ankle	The monthly cycle; labour; sleep; the three yin vessels of the leg meet here
SP 9	Yin Mound Spring	Below the inner side of the knee	Damp; swelling; difficult urination
SP 10	Sea of Blood	Above the inner side of the kneecap	Disorders of the blood; itching rashes
HT 7	Spirit Gate	At the wrist crease, on the side of the little finger	Sleeplessness; palpitations; fright; a troubled mind
SI 3	Back Stream	On the edge of the hand, behind the knuckle of the little finger	Stiff neck and back; opens the governing vessel
BL 2	Gathered Bamboo	At the inner end of the eyebrow	Headache at the brow; the eyes
BL 13	Lung Transport	Beside the third vertebra of the chest	Cough and asthma
BL 15	Heart Transport	Beside the fifth vertebra of the chest	The heart; the spirit
BL 18	Liver Transport	Beside the ninth vertebra of the chest	The liver; the eyes

Code	Name	Place	Chiefly used for
BL 20	Spleen Transport	Beside the eleventh vertebra of the chest	Digestion
BL 23	Kidney Transport	Beside the second vertebra of the loin	The lower back; the kidney; the ears
BL 40	Middle of the Crook	In the centre of the hollow of the knee	Pain of the lower back
BL 60	Kunlun Mountains	Between the outer ankle and the heel tendon	Headache; pain along the whole back
BL 67	Reaching Yin	At the outer corner of the nail of the little toe	Burnt with mugwort to turn a child that lies wrongly in the womb
KI 1	Bubbling Spring	On the sole, in the hollow behind the ball of the foot	Fainting; to draw what has risen downward
KI 3	Great Stream	Between the inner ankle and the heel tendon	To build up the kidney
KI 6	Shining Sea	Below the inner ankle	A dry throat; sleeplessness; opens the yin heel vessel
PC 6	Inner Pass	Two inches above the wrist crease, between the two sinews	Nausea and vomiting; pain of the chest; a restless mind
TB 5	Outer Pass	Two inches above the back of the wrist	Colds with fever; pain of the ear and the side of the head
GB 20	Wind Pool	Below the skull, in the hollow at the side of the nape	Headache; dizziness; colds; the eyes

Code	Name	Place	Chiefly used for
GB 21	Shoulder Well	On the top of the shoulder	Stiff shoulders. Forbidden in pregnancy
GB 30	Jumping Circle	In the buttock, behind the hip joint	Sciatic pain
GB 34	Yang Mound Spring	Below the head of the outer bone of the lower leg	The sinews of the whole body; the meeting point of the sinews
LR 3	Great Rushing	On the top of the foot, between the first and second foot bones	Knotted *qi* of the liver; headache; anger; cramps
LR 14	Gate of the Cycle	Below the nipple, between the sixth and seventh ribs	Fullness under the ribs
GV 4	Gate of Life	Below the second vertebra of the loin	To warm the yang of the kidney
GV 14	Great Hammer	Below the seventh vertebra of the neck	Fever; all the yang vessels meet here
GV 20	Hundred Meetings	On the crown of the head	To raise what has sunk; to calm the spirit
GV 26	Middle of Man	In the groove below the nose	To wake a person who has fainted
CV 4	Gate of the Origin	Three inches below the navel	To build up the original *qi*
CV 6	Sea of *Qi*	One and a half inches below the navel	Tiredness; weakness of the lower belly
CV 12	Middle of the Stomach Duct	Four inches above the navel	Every disorder of the stomach

Code	Name	Place	Chiefly used for
CV 17	Middle of the Chest	On the breastbone, level with the nipples	Tightness of the chest; the meeting point of the *qi*

Many names are small maps. The points beside the spine are named after the organ at their level. The points near the elbow and the knee are pools, marshes, springs and seas. A name such as Meeting of Three Yin says which vessels cross. A name such as Spirit Gate says what is reached there.

48. Causes and names of illness

Three groups of causes

Since the twelfth century Chinese physicians have sorted the causes of illness into three groups. The first comes from outside, from the weather. The second comes from within, from the feelings. The third is neither. It covers the conduct of life and accidents.

The six excesses

Heaven has six kinds of weather, and each belongs to a season. They do no harm while they come at their time and in measure. They make ill when they are too strong, when they come out of season, or when the person they meet is weak. They are then called the six excesses.

Excess	Season	Its nature	What is seen
Wind	Spring	Light and quick. It rises, moves about and changes. It opens the way for the other five	Complaints that come suddenly and move from place to place: itching, sneezing, a stiff neck, pains that wander. Within the body: tremor, cramp, dizziness
Cold	Winter	It contracts and congeals. It injures the yang	Chills, no sweat, thin and clear discharges, a severe fixed pain that warmth relieves
Summer heat	Summer	It rises and scatters. It consumes *qi* and fluids	High fever, heavy sweat, great thirst, exhaustion

Excess	Season	Its nature	What is seen
Damp	Late summer	Heavy and sticky. It sinks, clings and lingers	A heavy head and heavy limbs, swollen joints, a full chest, sticky stools, cloudy discharges. Hard to cure
Dryness	Autumn	It dries the fluids and injures the lung	A dry nose, throat and skin; a dry cough
Fire	Any season	It flames upward, dries the fluids, stirs the blood and troubles the spirit	High fever, a red face and red eyes, bleeding, sores, restlessness, raving

Wind is called the leader of the hundred illnesses. It seldom comes alone. It carries cold, heat or damp into the body, and the physician names the pair: wind and cold, wind and heat, wind and damp.

The six can also arise inside, with no weather to blame. A person whose yin is used up develops heat. A person whose spleen does not move the fluids develops damp. The physician describes these inner states by the same words, since they look the same.

The words describe what an illness is like and not what entered. A patient with a wind and cold pattern has not necessarily stood in a cold wind. He has an illness that behaves as cold wind behaves. It came on suddenly, it tightens and chills, and it sits at the surface.

Modern studies have looked for the weather behind the common cold. In one British experiment, ninety volunteers sat for twenty minutes with their bare feet in cold water. Ninety others kept their feet in an empty bowl. In the following days about three in ten of the chilled group came down with a cold, against one in ten of the others (Johnson 2005). The virus is the cause, in the hospital's sense. The chill decided who fell ill, as the Chinese physicians hold.

The seven feelings

The inner causes are seven: joy, anger, worry, brooding, grief, fear and fright. They are natural answers to what a person meets, and they do no harm in passing. They make ill when they are sudden and violent, or when they last.

The feelings do not act by way of the surface. They strike the organs directly, and they act through the direction of the *qi*, as chapter 45 described.

Feeling	What it does to the *qi*	Organ	What is seen
Anger	Makes it rise	Liver	A red face, headache, dizziness; in the extreme, vomiting of blood or a stroke
Joy, beyond measure	Slackens it	Heart	A scattered mind, palpitations, sleeplessness
Grief	Wastes it	Lung	A weak voice, shortness of breath, tiredness, weeping
Worry and brooding	Knot it	Spleen and lung	No appetite, a full belly, loose stools, a tight chest
Fear	Makes it sink	Kidney	Loss of control of urine and stool; weak knees
Fright	Throws it into disorder	Heart and kidney	Palpitations; a mind that will not settle; sleeplessness

The heart is touched by all seven, since it houses the spirit. Anger knotted for years is held to produce heat, then phlegm, and in time lumps.

Chapter 22 reported the work of American heart specialists on patients whose hearts were stunned by a sudden grief or fright (Wittstein 2005). The Chinese classic had placed grief, joy and fright at the heart.

Causes that are neither

The third group is the largest in practice.

Food. Too much food injures the stomach and the spleen, and so does too little. Cold and raw food chills the centre. Greasy and sweet food and wine produce damp and phlegm. Eating at irregular hours, in haste or in anger does the same harm.

Work and rest. Overwork of the body uses up *qi*. Overwork of the mind injures the spleen and the blood of the heart. Too little movement is as bad. The classic lists five ways of overdoing. Long looking injures the blood. Long lying injures the *qi*. Long sitting injures the flesh. Long standing injures the bones. Long walking injures the sinews.

Sexual excess spends the essence, and with it the root of yin and yang.

Injuries: blows, falls, cuts, burns, bites and stings.

Parasites and poisons.

Wrong treatment. The physicians list their own art among the causes.

What an illness leaves behind. Phlegm and standing blood are products of illness. Once formed, they become causes in their turn. A physician who treats a long illness always asks whether one of the two is present.

Behind all causes stands the constitution. A child who received a weak essence from the parents falls ill from what another child shakes off.

Illness and pattern

A Chinese diagnosis has two parts.

The first is the name of the illness. Most Chinese names of illnesses state the chief complaint: cough, headache, sleeplessness, painful joints, wasting with thirst. Others are old technical terms. Painful, stiff joints are called an impediment. Weak and thin limbs are called a wilting. A sudden fall with palsy of one side is called a stroke by wind.

The second part is the pattern. It describes the state of the whole person at this moment: what kind of imbalance, at what depth, in which organ, from what cause. The pattern decides the treatment. The name of the illness does not.

A saying of the textbooks states the consequence. The same illness is treated in different ways, and different illnesses are treated in the same way. Three people with a cough may have a wind and cold pattern, a pattern of lung yin too weak, and a pattern of phlegm and damp. They receive three different formulas. A person with a cough and a person with loose stools may both have a pattern of weak spleen with damp. They receive the same formula.

The method has a modern name: to tell the patterns apart and to fix the treatment by the pattern. The World Health Organization took it into the international classification of diseases in 2019. The new chapter lists some 150 illnesses and nearly 200 patterns from the Chinese, Japanese and Korean traditions. It may only be used together with a diagnosis from the main part of the classification. The two are entered side by side.

Eight principles

The first step in finding a pattern is to put four questions. Each has two answers.

Question	One answer	The other answer
Where is the illness?	At the surface: sudden onset, chill and fever together, aching, a floating pulse	Inside: the organs are involved; no chill with the fever; a deep pulse
What is its nature?	Cold: chilliness, a pale face, no thirst, clear urine, a slow pulse	Heat: fever, a red face, thirst, dark urine, a rapid pulse
How do the patient's strength and the illness stand?	Empty: the upright *qi* is weak. Long illness, tiredness, a weak pulse	Full: an evil is present and strong. Recent illness, pain that dislikes pressure, a strong pulse
Taken together?	Yin: inside, cold and empty	Yang: surface, heat and full

The eight answers are called the eight principles. The first three questions are independent, and they give eight combinations. A patient may have heat inside with emptiness: that is the weak yin with empty heat of chapter 46. He may have cold at the surface with fullness: that is the common cold in its first stage.

The treatment follows at once from the answers. What is at the surface is released by sweating. What is inside is cleared, warmed, purged or harmonised. Cold is warmed, and heat is cooled. What is empty is filled, and what is full is emptied.

One rule of order is strict. Where emptiness and fullness occur together, the physician must decide which to treat first. To attack an evil in a weak patient may break the patient. To build up a patient in whom an evil is lodged may feed the evil.

Finer maps

After the eight principles the physician chooses a finer map, according to the kind of illness.

Map	Used for	Its divisions
Qi, blood and fluids	Any illness	The faults of chapter 46: too little, sinking, standing still, going against its course; standing blood; phlegm; damp
The organs	Long, inner illnesses	Some seventy standard patterns of the solid and hollow organs

Map	Used for	Its divisions
The six stages	Fevers that begin with a chill	Chapter 45
The four levels	Fevers that begin with heat	Defence, *qi*, nourishment, blood
The three burners	Fevers with damp	Upper, middle, lower
The warp vessels	Pain and palsy; needling	The twelve vessels and their strips of the surface

The next section sets out the organ patterns that are met most often.

Reference: thirty-two common patterns

The table lists the patterns that a student must know by heart. For each it gives the chief signs, the tongue, the pulse, the method of treatment and a formula that is typical for it. The formulas are named in English, with the Chinese name in the reference table of chapter 52.

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Wind and cold at the surface	Chill stronger than fever, no sweat, headache, aching limbs, a stuffed nose with clear discharge	Thin white coat	Floating, tight	To open the surface with acrid, warm drugs	Ephedra Decoction
Wind and heat at the surface	Fever stronger than chill, sore throat, thirst, yellow discharge	Red tip, thin yellow coat	Floating, rapid	To open the surface with acrid, cool drugs	Honeysuckle and Forsythia Powder

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Lung *qi* too weak	A weak cough, short breath, a weak voice, sweating by day, frequent colds	Pale	Weak	To build up the lung and firm the surface	Jade Windscreen Powder
Lung yin too weak	A dry cough with little sticky sputum, sometimes blood; heat in the afternoon; sweating at night	Red, little coat	Thin, rapid	To nourish the yin of the lung	Lily Bulb Decoction
Phlegm and damp in the lung	Cough with much white sputum, a full chest, worse lying down	Thick, greasy white coat	Slippery	To dry damp and transform phlegm	Two Aged Ingredients Decoction
Spleen *qi* too weak	Tiredness, no appetite, a swollen belly after meals, loose stools, a sallow face	Pale, swollen, with tooth marks	Weak	To build up the *qi* of the spleen	Four Gentlemen Decoction

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Spleen yang too weak	The same, with cold limbs, swelling and undigested food in the stool	Pale and wet	Deep, slow	To warm the centre	Regulate the Middle Pill
Spleen *qi* sinking	A dragging feeling in the belly, organs out of place, long loose stools	Pale	Weak	To build up and to raise	Strengthen the Centre and Raise the *Qi* Decoction
Spleen does not hold the blood	Bruises, heavy monthly bleeding, blood in the stool, with the signs of a weak spleen	Pale	Thin, weak	To build up the *qi* so that it holds	Restore the Spleen Decoction
Damp and heat in spleen and stomach	Fullness, nausea, no appetite, a heavy body, sticky foul stools, sometimes yellow skin	Red, with a greasy yellow coat	Slippery, rapid	To clear heat and move damp	Coptis and Magnolia Bark Drink

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Fire in the stomach	Burning pain in the upper belly, thirst for cold drinks, constant hunger, swollen bleeding gums, foul breath	Red, with a dry yellow coat	Rapid, strong	To clear the fire of the stomach	Clear the Stomach Powder
Stomach yin too weak	Hunger without the wish to eat, a dry mouth, a dull unease in the upper belly	Red, peeled in the centre	Thin, rapid	To nourish the yin of the stomach	Benefit the Stomach Decoction
Food that stays	After overeating: fullness, foul belching, sour risings, no wish for food	Thick coat	Slippery	To move the food on	Preserve Harmony Pill

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Liver *qi* knotted	Sighing, tightness under the ribs, a lump in the throat, changing moods, swollen breasts before the period	Normal or slightly dark	Like a taut string	To free the liver's *qi*	Free and Easy Wanderer Powder
Liver fire blazing	Headache, red eyes, sudden ringing in the ears, a bitter taste, rage	Red sides, yellow coat	String-like, rapid	To clear the liver's fire	Gentian Decoction to Clear the Liver
Liver yang rising	Dizziness, headache, a flushed face, irritability, with weak yin below	Red	String-like, thin	To settle the yang and nourish the yin	Gastrodia and Uncaria Drink
Wind stirring in the liver	Tremor, tics, convulsions, sudden palsy	Stiff, trembling or drawn to one side	String-like	To extinguish the wind	Settle the Liver and Extinguish Wind Decoction

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Liver blood too little	Blurred sight, spots before the eyes, numb limbs, cramps, pale brittle nails, scanty periods	Pale	Thin	To nourish the blood	Four Ingredients Decoction
Damp and heat in liver and gallbladder	Pain under the ribs, yellow skin, a bitter taste, itching or discharge of the sexual organs	Red, with a greasy yellow coat	String-like, slippery, rapid	To clear damp and heat	Gentian Decoction to Clear the Liver
Heart blood too little	Palpitations, poor memory, trouble in falling asleep, many dreams, a pale face	Pale	Thin	To nourish the blood and calm the spirit	Restore the Spleen Decoction
Heart yin too weak	The same, with sweating at night, restlessness and a dry mouth	Red tip, no coat	Thin, rapid	To nourish the yin and calm the spirit	Heavenly Emperor’s Pill for the Heart

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Fire in the heart	Sores on the tongue, agitation, sleeplessness, dark scanty urine	Red tip	Rapid	To clear the heart and lead the fire down	Guide Out the Red Powder
Standing blood of the heart	Stabbing pain in the chest that goes to the left arm; purple lips	Purple	Choppy or interrupted	To move the blood	Drive Out Standing Blood from the Mansion of Blood Decoction
Phlegm clouds the heart	Confusion, muttering, a dull stare; in the fiery form, shouting, violence and no sleep	Thick, greasy coat	Slippery	To clear the phlegm and open the heart	Scour the Phlegm Decoction
Kidney yang too weak	A cold and sore lower back, cold knees, much pale urine, loss of desire, swelling of the legs	Pale, swollen, wet	Deep, weak	To warm the yang of the kidney	Kidney *Qi* Pill from the Golden Casket

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Kidney yin too weak	A sore lower back, ringing in the ears, dizziness, a dry mouth at night, sweating at night, hot soles	Red, no coat	Thin, rapid	To nourish the yin of the kidney	Six-Ingredient Pill with Rehmannia
Kidney essence too little	In children: late walking, late speech, late closing of the skull. In adults: early greying, loose teeth, poor memory, no children	Pale or red	Weak	To fill the essence	Restore the Left Pill
Kidney does not grasp the *qi*	Breathlessness on effort; breathing out is easy and breathing in is hard	Pale	Weak, floating	To help the kidney to grasp	Ginseng and Gecko Powder
Heart and kidney do not meet	Sleeplessness, palpitations, dreams, a dry mouth at night, a weak lower back	Red tip	Thin, rapid	To make fire and water meet	Coptis and Ass-Hide Glue Decoction

Pattern	Chief signs	Tongue	Pulse	Method	Typical formula
Qi and blood both too little	Tiredness, a pale face, short breath, dizziness, palpitations	Pale	Thin, weak	To build up both	Eight Treasures Decoction
Damp and heat in the bladder	Frequent, urgent, burning urination; dark or cloudy urine	Red, greasy yellow coat at the root	Slippery, rapid	To clear heat and open the water way	Eight Corrections Powder
Wind, cold and damp in the joints	Painful joints: wandering pain with wind, severe fixed pain with cold, heavy swollen joints with damp	White coat	Tight or slippery	To drive out wind, cold and damp and to build up liver and kidney	Angelica Pubescens and Mistletoe Decoction

Three features of the table deserve notice.

A pattern is a bundle. None of the signs proves a pattern alone. The physician looks for several signs from one row, with a tongue and a pulse that agree.

The same sign means different matters in different company. Sleeplessness appears in five rows. A person who cannot fall asleep and has a pale tongue is treated in one way. A person who wakes hot at night with a red tongue is treated in another.

Patterns combine and change. A real patient commonly shows two or three at once. A knotted liver presses on a weak spleen. A weak kidney yin lets the heart’s fire rise. The pattern is also read again at every visit. What was a full heat last week may be an empty heat today, and the formula changes with it.

What the names do

A patient who is told that the *qi* of her liver is knotted and presses on her spleen has received more than a label. She has been told how her troubles hang together. Her sighing, her tight ribs, her swollen belly and her bad temper before her period are one matter. She has been told what feeds it, which is frustration that finds no way out, and what will ease it.

Chapter 8 described this as the second part of every old medicine. The name places the suffering in an order that the patient can see and act on. The Chinese pattern does this in the language of the patient's own daily life: heat and cold, damp and dryness, fullness and emptiness, what rises and what sinks.

49. The four examinations

The order of the examination

A Chinese physician examines in four ways. He looks. He listens and smells, for which Chinese has one word. He asks. And he touches, above all the pulse at the wrist. The *Classic of Difficult Issues* ranks the four in that order of honour, as chapter 45 told. In practice they run together. The physician begins to look as the patient walks in.

The classics set conditions for the examination. The best hour is dawn. The yin has not yet stirred and the yang has not yet scattered. Food and drink have not been taken, and the vessels are quiet. The room should be still. The physician should be at ease himself, with an even breath. This chapter treats the first three examinations, and chapter 50 the pulse.

Looking

The spirit. The physician looks first for the spirit of chapter 46. He finds it in the eyes above all.

State	What is seen	What it means
With spirit	Bright eyes that move freely, a clear voice, apt answers, a face with colour	The illness is light, or the patient will recover
Without spirit	Dull eyes, slow movement, confused or no answers, a face without lustre	The illness is grave
False spirit	A patient who was sinking suddenly brightens, talks, and asks for food	Death is near

The third state has a Chinese name that means the light that turns back. The physicians compare it to the last flare of a lamp before the oil is gone. Western nurses know the same event and have their own name for it.

Colour. Each of the five colours of chapter 46 has its meaning in the face. Lustre matters more than hue. Any colour that is moist and alive is of good omen. Any colour that is dry and withered is of bad.

Colour	Organ	What it points to
Green-blue	Liver	Cold, pain, standing blood, wind. In a child, a blue tinge between the brows warns of convulsions
Red	Heart	Heat. A wholly red face is a full heat. Red cheekbones in the afternoon are an empty heat
Yellow	Spleen	A weak spleen or damp. A bright orange yellow is damp with heat. A dull sallow tint is a weak spleen
White	Lung	Too little *qi* or blood; cold
Dark	Kidney	A weak kidney, cold, pain, water, standing blood. Dark rings under the eyes belong here

Build and bearing. A heavy, slow patient suggests damp or weak yang. A restless one suggests heat. A patient who lies curled with his face to the wall and wants covers has a cold or yin illness. One who sprawls and throws off the covers has a hot or yang illness. Trembling is wind.

The parts. Each part of the head is read for its organ. Red corners of the eyes point to the heart, and yellow whites of the eyes to jaundice. Pale lips mean too little blood, purple lips standing blood, and cracked lips heat. The hair of the head shows the kidney and the blood. The nails show the liver.

In a child under three the pulse is too small to read. The physician looks at the vein on the edge of the index finger instead. Its three joints are called the three gates. A vein that shows only at the first gate means a light illness. One that reaches the third gate means danger.

What the body gives off. Sputum, vomit, stool and urine are judged by one rule. What is clear, thin and pale is cold. What is yellow, thick and strong-smelling is hot.

Listening and smelling

A loud, rough voice belongs to a full illness, and a weak, low voice to an empty one. A patient who will not speak is cold or weak. One who talks without stopping is hot. Loud raving is a full heat that troubles the spirit. Low muttering to oneself, with the same words over and over, is an exhausted heart.

Breathing, coughing and hiccups are heard in the same way: loud and coarse is full, faint and short is empty. Frequent sighing is the sign of a knotted liver.

Smell follows the rule of the excretions. Foul and strong is heat. Faint or fishy is cold and weakness.

Asking

The physician asks by a fixed list, which students learn as a rhyme of the seventeenth century. It names ten questions and adds three more.

Question	Some of what the answers show
Cold and heat	Chill and fever together: the illness is at the surface. Fever without chill: heat inside. Chilliness without fever: weak yang. Chill and fever by turns: the lesser yang. Heat that rises in the afternoon: weak yin
Sweat	No sweat in a surface illness: cold has shut the pores. Sweat by day on slight effort: weak *qi*. Sweat in sleep that stops on waking: weak yin
Head and body	The place of a headache names the vessel. The kind of pain names the cause. A swelling, moving pain is knotted *qi*. A stabbing, fixed pain is standing blood. A heavy pain is damp. A burning pain is heat. A dull pain that pressure eases is emptiness. A pain that pressure worsens is fullness

Question	Some of what the answers show
Stool and urine	Dry, hard stools: heat, or too little fluid. Loose stools with undigested food: weak yang of the spleen. Sticky, foul stools: damp and heat. Much pale urine: cold. Scanty dark urine: heat. Rising at night to pass water: a weak kidney
Food and drink	No appetite: a weak spleen or damp. Constant hunger: fire in the stomach. A wish for cold drinks: heat. A wish for warm drinks: cold. Thirst with no wish to drink: damp
Chest and belly	Tightness, palpitations, fullness, and their relation to meals and to feelings
Hearing	A sudden loud ringing: fire of the liver. A faint ringing that came slowly: a weak kidney
Thirst and taste	A bitter taste: fire of the liver or the heart. A sweet, sticky taste: damp and heat of the spleen. No taste: a weak spleen
Earlier illnesses	What the patient has had, and what was left behind
Causes	What the patient thinks brought it on: weather, food, strain, a quarrel, a loss
Drugs taken	What has been tried, and what it did. The answer to an earlier treatment is itself a sign
Women	The length of the cycle; the amount, colour and clots of the blood; pain before or after; discharges; births
Children	Birth, feeding, growth, and the fevers with rash that the child has had

Sleep is always asked about. A patient who cannot fall asleep has too little blood of the heart. One who wakes hot in the night has weak yin. One who wakes between one and three and lies angry has a troubled liver.

The quality of a sign. The physician is seldom content with the fact of a symptom. He asks how it is. Thirst is not one sign. A thirst for large draughts of cold water is one sign. A thirst that is satisfied by sips of warm tea is another. A dry mouth with no wish to drink is a third. They point in three directions.

The fall in rank. The *Inner Classic* has a chapter on the five errors of physicians. One of them is to examine without asking about the patient's life. A person who was once of high rank and is now low will fall ill, the text says, even though no evil has struck from outside. The illness arises from within. The same holds for one who was rich and has become poor, and for one who has been parted from those he loves. A physician who does not ask about these matters, it concludes, does not know the cause, and his treatment will fail.

The four together

No single sign decides. A pattern must rest on signs from all four examinations that point the same way. Where they disagree, the physician weighs them. The textbooks give rules for the commonest conflict, between the pulse and the other signs. Sometimes the pulse is to be followed, and sometimes the signs.

A case as the textbooks give it. The following is an illustration of the kind found in every textbook. It is not a report of a real patient.

A woman of forty-two, a teacher, has had headaches for two years. They sit at the temples and behind the eyes. They come before her period and after quarrels.

The physician looks. She is lean, her eyes are a little red, and she sits forward and speaks fast. He listens. She sighs often. He asks. She sleeps lightly and dreams much. Her breasts swell before the period, and the blood is dark with small clots. She has a bitter taste in the morning, dry stools and a wish for cold drinks. She says that she swallows her anger at work. Her tongue is red at the sides with a thin yellow coat. Her pulse is like a taut string and a little fast.

The illness is headache. The place, at the temples, is the strip of the lesser yang, which belongs to the gallbladder and its partner the liver. By the eight principles the illness is inside, hot and full. The pattern is a knotted *qi* of the liver that has turned to fire and rises.

The method follows from the name. The physician frees the liver's *qi*, clears the fire and leads it downward. He writes a formula built on bupleurum root, with gardenia fruit to clear the heat. He needles a point between the first two bones of the foot and points at the nape and the wrist. He advises regular meals, less wine and less spice, a walk each day, and some way of saying what she now swallows. At the next visit he reads the tongue and the pulse again, and changes the formula by what he finds.

The case shows the loop of chapter 8. The reading yields a name. The name yields the act. The same reading then judges what the act has done.

The tongue

The tongue has a place of its own in the examination by looking. The physicians of the Han noted the coat of the tongue in fevers. The first book on the subject appeared in 1341, with thirty-six drawings. The physicians of the warm illnesses in the Qing made the tongue their chief guide, since in a fast fever it changes from day to day.

The patient puts the tongue out loosely, in daylight, and not for long. The physician first asks whether coffee, tobacco or a coloured sweet has stained it. He then looks at four matters: the colour of the body of the tongue, its shape, its coat, and its moisture.

The body of the tongue.

What is seen	What it means
Pale red, supple, with a thin white coat	Health
Pale	Too little *qi*, blood or yang; cold
Red	Heat. A red tip belongs to the heart. Red sides belong to the liver
Crimson	Heat has gone deep, to the level of nourishment or blood. The yin is badly injured
Purple	Blood that stands still. Reddish purple with heat; bluish purple with cold
Swollen, with the marks of the teeth at the edge	A weak spleen; damp
Thin	Too little blood or yin
Cracked	The yin is injured. A long crack to the tip belongs to the heart. Cracks in the centre belong to the stomach
Red points like prickles	Heat. Their place shows the organ
Stiff	Wind; heat that has reached the wrapping of the heart; a stroke
Trembling	Weak *qi*, or wind
Drawn to one side	Wind; a stroke
Swollen dark veins on the underside	Standing blood

The coat.

What is seen	What it means
Thin and white	Health, or the first stage of a cold at the surface
Thick	An evil has gone deep, or food stays in the stomach
Yellow	Heat
Grey or black	An extreme. Black and dry is extreme heat. Black and wet is extreme cold
Greasy or sticky	Damp or phlegm
Dry	The fluids are injured
Peeled in patches, like a map	The *qi* and yin of the stomach are injured
No coat at all, shining like a mirror	The yin of the stomach is exhausted
A coat without root, which seems laid on and can be wiped off	The *qi* of the stomach is weak

The map of the tongue. The tongue is read as a small body. The tip shows the heart and, behind it, the lung. The centre shows the spleen and the stomach. The edges show the liver and the gallbladder. The root shows the kidney, the bladder and the gut. The front third belongs to the upper burner, the middle third to the middle burner, and the back third to the lower.

Body and coat tell different stories. The coat is held to arise from the *qi* of the stomach, which steams upward. It changes within days. Its thickness shows how deep an evil has gone, and its colour shows cold or heat. The body of the tongue changes slowly. It shows the state of the blood and the yin, and so the ground on which the illness stands. In a fever the physician watches the coat. In a long illness he watches the body.

The tongue in the hospital. Western medicine read the tongue too, before it had laboratories, and some of its readings match. A pale tongue goes with a lack of red blood cells. A smooth, red, shining tongue without its small points goes with a lack of iron or of certain vitamins. The Chinese physician calls that tongue mirror-like and reads it as exhausted yin.

Two modern studies link the coat to measurable states. Chinese researchers took the coat from the tongues of patients with an inflamed stomach. Some had a hot pattern with a yellow coat, and some a cold pattern with a white one. The two groups carried different communities of bacteria on the tongue (Jiang 2012). A Japanese survey of people who do not smoke found diabetes about twice as often in those with a yellow coat as in those with a white one (Tomooka 2018).

What has been measured about the examinations

The four examinations are done by a person with trained senses, and the result is a judgment. Researchers have asked how far two physicians who examine the same patient agree.

Patterns. A review of all such studies up to 2009 found that agreement on patterns was in general not high (O'Brien 2009). Three examples show the range.

In Sydney two or three practitioners each examined thirty-five patients who had come to a teaching clinic with any complaint. They chose from a list of the fifty-six patterns most used there. They agreed on the pattern in 23 per cent of comparisons (Popplewell 2019).

In Oslo two needlers examined fifty-four women, thirty of whom could not conceive. They used thirty-nine different patterns and thirty-six different points. On the choice of points they hardly agreed. On the broad question of fullness or emptiness they agreed fairly to moderately. And when the pattern was given, they agreed well on the vessel to be treated (Birkeflet 2011).

In Seattle the records of more than 150 first visits for long-standing low back pain were compared. Eighty-five per cent of the patients had received a diagnosis of *qi* that stands still, with or without standing blood. A third to a half had a weak kidney. More than eighty-five different points had been used. Only five or six points appeared often, and two of these were common to both sets of records. They are the two points for the lower back in the table of chapter 47 (Sherman 2001).

The tongue. Seventeen clinicians in Hong Kong judged photographs of tongues taken with a telephone. Each agreed well with himself when he judged the same tongue on another day, except on the colour of the body of the tongue. Agreement between different clinicians was moderate for the coat and only fair for the body (Wang 2020).

The pulse. Chapter 50 gives the findings.

What the numbers show. Three conclusions can be drawn without forcing the data.

Agreement is poor on the fine choice: which of fifty patterns, which of three hundred points. It is better on the broad questions: full or empty, hot or cold, which vessel. The first step of the method, the eight principles, is the part that two physicians share.

Agreement rises when the physicians have trained together and have fixed their terms. The classical words are images. A pulse like a taut string and a slippery pulse are learned at the bedside from a teacher, and different lineages draw the lines in different places.

And one complaint leads to one or two patterns in most patients. Eighty-five per cent of the back patients had the same main pattern. The spread lies in the additions.

Chinese groups have also asked whether a pattern has a counterpart in the laboratory. They studied patients with the cold pattern and the hot pattern of the same joint disease. They report that the two groups differ in the activity of their genes and in the small molecules of

their blood. They report, too, that the two groups answer differently to the same drugs (Dai 2013). These findings await confirmation elsewhere.

Chapter 67 returns to the low agreement between physicians. It asks whether a reading that is a meeting of two persons should be expected to give the same result with another reader.

What stands out in the examinations

1. **The spirit is examined first,** and it is found in the eyes.
2. **A sign is judged by its quality** and by the company it keeps.
3. **The tongue is a small body.** Its coat shows the day, and its body shows the year.
4. **The patient's life is part of the examination.** A fall in rank or wealth is a cause of illness in the classic.
5. **The answer to an earlier treatment is a sign.**
6. **Two physicians agree on the broad lines and differ on the fine ones.**

50. The pulse

From nine places to one

The oldest Chinese method felt the pulse all over the body. A chapter of the *Inner Classic* names three regions, the head, the hands and the feet. In each region it names three arteries, which it calls heaven, earth and man. The nine places were compared with each other. A place that beat alone, larger or smaller or faster than the rest, marked the seat of the illness.

A second old method compared two places, the artery of the neck and the artery of the wrist. The physician judged how many times larger one was than the other. The classic gives the readings in whole numbers. If the neck is once as large again as the wrist, the illness is in the lesser yang. If it is twice as large again, the illness is in the greater yang. If it is three times, the illness is in the yang brightness. The same scale, with the wrist the larger, gives the three yin. A fourfold difference means that yin and yang have parted, and the patient dies.

The *Classic of Difficult Issues* reduced all of this to the wrist, as chapter 45 told. Its ground was that all the vessels meet there. Since the third century the wrist has been the place of the Chinese physician. The pulse on the top of the foot is still felt in grave illness, to learn whether the stomach has any *qi* left.

How it is done

The patient sits or lies with the arm at the level of the heart, the palm upward, and the wrist on a small cushion. The physician finds the knob of bone on the thumb side of the wrist and lays his middle finger beside it, on the artery. That place is called the gate. He lays the index finger next to it toward the hand, on the place called the inch. He lays the ring finger toward the elbow, on the place called the foot. The fingers are arched, and the tips lie level. For a tall patient he spreads them, and for a child he uses one finger.

He feels first with all three fingers together, for the pulse as a whole. Then he feels each place alone. At each place he presses to three depths. With a light touch he feels the surface. With moderate pressure he feels the middle. With heavy pressure, down to the sinews and the bone, he feels the depth. Then he takes the other wrist.

He does not hurry. The classics require at least fifty beats at each wrist. A pulse that drops a beat may do so only once in thirty or forty. Zhang Zhongjing complains in his preface of physicians who take the wrist and let it go before they have counted to fifty.

One sentence of the *Inner Classic* is repeated in every manual. There is a way of holding the pulse, it says: emptiness and stillness are its treasure. The physician clears his mind of other matters before he lays his fingers down.

The physician’s breath is the clock

The Chinese physician did not count the pulse against a clock. He counted it against his own breath.

The rule stands in the *Inner Classic*. In a person who is not ill, the pulse beats twice while he breathes out and twice while he breathes in. With the pause between, that makes five beats to a breath. Such a person is called level.

The text goes on to say whose breath is meant. One uses a person who is not ill to measure the one who is ill. The physician is not ill. So he evens his own breath and takes the measure of the patient by it.

Beats to one breath of the physician	Name	Meaning
Four or five	Level	Health
Three	Slow	Cold
Six	Rapid	Heat
Seven or eight	Racing	Extreme heat; the yin is giving out
One or two		The *qi* is failing

The numbers are sound. A calm adult breathes about fifteen times a minute, and four or five beats to a breath give sixty to seventy-five beats a minute. Modern physiology knows the ratio of pulse to breath and gives it a name of its own. In healthy adults at rest it lies near four, and in deep sleep it settles on whole numbers more often than chance allows (Scholkmann 2019). A study in *Nature* found that in athletes at rest the heartbeat locks to the breath for minutes at a time. The ratios were whole numbers, such as three to one and five to two (Schäfer 1998). The author’s book on the body tested the lock on recordings of forty people at rest. The test that had been fixed in advance found nothing. An adjusted analysis found the lock somewhat above chance, and in recordings of sleep it was strongest in deep sleep (Konstapel 2026c).

The classical rule holds more than a norm. It makes the physician the instrument. His own rhythm is the standard, and he must first bring it to rest. A physician who is ill, hurried or upset cannot take a pulse, since his measure is off. Chapter 67 returns to this.

Three places on two wrists

Each of the six places is assigned to organs. The assignment has varied over the centuries. The table gives the one most taught today.

Place	Left wrist	Right wrist	Burner
Inch, nearest the hand	Heart	Lung	Upper
Gate, in the middle	Liver	Spleen and stomach	Middle
Foot, nearest the elbow	Kidney, the yin	Kidney, the yang	Lower

The left wrist is held to show the blood and the right wrist the *qi*. The three depths add a further reading. The surface shows the yang and the hollow organs. The depth shows the yin and the solid organs. The *Classic of Difficult Issues* counted five depths by the weight of the fingers in beans, as chapter 45 described.

Three places with three depths give nine readings on each arm. The classics keep the old name of the nine indicators for them.

The healthy pulse

A healthy pulse is defined by three qualities and not by a number.

It has **stomach**. It is neither fast nor slow, neither hard nor limp. It comes and goes smoothly and without haste.

It has **spirit**. It is soft and yet has strength, and its beats are even.

It has **root**. It can still be felt at the deepest level and at the place nearest the elbow.

The classic says of the first quality that with the *qi* of the stomach there is life, and without it death. A pulse can be abnormal in many ways and the patient may still recover, as long as it keeps these three.

The healthy pulse also changes with the season. In spring it is a little like a string. In summer it is full and surging. In autumn it is light and floats. In winter it lies deep, like a stone. A pulse that fits its season is well. A full, surging pulse in winter is a warning. The pulse differs, too, with age, sex and build. It is quicker in children, deeper in the stout, and nearer the surface in the lean. Food, wine, exertion and strong feeling change it for a time, which is why the patient rests before it is read.

In a few people the artery runs over the back of the wrist, and the usual place is empty. The textbooks describe the variant, so that no student takes it for a dying pulse.

Twenty-eight pulses

The pulse of an ill person is described by its qualities. Wang Shuhe named twenty-four in the third century. Li Shizhen described twenty-seven in his verses of 1564, and one more was added in the next century. The reference table at the end of this chapter gives all twenty-eight.

They are easier to grasp by the questions that the fingers put.

Question	The two answers	What they show
How deep does it lie?	Floating; deep	Surface; inside
How fast is it?	Slow; rapid	Cold; heat
How strong is it?	Empty; full	Weakness of the patient; strength of the illness
How broad is it?	Thin; large	Too little blood and yin; heat or fullness
How long is it?	Short; long	Weak or knotted *qi*; abundance
How does it pass under the finger?	Slippery; choppy	Phlegm, damp, or a child in the womb; standing blood or dryness
How taut is it?	Like a string, or tight like a rope; soft	The liver, pain, cold; damp and weakness
Is it regular?	Regular; with pauses	Pauses show cold, heat with congestion, or an exhausted organ

The first three questions are those of the eight principles. A physician who can answer only these already knows whether the illness is at the surface or inside, cold or hot, empty or full.

A real pulse has several qualities at once. A floating and tight pulse is wind and cold at the surface. A deep, thin and rapid pulse is weak yin with empty heat. A string-like and slippery pulse is a knotted liver with phlegm. And the pulse may differ from place to place. A pulse that is string-like only at the left gate points to the liver. One that cannot be found at either foot place points to an empty kidney.

Learning by images

No book can teach the pulse. A student learns it with his fingers beside a teacher’s, on thousands of wrists. The books help with images, and the images are the tradition’s real vocabulary.

A floating pulse is like wood that floats on water: press, and it gives way. A slippery pulse is like pearls rolling in a dish. A choppy pulse is like a knife scraping bamboo, or like a sick silkworm eating a leaf. A string-like pulse is like the string of a lute under the finger. A tight pulse is like a twisted rope pulled taut. A surging pulse comes like a wave, with strength, and falls away gently. A thin pulse is like a thread of silk, fine and yet distinct. A hollow pulse is

like the stalk of a spring onion: firm at the rim and empty in the middle. It is found after a great loss of blood. A scattered pulse is like willow down on the wind.

The pulses of the dying have names of their own. One is the pecking of a sparrow: several quick beats and a stop. One is the leaking roof: a single drop at long and uneven intervals. One is the fish that hovers with only its tail moving. One is the rope that comes untied. One is the pot that bubbles. They describe the failing rhythms of a heart in its last hours. Galen's ant, gazelle and mouse tail belong to the same order of names.

Two ways of touching. The Japanese historian Shigehisa Kuriyama compared the Greek and the Chinese pulse (Kuriyama 1999). Both peoples laid their fingers on the same artery at the same period. They did not feel the same.

The Greek physicians asked what the artery does. It widens and narrows, and they measured the size, the speed and the rhythm of that beat. Their words are words of measure.

The Chinese physicians did not speak of a beat. They spoke of something that streams past under the fingers, and they asked what it is like: smooth or rough, taut or slack, floating or sunk. Their words are words of touch and texture.

Neither was wrong. A fingertip on an artery receives far more than a count. What a people finds there depends on what it has learned to ask.

The pulse and the other signs

The pulse is not a picture of the organs. It does not show a stone in the gallbladder. It shows the state: the depth of the illness, its heat or cold, the strength that is left, and the quality of what moves.

It is one of four examinations and must agree with the others. A rapid pulse with a pale, wet tongue and cold limbs is not heat. The textbooks call that a false sign and tell the student to follow the rest. A calm pulse in a patient who is plainly sinking is of bad omen for the same reason.

The pulse has one use that the other examinations lack. It changes within minutes. A needler feels the pulse before he places his needles and again after. If the string has slackened or the sunken pulse has risen, the treatment has taken. In the Japanese school called Toyohari, whose practitioners are mostly blind, the pulse decides when a treatment is finished.

The pulse of a woman with child

The classics say that a slippery pulse in a woman whose period has stopped, and who is not ill, means a child. They add that the pulse at the foot place does not weaken under pressure. Stories of physicians who named a pregnancy from the wrist, or even the sex of the child, are told in every period.

A woman who is carrying a child does have a changed pulse. Her heart moves much more blood from the first weeks on, and her vessels widen. The pulse becomes fuller and bounding. No trial has shown that the sex of a child can be felt.

What has been measured

Do two readers agree? A review of twelve studies of the pulse at the wrist found the answer to depend on how the reading was defined (Bilton 2016). Where practitioners used the classical images as each had learned them, agreement was poor. Where a group had first agreed on what to feel for, depth, breadth, strength, speed and rhythm, each defined in plain terms, trained readers agreed in most cases.

The result fits the lesson of chapter 49. The first questions of the fingers can be shared and checked. The fine images are passed from one teacher to his own pupils.

Does the pulse change with treatment? In Australia sixty-two healthy volunteers received either a Toyohari treatment or a pretended one. In that school the needle only touches the skin, and the practitioner stops when the pulse has changed. A researcher who did not know the group measured the pulse wave at the wrist with an instrument. A measure of how well the heart muscle is fed with blood improved in the treated group and not in the others (O'Brien 2013).

What is in the wave? Modern heart specialists read the wrist again, with a sensor in place of fingers. From the shape of the wave at the wrist they calculate the pressure at the heart and the stiffness of the great arteries. The shape of the pulse carries information about the whole circulation, as the Chinese physicians held. Whether it carries the particular information that they read from it has not been settled.

A Taiwanese physicist, Wang Wei-Kung, has analysed the wave into its overtones since the 1980s. He reports that each of the lower overtones changes with the state of one organ. The work has not been confirmed by independent groups.

The watch and the Chinese. One link between the two ways of touching deserves a line. In 1707 the English physician John Floyer published a book on timing the pulse with a watch that ran for exactly one minute. He was the first in Europe to count the pulse as a matter of routine. The second volume of his book is a study of the Chinese art of the pulse. He knew it from a translation of Wang Shuhe that a physician of the Dutch East India Company had printed in 1682.

What stands out in the pulse

1. **The whole is read at one place.** Three fingers, three depths and two wrists give the state of every organ.
2. **The physician's own breath is the measure.** He must be well and at rest before he reads.

3. **Stillness of mind is called the treasure of the art.**
4. **The norm is a ratio,** four or five beats to a breath, and modern measurement finds the same ratio.
5. **Health is a quality and not a number:** stomach, spirit and root.
6. **The qualities are taught by images** and learned by touch from a teacher.
7. **The Greeks measured a beat, and the Chinese felt a stream.** Both were reading the same artery.
8. **The pulse answers within minutes,** and so it judges the treatment as well as the illness.

Reference: the twenty-eight pulses

The table follows the standard list. The Chinese name is given in its usual spelling. The image is the one by which the pulse is taught.

No.	Pulse	Chinese	What the fingers feel	Image	What it shows
1	Floating	*fu*	Clear under a light touch; weaker under pressure	Wood floating on water	An illness at the surface. Without strength: weak yin
2	Deep	*chen*	Found only under heavy pressure	A stone dropped into water	An illness inside. With strength: fullness. Without: emptiness
3	Slow	*chi*	Three beats to a breath		Cold. Also found in the very fit
4	Rapid	*shuo*	Six beats to a breath		Heat
5	Empty	*xu*	Broad, soft and without strength at every depth		Too little *qi* and blood

No.	Pulse	Chinese	What the fingers feel	Image	What it shows
6	Full	*shi*	Broad, long and strong at every depth		A strong evil in a strong patient
7	Slippery	*hua*	Smooth and round; it slides under the finger	Pearls rolling in a dish	Phlegm, damp, food that stays; a child in the womb. In the young and strong: health
8	Choppy	*se*	Rough and uneven; it comes with difficulty	A knife scraping bamboo	Standing blood; too little blood or essence
9	String-like	*xian*	Straight, long and taut	The string of a lute	The liver; pain; phlegm
10	Tight	*jin*	Taut and twisted; it seems to move from side to side	A twisted rope pulled taut	Cold; pain
11	Surging	*hong*	Broad; it arrives with strength and falls away gently	A wave	Great heat
12	Thin	*xi*	Fine as a thread, yet distinct	A thread of silk	Too little blood and yin; damp
13	Faint	*wei*	Very fine and soft; hardly felt; at times lost		The yang is collapsing

No.	Pulse	Chinese	What the fingers feel	Image	What it shows
14	Weak	*ruo*	Deep, thin and soft		Too little *qi* and blood
15	Soft	*ru*	Floating, thin and soft	A thread floating on water	Emptiness; damp
16	Scattered	*san*	Floating and broad, without root; it vanishes under pressure	Willow down on the wind	The *qi* is about to disperse. A grave sign
17	Hollow	*kou*	Floating and broad; firm at the edges and empty in the middle	The stalk of a spring onion	A great loss of blood
18	Drumskin	*ge*	Floating and broad; hard on the surface and empty beneath	The skin of a drum	Loss of blood or essence
19	Firm	*lao*	Deep, strong, broad, long and taut		Cold inside; lumps
20	Hidden	*fu*	Deeper than deep; found only against the bone		Extreme pain; fainting; the yang shut in

No.	Pulse	Chinese	What the fingers feel	Image	What it shows
21	Long	*chang*	It reaches beyond the three places		If soft: health. If hard: heat; rising yang of the liver
22	Short	*duan*	It does not fill the three places		Weak or knotted *qi*
23	Stirred	*dong*	Short, slippery and rapid, at one place only	A bean	Fright; pain
24	Leisurely	*huan*	Four beats to a breath; relaxed		Health. With other signs: damp
25	Hasty	*cu*	Rapid, with pauses at uneven intervals		Heat with congestion
26	Knotted	*jie*	Slow, with pauses at uneven intervals		Cold; knotted *qi*; phlegm; standing blood
27	Interrupted	*dai*	Pauses at even intervals, each rather long		The *qi* of an organ is exhausted
28	Racing	*ji*	Seven or eight beats to a breath		Extreme heat; the yin is giving out

The list can be reduced. Six of the twenty-eight are called the leaders: floating and deep, slow and rapid, empty and full. Most of the others are described in the table as combinations of

these with breadth, length and smoothness. The soft pulse is floating, thin and without strength. The firm pulse is deep, broad and strong. A student who has mastered the leaders can build the rest.

51. Needle and fire

One word for two arts

The Chinese name of this art joins two characters, the needle and burning. The two have always been taught together. The needle moves what stands still and empties what is too full. Fire warms what is cold and raises what has sunk. Where the needle does not serve, the *Divine Pivot* says, burning is fitting.

The manuscripts of Mawangdui show that burning is the older. They treat the vessels by fire alone. Tradition says that the first needles were of sharpened stone, and stone lancets for opening boils have been found in early graves. Needles of metal appear in the Han. A set of nine, four of gold and five of silver, lay in the tomb of a prince who died in 113 before our era.

Nine needles

The first chapter of the *Divine Pivot* describes nine instruments. Only one of them is a needle in the modern sense.

Needle	Form	Use
Arrowhead	Broad, with a short point	To prick the skin lightly and let out heat
Round	A rounded tip	To press and rub between the muscles without piercing
Blunt	A tip like a grain of millet	To press on the vessels
Lance	Three-edged	To let a few drops of blood
Sword	Flat and double-edged	To open a boil and let out pus
Round and sharp	Like a hair of a horse’s tail, a little thickened	For sudden, painful conditions
Fine	Hair-thin	To be left in place; the needle of ordinary treatment
Long	Up to a hand and more in length	For deep-seated pain

Needle	Form	Use
Large	Thick, like a staff	To let water out of swollen joints

The fine needle is the one in use today. A modern needle is of steel, from a sixth to a third of a millimetre thick, sterile, and used once. It is solid and carries nothing into the body.

How a treatment goes

A treatment in the Chinese manner uses between five and fifteen needles. The patient lies down. The physician finds each point by measure and by touch, as chapter 47 described, and inserts the needle through a guide tube or with a quick twist of the fingers. The depth ranges from a few millimetres on the face to several centimetres in the buttock.

The arrival of qi. The physician does not simply place the needle. He works it gently up and down or turns it until something answers. The patient feels a dull ache, a heaviness, a numbness or a spreading warmth round the needle, and sometimes along the limb. The physician feels the needle taken hold of. The classics compare it to a fish that takes the bait. This is called the arrival of *qi*.

The *Divine Pivot* makes it the condition of success. The essential of needling, it says, is that the *qi* arrives. Then there is an effect, and the effect is as sure as wind that blows the clouds away and shows the blue sky.

To fill and to empty. Having obtained the *qi*, the physician does one of two acts with it. He fills where the pattern is empty, and he empties where it is full. The methods differ by school. To fill, he may insert the needle slowly as the patient breathes out and point it with the course of the vessel. He turns it gently, withdraws it quickly, and presses the hole shut. To empty, he does the reverse and leaves the hole open.

Retention. The needles then stay in for twenty to thirty minutes, while the patient rests. Many patients fall asleep. A course is commonly ten treatments.

The needler's mind. The classics give as much room to the state of the needler as to the technique. He is to be as one who looks into a deep abyss. His hand is to be as one that holds a tiger. His spirit is not to stray to anything else. He looks at the patient's eyes as he needles, and he keeps his attention at the tip of the needle.

When not to needle. The *Divine Pivot* lists patients who must not be needled in their present state. They are the drunk, the enraged, the exhausted, the overfed, the starving, the very thirsty and the badly frightened. They must first come to rest.

The choice of points

A needler chooses points by a few plain rules.

Near. Points at the place of the complaint, and above all the tender places that the finger finds.

Far. Points on the same vessel at the hand or the foot. The rule is that a vessel treats whatever lies along its course. A toothache is treated at the hand, since the vessel of the large intestine runs from the index finger to the face. Four lines of verse that every student knows name the far point for each region. For the belly, take Leg Three Miles. For the back, take Middle of the Crook. For the head and nape, take Broken Sequence. For the face and mouth, take Joining Valley.

Across. The left side is needled for a pain on the right, the arm for the leg, and the front for the back.

By the pattern. Points are added for the state of the whole person. One point builds up the spleen, another clears heat, and another calms the spirit. The five transport points on each limb allow treatment by the rule of mother and child.

The Chinese style of the modern colleges uses rather thick needles, placed deep, with a strong sensation. Other styles differ. Japanese needlers use very fine needles, placed shallow, and some schools only touch the skin. Chapter 65 describes them.

Kindred methods

Method	What is done	Note
Pressing	The points are pressed with the finger	The basis of the hand therapies of chapter 53
Electric needling	A weak pulsed current is passed between two needles	Developed in China in the 1950s; the form most used in research
Ear needling	Small needles or seeds are placed on points of the outer ear	The modern map of the ear, an upside-down child, was drawn by a French physician, Paul Nogier, in 1957, and taken over in China
Scalp needling	Needles are slid under the scalp over zones of the brain	Devised in China about 1970, for palsy after a stroke
Letting blood	A point or a small vein is pricked, and a few drops are let	For heat, and for standing blood
Cupping	A cup is fixed on the skin by suction, with fire or a pump	The same method as in chapter 40
Scraping	The oiled skin is scraped with a smooth edge until it reddens	A household remedy across East Asia for aches and the start of a cold
Plum-blossom needle	A small hammer with a cluster of short needles is tapped on the skin	For children and for the skin

Burning

The material is the leaf of mugwort, dried, aged and rubbed to a soft wool. It smoulders slowly and evenly. The Japanese word for it, by way of the Dutch at Nagasaki, gave Europe the word moxa.

Form	What is done
Cones on the skin	A cone of the wool, from the size of a grain of rice to that of half a date stone, is set on the point and lit. It is taken off when the patient feels the heat, or, in the old manner, burned down to raise a small blister
Cones on a layer	The cone is set on a slice of ginger or garlic, or on salt that fills the navel
The stick	The wool is rolled in paper like a cigar. The glowing end is held a finger's breadth above the point, or moved to and fro
The warm needle	A ball of the wool is fixed to the handle of an inserted needle and lit

Burning is used where the pattern is cold or empty: an aching back in an old man, loose stools from a weak spleen, a cold womb, organs that have sunk. It is used on healthy people as well. A saying holds that whoever wishes to be well should keep the point Leg Three Miles moist, which means burnt often enough that it never quite heals.

One use has been tested with care. From the seventh month of pregnancy, a child may lie with its head upward. It can be turned by burning the point at the outer corner of the little toe, on both feet, for some minutes each day. In an Italian and Chinese trial, 260 women who were in the thirty-third week of a first pregnancy with such a child took part. Half burned the point for one to two weeks. Two weeks later the child had turned in three quarters of them, against less than half of the others. The mothers felt the child move more during the treatment (Cardini 1998). Later trials have mostly, though not all, pointed the same way.

What has been measured: does it help?

No part of the old medicines has been tested as much as needling. There are several thousand randomised trials. The picture they give is consistent, and it is not simple.

Long-standing pain. A group of researchers gathered the raw data of the best trials of needling for pain of the back and neck, worn joints, headache and the shoulder. They had the records of 20,827 patients from thirty-nine trials. Needling was clearly better than no needling. The difference was about half a standard deviation, which is the size of the effect of the common pain drugs. Needling was also better than pretended needling, by a much smaller margin. The gains held for at least a year (Vickers 2018).

The German trials. The largest single trial was run for the German health insurers. It enrolled 1,162 people who had had low back pain for eight years on average. One group received needling by the Chinese rules. One received shallow needling at places that are not points. One received the best usual care: drugs, exercise and physiotherapy. After six months, 47.6 per cent of the first group had improved by the agreed measure, and 44.2 per cent of the second. In the group with usual care the figure was 27.4 per cent (Haake 2007).

Both forms of needling worked almost twice as well as the best that the hospital had. And it made little difference where the needles were put.

Sickness and vomiting. One point has been tested more than any other. It lies on the inner forearm, two inches above the wrist. A review of fifty-nine trials with 7,667 patients found that needling or pressing it reduced sickness and vomiting after operations by about a third, against pretended treatment. It did so about as well as the standard drugs (Lee 2015).

Migraine. A review of twenty-two trials with nearly five thousand patients found that a course of needling reduces the number of attacks. It did slightly better than pretended needling and at least as well as the preventive drugs, with fewer unwanted effects (Linde 2016).

Trials in which the place mattered. A Chinese trial enrolled 404 patients with chest pain from a narrowed heart artery. One group was needled on the two vessels that the classics assign to the heart. A second group was needled on another vessel, a third at places that are not points, and a fourth was not needled. All kept their usual drugs. The first group had clearly fewer attacks than each of the other three (Zhao 2019).

In another, 504 women who leaked urine on coughing received electric needling at points over the sacrum or a pretended form of it. After six weeks the leak had fallen by about ten grams in a standard test in the first group, and by under three in the second (Liu 2017).

Trials that found nothing. The record includes clear failures. Needling did not raise the chance of a child in women who underwent fertilisation outside the body. It did no better than pretended needling for the hot flushes of the change of life. In several trials for worn knees, real and pretended needling came out the same.

How safe is it? A German survey followed 229,230 patients through more than two million treatments. About one patient in twelve reported some unwanted effect, in most cases a small bleed, a bruise or pain at the needle. Two patients had a punctured lung (Witt 2009). In trained hands, with needles used once, serious harm is rare.

The riddle of the pretended needle

The trials leave a riddle. Needling helps, often more than the best usual care. Yet a pretended form of it, at the wrong places or without piercing, helps nearly as much. Three explanations are offered, and they do not exclude each other.

The pretended needle is not nothing. A shallow prick or a touch on the skin is a stimulus. It sets off signals in the nerves of the skin that affect pain and mood. Some Japanese schools treat by touch alone, as chapter 65 tells, and hold that it is the better method. A trial that compares deep needling with a light touch is comparing two treatments (Lund 2006). The pooled data bear this out. Where the pretended needle pierced the skin, the difference from the real one was smaller than where it did not (MacPherson 2014).

The occasion heals. Chapter 8 described a trial in which patients with a painful bowel all received pretended needling. One group was left on a waiting list, one was needled by a practitioner who said little, and one by a practitioner who took time and showed warmth. Adequate relief was reported by 28, 44 and 62 per cent (Kaptchuk 2008). The patient lies down, is examined and touched with care, and rests for half an hour with the expectation of relief. That has an effect of its own, and a needling trial delivers it to both groups.

The practitioner matters. In an English trial of needling for worn hips and knees, the kind of needle, real or not, made no difference to the result. Which of the three practitioners gave the treatment did (White 2012). Few trials look for this. Most use one practitioner or a fixed protocol, and so hold constant what may be a large part of the treatment.

The riddle is therefore partly an effect of the question. The trials ask whether the exact place and depth matter. The classics also say that the state of the needler, the spirit of the patient and the meeting of the two matter. The trials have confirmed the second claim better than the first.

What has been measured: how does it act?

The body's own opiates. In the 1970s the Chinese physiologist Han Jisheng needled one rabbit and passed fluid from its brain into the brain of a second rabbit. The second rabbit became less sensitive to pain as well. Something had been released. Canadian and American researchers then showed, in mice and in volunteers, that a drug which blocks the action of opiates also blocks the relief of pain by needling. Needling releases the body's own opiates.

Han went on to show that the kind released depends on the rhythm of the stimulus. Electric needling at two pulses a second releases one family of them. At a hundred pulses a second it releases another. Alternating the two releases both, and relieves pain best (Han 2003).

At the needle. In mice a needle was turned at a point below the knee. The level of a calming messenger in the tissue round it rose more than twentyfold. Mice that lacked the receptor for that messenger gained no relief (Goldman 2010).

Through the nerves to the organs. A group at Harvard found a nerve path in mice by which needling acts on inflammation. Weak electric needling at the point below the knee excites a particular class of nerve fibres in the deep tissue of the hind limb. The signal runs to the brain stem and out again along the vagus nerve to the adrenal gland, which then releases

messengers that damp inflammation in the whole body. The same stimulus on the belly did not have this effect, since the fibres are absent there (Liu 2021).

This finding gives a ground in the body for two claims of the classics. A point on a limb acts on organs far away. And the place matters: some regions of the body have the path, and others do not.

In the brain. Scans of people who are being needled show a quieting of the deep parts of the brain that deal with pain and feeling. It occurs when the dull ache of the arrival of *qi* is felt. When the needle causes sharp pain, the same parts become more active.

Reference: classical point prescriptions

The table gives, for thirty common complaints, the points that the textbooks most often name. A needler adds or leaves out points by the pattern of the patient. The codes are explained in the reference table of chapter 47. Points with a name only lie off the fourteen lines.

Complaint	Chief points	The reasoning
Headache at the forehead	LI 4, ST 44, GV 23, the point between the brows	The forehead belongs to the yang brightness. Far points on its two vessels, near points on the brow
Headache at the temples	TB 5, GB 41, GB 20, the point at the temple	The temples belong to the lesser yang
Headache at the back of the head	SI 3, BL 60, GB 20, BL 10	The nape belongs to the greater yang
Headache at the crown	LR 3, GV 20	The liver’s vessel reaches the crown
Stiff neck	SI 3, GB 39, GB 20, the tender places	A far point on the vessel through the neck; then the place itself
Painful shoulder	LI 15, TB 14, SI 9, LI 11, ST 38	Three points round the joint; a far point on the leg, needled while the arm is moved
Tennis elbow	LI 11, LI 10, LI 4, the tender places	Along the vessel of the large intestine
Low back pain	BL 23, BL 25, BL 40, GV 4, the tender places	The points beside the spine at the level of the pain; the far point in the hollow of the knee

Complaint	Chief points	The reasoning
Sciatic pain	GB 30, BL 40, GB 34, BL 60	Down the vessel along which the pain runs
Painful knee	The two hollows below the kneecap, ST 36, SP 9, GB 34	Round the joint
Toothache	LI 4, ST 44, ST 6, ST 7	The vessels of the yang brightness enter the gums
Sore throat	LU 11, LI 4, LU 10	The tip of the thumb is pricked to bleed a drop
Common cold	LI 4, LU 7, GB 20, GV 14	To open the surface and drive out wind
Cough	LU 7, LU 5, BL 13, CV 22	The lung's vessel and its point on the back
Asthma	The point beside the seventh vertebra of the neck, BL 13, CV 17, LU 6, ST 40	To send the lung's *qi* downward and clear phlegm
Blocked or running nose	LI 20, LI 4, the point between the brows, GB 20	The large intestine's vessel ends beside the nose
Sickness and vomiting	PC 6, ST 36, CV 12	To send the stomach's *qi* downward
Pain in the upper belly	CV 12, ST 36, PC 6	The gathering point of the stomach with its far point
Loose stools	ST 25, ST 36, SP 9, CV 6	The gathering point of the large intestine; to build up the spleen
Hard stools	ST 25, TB 6, BL 25, KI 6	To move the bowel and moisten
Painful periods	SP 6, CV 3, SP 8, LR 3	The three yin vessels of the leg meet at one point
Absent or scanty periods	SP 6, SP 10, CV 4, ST 36	To nourish and move the blood

Complaint	Chief points	The reasoning
Sickness in pregnancy	PC 6	Pressed or needled lightly. Many other points are forbidden in pregnancy
A child that lies wrongly	BL 67	Burnt, not needled
Difficult urination	CV 3, SP 6, SP 9, BL 28	The gathering point of the bladder
Sleeplessness	HT 7, SP 6, the point behind the ear, GV 20	To calm the spirit and settle the heart
Palpitations and fright	PC 6, HT 7, BL 15, CV 17	The heart's vessel and its wrapping
Low spirits with a tight chest	LR 3, LI 4, PC 6, GV 20	The first two together are called the four gates. They free knotted *qi*
Dizziness	GV 20, GB 20, LR 3, KI 3	To settle what has risen and to feed the root
Tiredness and weakness	ST 36, CV 6, CV 4, BL 20	Often with burning mugwort
Fainting	GV 26, KI 1, PC 9	A sharp stimulus to bring the spirit back
Palsy of the face	ST 4, ST 6, LI 4, GB 14, TB 17	Points of the face, with the far point of the face
Palsy after a stroke	LI 15, LI 11, LI 4, ST 36, GB 34, GB 39, with scalp needling	Chiefly the yang brightness vessels of the affected side

Three rules of chapter 51 can be read off the table. Nearly every prescription joins a point at the place with a point far away on the same vessel. The far points lie at the hand, the wrist, the foot and below the knee. And a small number of points recur. Joining Valley, Leg Three Miles, Inner Pass and Meeting of Three Yin appear in a third of the rows.

52. Drugs and formulas

The larger half

In China most of the old medicine is given by mouth. Needling is the part that the West knows best. Within China it is the smaller part. A Chinese hospital of the old medicine is, above all, a place where formulas are written and decoctions are boiled.

The pharmacy is large. The official drug book of the state lists some six hundred crude drugs. A physician uses two or three hundred of them regularly. About five in six are parts of plants: roots, barks, twigs, leaves, flowers, fruits and seeds. The rest are minerals, shells, and materials from animals.

Five descriptions of a drug

A Western pharmacy describes a drug by its active compound and the amount of it. The Chinese pharmacy describes a drug by five properties. None of them is an amount.

Its nature. A drug is cold, cool, warm or hot. Some are level. The nature is known by what the drug does to a patient. What relieves a hot pattern is cold. Gypsum, coptis root and rhubarb are cold. Dried ginger, cinnamon bark and aconite are hot.

Its flavour. There are five flavours, and each has a work.

Flavour	What it does	Examples
Acrid	It scatters and moves. It opens the surface and gets *qi* and blood going	Ephedra, mint, fresh ginger, tangerine peel
Sweet	It builds up, harmonises and slows	Ginseng, liquorice, jujube, rehmannia
Sour	It gathers and holds. It stops sweat, loose stools and loss of essence	Schisandra fruit, smoked plum, cornelian cherry
Bitter	It clears heat, dries damp and sends downward	Coptis, rhubarb, gardenia, apricot kernel
Salty	It softens what is hard and leads downward	Seaweed, oyster shell, mirabilite

A sixth, the bland, lets water out. Poria fungus and coix seed are bland.

Its direction. A drug rises, sinks, floats outward or draws inward. Drugs that are light in weight, such as flowers and leaves, mostly rise and float. Drugs that are heavy, such as seeds, roots, shells and stones, mostly sink. A rhyme of the apprentices records the exceptions. All

flowers rise, and inula flower alone descends. All seeds descend, and the seed of the chaste tree alone rises.

The direction of the drug is matched against the direction of the illness. A cough is *qi* of the lung that rises against its course, and it is treated with drugs that send downward. Organs that have sunk are treated with drugs that raise. A cold at the surface is treated with drugs that float outward.

The vessel that it enters. Each drug is assigned to one or more organs and their vessels. The assignment says where the drug acts. Two drugs of the same nature and flavour differ by it. Coptis, scutellaria and phellodendron are all bitter and cold. The first clears heat from the heart and the stomach, the second from the lung, and the third from the lower burner.

Some drugs are used chiefly as guides. They lead a whole formula to a place. Platycodon root is called the boat that carries drugs upward to the chest. Achyranthes root leads downward to the knees. For a headache the physician adds a guide for the strip of the head that hurts: one drug for the nape, another for the forehead, a third for the temples.

Its poison. The drug books mark each drug as without poison, slightly poisonous or very poisonous. The word has a wider sense than in English. It means the strength with which a drug acts against the body as well as for it.

Taken together, the five properties describe a drug as a direction at a place, with a temperature. The research of the author before this book put it in those words. A formula is then a set of directions at a set of places, which together turn the pattern back.

Preparation changes the drug

Few drugs are used as they are gathered. The art of preparing them is a craft of its own. The same root can be made into several drugs.

Method	Effect	Example
Steaming with wine	Turns a cooling drug into one that builds up	Raw rehmannia root cools the blood. Steamed until black, it nourishes blood and essence
Frying with honey	Makes a drug milder and directs it to build up the centre	Liquorice; astragalus
Frying with vinegar	Leads the drug to the liver and strengthens its action on pain	Bupleurum; corydalis

Method	Effect	Example
Frying with salt water	Leads the drug to the kidney	Eucommia bark; phellodendron
Charring	Gives a drug the power to stop bleeding	Many leaves and roots
Long boiling, or soaking and steaming	Reduces poison	Aconite root, which is deadly when raw

The last row matters most. Aconite is the strongest warming drug of the pharmacy and one of the most poisonous plants known. It may be used only after preparation, and it is boiled for an hour before the other drugs are added. Chemists have confirmed that long heating breaks down its most dangerous compounds.

The kinds of drugs

The textbooks sort the drugs by what they do. The table gives the classes with a few members of each. The reference tables that follow this chapter describe a hundred drugs singly.

Class	What the drugs do	Examples
Opening the surface, warm	Bring out a sweat; drive out wind and cold	Ephedra, cinnamon twig, fresh ginger, perilla leaf
Opening the surface, cool	Drive out wind and heat	Mint, chrysanthemum, mulberry leaf, bupleurum
Clearing heat	Cool fire, cool the blood, dry damp heat, resolve poison	Gypsum, coptis, scutellaria, honeysuckle, raw rehmannia
Purging	Move the bowel	Rhubarb, mirabilite, hemp seed
Driving out wind and damp	Relieve painful joints	Angelica pubescens root, clematis root
Transforming damp	Dry or scent away damp of the centre	Atractylodes, magnolia bark, cardamom
Letting water out	Increase the urine; reduce swelling	Poria, alisma, coix seed
Warming the inside	Drive out deep cold; rescue the yang	Aconite, dried ginger, cinnamon bark, evodia
Ordering the *qi*	Move knotted *qi*; send down what rises	Tangerine peel, cyperus, immature bitter orange

Class	What the drugs do	Examples
Moving food on	Relieve food that stays	Hawthorn fruit, sprouted barley
Stopping bleeding		Notoginseng, mugwort leaf, cattail pollen
Moving the blood	Break up standing blood	Ligusticum, red sage root, peach kernel, safflower
Transforming phlegm, stopping cough		Pinellia, fritillaria bulb, apricot kernel, platycodon
Calming the spirit	Settle the heart; bring sleep	Sour jujube seed, dragon bone, polygala
Settling the liver, extinguishing wind	Stop dizziness, tremor and convulsion	Gastrodia, uncaria, oyster shell
Opening the orifices	Wake a senseless patient	Musk, borneol, acorus
Building up the *qi*		Ginseng, astragalus, white atractylodes, liquorice
Building up the blood		Angelica root, prepared rehmannia, white peony
Building up the yin		Ophiopogon, lycium fruit, lily bulb
Building up the yang		Deer antler, eucommia, cistanche
Holding and gathering	Stop sweat, loose stools and loss of essence	Schisandra, cornelian cherry, lotus seed
Driving out worms		Quisqualis fruit, areca nut

The list makes the logic of the pharmacy visible. Nearly every class is named after a movement: to open, to clear, to send down, to move on, to hold, to raise, to settle. The classes that build up are named after what is too little.

The formula

A Chinese physician seldom gives one drug. He gives a formula of four to fifteen. The formula is the unit of treatment, and the great formulas have names, authors and dates. A physician thinks in formulas as a chess player thinks in openings.

Its structure. Chapter 45 gave the four ranks of the Divine Farmer's classic. They are the grammar of every formula.

Rank	Its task
Ruler	Treats the chief pattern. It is given in the largest amount
Minister	Helps the ruler, or treats a second pattern that goes with the first
Assistant	Treats lesser complaints, or checks the harshness or the poison of the ruler
Envoy	Leads the formula to its place, and makes the drugs agree with each other

Three formulas taken apart. The grammar is easiest to see in examples.

Ephedra Decoction treats wind and cold at the surface: chill, no sweat, aching limbs, and a wheeze. It has four drugs. Ephedra is the ruler. It is acrid and warm, and it opens the pores. Cinnamon twig is the minister. It warms the vessels and helps the sweat to come. Apricot kernel is the assistant. It sends the *qi* of the lung downward and eases the wheeze. Liquorice is the envoy. It moderates the two acrid drugs and protects the stomach.

The formula joins two directions. Ephedra drives outward and upward. Apricot kernel sends downward. The lung, which spreads outward and sends downward, is set right in both of its movements at once.

Six-Ingredient Pill with Rehmannia treats weak yin of the kidney. A children's physician of the Song made it from an older formula of eight drugs by leaving out the two that warm. It has two groups of three. The first three build up: prepared rehmannia for the kidney, cornelian cherry for the liver, and Chinese yam for the spleen. The second three clear and let out: alisma, moutan bark and poria. Each of them checks one of the first three. The physicians call the design three that fill and three that empty. A drug that only filled, they say, would clog. It may be the most prescribed formula in East Asia.

Minor Bupleurum Decoction treats the illness of the lesser yang, which is neither at the surface nor inside. It may be neither sweated out nor purged. Bupleurum lifts the evil outward. Scutellaria clears the heat that has gone in. Pinellia and fresh ginger send the stomach's *qi* down and stop the sickness. Ginseng, jujube and liquorice support the patient, so that the evil does not go deeper. The formula works at the pivot, as chapter 46 put it.

Eight methods. Every formula follows one of eight methods of treatment, or joins several.

Method	Used when
To sweat	An evil is at the surface
To bring up	Phlegm or spoiled food lies high in the stomach or chest. Seldom used now
To purge	Heat, cold, water or standing blood is lodged inside and the patient is strong
To harmonise	The illness is at the pivot, or two organs are at odds
To warm	There is cold, or the yang is weak
To clear	There is heat
To disperse	Something has gathered slowly: food, phlegm, a lump
To build up	*Qi*, blood, yin or yang is too little

The formula is fitted to the patient. A named formula is a starting point. The physician adds and takes away. For a patient with the lesser yang illness who also coughs, he adds a drug for the cough and removes the ginseng. The classic itself lists such changes after each formula. Two patients with the same named formula seldom go home with the same packet.

Pairs. Much of the craft lies in pairs of drugs that are known to work well together.

Pair	Why they are joined
Cinnamon twig and white peony	One opens the surface, the other holds the nourishment within. Together they regulate sweating
Coptis and evodia, six parts to one	One is bitter and cold, the other acrid and hot. Together they clear a fire of the liver that attacks the stomach, without chilling the stomach
Pinellia and fresh ginger	Both stop sickness, and the ginger takes away the poison of the pinellia
Aconite with dried ginger and liquorice	The two companions strengthen the warming and reduce the poison
Astragalus and angelica root, five parts to one	To make blood, build up the *qi* that makes it

Pair	Why they are joined
Bupleurum and white peony	One frees the liver's *qi*, the other nourishes the liver's blood, so that the freeing does not dry

The old pharmacists also listed pairs that must never be combined. A rhyme names eighteen such oppositions and nineteen pairs in which one drug cancels the other. Liquorice, for example, is not to be given with certain harsh purges of water. Chemists have confirmed some of these prohibitions and not others.

Forms. The classical form is the decoction. The day's drugs are soaked, boiled in an earthen pot for twenty to forty minutes, strained and boiled a second time. The two liquids are mixed and drunk warm in two parts. Hard materials such as shells go in first. Scented leaves such as mint go in for the last minutes only.

Other forms have other uses. Powders act quickly and are easy to carry. Pills bound with honey act slowly and are taken for months. Syrups, medicated wines and plasters complete the list. In modern hospitals the decoction is often replaced by granules that dissolve in hot water.

Food as medicine

The line between a drug and a food is not sharp in China. Ginger, jujubes, cinnamon, lotus seeds, Chinese yam, lycium berries and the white fungus are in every kitchen and every pharmacy. Sun Simiao wrote that a physician should first treat with food. Only when food fails should he prescribe a drug.

Every food has a nature and a flavour, like every drug. Mutton, ginger, garlic and wine are warming. Pears, watermelon, mung beans, crab and green tea are cooling. Rice is level. A mother chooses the family's dishes by the season and by the state of each member. A woman who has just given birth eats warming foods for a month and avoids cold ones. A child with a hot cough is given a steamed pear.

Chapter 53 returns to the regimen of food.

What stands out in the pharmacy

1. **A drug is described by its nature, flavour, direction and place,** and not by an amount of an active compound.
2. **The direction of the drug is set against the direction of the illness.**
3. **Preparation is part of the drug.** The same root, raw or steamed, treats opposite states.
4. **The unit of treatment is the formula,** which is built like a small state.

5. **The great formulas pair opposed movements:** one drug opens and one holds; three fill and three empty.
6. **Every formula is fitted to the patient** and changed as the patient changes.
7. **Food is the first medicine.**

What has been measured: single drugs

The Chinese pharmacy has given modern medicine several of its most important drugs. The stories of two of them show how the old knowledge and the new method met.

Sweet wormwood. In 1967 the Chinese government began a secret search for a remedy against malaria. The parasite had become resistant to the existing drugs. In 1969 Tu Youyou, a researcher at the academy of Chinese medicine in Beijing, was put in charge of one group. Her team went through more than two thousand old recipes and tested some 380 extracts from 200 plants on mice.

An extract of sweet wormwood showed promise and then failed in the next test. Tu went back to the books. In Ge Hong's handbook of the fourth century she read the line that chapter 44 quoted. Take a handful of the plant, soak it in water, wring out the juice, and drink it. Ge Hong did not boil it. Nearly every Chinese drug is boiled. Tu concluded that heat might destroy what she was looking for. She extracted the plant with a cold solvent.

On 4 October 1971 her extract number 191 cleared the parasite from every infected mouse. She and two colleagues took the extract themselves, to see whether it was safe. The first patients were treated in 1972, and the pure compound was isolated the same year. It is called artemisinin. Combined with other drugs it is now the standard treatment for the dangerous form of malaria all over the world, and it has saved millions of lives. Tu received the Nobel Prize in 2015 (Tu 2011).

Two lessons are drawn from the story, and both are true. The old text held exact knowledge in a detail of preparation, as the English eye salve of chapter 42 did. And the remedy became a world drug only after it had been taken out of the Chinese system. Nobody who receives artemisinin is examined for a pattern.

Arsenic. White arsenic has been in the Chinese pharmacy for two thousand years. It is used on the rule that one poison is fought with another. In 1971 physicians from the medical school of Harbin, in the north-east, heard of a country healer who treated tumours. His remedy was a mixture of arsenic, a salt of mercury and toad venom. They took the recipe apart and kept the arsenic. Given into a vein, in a small dose, it cleared the blood of patients with one kind of acute leukaemia, in which the patient bleeds to death within weeks.

Researchers in Shanghai later found how it acts. This leukaemia is caused by a single faulty protein. Arsenic makes the cell destroy that protein. A second drug, derived from vitamin A, attacks the same protein at its other end. In an Italian and German trial, the two together were compared with the earlier standard treatment. After two years, 97 per cent of patients on the

pair were alive and free of the illness, against 86 per cent (Lo-Coco 2013). The deadliest form of acute leukaemia has become the most curable, without chemotherapy.

The formula confirmed. A Chinese formula for the same leukaemia was devised in the 1980s. It joins a mineral that contains arsenic with the blue dye of the indigo plant and the root of red sage. Its author called the mineral the ruler and the two plants the minister and the assistant. A Shanghai group tested the active compound of each on leukaemia cells and in mice, singly and together. The arsenic compound did the main work. The other two made the cells take up more of it, and each added an effect of its own. The three together did far more than any one (Wang 2008). The ranks of a classical formula were shown to hold at the level of molecules.

Others. Ephedrine came from ephedra. An extract of coptis root, long used for hot bowels, lowers the fats and the sugar of the blood. A compound from the tuber of corydalis, the pain drug of the Chinese pharmacy, relieves pain by a path that the opiates do not use.

What has been measured: whole formulas

Formulas are much harder to test than pure compounds. A decoction holds hundreds of compounds. The crude drugs vary with the soil and the year. And the formula is meant to be fitted to the patient and changed from week to week. Some good trials exist all the same.

A painful bowel. In Sydney, 116 patients with a painful and irregular bowel were divided into three groups. One received a standard formula of twenty drugs. One received a formula written for each patient by a Chinese physician. One received a dummy. After sixteen weeks both groups on real drugs had improved clearly more than the dummy group. The standard formula had done at least as well as the individual ones. Fourteen weeks after the treatment ended, only the group with individual formulas had kept its gain (Bensoussan 1998).

The result is often quoted for the first finding. The second deserves as much notice. The fitted formula did no more at the time and lasted longer.

Influenza. In the epidemic of 2009, Chinese hospitals enrolled 410 young adults with the new influenza. They received no drug, the standard antiviral drug, a decoction made from two classical formulas, or both. The fever ended after a median of twenty-six hours with no drug, twenty hours with the antiviral, sixteen hours with the decoction, and fifteen hours with both (Wang 2011).

The heart. Two recent trials are the largest ever done with Chinese formulas. Both used a fixed formula in capsules, added to full modern treatment, against a dummy. In the first, 3,110 patients with a weak heart took a formula of eleven drugs built on astragalus and aconite. After a year and a half, 25 per cent of them had died of heart disease or had been admitted to hospital for the heart. On the dummy the figure was 30 per cent (Cheang 2024). In the second, 3,777 patients with a fresh heart attack took a formula that contains ginseng

and several materials from insects. After thirty days, 3.4 per cent had suffered a grave event of the heart or brain, against 5.2 per cent (Yang 2023).

These trials tested Chinese drugs in the manner of the hospital. Every patient received the same capsules. No pattern was read.

What has been measured: harm

Plants can injure, and the Chinese pharmacy has caused serious harm in modern times.

The gravest case began in Belgium. Between 1990 and 1992 more than a hundred women who had attended one slimming clinic developed failure of the kidneys. The clinic had given them capsules with two Chinese plants. One of the plants had been replaced by another with a similar Chinese name. The substitute belongs to a family of plants that contain a compound which destroys the kidney and causes cancer. Of thirty-nine of these women whose kidneys were later removed, eighteen had cancer of the urinary passages (Nortier 2000).

Plants of that family were part of several classical formulas. In Taiwan, where they were prescribed widely until 2003, the mark that the compound leaves in the genes has since been found in the majority of liver cancers examined. The plants are now banned in most countries. Chapter 75 returns to this and to the other harms: metals, plants that injure the liver, and products secretly mixed with Western drugs.

The classics were not blind to poison. They graded every drug by it, prescribed the processing that reduces it, and forbade long use of the lower grade. The modern disasters came from a break in that knowledge. A wrong plant was sold under a right name, by people who had not learned the craft. It was sold for a purpose that no Chinese physician would have recognised.

Why a formula is hard to test

A trial needs a fixed treatment, and the formula is by design not fixed. Researchers have met the difficulty in three ways.

Some test one compound from one plant. That gave artemisinin. It abandons the formula.

Some test a fixed formula in every patient with a Western diagnosis. That gave the heart trials. It abandons the pattern.

A few compare fitted with fixed treatment, as the bowel trial did. This design tests the claim that the medicine itself makes: that the reading of the patient adds to the result. It is the rarest of the three, and chapter 74 argues that it is the one most needed.

Reference: the chief drugs

The table describes 101 drugs of the Chinese pharmacy in the order of the classes of chapter 52. For each it gives the Chinese name, the material, the nature and flavour, the organs whose

vessels the drug enters, and the chief actions as the drug books state them. The table is a description of a tradition. It is not advice for use. Several of these drugs are poisonous, and several come from animals that are now protected.

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Mahuang	Ephedra stem	Warm; acrid, slightly bitter	Lung, bladder	Brings out a sweat; calms wheezing; lets water out
Guizhi	Cinnamon twig	Warm; acrid, sweet	Heart, lung, bladder	Opens the surface; warms the vessels; helps the yang
Shengjiang	Fresh ginger	Warm; acrid	Lung, spleen, stomach	Opens the surface; stops sickness; reduces the poison of other drugs
Zisuye	Perilla leaf	Warm; acrid	Lung, spleen	Opens the surface; moves the *qi* of the centre; counters fish and crab poisoning
Fangfeng	Saposhnikovia root	Slightly warm; acrid, sweet	Bladder, liver, spleen	Drives out wind; relieves pain and spasm. The name means guard against wind
Qianghuo	Notopterygium root	Warm; acrid, bitter	Bladder, kidney	Wind, cold and damp of the nape and upper back

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Baizhi	Angelica dahurica root	Warm; acrid	Lung, stomach	Headache at the forehead; opens the nose; reduces swellings
Bohe	Mint	Cool; acrid	Lung, liver	Wind and heat; clears the head, eyes and throat; frees the liver's *qi*
Juhua	Chrysanthemum flower	Slightly cold; sweet, bitter	Lung, liver	Wind and heat; clears the eyes; settles the liver
Sangye	Mulberry leaf	Cold; sweet, bitter	Lung, liver	Wind and heat; moistens the lung; clears the eyes
Chaihu	Bupleurum root	Slightly cold; bitter, acrid	Liver, gallbladder	The lesser yang; frees the liver's *qi*; raises the yang
Gegen	Kudzu root	Cool; sweet, acrid	Spleen, stomach	A stiff nape; thirst; raises the clear; brings out rashes
Shengma	Cimicifuga rhizome	Slightly cold; acrid, sweet	Lung, spleen, stomach, large intestine	Raises the yang; brings out rashes; resolves heat poison

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Shigao	Gypsum	Very cold; acrid, sweet	Lung, stomach	Great heat with great thirst
Zhimu	Anemarrhena rhizome	Cold; bitter, sweet	Lung, stomach, kidney	Clears heat and nourishes yin
Zhizi	Gardenia fruit	Cold; bitter	Heart, lung, stomach, triple burner	Clears heat of all three burners; restlessness; yellow skin from damp heat
Huangqin	Scutellaria root	Cold; bitter	Lung, gallbladder, stomach, large intestine	Clears heat and damp of the upper body; calms the child in the womb
Huanglian	Coptis rhizome	Cold; bitter	Heart, liver, stomach, large intestine	Fire of the heart and stomach; hot, bloody stools
Huangbai	Phellodendron bark	Cold; bitter	Kidney, bladder	Damp heat of the lower body; empty fire
Longdancao	Gentian root	Cold; bitter	Liver, gallbladder	Fire of the liver; damp heat of liver and gallbladder
Jinyinhua	Honeysuckle flower	Cold; sweet	Lung, stomach, large intestine	Resolves heat poison; wind and heat; sores

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Lianqiao	Forsythia fruit	Slightly cold; bitter	Lung, heart, gallbladder	Heat poison; sores and lumps; wind and heat
Pugongying	Dandelion	Cold; bitter, sweet	Liver, stomach	Heat poison; abscess of the breast
Banlangen	Isatis root	Cold; bitter	Heart, stomach	Heat poison; sore throat; epidemic fevers
Shengdihuang	Raw rehmannia root	Cold; sweet, bitter	Heart, liver, kidney	Cools the blood; nourishes yin
Mudanpi	Bark of tree peony root	Slightly cold; bitter, acrid	Heart, liver, kidney	Cools and moves the blood; clears empty heat
Chishao	Red peony root	Slightly cold; bitter	Liver	Cools the blood; moves standing blood
Qinghao	Sweet wormwood	Cold; bitter, acrid	Liver, gallbladder	Empty heat; summer heat; fevers that come and go
Digupi	Bark of lycium root	Cold; sweet	Lung, liver, kidney	Heat that seems to steam from the bones; heat of the lung

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Dahuang	Rhubarb root	Cold; bitter	Spleen, stomach, large intestine, liver, heart	Purges bound heat; moves standing blood; clears fire
Mangxiao	Mirabilite, a salt	Very cold; salty, bitter	Stomach, large intestine	Softens hard stools and purges
Huomaren	Hemp seed	Level; sweet	Spleen, stomach, large intestine	Moistens the bowel
Duhuo	Angelica pubescens root	Slightly warm; acrid, bitter	Kidney, bladder	Wind and damp of the lower back and legs
Weilingxian	Clematis root	Warm; acrid, salty	Bladder	Wind and damp; opens the vessels
Sangjisheng	Mulberry mistletoe	Level; bitter, sweet	Liver, kidney	Painful joints with weak liver and kidney; calms the child in the womb
Cangzhu	Atractylodes lancea rhizome	Warm; acrid, bitter	Spleen, stomach	Dries damp strongly
Houpo	Magnolia bark	Warm; bitter, acrid	Spleen, stomach, lung, large intestine	Moves *qi* downward; relieves fullness; dries damp
Sharen	Amomum fruit	Warm; acrid	Spleen, stomach	Moves the *qi* of the centre; stops sickness

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Fuling	Poria fungus	Level; sweet, bland	Heart, spleen, kidney	Lets water out; builds up the spleen; calms the heart
Zexie	Alisma rhizome	Cold; sweet, bland	Kidney, bladder	Lets water out; clears heat of the lower burner
Yiyiren	Coix seed	Slightly cold; sweet, bland	Spleen, stomach, lung	Damp; a weak spleen; pus; stiff joints
Cheqianzi	Plantain seed	Cold; sweet	Kidney, liver, lung	Increases the urine; clears the eyes
Yinchen	Artemisia capillaris	Slightly cold; bitter	Spleen, stomach, liver, gallbladder	Yellow skin from damp heat
Fuzi	Prepared aconite root	Very hot; acrid; poisonous	Heart, kidney, spleen	Rescues collapsing yang; warms; relieves cold pain
Ganjiang	Dried ginger	Hot; acrid	Spleen, stomach, heart, lung	Warms the centre; rescues the yang; warms the lung
Rougui	Cinnamon bark	Very hot; acrid, sweet	Kidney, spleen, heart, liver	Warms the yang of the kidney; leads fire back to its source

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Wuzhuyu	Evodia fruit	Hot; acrid, bitter	Liver, spleen, stomach	Cold pain; a stomach whose *qi* rises; headache at the crown
Chenpi	Aged tangerine peel	Warm; acrid, bitter	Spleen, lung	Moves the *qi* of the centre; dries damp; transforms phlegm
Zhishi	Immature bitter orange	Slightly cold; bitter, acrid	Spleen, stomach, large intestine	Breaks up knotted *qi*; reduces fullness
Xiangfu	Cyperus rhizome	Level; acrid, slightly bitter	Liver, triple burner	Frees the liver's *qi*; regulates the monthly cycle
Muxiang	Aucklandia root	Warm; acrid, bitter	Spleen, stomach, large intestine, gallbladder	Moves *qi*; relieves pain in the belly
Shanzha	Hawthorn fruit	Slightly warm; sour, sweet	Spleen, stomach, liver	Digests meat and fat; moves the blood
Maiya	Sprouted barley	Level; sweet	Spleen, stomach	Digests grain
Sanqi	Notoginseng root	Warm; sweet, slightly bitter	Liver, stomach	Stops bleeding without leaving standing blood; pain of injury

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Aiye	Mugwort leaf	Warm; bitter, acrid	Liver, spleen, kidney	Warms the womb; stops bleeding. The material of burning
Chuanxiong	Ligusticum rhizome	Warm; acrid	Liver, gallbladder, wrapping of the heart	Moves blood and *qi*; headache
Danshen	Red sage root	Slightly cold; bitter	Heart, liver	Moves the blood; cools; calms the spirit
Taoren	Peach kernel	Level; bitter, sweet	Heart, liver, large intestine	Breaks up standing blood; moistens the bowel
Honghua	Safflower	Warm; acrid	Heart, liver	Moves the blood; the monthly cycle
Yanhusuo	Corydalis tuber	Warm; acrid, bitter	Liver, spleen	Moves blood and *qi*; relieves pain of every kind
Yimucao	Motherwort	Slightly cold; bitter, acrid	Heart, liver, bladder	The monthly cycle; after childbirth. The name means the herb that benefits mothers

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Niuxi	Achyranthes root	Level; bitter, sour	Liver, kidney	Moves the blood; strengthens sinews and bones; leads downward
Banxia	Prepared pinellia tuber	Warm; acrid; poisonous when raw	Spleen, stomach, lung	Dries damp and transforms phlegm; sends rising *qi* down; stops sickness
Chuanbeimu	Fritillaria bulb	Slightly cold; bitter, sweet	Lung, heart	Moistens the lung; cough with hot phlegm; lumps
Gualou	Trichosanthes fruit	Cold; sweet	Lung, stomach, large intestine	Hot phlegm; opens the chest; moistens the bowel
Jiegeng	Platycodon root	Level; bitter, acrid	Lung	Opens the lung; phlegm; the throat; carries other drugs upward
Xingren	Apricot kernel	Slightly warm; bitter; slightly poisonous	Lung, large intestine	Stops cough and wheezing; moistens the bowel
Sangbaipi	Bark of mulberry root	Cold; sweet	Lung	Clears heat of the lung; wheezing; swelling

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Suanzaoren	Sour jujube seed	Level; sweet, sour	Heart, liver	Nourishes heart and liver; brings sleep; stops sweating
Yuanzhi	Polygala root	Slightly warm; bitter, acrid	Heart, kidney, lung	Calms the spirit; clears phlegm from the heart
Longgu	Fossil bone	Level; sweet, astringent	Heart, liver, kidney	Settles the spirit; anchors the yang; holds what leaks
Muli	Oyster shell	Slightly cold; salty, astringent	Liver, kidney	Anchors the yang; softens what is hard; holds
Tianma	Gastrodia tuber	Level; sweet	Liver	Extinguishes wind; dizziness; headache; spasm
Gouteng	Uncaria stem with hooks	Slightly cold; sweet	Liver, wrapping of the heart	Extinguishes wind; clears heat of the liver
Shichangpu	Acorus rhizome	Warm; acrid, bitter	Heart, stomach	Opens the orifices; clears phlegm; quiets the spirit

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Shexiang	Musk	Warm; acrid	Heart, spleen	Opens the orifices strongly; moves the blood. Now made artificially
Renshen	Ginseng root	Slightly warm; sweet, slightly bitter	Spleen, lung, heart	Greatly builds up the original *qi*; generates fluids; calms the spirit
Dangshen	Codonopsis root	Level; sweet	Spleen, lung	Builds up the *qi* of the centre. A mild stand-in for ginseng
Huangqi	Astragalus root	Slightly warm; sweet	Spleen, lung	Builds up *qi*; raises the yang; firms the surface; heals sores
Baizhu	White atractylodes rhizome	Warm; bitter, sweet	Spleen, stomach	Builds up the spleen; dries damp; stops sweating
Shanyao	Chinese yam	Level; sweet	Spleen, lung, kidney	Builds up spleen, lung and kidney; holds the essence

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Gancao	Liquorice root	Level; sweet	All twelve vessels	Builds up *qi*; moistens the lung; resolves poison; makes the other drugs agree
Dazao	Jujube fruit	Warm; sweet	Spleen, stomach	Builds up the centre; nourishes the blood; calms
Danggui	Chinese angelica root	Warm; sweet, acrid	Liver, heart, spleen	Nourishes and moves the blood; regulates the monthly cycle
Shudihuang	Prepared rehmannia root	Slightly warm; sweet	Liver, kidney	Nourishes blood, yin and essence
Baishao	White peony root	Slightly cold; bitter, sour	Liver, spleen	Nourishes the blood; softens the liver; relieves cramp
Ejiao	Ass-hide glue	Level; sweet	Lung, liver, kidney	Nourishes the blood; stops bleeding; moistens
Heshouwu	Prepared fleeceflower root	Slightly warm; bitter, sweet, astringent	Liver, kidney	Nourishes blood and essence; the hair. Injury of the liver has been reported
Maidong	Ophiopogon tuber	Slightly cold; sweet, slightly bitter	Lung, stomach, heart	Nourishes yin; moistens the lung; clears the heart

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Gouqizi	Lycium fruit	Level; sweet	Liver, kidney	Nourishes liver and kidney; brightens the eyes
Baihe	Lily bulb	Slightly cold; sweet	Lung, heart	Moistens the lung; calms the spirit
Shihu	Dendrobium stem	Slightly cold; sweet	Stomach, kidney	Nourishes the yin of the stomach; generates fluids
Lurong	Velvet of deer antler	Warm; sweet, salty	Kidney, liver	Builds up the yang of the kidney and the essence; strengthens bones
Duzhong	Eucommia bark	Warm; sweet	Liver, kidney	Strengthens the lower back and knees; calms the child in the womb
Roucongrong	Cistanche stem	Warm; sweet, salty	Kidney, large intestine	Builds up the yang; moistens the bowel
Yinyanghuo	Epimedium leaf	Warm; acrid, sweet	Liver, kidney	Builds up the yang; drives out wind and damp

Chinese name	Material	Nature and flavour	Enters	Chief actions in the drug books
Wuweizi	Schisandra fruit	Warm; sour	Lung, heart, kidney	Holds the *qi* of the lung; stops sweating; holds the essence; calms. The name means the fruit of five flavours
Shanzhuyu	Cornelian cherry fruit	Slightly warm; sour	Liver, kidney	Holds the essence; stops sweating; builds up liver and kidney
Lianzi	Lotus seed	Level; sweet, astringent	Spleen, kidney, heart	Builds up the spleen; stops loose stools; holds the essence; calms
Binglang	Areca nut	Warm; bitter, acrid	Stomach, large intestine	Kills worms; moves *qi* downward; lets water out
Zhusha	Cinnabar	Slightly cold; sweet; poisonous	Heart	Settles the heart. It is an ore of mercury, and its use is now restricted

A reader who goes down the columns will see the rules of chapter 52 at work. The drugs that open the surface are acrid. The drugs that clear heat are bitter and cold. The drugs that build up are sweet. The drugs that hold are sour. The drugs that settle and anchor are shells, bones and stones, which are heavy and sink.

Reference: fifty-six formulas

The table lists the formulas that this part names, and others that every physician of Chinese medicine knows. The English names follow the usual translations. The source is the book in which the formula first appears.

Formula	Chinese name	Source	Ingredients	Pattern
Ephedra Decoction	*Mahuang tang*	*Cold Damage*, about 200	Ephedra, cinnamon twig, apricot kernel, liquorice	Wind and cold at the surface, without sweat
Cinnamon Twig Decoction	*Guizhi tang*	*Cold Damage*	Cinnamon twig, white peony, fresh ginger, jujube, liquorice	Wind and cold at the surface, with sweat
Minor Blue-Green Dragon Decoction	*Xiao qinglong tang*	*Cold Damage*	Ephedra, cinnamon twig, dried ginger, asarum, schisandra, white peony, pinellia, liquorice	Cold with thin, watery phlegm: wheezing, a streaming nose
Ephedra, Apricot Kernel, Gypsum and Liquorice Decoction	*Ma xing shi gan tang*	*Cold Damage*	The four drugs of the name	Heat shut in the lung, with wheezing

Formula	Chinese name	Source	Ingredients	Pattern
Honeysuckle and Forsythia Powder	*Yinqiao san*	*Warm Illnesses*, 1798	Honeysuckle, forsythia, platycodon, mint, bamboo leaf, schizonepeta, prepared soybean, burdock fruit, reed rhizome, liquorice	Wind and heat at the surface
Mulberry Leaf and Chrysanthemum Drink	*Sangju yin*	*Warm Illnesses*	Mulberry leaf, chrysanthemum, apricot kernel, forsythia, mint, platycodon, reed rhizome, liquorice	Wind and heat with cough
Minor Bupleurum Decoction	*Xiao chaihu tang*	*Cold Damage*	Bupleurum, scutellaria, pinellia, fresh ginger, ginseng, jujube, liquorice	The lesser yang: chill and fever by turns
White Tiger Decoction	*Baihu tang*	*Cold Damage*	Gypsum, anemarrhena, liquorice, rice	Great heat of the yang brightness
Major Order the *Qi* Decoction	*Da chengqi tang*	*Cold Damage*	Rhubarb, mirabilite, immature bitter orange, magnolia bark	Heat bound in the bowel

Formula	Chinese name	Source	Ingredients	Pattern
Hemp Seed Pill	*Maziren wan*	*Cold Damage*	Hemp seed, apricot kernel, white peony, immature bitter orange, magnolia bark, rhubarb	Dry, hard stools
Coptis Decoction to Resolve Poison	*Huanglian jiedu tang*	8th century	Coptis, scutellaria, phellodendron, gardenia	Fire poison in all three burners
Gentian Decoction to Clear the Liver	*Longdan xiegan tang*	17th century	Gentian, scutellaria, gardenia, alisma, akebia stem, plantain seed, angelica, raw rehmannia, bupleurum, liquorice	Fire of the liver; damp heat of liver and gallbladder
Clear the Stomach Powder	*Qingwei san*	Li Dongyuan, 13th century	Coptis, cimicifuga, moutan bark, raw rehmannia, angelica	Fire of the stomach: toothache, bleeding gums
Guide Out the Red Powder	*Daochi san*	Qian Yi, 1119	Raw rehmannia, akebia stem, liquorice tips, bamboo leaf	Fire of the heart, led out by the urine
Left Metal Pill	*Zuojin wan*	Zhu Danxi, 14th century	Coptis and evodia, six to one	Fire of the liver that attacks the stomach: sour risings

Formula	Chinese name	Source	Ingredients	Pattern
Artemisia Capillaris Decoction	*Yinchenhao tang*	*Cold Damage*	Artemisia capillaris, gardenia, rhubarb	Yellow skin from damp heat
Eight Corrections Powder	*Bazheng san*	Song state formulary, 12th century	Plantain seed, dianthus, knotgrass, talc, gardenia, akebia stem, rhubarb, liquorice	Damp heat in the bladder
Five-Ingredient Powder with Poria	*Wuling san*	*Cold Damage*	Poria, polyporus, alisma, white atractylodes, cinnamon twig	Water that is not moved: swelling, scanty urine
True Warrior Decoction	*Zhenwu tang*	*Cold Damage*	Aconite, poria, white atractylodes, white peony, fresh ginger	Weak yang with water that floods: swelling, palpitations
Decoction for the Four Limbs that are Cold	*Sini tang*	*Cold Damage*	Aconite, dried ginger, liquorice	Collapse of the yang
Regulate the Middle Pill	*Lizhong wan*	*Cold Damage*	Dried ginger, ginseng, white atractylodes, liquorice	A cold, weak spleen
Pinellia Decoction to Clear the Upper Belly	*Banxia xiexin tang*	*Cold Damage*	Pinellia, scutellaria, coptis, dried ginger, ginseng, jujube, liquorice	Cold and heat knotted in the stomach

Formula	Chinese name	Source	Ingredients	Pattern
Calm the Stomach Powder	*Pingwei san*	Song state formulary	Atractylodes, magnolia bark, tangerine peel, liquorice	Damp in the centre
Two Aged Ingredients Decoction	*Erchen tang*	Song state formulary	Pinellia, tangerine peel, poria, liquorice	Phlegm and damp
Warm the Gallbladder Decoction	*Wendan tang*	12th century	Pinellia, bamboo shavings, immature bitter orange, tangerine peel, poria, ginger, jujube, liquorice	Hot phlegm: sleeplessness, fright, nausea
Pinellia and Magnolia Bark Decoction	*Banxia houpo tang*	*Golden Casket*	Pinellia, magnolia bark, poria, fresh ginger, perilla leaf	The feeling of a lump in the throat
Preserve Harmony Pill	*Baohe wan*	Zhu Danxi	Hawthorn, medicated leaven, radish seed, pinellia, tangerine peel, poria, forsythia	Food that stays
Four Gentlemen Decoction	*Sijunzi tang*	Song state formulary	Ginseng, white atractylodes, poria, liquorice	Weak *qi* of the spleen

Formula	Chinese name	Source	Ingredients	Pattern
Six Gentlemen Decoction	*Liujunzi tang*	Ming	The four gentlemen with tangerine peel and pinellia	Weak spleen with phlegm
Strengthen the Centre and Raise the *Qi* Decoction	*Buzhong yiqi tang*	Li Dongyuan, 1249	Astragalus, ginseng, white atractylodes, liquorice, angelica, tangerine peel, cimicifuga, bupleurum	The *qi* of the centre has sunk
Jade Windscreen Powder	*Yupingfeng san*	14th century	Astragalus, white atractylodes, saposhnikovia	A weak defence: frequent colds, sweating
Generate the Pulse Powder	*Shengmai san*	13th century	Ginseng, ophiopogon, schisandra	*Qi* and yin both exhausted
Four Ingredients Decoction	*Siwu tang*	Song state formulary	Prepared rehmannia, angelica, white peony, ligusticum	Too little blood. The basic formula for women
Angelica Decoction to Build Up the Blood	*Danggui buxue tang*	Li Dongyuan	Astragalus and angelica, five to one	Loss of blood with weak *qi*
Eight Treasures Decoction	*Bazhen tang*	1529	The four gentlemen with the four ingredients	*Qi* and blood both too little

Formula	Chinese name	Source	Ingredients	Pattern
Restore the Spleen Decoction	*Guipi tang*	1253	Ginseng, astragalus, white atractylodes, poria, sour jujube seed, longan flesh, aucklandia, angelica, polygala, ginger, jujube, liquorice	Heart and spleen both weak: sleeplessness, palpitations, bleeding
Six-Ingredient Pill with Rehmannia	*Liuwei dihuang wan*	Qian Yi, 1119	Prepared rehmannia, cornelian cherry, Chinese yam, alisma, moutan bark, poria	Weak yin of the kidney
Kidney *Qi* Pill from the Golden Casket	*Jingui shenqi wan*	*Golden Casket*	The six, with aconite and cinnamon	Weak yang of the kidney
Restore the Left Pill	*Zuogui wan*	Zhang Jiebin, 1624	Prepared rehmannia, Chinese yam, lycium fruit, cornelian cherry, cyathula, dodder seed, glues of deer antler and tortoise shell	Essence and yin of the kidney too little

Formula	Chinese name	Source	Ingredients	Pattern
Restore the Right Pill	*Yougui wan*	Zhang Jiebin, 1624	Prepared rehmannia, Chinese yam, cornelian cherry, lycium fruit, dodder seed, eucommia, angelica, glue of deer antler, aconite, cinnamon bark	Yang of the kidney too weak
Heavenly Emperor's Pill for the Heart	*Tianwang buxin dan*	17th century	Raw rehmannia, ginseng, red sage, scrophularia, poria, schisandra, polygala, platycodon, angelica, asparagus root, ophiopogon, biota seed, sour jujube seed	Weak yin of the heart: sleeplessness, restlessness
Sour Jujube Seed Decoction	*Suanzaoren tang*	*Golden Casket*	Sour jujube seed, poria, anemarrhena, ligusticum, liquorice	Sleeplessness from too little blood of the liver
Liquorice, Wheat and Jujube Decoction	*Gan mai dazao tang*	*Golden Casket*	The three of the name	Sadness and weeping without cause

Formula	Chinese name	Source	Ingredients	Pattern
Coptis and Ass-Hide Glue Decoction	*Huanglian ejiao tang*	*Cold Damage*	Coptis, scutellaria, white peony, egg yolk, ass-hide glue	Heart and kidney do not meet
Free and Easy Wanderer Powder	*Xiaoyao san*	Song state formulary	Bupleurum, angelica, white peony, white atractylodes, poria, liquorice, with a little mint and ginger	Knotted *qi* of the liver with a weak spleen and too little blood
Bupleurum Powder to Spread the Liver	*Chaihu shugan san*	Ming	Bupleurum, tangerine peel, ligusticum, cyperus, bitter orange, white peony, liquorice	Knotted *qi* of the liver with pain under the ribs
Escape Restraint Pill	*Yueju wan*	Zhu Danxi	Cyperus, ligusticum, atractylodes, gardenia, medicated leaven	Six kinds of standing still: of *qi*, blood, phlegm, fire, damp and food
Drive Out Standing Blood from the Mansion of Blood Decoction	*Xuefu zhuyu tang*	Wang Qingren, 1830	Peach kernel, safflower, angelica, raw rehmannia, ligusticum, red peony, achyranthes, platycodon, bupleurum, bitter orange, liquorice	Standing blood in the chest

Formula	Chinese name	Source	Ingredients	Pattern
Build Up the Yang to Restore Five Tenths Decoction	*Buyang huanwu tang*	Wang Qingren, 1830	A very large dose of astragalus, with angelica, red peony, earthworm, ligusticum, peach kernel, safflower	Palsy of one side after a stroke
Cinnamon Twig and Poria Pill	*Guizhi fuling wan*	*Golden Casket*	Cinnamon twig, poria, moutan bark, peach kernel, peony	Lumps in the womb
Generation and Transformation Decoction	*Shenghua tang*	17th century	Angelica, ligusticum, peach kernel, charred ginger, liquorice	After childbirth, to clear what remains
Gastrodia and Uncaria Drink	*Tianma gouteng yin*	1958	Gastrodia, uncaria, abalone shell, gardenia, scutellaria, cyathula, eucommia, motherwort, mistletoe, fleeceflower stem, poria	Rising yang of the liver: dizziness, headache

Formula	Chinese name	Source	Ingredients	Pattern
Settle the Liver and Extinguish Wind Decoction	*Zhengan xifeng tang*	Zhang Xichun, 1918	Achyranthes, haematite, fossil bone, oyster shell, tortoise shell, white peony, scrophularia, asparagus root, and others	Wind stirring in the liver; a threatening stroke
Angelica Pubescens and Mistletoe Decoction	*Duhuo jisheng tang*	Sun Simiao, 652	Fifteen drugs that drive out wind and damp and build up liver, kidney, *qi* and blood	Long-standing pain of joints and lower back
Lily Bulb Decoction	*Baihe gujin tang*	16th century	Lily bulb, raw and prepared rehmannia, ophiopogon, scrophularia, fritillaria, platycodon, angelica, white peony, liquorice	Weak yin of the lung with a dry cough
Calm the Palace Pill with Cattle Gallstone	*Angong niuhuang wan*	*Warm Illnesses*, 1798	Cattle gallstone, musk, coptis, scutellaria, gardenia, borneol, pearl, with minerals of arsenic and mercury	High fever with loss of consciousness. The best-known emergency pill

Four observations can be made on the table.

The oldest formulas are the smallest. Those of the *Cold Damage* have three to eight drugs. Later formulas grow to twelve and more.

The formulas form families. The four gentlemen and the four ingredients are joined to make the eight treasures. Two drugs are added to the six-ingredient pill to warm it. A physician learns some twenty roots and derives the rest.

New formulas were still being made in the twentieth century. Two in the table date from 1918 and 1958. Both were devised for the dizziness and strokes of people with high blood pressure.

Some classical formulas hold dangerous materials. The stem called akebia appears in three of the rows. In the twentieth century it was often replaced by a plant of the harmful family that chapter 52 described. The emergency pill contains ores of mercury and arsenic. Chapter 75 returns to both.

53. Food, hands, movement and stillness

Nourishing life

The Chinese have a name for all that a person does to stay well. It means the nourishing of life. It is older than the classics, as the tomb of Mawangdui showed, and the classics begin with it. The *Inner Classic* ranks it above all treatment. Its first two chapters, which chapter 45 summarised, are a rule of life and not a medical theory.

The nourishing of life has four parts: food, the hands, movement with breath, and the stilling of the mind. A fifth, the ordering of sexual life, is treated in the old books at length and may be passed over here. The four are the daily medicine of hundreds of millions of people who never see a physician for them.

Food

Chapter 52 noted that food and drugs are not sharply divided. The rules of eating are simple and old.

Grain is the ground. The *Inner Classic* gives the order of a meal. The five grains nourish. The five fruits assist. The five kinds of meat benefit. The five vegetables fill out. A meal is built on rice, millet or wheat, with vegetables, and with a little meat or fish for flavour.

Warm and cooked. The stomach is pictured as a pot that ripens the food. Cold and raw food makes it work harder and cools the centre. Most Chinese dishes are cooked, and most drinks are warm. The standard food for the sick, the old, the newborn’s mother and the small child is rice boiled long in much water to a thin porridge. A hundred kinds are described, each with an added ingredient for a purpose.

Measure. One eats until seven parts in ten are full. One eats at regular hours, slowly, and not in anger.

The five flavours in balance. Each flavour feeds its organ, and too much of it harms. Too much salt, the classic says, hardens the pulse and changes the colour of the face. Too much sweet makes the bones ache and the hair fall.

By season and by person. Cooling foods are eaten in summer and warming foods in winter. A person with a hot pattern avoids mutton, spices and wine. A person with a cold pattern avoids raw fruit and iced drinks. The table gives some of the assignments that every household knows.

Nature	Foods
Hot and warm	Mutton, chicken, shrimp, ginger, garlic, onion, pepper, cinnamon, walnut, wine, brown sugar

Nature	Foods
Level	Rice, maize, pork, beef, carp, egg, soybean, carrot, cabbage, peanut, honey
Cool and cold	Duck, crab, mung bean, bean curd, cucumber, melon, pear, banana, seaweed, green tea, salt

The month of sitting. The best-kept rule concerns a woman after childbirth. For thirty days she stays indoors and warm. She does not wash in cold water or sit in a draught. She eats warming and building foods: chicken with ginger and sesame oil, broths with angelica root, eggs, brown sugar. The custom is kept from Singapore to San Francisco.

Researchers have asked whether the hot and cold natures of foods answer to anything measurable. Reviews of the work find a pattern. Foods called warm tend to be rich in fat and protein and in the sharp compounds of spices, which excite the nerve endings that register heat. Foods called cold tend to be watery and to contain compounds that excite the endings for cold (Zhou 2021). The old assignment follows, at least in part, what the body senses.

The hands

The third department of the Tang medical office was that of the hands. The art has two old names, which mean pressing and rubbing, and pushing and grasping.

The practitioner works on the muscles, the joints and the points, with the patient clothed or under a cloth. The basic movements have fixed names.

Movement	What is done
Pushing	The thumb or palm is pushed along a line, often along a vessel
Grasping	A muscle is lifted and squeezed between thumb and fingers
Pressing	A point is pressed steadily with a thumb, a knuckle or an elbow
Rubbing	The palm circles on the skin, above all on the belly
Kneading	The thumb or the heel of the hand circles while it presses
Rolling	The back of the loose fist is rolled to and fro over a muscle

Movement	What is done
Tapping	The body is struck lightly with the fingertips, the edge of the hand or a loose fist
Stretching and turning	A joint is moved through its range and gently pulled

The same rules of diagnosis apply as for needles. The practitioner chooses vessels and points by the pattern, and fills or empties by the strength, the speed and the direction of the hand.

Three branches deserve mention.

Bone setting. Setters of bones and joints are a profession of their own. Many learned in the schools of the fighting arts, which had their own liniments and plasters for bruises and sprains.

The treatment of small children. Since the Ming, children under six have been treated by the hands in place of needles and bitter drugs. The points lie mainly on the hands and forearms and differ from those of adults. Some are lines and some are surfaces. A common treatment for a child who will not eat is to pinch and roll the skin along the spine, from the tailbone to the neck, several times each day.

The blind. In China, as in Japan, massage is a trade of the blind. The state trains and employs them in large numbers.

Trials of the hand therapies are fewer than those of needling. Reviews find that massage relieves long-standing low back pain for some weeks. Trials of the children’s treatment are small.

Self-treatment with the hands

A large part of the art is done by a person on himself. Sun Simiao describes a daily round that is still taught. On waking, one rubs the palms warm and covers the eyes with them. One rubs the face, the ears and the nape. One knocks the teeth together thirty-six times and swallows the saliva in three parts. One combs the hair with the fingers a hundred times. One rubs the belly in circles round the navel and the lower back over the kidneys. After meals one walks a hundred paces, rubbing the belly.

Schoolchildren in China perform a set of eye exercises to music every day, pressing points round the eyes. The practice was introduced in 1963. Whether it prevents short sight has been much studied and is not settled.

Leading and pulling

The oldest Chinese name for healing movement means leading and pulling. The breath is led, and the limbs are pulled. The painted chart of Mawangdui shows it in the second century before our era. Chao Yuanfang's book of 610 prescribes such exercises, and no drugs, for hundreds of conditions.

Three sets have come down in common use.

The play of the five animals. Hua Tuo is said to have told a pupil that the body needs work, but not to exhaustion. Movement lets the *qi* of food be used up and the blood go round, as a door hinge that is in use does not rust. He taught the movements of the tiger, the deer, the bear, the ape and the bird. The pupil, the story adds, lived past ninety with sound teeth and ears.

The eight pieces of brocade. A set of eight movements has been known since the twelfth century. It takes ten minutes and can be done by the old and the ill.

Movement	Traditional purpose
Two hands hold up the sky	To order the triple burner
Drawing the bow to left and right	To open the chest and the lung
One arm raised, one pressed down	To regulate the spleen and the stomach
Looking back over each shoulder	Against the five kinds of overdoing and the seven injuries
Swaying the head and swinging the tail	To take away the fire of the heart
Two hands reach down to the feet	To strengthen the kidneys and the lower back
Clenching the fists with glaring eyes	To increase strength
Rising on the toes and dropping on the heels	To shake off the hundred illnesses

The six sounds. A method of the sixth century joins the breath to sound. Each of six syllables is breathed out, almost without voice, for one organ. The six organs are the liver, the heart, the spleen, the lung, the kidney and the triple burner. The lips and tongue take a different shape for each. The patient chooses the sound of the organ that is ill.

Taiji

The best known of the Chinese exercises began as a fighting art. It is called the boxing of the great ultimate, after the old name for the unity of yin and yang. It is traced to a village in Henan in the seventeenth century. In the nineteenth century a teacher brought it to Beijing,

and from his family the form that is now practised in parks all over the world descends. In 1956 the state published a short form of twenty-four movements for the general public.

A form is a fixed chain of movements that takes from five to thirty minutes. Its principles can be stated briefly.

The movement is slow, even and without a break. The body is upright and loose. The weight is always wholly on one leg or passing to the other, so that one leg is full and one is empty at every moment. The waist leads, and the arms follow. The breath is left to itself and deepens. The mind leads the movement, and strength is not used.

The classics of the art describe the body as a string of pearls that the *qi* passes through. They describe the practice as stillness in movement.

Working with the breath

The modern word for these arts means work with the *qi*. It came into general use in the 1950s, when a state sanatorium began to treat patients with ulcers and nervous exhaustion by rest, posture and breathing.

All the methods order three matters: the body, the breath and the mind. The body is placed, sitting, lying or standing. The best-known standing posture is called standing like a post. The practitioner stands with the knees a little bent and the arms rounded, as if holding a large ball, for twenty minutes or an hour. The breath is made slow, fine, deep and even, and is brought down to the lower belly. The mind is collected, most often on a place three finger-breadths below the navel, which is called the field of the elixir.

In the 1980s China went through what was called a fever of this practice. Tens of millions took it up. Masters filled sports halls and claimed to heal by sending out their *qi*. The state at first encouraged the movement. It suppressed the largest of the new schools in 1999 and has since licensed four standard sets of exercises.

The fever had a medical side effect. Chinese psychiatrists saw patients who had become confused, heard voices or could not stop their bodies from shaking after intensive practice, most of them without a teacher. The Chinese list of mental illnesses took the condition up under its own name. The old books had warned of it. They say that one who strains the breath lets the fire run wild.

The inner elixir

Behind the exercises stands a discipline that goes much further. The Daoist adepts of the Tang and Song gave up the search for an elixir made from minerals, which had poisoned emperors. They sought the elixir inside the body.

Their map has three fields, one above another. The lower, in the belly, is the seat of the essence. The middle, in the chest, is the seat of the *qi*. The upper, behind the point between

the brows, is the seat of the spirit. The work goes in three steps, which chapter 46 named. The essence is refined into *qi*. The *qi* is refined into spirit. The spirit is returned to emptiness. In the first step the breath is led in thought up the back and down the front, in the small round of heaven of chapter 47.

One late text of this school became known in the West. Its title is *The Secret of the Golden Flower*. Richard Wilhelm translated it into German in 1929, and Carl Gustav Jung wrote a commentary. It teaches a single practice, which it calls turning the light round. The light of the eyes and of attention goes outward all day. The adept turns it back toward its source, in the space between the eyes, and keeps it circling there. When the light circles, the text says, the powers of the whole body gather. The fruit of the work is described as a new body of light that forms within the old one.

Chapter 6 listed this teaching among the old accounts of a second body. Chapter 67 returns to it.

What has been measured

The slow exercises have been tested more thoroughly than any other part of the nourishing of life, and with clearer results than needling.

Condition	Trial	Result
Falls in old age	Reviews of many trials	Taiji reduces the rate of falls by about a fifth (Sherrington 2019). In one early American trial, older people who practised it had nearly half as many repeated falls
Parkinson’s disease	195 patients, taiji against strength training and stretching, twice a week for six months	Taiji gave the best balance and the fewest falls (Li 2012)
Widespread muscle pain with tiredness	66 patients, taiji against stretching with instruction, twelve weeks	Symptoms fell about three times as much with taiji, and the gain held at six months (Wang 2010)
Worn knees	Taiji against standard physiotherapy	The same relief of pain; better mood with taiji
A weak heart	Taiji added to usual care	Better quality of life and mood

Condition	Trial	Result
Low spirits	A review of 218 trials of exercise	Walking, yoga, strength training, taiji and the breath exercises all relieved depression (Noetel 2024)

The exercises act on balance, on the strength of the legs, on breathing and on mood at once. The trials cannot say which part does the work, and the tradition would not accept the question. It holds that slow movement, a quiet breath and a collected mind are one act.

What stands out in the nourishing of life

1. **The first medicine is the conduct of the day:** what is eaten, when one sleeps, how one moves, what one dwells on.
2. **Food is chosen as drugs are,** by nature, flavour, season and person.
3. **The hands treat by the same rules as the needle.**
4. **Much of the treatment is done by the patient on himself,** every day.
5. **Sound is used on the organs:** six syllables for six of them.
6. **The exercises join movement, breath and attention,** and the trials find them effective where they have looked.
7. **Strained practice makes ill.** The tradition names the danger and requires a teacher.
8. **The highest practice works with light,** which the adept turns back to its source.

54. The illnesses in Chinese medicine

How the illnesses are ordered

Chapter 48 explained that a Chinese diagnosis names an illness and a pattern. This chapter turns to the illnesses. It describes those that the tradition treats at greatest length, in its own terms, and adds what is known of each from outside.

The textbooks divide medicine into branches, much as a hospital does.

Branch	What it covers
Inner medicine	Fevers from outside; the long illnesses of the organs
Outer medicine	Sores, boils and abscesses; the skin; piles; lumps of the neck and breast
Women	The monthly cycle; discharges; pregnancy; childbirth and after
Children	Fevers with rash; convulsions; failure to thrive; the illnesses of the newborn
Injuries	Fractures, dislocations, sprains
The eyes; the ear, nose and throat	

Inner medicine has a great division of its own. On one side stand the illnesses that are caught from outside and run a course of days: the fevers. On the other stand the illnesses that arise within and last: the textbooks call them inner injuries and miscellaneous illnesses.

Fevers from outside

Chapter 45 set out the six stages of a fever that begins with cold. The physicians of the Qing added a second map for fevers that begin with heat. It has four levels.

Level	Signs	Tongue and pulse	Method
Defence	Fever with a slight dread of wind, a sore throat, cough, a little sweat	Red tip, thin coat; floating and rapid	To open the surface with cool, acrid drugs

Level	Signs	Tongue and pulse	Method
Qi	High fever without chill, great thirst, sweating; cough with yellow sputum, or a hard belly	Red, with a yellow coat; surging and rapid	To clear the heat
Nourishment	Fever that rises at night, restlessness, no sleep, a faint rash, moments of raving; little thirst	Crimson, with little coat; thin and rapid	To cool the nourishment and to turn the heat back outward
Blood	Bleeding from nose, gut or bladder; dark blotches on the skin; raving or loss of consciousness; later tremor and convulsions	Deep crimson or purple	To cool the blood and scatter it

Ye Tianshi gave the rule for the four in one sentence. At the level of defence one may sweat. At the level of *qi* one may clear. At the level of nourishment the heat can still be turned back out to the *qi*. At the level of blood one must cool the blood at once, for fear that it be used up and set moving.

The map describes what a modern physician would call the course of a severe infection. First come the signs in the throat and chest, then the high fever, then the clouding of the mind. At last there is bleeding under the skin, and collapse. The Chinese physician reads at each visit how deep the illness has gone and treats that depth.

The two maps were used in the epidemics of this century. In the epidemic of 2003 and again from 2020, Chinese hospitals gave decoctions and standard formulas to most patients beside Western care. The trials that were run in haste suggest that some formulas shortened the fever and the cough. They do not show that deaths were prevented.

Stroke by wind

A sudden fall, with loss of speech and palsy of one side, is called a stroke by wind, since it comes like a gust and changes quickly. The physicians of the Han blamed a wind from outside. Since the thirteenth century the wind has been sought within. A liver whose yang rises unchecked, phlegm, and fire are held to stir it.

The textbooks distinguish two depths. If the wind has struck only the vessels, the patient is awake. The mouth is drawn to one side, the speech is slurred, and an arm and leg are numb or weak. If it has struck the organs, the patient falls senseless.

The senseless patient is read further. In the closed form the jaw and fists are clenched, the face is red and the breath is loud. The orifices are shut, and the physician opens them with the emergency pill of chapter 52. In the form called desertion, the mouth and the hands are open, the eyes are closed, the limbs are cold and the breath is faint. The yang is leaving. The physician gives ginseng with aconite and burns mugwort on the belly.

After the stroke, the palsy is treated for months with needles, with the hands, and with the formula of Wang Qingren that builds up the *qi* and moves the blood. Reviews of the trials of needling after a stroke find that it may speed recovery. The trials are of low quality.

Wasting and thirst

The Chinese name of this illness joins its two signs. The patient wastes away, and his thirst cannot be stilled. It is the diabetes of the Greek and the modern physician.

The *Inner Classic* gives its cause in plain words. It comes from rich and sweet food. The patient must have eaten much that is sweet and fat. Fat produces heat inside, and sweetness fills the centre, and the *qi* rises and turns to wasting and thirst. The text adds that this is an illness of the wealthy.

By the seventh century Chinese physicians had recorded that the urine of these patients is sweet. Chao Yuanfang noted in 610 that they are prone to boils and carbuncles. Sun Simiao listed three matters that the patient must avoid: wine, sexual excess, and salty and floury food. One who keeps these three rules, he wrote, may recover without drugs. One who does not cannot be saved by any drug.

The textbooks divide the illness in three by its leading sign. The upper form, with thirst, belongs to the lung. The middle form, with hunger, belongs to the stomach. The lower form, with a flood of urine, belongs to the kidney. All three rest on a yin that is used up by dry heat.

Impediment of the joints and of the chest

Painful, stiff joints are called an impediment. The *Inner Classic* explains them by three evils that arrive together: wind, cold and damp. The physician asks which leads.

Kind	Leading evil	What is seen
Wandering	Wind	The pain moves from joint to joint
Painful	Cold	Severe pain in fixed places, eased by warmth

Kind	Leading evil	What is seen
Fixed	Damp	Heavy, swollen, numb joints; worse in wet weather
Hot	Heat	Red, hot, swollen joints with fever

In a long illness the liver and the kidney, which govern sinews and bones, are held to be worn out. The formula builds them up while it drives the evils out.

One drug for the hot kind has been tested with success, and it shows the risks as well. The root of a climbing shrub called the thunder god vine has been used in the south of China for swollen joints. In a Chinese trial of 207 patients with the severe modern form of the illness, an extract of the root did as well as the standard Western drug. The two together did better than either. After twenty-four weeks, half of the patients had improved by the agreed measure on the Western drug, somewhat more on the extract, and three quarters on both (Lv 2015). The plant is poisonous. It can harm the liver and stop the monthly cycle, and it is not a household remedy.

The same word, impediment, is used for the chest. Zhang Zhongjing describes a pain in the chest that goes through to the back, with shortness of breath. He treats it with the fruit of trichosanthes, the bulb of a wild chive and white wine. Modern Chinese physicians read the condition as standing blood and phlegm in the vessels of the heart. The large trial of chapter 52 after a heart attack tested a formula made on that reading.

Illnesses of the mind

The Chinese tradition has no separate medicine of the mind. The spirit lodges in the heart, the cloud soul in the liver, and their illnesses are illnesses of those organs. The classics describe several conditions with great exactness.

The running piglet. Zhang Zhongjing writes of an illness that starts in the lower belly and rushes up to the throat. While the attack lasts, the patient feels that he is about to die. Then it passes off, and he is as before. It comes, the text says, from fright and fear. A modern reader will recognise the attack of panic.

The lily illness. The patient wants to eat and cannot. He wants to lie down and cannot lie. He wants to walk and cannot walk. Sometimes food tastes good to him, and sometimes he cannot bear the smell of it. He seems cold and is not cold, and seems hot and is not hot. No drug helps, and every drug makes him vomit. It is as if a spirit had hold of him, the text says, and yet his body looks sound. The remedy is the bulb of the lily, boiled alone or with one other drug.

The restless organ and **the plum stone in the throat** were described in chapter 45.

Constraint. In the fourteenth century Zhu Danxi taught that most long illnesses begin when something that should move is held fast. He named six kinds of constraint: of *qi*, blood, phlegm, fire, damp and food. The first comes first and draws the others after it. It arises when a person's wishes are thwarted and his feelings find no outlet. The pattern of the knotted liver in chapter 48 is its modern form, and it is the Chinese physician's usual reading of what the hospital calls depression.

Withdrawal and mania. The classics divide madness in two. In the yin form the patient is silent, dull and withdrawn. He mutters to himself, laughs and weeps without cause, and does not care for food or cleanliness. In the yang form he is loud and violent. He does not sleep, climbs on high places, sings, throws off his clothes and runs, and abuses those who come near. The *Inner Classic* notes that such a patient can go for days without food and yet leap over walls. Phlegm that clouds the heart is the cause of both. In the yang form the phlegm is joined with fire.

The classic's first advice for the yang form is short. Take away his food, it says, and he will be well. It then prescribes a drink made with iron filings, to bring the *qi* down. Later physicians purged. For the yin form they moved the *qi* and cleared the phlegm.

Illnesses of women

Sun Simiao opened his great work with the illnesses of women, and he gave a reason. Women, he wrote, are ten times harder to treat than men. They bear and nurse children, and they are more bound by their feelings and less free to speak of them.

The ground of the women's branch is the blood. The monthly cycle is read as a tide. After the period the blood and the yin are built up. In the middle of the cycle the yin turns to yang. In the second half the yang grows. Before the period the *qi* must move freely, and then the blood descends. A modern school gives a different formula in each of the four phases.

The physician asks about the length of the cycle, the amount, colour and thickness of the blood, clots, and pain, as chapter 49 listed. The patterns follow from the answers. A period that comes early, with much bright blood, is heat. One that comes late, with little pale blood, is too little blood or cold. Dark blood with clots and a stabbing pain is standing blood. Pain before the period is fullness, and pain after it is emptiness.

For the weeks after a birth the tradition has three rules: the mother is empty, standing blood must be cleared, and she must not be chilled. The month of sitting in chapter 53 applies them.

Illnesses of children

A child, the physicians say, is a body of pure yang. It grows fast, its illnesses turn hot quickly, and it recovers quickly. Its organs are tender, the spleen and the lung above all. So children mostly suffer from food that stays, from coughs, and from fevers.

Two conditions have names of their own. Convulsion is called fright wind. The quick form comes with high fever. The slow form comes in a child worn out by long looseness of the bowels. A child that does not thrive, with a large belly, thin limbs and dull hair, is said to have an accumulation. One old treatment is still used. A point in the crease of each finger is pricked, and a drop of clear yellow fluid is pressed out.

Illnesses that China names and the hospital does not

Some illnesses are known to every Chinese patient and to no Western textbook. They show how a name shapes what is suffered.

Getting fire. The commonest diagnosis in China is made at home. A person has eaten fried and spicy food, slept too little or quarrelled. He then has a sore throat, ulcers in the mouth, pimples or a nosebleed. He says that he has got fire. He drinks a cooling tea of herbs. Such teas are sold on every street of the south, and one of them is among the best-selling drinks in the country.

The emptied kidney. Young men come to physicians with dizziness, a sore back, tiredness, poor sleep and fear. They are convinced that they have lost too much semen, by self-abuse or in their sleep. The old books support the fear. The essence is the root of life, and it is limited. Indian medicine has the same illness under another name, as chapter 59 tells.

The shrinking. A man is seized by the belief that his penis is drawing back into his belly and that he will die when it has gone. He holds it fast, or has his family hold it, and calls for help. Single cases are known from the old books. From time to time the fear spreads. In 1984 and 1985 it ran through the island of Hainan and the nearby coast, and more than three thousand people were affected within a year. Almost all recovered within hours or days.

The weakness of the nerves. For most of the twentieth century Chinese clinics gave one diagnosis above all for troubles of mood. It was a Western one that the West had given up: weakness of the nerves. Patients complained of headache, dizziness, poor sleep, poor memory and tiredness. The American psychiatrist Arthur Kleinman examined a hundred such patients in Hunan in 1980. By the American rules of that time, eighty-seven of them had a major depression (Kleinman 1982). They did not say that they were sad. They said that their heads ached and that they were worn out. Many had suffered grave losses in the years of political upheaval.

Kleinman drew a conclusion that bears on every chapter of this book. The illness that a person has depends in part on the names that his world offers him. A name that points to the body lets a person be ill without shame and seek help. The same suffering under another name would have been a matter of politics or of character.

The other half in China

The medicine of the colleges says little of spirits. The medicine of the people has never been without them. A family with a sick member will often go to the hospital, to a physician of Chinese medicine and to a temple. It may go in that order or in another, and it sees no conflict.

The family's dead. The first layer of chapter 44 is still there. When an illness will not yield, a family asks whether an ancestor is displeased. A grave may be badly placed, or offerings may have been neglected, or a dead child may have been left without a tablet. A specialist is consulted, and the fault is put right.

Ghosts. The dead who have no descendants to feed them wander hungry, like the Babylonian ghosts of chapter 34. A person may run into one at a crossroads, by water, or at night. The signs are a sudden change of character, strange speech, or an illness that no remedy touches. In the seventh month of the old calendar, food is set out for them in every street.

The soul lost by fright. A small child has been startled by a fall, a dog or a loud noise. It then cries at night, sleeps badly, refuses food and runs a fever. The grandmothers say that a part of its soul has been frightened out. In Taiwan and Hong Kong a woman who knows the rite takes a garment of the child and a cup of rice. She passes them through incense smoke, calls the child by name, and bids the soul come home. From the pattern that the rice takes in the cup she reads what frightened the child. The reader met the same illness and the same calling among the Hmong of chapter 15 and in the Andes of chapter 17.

Needles for ghosts. The learned tradition kept a door open. Sun Simiao lists thirteen points for patients who rave, see what is not there, and act as if possessed. The points are needled one after another in a fixed order. Each point has a second name for this use: the ghost's palace, the ghost's faith, the ghost's fortress, the ghost's heart, and so on to the thirteenth. The points are still taught for madness. The second names are usually left out.

The written charm. A Daoist priest writes a sign in red ink on yellow paper, with a brush, in one breath, while he holds a certain thought. The paper is burned, and the ashes are stirred into water that the patient drinks. Once more a written word is taken as a drug. The imperial medical office kept a department for such methods until the sixteenth century.

The temple's prescriptions. Some temples keep a set of numbered slips, each with a prescription. A sick person kneels, states the complaint to the god, and shakes a tube of numbered sticks until one falls out. The keeper hands over the slip of that number, and the nearby pharmacy fills it. Larger temples have separate sets for adults, for children, for women and for the eyes.

The medium. In south China, Taiwan and among the Chinese overseas, a god may speak through a medium. The medium goes into a trance before the altar. His voice and bearing change. The clients come forward one by one, state their trouble, and are answered. He

names the cause, which is often an offended spirit or a fault in the family, and prescribes rites, charms and sometimes herbs.

Arthur Kleinman followed patients of such mediums in Taipei. Of twelve whom he was able to see again, ten judged that they had been helped. He noted that most had long-standing complaints of the kind that come and go, and troubles in the family (Kleinman 1979). A later study in Singapore followed twenty-one patients of a medium. Eleven said that they had been helped. Four said that they had been helped but had not done all that was asked. Five were unsure, and one had not been helped (Lee 2010).

The Chinese patient therefore lives with two medicines in a wider sense than the official one. The first treats the body in its seasons. The second treats the standing of a person among the living and the dead. The Greeks divided them between the physician and the temple. China never made the division complete.

What stands out in the illnesses

1. **A fever is read by depth.** Four levels or six stages tell the physician how far it has gone, and each depth has its method.
2. **Diabetes was laid to rich food in the oldest classic,** and three rules of conduct were ranked above every drug.
3. **Panic, depression and madness are described exactly,** as illnesses of the heart and the liver.
4. **The monthly cycle is read as a tide of yin and yang.**
5. **A name shapes the illness.** Weakness of the nerves allowed a generation to be ill without blame.
6. **The family's dead, the hungry ghost and the frightened soul are still treated,** by the temple and the grandmother.
7. **Even the learned tradition kept thirteen points for ghosts.**

Reference: twenty-five illnesses and their patterns

The table gives, for the illnesses that fill a Chinese clinic, the name, the nearest Western terms, and the patterns among which the physician chooses. The patterns are described in the reference table of chapter 48.

Illness	Nearest Western terms	Patterns among which the physician chooses
Common cold	Cold, influenza	Wind and cold; wind and heat; summer heat with damp; a cold in a person whose *qi* is weak

Illness	Nearest Western terms	Patterns among which the physician chooses
Cough	Bronchitis	From outside: wind and cold, wind and heat, dryness. From within: phlegm and damp, hot phlegm, fire of the liver that scorches the lung, weak yin of the lung
Wheezing and panting	Asthma, long-standing disease of the airways	Cold phlegm; hot phlegm; a weak lung; a kidney that does not grasp the *qi*
Pain in the upper belly	Inflammation and ulcer of the stomach	Cold in the stomach; food that stays; the liver's *qi* invading the stomach; heat of the stomach; standing blood; a cold, weak spleen and stomach; weak yin of the stomach
Loose stools		Cold and damp; damp and heat; spoiled food; a knotted liver that presses on the spleen; a weak spleen; weak yang of the kidney
Hard stools		Heat; knotted *qi*; weak *qi*; too little blood; cold from weak yang
Headache		From outside: wind with cold, heat or damp. From within: rising yang of the liver, a weak kidney, too little *qi* and blood, phlegm, standing blood

Illness	Nearest Western terms	Patterns among which the physician chooses
Dizziness	Dizziness; high blood pressure	Rising yang of the liver; phlegm; too little *qi* and blood; too little essence of the kidney
Sleeplessness		Heart and spleen both weak; heart and kidney do not meet; fire of the liver; hot phlegm; a timid heart and gallbladder
Palpitations	Disorders of the heartbeat; anxiety	Weak *qi*, blood, yin or yang of the heart; phlegm and fire; standing blood; water that presses on the heart
Impediment of the chest	Chest pain from the heart	Cold that congeals; phlegm; knotted *qi*; standing blood; weak yang
Constraint	Depression, anxiety	Knotted *qi* of the liver; *qi* turned to fire; phlegm and *qi* in the throat; a heart whose spirit is not nourished; heart and spleen both weak; weak yin with fire
Withdrawal and mania	Madness	Phlegm and knotted *qi*; phlegm and fire
Stroke by wind	Stroke	In the vessels or in the organs; closed or deserting; afterwards weak *qi* with standing blood
Wasting and thirst	Diabetes	Upper, middle and lower. In its course: weak yin with dry heat, then *qi* and yin both weak, then yin and yang both weak

Illness	Nearest Western terms	Patterns among which the physician chooses
Impediment of the joints	Joint diseases	Wandering, painful, fixed and hot; in long illness with weak liver and kidney
Wilting	Weak and wasted limbs	Heat of the lung that scorches the fluids; damp and heat; a weak spleen and stomach; weak liver and kidney
Pain of the lower back		Cold and damp; damp and heat; standing blood after a strain; a weak kidney
Swelling with water	Dropsy	The yang kind, sudden and from above, with wind or damp heat. The yin kind, slow and from below, with weak yang of the spleen or the kidney
Painful urination	Infections and stones of the urinary passages	Six kinds: with heat, with stones, with knotted *qi*, with blood, with cloudy urine, and from exhaustion
Yellow skin	Jaundice	The yang kind, bright as an orange, from damp and heat. The yin kind, dull and smoky, from cold and damp
Painful periods		Knotted *qi* with standing blood; cold that congeals in the womb; damp and heat; too little *qi* and blood; weak liver and kidney

Illness	Nearest Western terms	Patterns among which the physician chooses
Flooding and trickling	Bleeding from the womb out of season	Heat in the blood; a spleen that does not hold the blood; a weak kidney; standing blood
Accumulation in children	Failure to thrive	Food that stays; a weak spleen; worms
Sores and abscesses		The yang kind: red, hot, raised and painful. The yin kind: flat, pale, cold and slow

Three sayings of the clinic belong with the table.

On dizziness the schools disagree, and both sayings are taught. One master held that there is no dizziness without phlegm. Another held that there is none without emptiness.

On wilting, the *Inner Classic* gives a rule of one line. To treat wilting, take the yang brightness alone. The stomach is the sea that feeds the sinews, and so the points and drugs of the stomach's vessel come first.

On sores, the outer medicine has a rule of three steps. At the start the physician disperses, so that no pus forms. When pus has formed, he supports the patient, so that the body pushes it out. When the sore has opened, he builds up, so that the flesh grows again.

55. Chinese medicine today

Two medicines in one system

China is the only large country in which an old medicine and the medicine of the hospital stand side by side in law, in the universities and in the insurance.

A student who wants to practise Chinese medicine enters one of some forty universities of that medicine and studies for five years. About a third of the course is Western medicine: anatomy, physiology, pharmacology, the hospital's diagnosis. The graduate is licensed to prescribe both kinds of drugs. In a hospital of Chinese medicine a patient with pneumonia is likely to receive an X-ray, an antibiotic and a decoction.

A third profession stands between the two. Since the 1950s Western-trained physicians have been taught Chinese medicine in courses of two or three years. They practise what is officially called the integration of Chinese and Western medicine. Tu Youyou belonged to this group, and so did the physicians who brought arsenic to the leukaemia ward.

The mixture has a price. Critics inside China say that the young physicians of Chinese medicine read laboratory reports better than pulses. The old way of learning, by years at the side of one teacher, has given way to the lecture hall. The state has responded by naming senior physicians as masters of national medicine and attaching disciples to them.

Nine constitutions

One modern development returns to an old theme. Since the 1970s a Beijing professor, Wang Qi, has worked out a doctrine of bodily constitution. It was adopted as a national standard in 2009 and is used in the yearly health checks of the old. It sorts people by a questionnaire into nine types.

Type	Marks
Level	Sturdy, with good colour, sleep and appetite; adapts easily
Weak *qi*	Tires quickly, speaks softly, catches colds, sweats easily
Weak yang	Feels the cold; cold hands and feet; dislikes cold food
Weak yin	Hot palms and soles, a dry mouth, dry stools; restless; dislikes heat
Phlegm and damp	Stout, with a soft belly, an oily face and a sticky mouth

Type	Marks
Damp and heat	An oily face with pimples, a bitter taste, sticky stools; irritable
Standing blood	A dull complexion, dark lips, bruises easily, fixed pains
Knotted *qi*	Low-spirited, sensitive, sighs often; tightness of chest and ribs
Special	Reacts to pollen, foods and drugs; inherited sensitivities

In a national survey about a third of Chinese adults were of the level type (Wang 2012). A review of more than sixteen hundred later studies found each of the eight other types linked to certain illnesses. Stout people of the phlegm and damp type, for example, more often had diabetes and high blood pressure. Nearly all the studies looked at one moment only, and so they cannot say which came first (Liang 2020).

The reader will notice the count. Galen sorted people into nine temperaments, of which one is even. The Chinese standard has nine constitutions, of which one is level. The two lists were made eighteen centuries apart and without contact. Chapter 73 returns to the number.

Chinese hospitals have also opened departments with the old name of treating what is not yet ill. A person without a diagnosis is examined for constitution and tendency and is given a regimen. It consists of foods, exercises, burning of mugwort at certain seasons, and a formula for the turn of the year.

Abroad

The World Health Organization asked its member states in 2018 which old medicines were in use. Of the 120 states that answered, 113 reported that needling was practised (WHO 2019). It is the most widely spread of all the methods in this book.

In several Western countries it has entered the public system by way of the trials of chapter 51. The German insurance funds have paid for needling in long-standing pain of the lower back and of the knee since 2007. The American association of physicians for internal medicine named needling and taiji in 2017 among the treatments to be tried before drugs for long-standing back pain. The public insurance for the old in the United States has paid for needling in that condition since 2020. The English guideline body recommends it for long-standing pain without a known cause and for the prevention of migraine.

The Chinese pharmacy has travelled less well. Outside East Asia its drugs are mostly sold as food supplements, with no check on what they hold. The harm described in chapter 52 arose in that setting.

How good is the evidence?

For most of the last fifty years the trials done in China could not be relied on. Two findings made this plain.

In 1998 British researchers collected the controlled trials of needling from many countries. Trials from Western countries came out for and against. Every trial from China had reported a positive result (Vickers 1998).

In 2009 a group of Chinese and Canadian researchers took 3,137 trials from Chinese journals that called themselves randomised. They telephoned the authors and asked how the patients had been allotted. By the authors' own account, fewer than seven in a hundred of the trials had been randomised at all (Wu 2009).

The reasons were several. Chinese journals did not publish negative results. Physicians were rewarded for the number of their papers. And many did not see why a medicine that had been used for two thousand years should need a trial.

The picture has changed since about 2010. Large trials from China, registered in advance and run with independent oversight, now appear in the leading Western journals. Those cited in chapters 51 and 52 are of this kind, and some of them are negative. The older literature, which fills the Chinese databases, remains of little use.

A second difficulty is not a matter of honesty. It lies in the design of trials, and chapter 51 called it the riddle of the pretended needle. A trial fixes the treatment and varies one element. The Chinese physician fixes nothing. He reads, treats, reads again and changes the treatment. Most trials therefore test a part of his medicine with the loop cut through.

What holds, what is open, what has failed

The table sums up the measured findings of chapters 49 to 54.

Part of the medicine	What has been found
The examinations	Two physicians agree on the broad questions and differ on the fine ones. Agreement rises with shared training and defined terms
The pulse	The classical norm of four to five beats to a breath is the measured norm. A change felt by the practitioner went with a measured change in one study. The fine readings are unconfirmed

Part of the medicine	What has been found
The tongue	The coat can be judged reliably. It varies with the bacteria of the mouth and with at least one illness of the whole body
The vessels and points	No structure has been found. The charts agree with the planes of connective tissue, with tender points, and with the paths that sensation takes
Needling for pain	Clearly better than no needling and than usual care. Slightly better than pretended needling
Needling for sickness	One point works about as well as the standard drugs
Needling: place and practitioner	A few trials show that the place matters. One shows that the practitioner matters. The nerve path from a point on the leg to inflammation in the body has been traced in mice
Burning	Turns a child in the womb in most trials
Single drugs	Several of the most important drugs of modern medicine: against malaria, leukaemia and asthma
Formulas	Fixed formulas added to modern care reduced deaths and relapses in two very large heart trials. A fitted formula for the bowel lasted longer than a fixed one
The architecture of a formula	Confirmed at the level of molecules for one formula
Hot and cold natures of drugs and foods	Partly matched by their composition and by the receptors that they excite
Slow exercise	Fewer falls, better balance, less pain, better mood, in good trials

Part of the medicine	What has been found
Harm	Kidney failure and cancer from one family of plants; poisoning by metals in some pills; liver injury from a few plants; mental illness after strained breathing practice
Not tested	The reading of fate, the temple, the medium, the thirteen points; the choice of points by the hour; the whole of a treatment as a physician gives it

Six observations from the research

The research that led to this book collected the measured findings on the old medicines and looked for what they have in common. Six observations came out of the Chinese material. They are stated here and taken up again in Part VII.

1. **The diagnosis is aimed at the state of the person and not at the disease.** The World Health Organization has recognised this. It requires two codes, one for the disease and one for the pattern.
2. **Diagnosis, naming and treatment form one loop.** The treatment follows from the pattern. The same signs that gave the pattern judge the result. In one Japanese school the pulse decides when the treatment is finished.
3. **The diagnosis is poorly reproduced in its details and better in its outlines.** Chapter 49 gave the figures.
4. **The name places the suffering in a larger order,** and gives the patient a part to play in it: what to eat, when to rest, what to change.
5. **Trials cut the loop.** Tested as single parts, a point or a plant shows a small effect of its own. Tested as a whole, with the examination, the occasion and the relation, the medicine shows a larger one.
6. **Single molecules from old remedies sometimes act with great strength,** and they then act outside the old system. Nobody reads a pattern before giving artemisinin.

The fifth and sixth observations can be joined. The author proposed during the research that the medicine of the hospital works best where the place of the fault is the same in every patient. Examples are a parasite, a faulty protein and a broken bone. The old medicines work where the place differs from person to person and must be read in each. The proposal has not been tested as such. The trial that compared fitted with fixed formulas is the nearest that exists.

What stands out in Chinese medicine

The last twelve chapters can be drawn together in twelve points.

1. **The oldest layer is the family's dead,** and it is still in use.
2. **The body is read as a small heaven and earth.** What holds outside holds inside.
3. ***Qi* is known by its direction.** Most of its faults are faults of direction and passage.
4. **Everything is a relation of two,** which can be divided again without end, and each three has a part that opens, a part that closes and a pivot.
5. **Five and twelve come from the pitch pipes.**
6. **The vessels are a warp and a net,** and a point far away treats what lies along the thread.
7. **The whole person is read at the wrist,** against the physician's own breath, with a still mind.
8. **An illness has a depth and moves.** The physician reads the depth at each visit.
9. **A drug is a direction at a place,** and a formula is a small state.
10. **The first medicine is the conduct of life,** and the highest physician treats what is not yet ill.
11. **The spirit comes first,** in the patient and in the physician.
12. **The medicine has been counted,** late and under protest. Part of it holds, part is open, and part has done harm.

The next chapters cross the Himalaya. The medicine of India was written down in the same centuries as the Chinese classics. It uses other words, and the author holds that it describes the same body.

56. India: the knowledge of long life

The name

The medicine of India is called *Ayurveda*. The word joins *ayus*, the span of a life, with *veda*, knowledge. Its first textbook defines its subject at the start. Life, it says, is the union of the body, the senses, the mind and the self. The knowledge of life teaches what favours and what harms that union, and what makes a life happy or unhappy, long or short.

India has several hundred thousand registered practitioners of this medicine, more than four hundred colleges, and a ministry for it and its sister systems. It is practised in Nepal and Sri Lanka, and in simplified forms across the world. This chapter gives its history. The five chapters that follow describe its ground, its diagnosis, its illnesses, its healing and what has been measured.

Hymns against fever

The oldest Indian texts on healing are hymns. They stand in the *Atharvaveda*, the fourth collection of the sacred lore of the early Indians, which was complete by about 1000 before our era. Some hundred of its hymns are for the sick (Zysk 1991).

The healer of these hymns speaks to the illness and to the plant. Illness is a being or the act of a being. The healer names it, praises or threatens it, and sends it away.

Fever. The chief illness is called *takman*. The hymns describe it exactly. It makes the patient shiver and then burn. It turns him yellow. It comes every day, or on the third day, or it skips two days. It comes in autumn after the rains. These are the periods of chapter 41, observed in India a thousand years before the Greek physicians wrote. The healer does not treat the fever. He tells it to leave. One hymn sends it off to distant peoples in the north-west, and bids it take a wanton slave girl there and shake her.

Yellowness. A hymn against jaundice hands the yellow colour to birds. Into the parrots we put your yellowness, it says, and into the yellow wagtails. The patient is surrounded with the red of a bull, so that redness may enter him. The Babylonian healer washed an evil onto a clay figure. The Indian healer gives it to a bird of the same colour.

A broken bone. A hymn to a climbing plant is spoken over a fracture. Let marrow be joined with marrow, it says, and limb with limb. Let what has fallen from the flesh grow again, and bone grow to bone. A German charm was written down in the tenth century of our era, two thousand years later and at the other end of the same family of languages. It uses nearly the same words: bone to bone, blood to blood, limb to limb. Scholars take the two for descendants of one very old formula.

The plants. The healer addresses the plants as mothers and goddesses. He tells where they grow and who first found them. One hymn says that the boar knows the healing plant and the

mongoose knows it. The reader has met the recital of a remedy's origin in every part of this book.

The gods of these hymns include two physicians, the twin horsemen called the Ashvins. They gave a woman a leg of iron when hers was cut off in battle, and they made an old sage young again.

The wandering physicians

Between the hymns and the textbooks lies a gap of several centuries, and a change of kind. The textbooks explain illness by wind, bile and phlegm, by food and season. They treat by diet and drugs. Where did this medicine come from?

The historian Kenneth Zysk has given the answer that most scholars accept (Zysk 1991). The priests of the later Vedic age looked down on physicians. A text of the period declares the physician impure, since he goes among people of every kind. Healers therefore found their place among those who had left the priestly order: the wandering ascetics of the sixth and fifth centuries before our era. Among them were the first Buddhists and Jains. These wanderers begged their food, went from town to town, tended each other, and exchanged what they had seen to work.

The rule book of the Buddhist monks has a long chapter on medicines. It names the five that a monk may always keep: clarified butter, fresh butter, oil, honey and raw sugar. It lists roots, leaves, fruits, resins and salts, and it records cases. The Buddha is called the great physician. He is said to have told his monks that whoever would tend him should tend the sick.

The monastery became a place of treatment, and Buddhist monks carried Indian medicine with them to Sri Lanka, Central Asia, Tibet, China and South-East Asia. The oldest Sanskrit medical manuscript that survives was found in 1890 in a ruined monastery on the Silk Road.

Jivaka. The same rule book tells the life of the Buddha's physician, Jivaka. He studied for seven years under a teacher at Taxila in the north-west. At the end he asked when his training would be complete. The teacher handed him a spade. Go round Taxila for a day's journey in every direction, he said, and bring me whatever you find that is not a medicine. Jivaka came back with empty hands. He had found nothing that was not a medicine. The teacher told him that his training was complete.

Ashoka. About 257 before our era the emperor Ashoka, who had become a Buddhist, had an edict cut into rock at the borders of his realm. Everywhere, it says, the king has provided two kinds of medical care, for people and for animals. Healing plants have been brought and planted where they did not grow. Wells have been dug and trees planted along the roads.

A Greek ambassador at the Indian court about 300 before our era noted the same class of healers. They cure, he reported, mostly by regulating food and not by drugs.

Three great books

The classical medicine of India rests on three books, which are called the great triad.

The collection of Caraka. The first records the teaching of a sage named Atreya as his pupil Agnivesha took it down. A physician named Caraka revised it, perhaps in the first or second century of our era, and a later editor completed it. It is the book of inner medicine. It has eight parts and a hundred and twenty chapters (Sharma 1981).

Part	Chapters	Subject
Principles	30	The aims of medicine; drugs; food; the conduct of life; the physician
Causes	8	How eight chief illnesses arise
Measures	8	Taste, constitution, the channels, epidemics; how to examine and how to debate
The body	8	The person and the world; conception; the child in the womb; anatomy
The senses	12	The signs of approaching death
Treatment	30	Rejuvenation; then the illnesses one by one
Preparations	12	Drugs that bring up and that purge
Success	12	The five cleansing treatments and their mishaps

The book argues. Whole chapters are reports of meetings at which sages dispute a question, such as how many tastes there are, and Atreya gives the ruling. It names four ways of knowing: the word of the trustworthy, what is seen, what is inferred, and what is reasoned out from many causes together. It gives rules for debate between physicians, friendly and hostile.

It says that treatment stands on four feet: the physician, the drug, the attendant and the patient. Each must have four qualities. The patient's are a good memory, obedience, courage, and the power to describe his illness.

It preserves the charge that a teacher gives to a student before the sacred fire. The student shall strive for the relief of the sick with his whole being. He shall not desert a patient, though it cost his life. He shall not harm a patient even in thought. What he sees and hears in the patient's house he shall not make known.

The collection of Sushruta. The second book is the book of the knife. It records the teaching of a king of Benares to his pupil Sushruta, and it reached its present form about the same time as Caraka's (Wujastyk 2003).

It describes eight kinds of operation: cutting out, cutting open, scraping, piercing, probing, drawing out, letting out, and sewing. It lists a hundred and one blunt instruments and twenty sharp ones, and it adds that the best instrument is the hand. Students practise cutting on gourds and cucumbers, piercing on the veins of dead animals and on lotus stalks, and sewing on cloth and hide.

It teaches anatomy from the dead. A body that is whole, not too old, and not dead of poison or long illness is cleaned and wrapped in grass. It is laid in a cage in a slow stream for seven nights. Then the student brushes away the layers one by one with a whisk of grass, and looks.

Its operations were far ahead of their time. It describes the removal of a stone from the bladder and the pushing aside of a clouded lens of the eye. It describes the sewing of a torn gut with the heads of large black ants. And it describes the rebuilding of a nose from a flap of skin of the cheek. The last had a long history. Indian families of the potters' caste went on making noses. In 1794 a London magazine printed an eyewitness report of such an operation on a carter whose nose had been cut off as a punishment. English surgeons took up the method, and modern plastic surgery descends from it.

The heart of the eight limbs. The third book was written about 600 by Vagbhata, in the north-west. It joins the teaching of the two older books in clear verse, for learning by heart. It became the most used textbook in the south of India, and it was put into Tibetan and Arabic.

Its title refers to the eight branches of the classical medicine.

Branch	Subject
The body	Inner medicine
The child	The illnesses of children and of their nurses
Seizers	Illnesses that spirits bring
The upper parts	Eye, ear, nose, mouth and throat
The knife	Surgery
The fang	Poisons, bites and stings
Old age	Rejuvenation

Branch	Subject
The bull	Potency and the begetting of children

The third branch should be noted. The medicine of spirits is one of the eight limbs of the learned medicine, with its own chapters in every textbook.

The same knowledge was applied to other living beings. There are Sanskrit treatises on the medicine of elephants, of horses and of trees.

After the great books

Three later works complete the classical canon. They are called the lesser triad.

About 700 a physician named Madhava wrote a book on diagnosis alone. It goes through the illnesses one by one and gives the causes, the early signs, the full signs and the outlook. It was the first Indian book to describe several conditions clearly, among them the form of joint disease that chapter 59 describes, and smallpox.

About 1300 Sharngadhara wrote a short handbook of pharmacy. It contains the first account of the pulse in Indian medicine. The older books do not mention it.

In the sixteenth century Bhavamishra compiled a large work on drugs. It takes up materials that had come with the Muslims and the Portuguese: opium, China root, and the chilli. It describes a new illness under the name of the disease of the Franks, which is syphilis.

Mercury

From about the eighth century a new art entered Indian medicine. Its name means the science of mercury. It began among adepts who sought a body that does not die. They held that mercury, rightly prepared, would give it. Mercury was the seed of the god Shiva, and sulphur that of his consort. Joined, they made the red compound that the Chinese alchemists also prized.

The adepts worked out long procedures. Mercury is put through eighteen operations of cleaning, grinding with plant juices, heating and binding. Metals and minerals are burned again and again with herbs in a sealed vessel in a pit of cow-dung fire, until a fine ash remains. Such an ash is called a *bhasma*. The texts give tests for its fineness. It must enter the lines of the fingers when rubbed, and it must float on still water.

By the thirteenth century these ashes had a firm place in the pharmacy, and they have it still. Their makers hold that the procedures remove the poison. Chapter 61 gives what analyses have found.

Temples, sultans and merchants

A stone inscription of 1069 in a temple of the south records the endowment of a hospital. It had fifteen beds, a physician, a surgeon, two nurses, two men to fetch herbs and a barber. It lists the medicines to be kept in stock, some twenty of them, with the amounts.

From the thirteenth century the Greek medicine of chapter 40 was practised at the Muslim courts of India beside the Indian. The two borrowed from each other. The Indian physicians took the pulse, the examination of urine and several drugs. The hakims took Indian plants by the hundred.

Europeans who came to trade learned from Indian healers. A Portuguese physician at Goa published the first European book on Indian drugs in 1563. The Dutch governor of the Malabar coast, Hendrik van Rheede, did more. He was helped by a physician of a toddy-tapping caste, whose sworn statement stands at the head of the work, and by three Brahmin scholars. He had the plants of the coast collected, drawn and described with their local uses. The *Garden of Malabar* was printed in Amsterdam in twelve volumes from 1678 to 1693. It describes some seven hundred plants and is still a source for the medicine of Kerala.

Decline and return

The British first treated Indian medicine with respect. A college founded at Calcutta in 1822 taught Indian, Greek and European medicine side by side. In 1835 the government decided to support European learning only. The college was closed, and a medical college on the English model took its place.

For a century the old medicine lived on in families and in a few princely states. Its revival was part of the movement for independence. Physicians founded colleges, pharmacies and journals. They disagreed on a question that has not been settled since: whether to keep the medicine pure, or to join it with what the West had found.

After 1947 the Indian state chose a middle way. It recognised the old systems, set up councils to register practitioners and regulate colleges, and required that students also learn the basics of modern medicine. The degree takes five and a half years. Since 2014 the systems have had a ministry of their own. Its name is formed from their initials: Ayurveda, Yoga, Unani, Siddha and Homeopathy. A sixth, the Tibetan medicine of the Himalayan districts, was added to the recognised systems in 2010. In 2022 the World Health Organization opened a centre for traditional medicine in the state of Gujarat.

Two regions kept the old practice in its fullest form. In Kerala, in the south-west, families of physicians preserved the oil treatments and the cleansing cures that chapter 60 describes, and patients come from all over the world for them. In Sri Lanka the medicine has its own ministry.

The second half of the twentieth century also made Ayurveda a product. Indian teachers brought simplified versions to Europe and America. In India itself, companies sell its tonics,

toothpastes and soaps in every village shop. The medicine of the textbooks, with its long examination and its treatment fitted to one person, is a small part of what now goes under the name.

The chief books

Date	Book	Content
Before 1000 BCE	*Atharvaveda*	Hymns against fever, wounds, poison and spirits; praise of plants
4th century BCE and after	The monks' rule of the Buddhists	The oldest account of drugs, cases and nursing
1st to 5th century CE	Collection of Caraka	Inner medicine; eight parts, 120 chapters
1st to 5th century CE	Collection of Sushruta	Surgery; anatomy; the vital points
About 600	Vagbhata, *Heart of the Eight Limbs*	The whole of medicine in verse
About 700	Madhava, *Diagnosis*	Causes and signs of the illnesses
10th to 13th century	Books of the science of mercury	Metals and minerals as medicines
About 1300	Collection of Sharngadhara	Pharmacy; the pulse
16th century	Bhavamishra, *Light on Medicine*	Drugs old and new; the disease of the Franks
17th century	*Jewel Mine of Yoga*	The eight examinations; the oil drop on urine

What stands out in the history

1. **The oldest healing speaks to the illness** and sends it away, to another people or into a bird.
2. **The periods of the fever were counted in the hymns:** every day, on the third day, with two days skipped.
3. **The learned medicine grew among wanderers** who had left the priestly order and who shared what they had seen.
4. **Everything is a medicine.** Jivaka found nothing within a day's journey that was not.

5. **The first book argues.** It names its ways of knowing and reports its disputes.
6. **Surgery was learned by practice on plants and by looking into the dead.**
7. **The medicine of spirits is one of the eight limbs.**
8. **Mercury came late and from the seekers of immortality.**
9. **The pulse came late too.** The great books do not have it.
10. **The state has made the medicine official, and the market has made it a brand.** The full practice survives in families and in a few regions.

57. The ground: three faults, seven tissues, one fire

The person and the world

Caraka states the first principle of his medicine in one line. The person is the measure of the world. Whatever exists in the world exists in the person, and whatever exists in the person exists in the world. The Chinese classics say the same, as chapter 45 showed.

The Indian physicians took their account of the world from the philosophers. Everything that can be perceived is made of five great elements.

Element	Sanskrit	What it gives	Sense
Space	*akasha*	Room; the hollows of the body	Hearing
Wind	*vayu*	Movement	Touch
Fire	*tejas*	Heat, change, light	Sight
Water	*ap*	Cohesion, moisture	Taste
Earth	*prithvi*	Solidity, weight	Smell

A sixth factor makes a living person of them. It is the conscious self, which the body and the mind serve.

Ten pairs of qualities

The elements are known by their qualities. The textbooks list twenty, in ten pairs of opposites.

Heavy	Light	Soft	Hard
Cold	Hot	Clear	Slimy
Oily	Dry	Smooth	Rough
Dull	Sharp	Fine	Coarse
Stable	Mobile	Dense	Liquid

Every food, drug, season, activity and state of the body can be described in these terms. Two rules govern their use, and Caraka gives them at the outset. Like increases like. The opposite decreases. A dry, light, cold wind makes a dry, light, cold person worse. Warm, oily, heavy food makes him better. All treatment in this medicine is an application of the second rule. It is the rule of the Greek physicians.

Three faults

The five elements act in the body as three powers. The Sanskrit word for them is *dosha*. It means a fault, or that which spoils. The name is chosen from the physician's side. In balance the three keep the body alive. Out of balance they spoil it.

Dosha	Elements	Qualities	Chief seat	What it does
Vata, wind	Space and wind	Dry, light, cold, rough, fine, mobile	Below the navel: the large gut, the pelvis, the thighs, the bones, the ears, the skin	All movement: breath, speech, the beat of the heart, the passing of food and waste, the messages of the senses; eagerness
Pitta, bile	Fire, with a little water	Hot, sharp, light, liquid, slightly oily	Between the navel and the heart: the small gut, the stomach, the blood, the sweat, the eyes	All change: digestion, heat, hunger and thirst, sight, the lustre of the skin; understanding and courage
Kapha, phlegm	Water and earth	Heavy, cold, oily, slow, smooth, soft, stable	Above the heart: the chest, the throat, the head, the joints, the stomach, the fat	All holding together: build, moisture, the smoothness of joints, strength, endurance; patience

Wind leads. The other two, a later verse says, are lame. Bile and phlegm cannot move from their place unless wind carries them, as clouds are carried. Of the eighty kinds of illness that the texts assign to wind alone, forty to bile and twenty to phlegm, the illnesses of wind are the most and the hardest.

The mind has faults of its own. Caraka names two, restless passion and dull inertia. A third quality of the mind, clear goodness, is never a fault.

Five of each. Each of the three is divided in five by its place and work. The reference table at the end of this chapter lists all fifteen. The five winds are the most used. One draws in the breath. One carries speech and effort upward. One fans the digestive fire in the middle. One spreads through the whole body and moves the limbs and the blood. One presses downward and sends out urine, stool, seed, monthly blood and the child at birth.

A clock of thirds

The three faults take turns, and Vagbhata gives the rule in a single verse. Wind, bile and phlegm rule the end, the middle and the beginning of a life, of a day, of a night, and of a meal.

Cycle	Phlegm rules	Bile rules	Wind rules
A life	Childhood	The middle years	Old age
A day	The first third, after sunrise	The middle third, round noon	The last third, toward sunset
A night	The first third, after sunset	The middle third, round midnight	The last third, before dawn
Digestion	Just after eating	While the food is cooked	When the food has been digested

Every cycle, long or short, has the same three phases in the same order. The physician uses the clock daily. A cough that is worst in the morning and after meals is a cough of phlegm. A pain in the upper belly that comes at midnight and two hours after food is of bile. Sleeplessness before dawn and the pains of the old are of wind. A drug is given at the hour of the fault that it is meant to calm.

The year has a clock as well. India counts six seasons of two months. Each fault gathers in one season, breaks out in the next, and settles in a third. Phlegm gathers in the cold months and breaks out in spring, when the sun melts it. Bile gathers in the rains and breaks out in the hot clear autumn. Wind gathers in the dry heat of summer and breaks out in the rains. The physician cleanses each fault at the season of its breaking out, before it makes ill.

The constitution

At the moment of conception the three faults stand in a certain proportion in the seed of the father and the blood of the mother. That proportion stays with the child for life. It is called the *prakriti*, a word that means nature or original form. The mother’s food and conduct during the pregnancy, the season and the state of the womb add to it.

There are seven kinds: three in which one fault leads, three in which two lead, and one in which all three are equal. The last is the best and the rarest.

	Wind leads	Bile leads	Phlegm leads
Build	Thin, with prominent joints and veins	Medium, loose-limbed	Broad, well-covered, firm
Skin and hair	Dry, rough, cool; dry hair	Warm, soft, with moles and freckles; early grey or bald	Thick, smooth, cool, oily; thick hair
Appetite and bowel	Irregular; hard stools	Strong; cannot miss a meal; loose stools	Slow and steady; regular
Sleep	Light and broken	Short and sound	Long and deep
Speech and gait	Fast, talkative; a quick, light step	Sharp, to the point; a purposeful step	Slow, few words; a steady step
Mind	Quick to learn and quick to forget; restless; fearful	Sharp, ambitious; quick to anger	Slow to learn and slow to forget; calm; attached
Dislikes	Cold and wind	Heat and sun	Damp and cold
Dreams of	Flying, running, climbing	Fire, lightning, the sun	Lakes, birds, clouds
Tends to	Pain, stiffness, nervous complaints, wasting	Inflammation, acid, rashes, fevers	Colds, swelling, heaviness, stoutness

A person’s *prakriti* is his health. The physician does not try to make a wind type into a phlegm type. He brings each person back to his own proportion. The present departure from it has a name of its own, and the examination looks for both.

Caraka adds a classification of minds. He describes sixteen kinds of character and names them after gods, sages, demons and animals. Seven are of the clear quality, six of the passionate, and three of the dull.

Seven tissues

The body that the three faults move is built of seven tissues. The Sanskrit word means that which holds.

Tissue	Sanskrit	Its work
The juice of food	*rasa*	Nourishes; gives contentment
Blood	*rakta*	Gives life and colour
Flesh	*mamsa*	Covers and gives strength
Fat	*meda*	Oils and cushions
Bone	*asthi*	Supports
Marrow	*majja*	Fills the bones; includes the nerves
Seed	*shukra*	The power to beget and conceive

The tissues are made in that order, each from the one before. Food becomes juice, juice becomes blood, blood becomes flesh, and so on to the seed. The texts offer three images for the process. One compares it to milk that turns to curd and curd to butter. One compares it to water led through a field from one plot to the next. One compares it to pigeons that pick grain from a threshing floor, each taking its own kind.

The making of all seven from a meal is said to take about a month. What is eaten today is seed a month from now.

The essence of the seven. When all seven tissues have been formed, a finest part is left over. It is called *ojas*. The word means vigour. It has its seat in the heart and pervades the whole body. It is described as the colour of clarified butter, the taste of honey and the smell of parched rice. It gives firmness of body and mind, a clear complexion, a strong voice, and resistance to illness.

When *ojas* is reduced, the person is fearful, weak, anxious and dull of sense, with a poor colour. When it is lost, he dies. It is reduced by anger, grief, worry, hunger, overwork and injury, and it is built up by milk, clarified butter, rest and a quiet mind.

The Chinese physicians describe the same possession under the name of essence, as chapter 46 showed: received at birth, stored, spent by excess, and the measure of a life.

Three wastes. Stool, urine and sweat are the wastes. They are not mere refuse. Each has a work while it is in the body, and too little of any is as much an illness as too much.

The fire

The central idea of Indian medicine is fire. The Sanskrit word is *agni*, which is also the name of the god of fire. In the body it is whatever cooks and transforms.

The chief fire burns in the stomach and the small gut. It cooks the food. Five further fires, one for each element, sort the cooked food by its elements. Seven more, one in each tissue, turn the food of that tissue into the tissue itself. That makes thirteen.

Caraka says that a person's life, colour, strength, health, eagerness, build, lustre, vigour and heat all depend on the fire. When it goes out, he dies. When it burns evenly, he lives long and well. When it is deranged, he falls ill. So the fire is the root.

The fire has four states, and three of them belong to the three faults.

State	Fault	What is seen
Even	None	Food is digested in good time, with no discomfort
Irregular	Wind	Digestion is good one day and bad the next; wind, rumbling, cramp
Sharp	Bile	Food is burned up too fast; great hunger, burning, loose stools
Slow	Phlegm	Even a small meal lies heavy; no hunger, a coated tongue, drowsiness after eating

What the fire leaves raw. When the fire is too weak for the food, a part of the food stays uncooked. The texts call it *ama*, which means raw or unripe. It is sticky, heavy and foul. It stops up the channels, and the faults cling to it. It is carried round the body and lodges wherever a channel is weak.

The signs of *ama* are a thick coat on the tongue, foul breath, heaviness, loss of taste and appetite, stiffness, and stool that sinks in water. Most long illnesses, the physicians hold, begin with it. One Sanskrit word for illness is formed from it.

The first step in treating almost any illness is therefore to deal with the raw matter. The patient fasts or eats lightly. He drinks hot water and takes sharp, warming spices such as ginger and pepper, to kindle the fire and cook what is raw. Only when the raw matter is ripe are the faults driven out. The Greek physicians gave the same rule in the same image, as chapter 38 told. The Unani physicians made a procedure of it.

The channels

The body is full of passages through which the tissues, the wastes and the faults move. Caraka lists thirteen main kinds. Three take in from outside: breath, water and food. Seven carry the food of the seven tissues. Three carry out the three wastes. Other lists add the channels of the mind, of the monthly blood and of milk.

He then says more. As many kinds of structures as there are in a person, so many kinds of channels there are. Nothing in the body arises or wastes without them. A person, he concludes, is made of channels.

A channel can go wrong in four ways.

Fault of a channel	Sanskrit meaning	Example
Too much passes	Overflow	Loose stools; a flood of urine; heavy bleeding
Passage is stopped	Holding	Stopped bowels; a suppressed period; a stone
A knot forms	Knotting	A lump; a swollen vein; a growth
The contents go the wrong way	Going by a wrong path	Vomiting; bile in the blood; food that returns

Chapter 46 gave the four faults of *qi* in the Chinese textbooks: too little, sinking, standing still, and going against its course. Two of the four in each list are the same in so many words: what stands still, and what goes the wrong way. The Indian list adds the knot, which the Chinese physicians treat under standing blood and phlegm. Both medicines describe illness first as a fault of passage and direction.

Health, in this medicine, is defined by all of these together. Sushruta gives the definition that every student learns. A person is healthy when his faults are in balance, his fire is even, and his tissues and wastes do their work. His self, his senses and his mind must also be clear and content. The Sanskrit word for a healthy person says the same more briefly. It means one who stands in himself.

What has been measured about the constitution

The doctrine of the constitution makes a claim that can be tested. It says that people differ from birth in a few stable ways, and that the differences matter for illness and for treatment. Indian research institutes have examined the claim since 2008.

Genes. A group in Delhi chose healthy people of the three pure types, as agreed by physicians, and compared them. The types differed in the activity of many genes and in

common blood values (Prasher 2008). A later study of 262 men found fifty-two places in the hereditary material that together told the three types apart (Govindaraj 2015).

A gene for thin air. One finding went beyond the description. The bile type and the phlegm type differed in a gene that governs the body's answer to a lack of oxygen. The researchers then looked at the same gene in peoples who live at great heights and in patients who fall ill at height. The form of the gene that was common in the phlegm type was linked to mountain sickness. The form that was common in the bile type protected (Aggarwal 2010). A classification made by looking at build, skin and digestion had pointed to a gene whose work nobody had connected with them.

Agreement. Chapter 58 gives the findings on how far physicians agree when they judge a constitution. They agree moderately at best. Questionnaires do better.

The work is at an early stage, and almost all of it has been done in India by groups that favour the doctrine. It shows that the three types are not arbitrary. It has not yet shown that treating by type gives better results.

Reference: the fifteen sub-faults, the channels and the tastes

The five winds, five biles and five phlegms.

Name	Seat	Work	When it is out of order
Prana, the wind of breath	Head, chest, throat	Draws in breath and food; governs the senses and the mind	Hiccup, cough, breathlessness, a troubled mind
Udana, the upward wind	Chest, throat, navel	Speech, effort, memory, strength	Loss of voice, weak memory, illnesses of throat and head
Samana, the even wind	Beside the digestive fire	Fans the fire; separates food from waste	Poor digestion, lumps, loose stools
Vyana, the spreading wind	The heart; the whole body	Moves the limbs and the blood; opens and shuts the eyes	Fever, stiffness, illnesses of the whole body

Name	Seat	Work	When it is out of order
Apana, the downward wind	Pelvis, bladder, thighs	Sends out urine, stool, seed, monthly blood and the child	Illnesses of bladder, bowel and womb
The cooking bile	Stomach and small gut	Digests; supports the other four	Indigestion, burning
The colouring bile	Liver and spleen	Colours the juice of food into blood	Yellow skin, pale blood
The achieving bile	Heart	Understanding, memory, self-respect	Dullness, fear, anger
The seeing bile	Eyes	Sight	Failing sight
The shining bile	Skin	Colour and warmth of the skin; takes up oils	Rashes, loss of colour
The moistening phlegm	Stomach	Wets the food	Heavy digestion
The supporting phlegm	Chest	Supports heart and lungs	Laziness, a heavy chest
The tasting phlegm	Tongue	Taste	Loss of taste
The satisfying phlegm	Head	Feeds the senses	Dull senses, loss of memory
The joining phlegm	Joints	Oils the joints	Painful, creaking joints

The thirteen channels of Caraka.

Channel of	Its root	Signs that it is injured
Breath	The heart and the great gut	Breath that is too long, too short, broken or noisy
Water	The palate and the place of thirst	A dry mouth and throat; great thirst
Food	The stomach and the left side	No wish for food; indigestion; vomiting

Channel of	Its root	Signs that it is injured
The juice of food	The heart and its ten vessels	Loss of taste, nausea, heaviness, fever, early grey hair
Blood	The liver and the spleen	Skin diseases, bleeding, abscesses, yellow skin
Flesh	The sinews and the skin	Growths, swollen glands
Fat	The kidneys and the fat of the belly	The early signs of the urinary illnesses of chapter 59; stoutness
Bone	The fat and the hips	Aching bones; faults of teeth, hair and nails
Marrow	The bones and the joints	Pain in the joints, giddiness, fainting
Seed	The testes and the organ	Impotence, barrenness
Urine	The bladder and the groins	Too much or too little urine; painful urination
Stool	The large gut and the rectum	Stool that is hard, loose, scanty or painful
Sweat	The fat and the roots of the hair	Too much or no sweat; rough skin; burning

The six tastes. Chapter 60 explains how drugs and foods are judged by taste.

Taste	Elements	Effect on the faults	In excess	Examples
Sweet	Earth and water	Calms wind and bile; increases phlegm	Stoutness, slow fire, the urinary illnesses	Rice, wheat, milk, clarified butter, sugar, liquorice
Sour	Earth and fire	Calms wind; increases bile and phlegm	Burning, itching, loose flesh	Lemon, tamarind, sour milk, fermented food

Taste	Elements	Effect on the faults	In excess	Examples
Salty	Water and fire	Calms wind; increases bile and phlegm	Thirst, wrinkles, grey hair, swelling	Rock salt, sea salt
Pungent	Fire and wind	Calms phlegm; increases wind and bile	Burning, thirst, trembling, loss of seed	Ginger, pepper, long pepper, chilli, garlic
Bitter	Wind and space	Calms bile and phlegm; increases wind	Dryness, wasting, weakness	Neem, turmeric, gentian, bitter gourd
Astringent	Wind and earth	Calms bile and phlegm; increases wind	Dry mouth, hard stools, stiffness	Unripe banana, pomegranate rind, the myrobalans, betel nut

Each taste is made of two elements, and each fault is calmed by three tastes and increased by three. Wind is calmed by sweet, sour and salty. Bile is calmed by sweet, bitter and astringent. Phlegm is calmed by pungent, bitter and astringent. A full meal, the textbooks say, should contain all six.

58. Diagnosis in Indian medicine

The lamp

Caraka puts one sentence over the whole art of examination. A physician who does not enter the inner self of the patient with the lamp of knowledge and understanding cannot treat illness.

The examination that follows from it has two objects. The physician examines the patient: who this person is, what he can bear, what he is used to. And he examines the illness: what it is, where it is, how far it has gone. The textbooks treat the first at greater length than the second.

Three ways and ten points

The oldest scheme of examination has three parts. The physician looks, touches and asks. Caraka adds that he should use every sense except taste, and should learn what taste would tell by other means. Whether a patient's urine is sweet, for example, is learned by setting it out and watching whether ants come to it.

Caraka then gives ten points on which a patient is to be assessed before treatment begins.

Point	What is assessed
Constitution	The proportion of the three faults from birth
Departure	The present state of the faults, tissues and wastes
Excellence of the tissues	Which of the seven tissues, and the mind, are of the best kind in this person. Good skin, good blood, good flesh and so on each have their marks
Compactness	How firmly the body is knit
Measure	Height, reach and the girth of each part, counted in the breadths of the patient's own finger
What suits	The foods, climate and habits to which the person is used
Mind	Whether the mind is strong, middling or weak. A strong mind bears great pain calmly. A weak mind cannot bear even a little

Point	What is assessed
Power to digest	How much can be eaten, and how well it is digested
Power to exert	How much work can be done
Age	Childhood, the middle years or old age

The purpose of the ten is stated plainly. They tell the physician the strength of the patient, and the strength of the patient decides the strength of the treatment. A strong drug that cures a strong man kills a weak one.

Two of the ten deserve a remark. The body is measured by the patient's own finger, as the Chinese needler measures by the patient's own inch. And habit counts as a fact about the body. What a person has eaten and done all his life suits him, the texts say, even if it is not good in itself. It must be changed only by degrees.

Eight examinations

A later scheme, which the handbooks of the seventeenth century made standard, lists eight examinations.

Examination	What is noted
Pulse	The gait of the beat under each of three fingers
Urine	Colour, clearness, smell; the behaviour of a drop of oil on its surface
Stool	Colour, form, smell; whether it floats or sinks
Tongue	Dry, rough and cracked in wind; red or yellow in bile; pale, wet and coated in phlegm
Voice	Hoarse or broken in wind; sharp in bile; heavy and thick in phlegm
Touch	Cold, dry and rough in wind; hot in bile; cool, moist and smooth in phlegm
Eyes	Dry, restless and sunken in wind; red or yellow, shy of light, in bile; pale, moist and heavy-lidded in phlegm
Form	Build, face and bearing

The pulse

The great books of chapter 56 do not mention the pulse. It appears about 1300 and is fully described a few centuries later. It probably came into Indian medicine through contact with the Greek medicine of the Muslim courts and with the Chinese. The Indian physicians gave it a form of their own.

The physician uses his right hand. He takes the right wrist of a man and the left wrist of a woman. He lays three fingers on the artery below the root of the thumb. The patient has rested, and has not just eaten, bathed or exerted himself. The physician is told to be seated at ease, with a collected mind.

Each finger reads one of the three faults.

Finger	Fault	The gait of the pulse
Index, nearest the thumb	Wind	It curves and glides, like a snake or a leech. It is quick, thin and uneven
Middle	Bile	It leaps, like a frog, a sparrow or a crow. It is strong and bounding
Ring	Phlegm	It glides slowly, like a swan, a peacock or a dove. It is broad, soft and steady

In health the pulse is steady and strong under all three fingers, and the textbooks compare it to the unhurried step of an elephant or a swan. When one fault is roused, its gait is felt most, at its own finger. When two are roused, the pulse is by turns like a snake and a frog, or a frog and a swan. When all three are roused together, it is quick, slow and broken at once. The textbooks compare it to the tapping of a woodpecker or the running of a quail. That pulse is of bad omen.

The handbooks go on to list the pulse of each fever, of hunger and of a full stomach, and of desire, anger and fear. They list the pulses that announce death within a day, three days or a month.

The reader will note the plan. The Chinese physician reads three places on the wrist for the upper, middle and lower body. The Indian physician reads the same three places for the three faults. Both read with three fingers.

The drop of oil

One examination is peculiar to India and to the Tamil medicine of chapter 61. The first urine of the morning is caught in a clean bowl, after the first part has been let go. The bowl is set in a still place in the morning light. The physician lets one drop of sesame oil fall on the surface from a blade of grass, and watches.

What the drop does	What it means
It spreads quickly	The illness is easy to cure
It stays as it fell	The illness is hard to cure
It sinks	The illness cannot be cured
It moves and takes the shape of a snake	Wind
It takes the shape of an umbrella	Bile
It lies round as a pearl	Phlegm
It breaks into the form of a sieve	A cause in the family line or from a spirit

The direction in which the drop spreads is read as well. The test rests on a real property. How a drop of oil spreads on urine depends on what is dissolved in the urine, which changes its surface. Whether the readings are right has hardly been studied.

Five ways of knowing an illness

The textbook of diagnosis teaches that an illness is known in five ways.

By its causes. What the patient ate and did, in what season, with what feelings.

By its forerunners. Most illnesses announce themselves. A fever is preceded by tiredness, yawning, aching and a loss of taste. The physician who sees the forerunners can act before the illness is formed.

By its signs.

By trial. Where the signs leave the matter open, the physician gives food or a drug of a known quality. He sees whether the patient is better or worse for it. Relief from warm, oily treatment shows wind. The answer to a treatment is itself a means of diagnosis.

By its course. How the faults were roused, which path they took, where they lodged, and what they have done there.

Six stages

Sushruta describes the course of an illness in six stages. He calls them the six times for action, since at each of them the physician can step in.

Stage	What happens	What is noticed
Gathering	A fault grows in its own seat	Slight signs at that seat: a full belly with wind, a yellowish tinge with bile, heaviness with phlegm. The person feels a dislike for what increases the fault
Rising	The fault grows further and is stirred	The signs are stronger: pain and rumbling, burning and thirst, loss of appetite and nausea
Spreading	The fault leaves its seat and travels through the body	Passing signs in many places
Lodging	The fault settles where a channel is weak	The forerunners of a particular illness, at a particular place
Showing	The illness is fully formed	The complete signs. The illness can now be named
Breaking	The illness becomes fixed, or breaks into complications	A long illness; ulcers; damage to the tissues

The physician who acts in the first stages, Sushruta says, cuts off the later ones. The longer the fault is left, the stronger it grows. The scheme gives a reasoned form to the teaching of Bian Que in chapter 44. An illness moves inward by stages, and it should be met at the first.

The fourth stage carries an idea of its own. A fault that travels does not settle anywhere. It settles at a place that was already weak: by an old injury, by inheritance, by overuse. The texts call such a place a flaw in the space of a channel. Two people with the same roused fault therefore get different illnesses.

Four verdicts

Before he treats, the physician must judge whether the illness can be cured. The textbooks name four classes.

Verdict	Meaning
Easy to cure	One fault, a recent illness, a strong patient, a favourable season, all four feet of treatment at hand
Hard to cure	Two faults, or an illness in a vital part, or one that needs the knife
To be held in check	The illness cannot be removed. It stays quiet as long as the regimen and the drugs are kept up, and returns when they are stopped
To be refused	The illness cannot be cured or checked

Caraka gives blunt advice on the fourth. A physician who takes on an incurable case loses his fee, his learning and his good name. The Egyptian surgeon of chapter 35 had three verdicts of the same kind. The Indian physician adds the third class, which fits the long illnesses of old age that medicine controls and does not cure.

Signs on the road

One part of Caraka's work, twelve chapters long, deals with the signs of approaching death. Many are bodily and exact: a changed smell, a changed shadow, a face that does not answer, a failing of the senses one by one.

Others concern matters outside the patient. A chapter is given to the messenger who comes to fetch the physician. The physician is to note who he is, how he is dressed and what he says. He notes at what hour and from what direction the man comes, and what he himself was doing when the man arrived. Some messengers announce a patient who will die. Such a messenger is himself distressed, or comes at noon, at midnight or at dusk. Or he finds the physician asleep, or cutting or breaking an object, or facing south.

The physician is then to note what he meets on his way to the house. A full water jar, a cow with her calf, curds, fruit, a white flower and the sound of a drum or of sacred recitation are good. A snake, an empty vessel, a quarrel and the sound of weeping are bad.

The reader has seen this in chapter 33. The first two tablets of the Babylonian handbook deal with what the healer sees on his way to the patient. The Indian text is a thousand years younger and stands in a work of reasoned medicine. Its author does not explain the signs. He records that experienced physicians observe them.

Dreams

Caraka lists seven kinds of dreams. Five reflect what the dreamer has seen, heard, felt, wished or imagined, and mean nothing for his health. The sixth foretells. The seventh arises

from the faults of the body. A person in whom wind is roused dreams of flying and climbing. One with roused bile dreams of fire and blood. One with roused phlegm dreams of water and white birds.

Certain dreams of a sick person are signs of death: riding south on a camel or an ass, sinking in mud, being bound, a tree growing from the chest. The Greek physicians of chapter 38 read dreams in the same two ways, as reflections of the body’s state and as signs.

The seizers

The third of the eight limbs of chapter 56 deals with illnesses that spirits bring. The textbooks treat it as a matter of diagnosis like any other. Sushruta describes eight kinds of beings that may seize a person, and he tells them apart by the behaviour of the patient.

A person seized by a god is calm, clean, fond of flowers and fragrance, sleeps little and speaks Sanskrit well. One seized by an ancestor is quiet and subdued, makes offerings of water with his left shoulder bared, and wants meat, sesame and sweet rice. One seized by a heavenly musician sings, dances and laughs. One seized by a serpent being creeps on the ground and licks his lips. One seized by a flesh-eating demon is restless, filthy, runs about naked and eats refuse.

The text adds the days of the month on which each kind seizes, and it prescribes offerings, recitations and incense beside drugs. Small children have nine seizers of their own, each with a picture of signs that a modern reader can partly match to illnesses of infancy.

Caraka, who is the more sceptical of the two, sets a limit. He writes that neither gods nor demons afflict a person who is not already afflicted by his own acts. One should not blame them, he says. One should look to oneself.

What has been measured

The constitution. A review of 2025 counted sixty-four different instruments for judging the constitution. Twenty had been tested in any way, and two met most of the usual standards (Venkatesh 2025). One short questionnaire gave nearly the same result when the same people filled it in again, and it agreed well with the judgment of physicians (Bhargav 2026).

The physician’s judgment. In a German and Indian trial for worn knees, which chapter 61 describes, pairs of Indian physicians examined the same patients. On the constitution and on the state of the digestive fire their agreement was poor to fair. On the final diagnosis of the illness, reached after discussion, it was high (Kessler 2019).

The pulse. A Danish and Indian study had fifteen physicians feel the pulse of twenty people twice, without knowing whom they held. The agreement of a physician with himself was low (Kurande 2013).

The findings match those from China in chapter 49. The broad judgment is shared. The fine reading differs from physician to physician and from hour to hour.

What stands out in the diagnosis

1. **The physician must enter the inner self of the patient with a lamp.**
2. **The patient is examined before the illness,** on ten points, to learn his strength.
3. **The body is measured by its own finger, and habit counts as a fact.**
4. **Three fingers read three faults,** and each fault has the gait of an animal.
5. **A drop of oil on urine is read by its shape, its spread and its direction.**
6. **The answer to a trial of treatment is a means of diagnosis.**
7. **An illness passes through six stages** and lodges where a channel was already weak.
8. **There are four verdicts,** and one of them is to hold in check.
9. **The messenger and the road are read,** as in Babylon.
10. **Seizure by a spirit is diagnosed by conduct,** and Caraka sends the patient back to his own acts.

59. The illnesses in Indian medicine

Three causes

Caraka reduces all causes of illness to three.

The wrong use of the senses. Each sense can be used too much, too little or wrongly. To stare at very bright or very small objects, to hear very loud noise, to be touched by great heat or cold, are examples. So is the opposite: to see, hear or feel nothing for a long time.

The offence against understanding. This is Caraka's own term, and he gives it the most weight. A person does what he knows to be harmful, or fails to do what he knows to be good. The fault lies in his understanding, his self-command or his memory. Under this head the text lists the holding back of natural urges and the indulging of harmful ones. It lists excess in food, drink and sex, the neglect of the right time for treatment, bad company, and envy, fear, anger and greed.

Time. The seasons roughen and soften the faults by turns, as chapter 57 described, and age does the same over a life.

The first two causes can be avoided, and the third can be met by living with the season. Most illness, Caraka concludes, is of a person's own making.

Thirteen urges. One list under the second cause is quoted in every Indian textbook. Thirteen urges of the body must never be held back. They are the urges to pass urine, stool, wind and seed, to vomit, to sneeze, to belch and to yawn. They are also the urges to eat when hungry, to drink when thirsty, to weep, to sleep, and to pant after effort. Each has its illness when it is suppressed. The urges of greed, grief, fear, anger, vanity, shamelessness and envy, on the other hand, must always be held back.

Sushruta sorts illnesses by where they come from, in seven classes. They come from the seed of the parents, from the time in the womb, from the faults, from injury, from the season, or from the gods. The seventh class comes from nature: hunger, old age and death. The textbooks then sort them by the fault that leads and by the part affected. The reference table at the end of this chapter lists thirty of the chief ones.

Fever

Fever stands first in every book. Caraka calls it the lord of illnesses. It alone, he says, is present at birth and at death, and it afflicts body, senses and mind together.

Its origin. The chapter on its treatment begins with a story. The great god Rudra was not invited to a sacrifice. His wrath took the form of a being with three heads and nine eyes, which destroyed the sacrifice and then asked what it should do next. Rudra said: you shall be fever in the world. The textbook of reasoned medicine opens its account of the commonest illness with the recital of its first appearance.

Raw and ripe. A fever has a raw stage and a ripe one. In the raw stage the faults are mixed with uncooked matter. The patient has no appetite, a coated tongue, heaviness, and urine that is cloudy. In this stage no drug is to be given to bring the fever down. The patient fasts, rests, is kept warm, and sips hot water. After some days the signs change. Hunger returns, the body feels light, and the tongue clears. The fever is ripe. Now the physician gives bitter decoctions, and, if needed, a purge.

The Indian rule is the Greek rule of chapter 38 and the Unani rule of chapter 40. What is raw is not driven out. It is cooked first.

The fevers that return. Caraka describes the fevers that come and go, and he names them by their periods. They are continuous, twice daily, daily, on the third day, and on the fourth day. His explanation deserves notice. The fault lodges in one of the tissues, and the deeper the tissue, the longer the interval. In the juice of food it gives a continuous fever. In the blood it gives a fever twice daily. In flesh it gives a daily fever, in fat a fever on the third day, and in bone and marrow a fever on the fourth. The period of the fever is read as the depth at which the fault lies.

Honey urine

The illness that the Chinese called wasting and thirst is described in India with even more care. It belongs to a class of twenty illnesses in which the urine is abnormal in amount or kind. Ten of the twenty are of phlegm, six of bile and four of wind. The last and worst of the wind kind is called honey urine.

The signs are precise. The patient passes much urine, which is sweet and pale like honey. Ants and flies gather where it has fallen. The whole body is sweet. He is thirsty, tired, and sleeps much. Later he wastes, and boils appear that do not heal.

The textbooks distinguish two kinds of patient. The first is stout. He has eaten too much that is sweet, heavy and fresh from the harvest. He sleeps by day and sits at ease. His illness is acquired. The second is lean. His illness came with his birth, from the seed of his parents. The two are to be treated in opposite ways. The stout patient is reduced. The lean patient is built up. Modern medicine drew the same line in the twentieth century and named the two kinds by numbers.

For the stout patient Sushruta prescribes a way of life before any drug. He is to eat barley and bitter vegetables and to give up rice, sweets and sour milk. And he is to move. The text suggests that a poor man should walk a hundred leagues, live by begging and gleaning like a holy man, or dig a well. A rich man should exercise, wrestle and ride. The drugs that follow are bitter. They are turmeric with the sour fruit called emblic, a black exudation of mountain rock, and the leaf of a climber. The Hindi name of that climber means destroyer of sugar. A person who chews that leaf cannot taste sweetness for an hour afterwards.

The king’s wasting

A long illness with cough, fever, loss of flesh and, at last, blood from the lungs is called the king of wastings. It is the consumption of the Greeks.

Its origin is told as a story of the moon. The moon god had twenty-seven wives, the stations of his monthly round, and loved only one of them. Their father cursed him, and he began to waste. The twin physicians of the gods cured him, and so he waxes again. The illness came down to men. The story names its causes in passing: excess of love, grief, and the neglect of one’s duties.

The texts give four causes in sober terms: exertion beyond one’s strength, the holding back of urges, the wasting of the tissues, and irregular food. The treatment is building up with meat broths, milk, clarified butter and rest, and it was all that any medicine had to offer before the twentieth century.

Illnesses of the skin

Eighteen illnesses of the skin are grouped under one name. Seven are grave and eleven lesser. The gravest, with loss of feeling, sores and the wasting of fingers and toes, is leprosy.

Sushruta prescribes for it the oil of the seeds of a forest tree. The patient drinks the oil in rising doses, after cleansing, and is rubbed with it, for months. The oil reached Europe from India and Burma in the nineteenth century. Until the 1940s it was the only treatment for leprosy that worked at all, and hospitals all over the world used it.

Illnesses of wind

The largest class of all are the eighty illnesses of wind. Most of what a modern hospital sends to the nerve specialist and the joint specialist falls under it: pain of every kind, stiffness, trembling, palsy, wasting of a limb, convulsions.

Sanskrit name	Meaning	Description
Pakshaghata	The striking of one side	Palsy of an arm and leg after a stroke
Ardita		Palsy of one side of the face
Gridhrasi	The vulture’s illness	Pain from the hip down the back of the leg. The patient walks like a vulture

Sanskrit name	Meaning	Description
Kampavata	The trembling wind	Trembling of the hands and head, slowness and stiffness
Apatanaka		The body bent backward like a bow, with locked jaw
Sandhigata vata	Wind in the joints	Painful, swollen, creaking joints in the old

The treatment of wind is the opposite of its qualities. Wind is dry, cold, light and mobile. So the patient is oiled, warmed, fed well and kept at rest. Oil is rubbed in, poured on, drunk and given by enema.

The trembling wind has a modern sequel. The texts treat it with the seeds of the velvet bean, among other drugs. In 1937 Indian chemists found in those seeds the compound that became, thirty years later, the standard drug for the shaking palsy. In a small English trial, a powder of the seeds worked faster and longer than the standard preparation (Katzenschlager 2004).

Raw matter and wind. About 700 Madhava described a joint illness that the older books do not single out. Raw matter from a weak digestive fire is carried by wind into the joints. Many joints swell at once, with fever, stiffness in the morning, and pain that he compares to the sting of scorpions. Later the joints are bent and fixed. It is the severe joint disease that modern medicine did not describe until 1800. The treatment begins with fasting and bitter, warming drugs, to cook the raw matter, and uses castor oil.

Paleness and iron

An illness with a pale or yellowish skin, tiredness, breathlessness, palpitations and swelling round the eyes is described by Caraka in a chapter of its own. Its name means the pale illness. He distinguishes five kinds, one of them in people who eat earth.

Among the remedies are several preparations of iron. Iron filings are steeped for a week in cow’s urine and given with milk. Rust of old iron is burned and powdered and made into pills with spices. The physicians of India treated paleness with iron about two thousand years before the cause of that illness was understood.

Illnesses of the mind

The textbooks devote full chapters to madness and to the falling sickness.

Madness. Caraka defines it as a wandering of the mind, the understanding, awareness, knowledge, memory, inclination, conduct and behaviour. He names its causes: unwholesome

and unclean food, disrespect for gods, teachers and the twice-born, a shock of fear or of joy, and a mind that was weak already.

There are five kinds. Three arise from the three faults, and one from all together. The wind kind laughs, sings, dances and weeps out of place and is thin and restless. The bile kind is angry and violent, runs naked, and wants shade and cold water. The phlegm kind is silent, sits alone, sleeps much and eats little. The fifth kind comes from outside, by the seizers of chapter 58.

The treatment has three parts. The body is cleansed, and the patient is given old clarified butter, which is held to clear the mind. He is calmed and advised by friends. And where the cause was a feeling, it is met by its opposite. A patient who went mad from the loss of what he loved is given a like object, or is comforted. Desire, grief, fear, anger, joy, envy and greed, the text says, are each to be countered by the feeling opposed to it. The Chinese physician Zhang Congzheng did the same, as chapter 44 told.

Caraka adds harsher measures for the violent: threats, a show of snakes with their fangs drawn, and confinement in a dark room. He adds as well that the patient should be given what he longs for when that can be done.

The fixed false idea. A short passage describes a condition that Caraka sets beside madness. A person takes the lasting for the passing and the harmful for the wholesome, and cannot be argued out of it. The text calls it the great illness. The treatment is cleansing, food that feeds the understanding, and the company of friends who are learned and who speak to him of what is true.

Loss of semen. Indian patients, like Chinese ones, come to physicians with tiredness, aching, poor sleep and fear. They are convinced that they are losing their seed in the urine or at night. The classical doctrine supports the fear. Seed is the last and finest of the seven tissues, and forty drops of blood are said to make one drop of it. An Indian psychiatrist gave the condition a name from the Sanskrit word for tissue in 1960. It is among the commonest complaints in the clinics of north India.

Illnesses of women and children

The textbooks list twenty illnesses of the womb. They give a regimen for each month of pregnancy, with the foods that suit the growth of the child at that stage. They describe the rites before conception and the care of the mother for a month and a half after the birth. She is oiled and bound, kept warm, and fed with gruels and broths that kindle the fire. The Chinese month of sitting has the same rules.

For the newborn the books prescribe the first food before the mother’s milk: a lick of honey and clarified butter, rubbed with gold. They list the nine seizers of infants, with offerings to each. A chapter in Caraka describes how to choose a wet nurse and how to judge her milk.

Poison

One of the eight limbs deals with poison: snakes, scorpions, spiders, rats, mad dogs, and poisonous plants and minerals. For a snakebite Sushruta orders a band above the bite, cutting and sucking, and burning. He orders spells as well, and says that they act faster than any drug when a truthful and disciplined man recites them.

The texts know a slow poison too. A poison that was not driven out, or food combinations that do not agree, may lie in the body for years and show itself in season. Certain foods must not be eaten together: fish with milk, honey that has been heated, honey and clarified butter in equal amounts.

Illness from former acts

Indian thought holds that every act bears fruit, in this life or a later one. The textbooks draw a medical conclusion. Illnesses are of three kinds. Some arise from the faults and yield to the proper treatment. Some arise from former acts. These do not yield, although the diagnosis is right and the treatment correct. And some arise from both.

For an illness of the second kind the patient is sent to make amends: gifts, vows, pilgrimage, recitation, and service to the poor and the sick. When the fruit of the act is used up, the illness ends.

Caraka does not let this become fatalism. In a chapter on epidemics a pupil asks whether the length of every life is fixed. Atreya answers that it is not. If it were, there would be no use in medicine and no difference between care and carelessness. Two powers decide a life: what was done before, and what a person does now. Each may be weak, middling or strong. A strong effort now overcomes a weak fate.

Epidemics

The same chapter asks a sharp question. People differ in constitution, food, strength and age. How can one illness strike a whole town at once? Atreya answers that four factors are common to all who live in a place: the air, the water, the land and the season. When these are spoiled, people of every kind fall ill together.

He then asks what spoils them, and his answer is not medical. The root is unrighteousness. When rulers and people give up right conduct, the gods withdraw, the seasons fail, and air and water turn bad. The cause of unrighteousness in its turn is the offence against understanding.

The advice that follows is practical. Before an epidemic, when the signs of a bad season are seen, the physician should gather his drugs, since they will lose their strength. During it, people should be cleansed and strengthened, should keep to truth and kindness, and should move to a healthy place.

What stands out in the illnesses

1. **Most illness is of a person's own making.** The chief cause is doing what one knows to be harmful.
2. **Thirteen urges must not be held back, and seven must.**
3. **Fever has an origin story,** and the reasoned textbook tells it.
4. **A raw illness is not attacked.** It is cooked first, by fasting and warmth.
5. **The period of a returning fever is read as the depth of the tissue** in which the fault lies.
6. **Diabetes was told apart in two kinds,** stout and lean, acquired and inborn, with opposite treatments.
7. **Iron was given for paleness, and the oil of a forest seed for leprosy.**
8. **A feeling that made ill is met by its opposite.**
9. **Some illnesses come from former acts** and are treated by making amends. Present effort can still overcome a weak fate.
10. **An epidemic is traced to spoiled air, water, land and season,** and these to a failure of right conduct.

Reference: thirty illnesses of the Indian textbooks

Sanskrit name	Meaning	Nearest Western terms	Kinds and leading faults	Line of treatment
Jvara	Heat	Fever	Eight kinds: of each fault, of each pair, of all three, and from outside	Fasting while raw; then bitter decoctions; purge if needed
Vishama jvara	Uneven fever	Malaria and other returning fevers	Continuous, twice daily, daily, third-day, fourth-day	Bitter drugs; cleansing; old clarified butter
Raktapitta	Blood and bile	Bleeding from nose, mouth or below	Upward, downward, or both	Cooling and astringent drugs; never stop it at once in a strong patient
Kasa	Cough	Cough	Five kinds: three of the faults, from injury to the chest, from wasting	By the fault; clarified butter for the dry kind
Shvasa	Breath	Breathlessness; asthma	Five kinds; the common one comes in attacks, worse at night and in cloudy weather	Sweating, warm oil on the chest, drugs that loosen phlegm
Rajayakshma	The king’s wasting	Consumption	From overexertion, held-back urges, wasting, irregular food	Building up: broths, milk, rest

Sanskrit name	Meaning	Nearest Western terms	Kinds and leading faults	Line of treatment
Hridroga	Illness of the heart	Heart disease	Five kinds; one with stabbing pain, one from worms	By the fault; the bark of the arjuna tree
Ajirna, *agnimandya*	The undigested; slow fire	Indigestion	By the state of the fire	Fasting; hot water; ginger and other kindlers
Grahani	The seat of the fire	Long-standing loose bowels with undigested food	Four kinds	To kindle the fire; buttermilk
Atisara	Running through	Diarrhoea	Six kinds, among them from fear and from grief	Not to be stopped while raw matter is present
Arshas	The enemy	Piles	Dry and bleeding	Drugs, caustic, cautery, or the knife
Udara	The belly	Swelling of the belly	Eight kinds, among them with water, with an enlarged spleen, with a stopped gut	Purging; a diet of milk; tapping the water
Gulma	A thicket	A movable lump in the belly	Five kinds; mostly wind	Oiling, warmth, mild purges
Pandu	Pale	Lack of blood	Five kinds, one from eating earth	Iron; clarified butter; emblic fruit

Sanskrit name	Meaning	Nearest Western terms	Kinds and leading faults	Line of treatment
Kamala		Yellow skin	Of the channels and of the trunk	Purging of bile; bitter drugs
Prameha	Abundant passing	Illnesses of the urine; diabetes	Twenty kinds: ten of phlegm, six of bile, four of wind. The last is honey urine	For the stout: barley, exercise, bitter drugs. For the lean: building up
Ashmari	Stone	Stone of the bladder	Four kinds	Drugs that break stones; the knife as a last resort
Shotha	Swelling	Dropsy	By the fault; from within or from outside	Drugs that increase the urine; a diet without salt
Sthaulya	Stoutness	Obesity	Fat that shuts the channels, with a sharp fire	Reducing: barley, honey, exercise, less sleep. Said to be harder to treat than leanness
Vatavyadhi	Illnesses of wind	Palsy, trembling, nerve pain, worn joints	Eighty kinds	Oiling, warmth, enemas of oil, rest
Amavata	Raw matter and wind	Inflammatory joint disease	Raw matter carried into the joints	Fasting, bitter warming drugs, castor oil; no oil rubbed on at first

Sanskrit name	Meaning	Nearest Western terms	Kinds and leading faults	Line of treatment
Vatarakta	Wind and blood	Gout	Begins in the great toe or the hands; spreads like rat poison	Bloodletting; cooling; purging
Kushtha	That which disfigures	Skin diseases; leprosy	Eighteen kinds; seven grave	Repeated cleansing; bitter drugs; the oil of chapter 59
Shvitra	White	White patches of the skin		A seed rubbed on and exposure to the sun
Visarpa	Creeping	Spreading inflammation of the skin	Seven kinds	Cooling; bloodletting
Unmada	Wandering of the mind	Madness	Of each fault; of all three; from seizers	Cleansing; old clarified butter; counsel; the opposite feeling; offerings
Apasmara	Loss of memory	The falling sickness	Four kinds	Cleansing; clarified butter prepared with brain-strengthening herbs
Murccha	Fainting	Fainting, coma	From the faults, from blood, from wine, from poison	Cooling; scents; by the cause

Sanskrit name	Meaning	Nearest Western terms	Kinds and leading faults	Line of treatment
Yonivyapat	Illnesses of the womb		Twenty kinds	Oil by enema and by pad; by the fault
Balagraha	Seizers of children	Fits and wasting of infants	Nine kinds	Fumigation, baths, offerings, drugs

60. Healing in Indian medicine

Three medicines

Caraka divides all treatment into three kinds.

The first rests on the unseen. It consists of recitation, healing plants and gems worn on the body, auspicious rites, offerings, gifts, vows, fasting, pilgrimage, and making amends. It is used for the illnesses of chapter 59 that come from former acts and from the seizers.

The second rests on reasoning. It consists of food and drugs, chosen by the rule of opposites, and of the cleansing treatments. It is the largest part of the textbooks.

The third is the mastery of the mind. Caraka defines it in one phrase: to hold the mind back from what harms. It is used for the illnesses of the mind, and it is part of every other treatment.

A second division cuts across the first. A fault of the body can be calmed where it is, or it can be driven out. Calming is done by food, by drugs that kindle the fire, by hunger and thirst, by exercise, and by sun and wind. It suits a mild illness or a weak patient. Driving out is the business of the five cleansings. The textbooks say that faults which are only calmed may rise again. Faults that have been driven out do not return.

The conduct of the day

Before any treatment comes the right way of living. The textbooks give a rule for the day, a rule for the seasons, and a rule of good conduct.

The day. A healthy person rises before dawn, in the last hour and a half of the night. He empties bowel and bladder. He cleans his teeth with a chewed twig of a bitter tree and scrapes his tongue. He holds oil in his mouth and puts a drop of oil in each nostril. He rubs the whole body with oil, above all the head, the ears and the soles of the feet. He exercises to half of his strength, which is reached when sweat appears on the forehead and the breath comes through the mouth. He bathes. He eats his main meal at midday, when the fire is strongest, and a light meal at dusk. He sleeps before the middle third of the night.

The daily rubbing with oil is the most characteristic Indian habit. Vagbhata says that it should be done every day. It keeps off old age, tiredness and wind. It clears the sight, feeds the body, lengthens life, and gives good sleep and firm skin.

The seasons. For each of the six seasons the texts prescribe food, clothing, exercise and sleep that counter the fault which gathers in it. In the cold months a person eats heavy, oily and sweet food, exercises hard, and warms himself. In spring, when phlegm melts, he eats light, dry and bitter food and gives up sleeping by day. In summer he rests in the shade, eats sweet, cool and liquid food, and drinks no wine. The week in which one season passes into the next is dangerous. The old regimen is dropped by degrees, and the new taken up by degrees.

Good conduct. A long passage in Caraka reads like a book of manners. A person should speak the truth, keep his temper, respect teachers and elders, help the poor and the frightened, and bear with harsh words. He should look after his body, his dress and his surroundings. He should not carry his limbs carelessly, laugh loudly, sleep or eat at dusk, or sit long with knees drawn up. The list runs to several hundred items. Caraka says that who keeps it gains health and the mastery of the senses together.

The rules of eating

Food is the first drug of this medicine. Caraka names eight matters that decide whether a food does good or harm. They are its nature, its preparation, what it is combined with, and its amount. They are also the place, the time, the manner of eating, and the person who eats.

He gives ten rules for the manner. Eat food that is warm. Eat food that is moist with a little fat. Eat the right amount. Eat when the last meal has been digested. Do not eat foods that disagree with each other. Eat in a pleasant place with what is needed at hand. Do not eat too fast. Do not eat too slowly. Do not talk or laugh while eating, and give the food your attention. Eat with regard to yourself, knowing what suits you.

The amount is stated as parts of the stomach. Half is to be filled with solid food, a quarter with liquid, and a quarter left empty for the wind to move. A saying of the Prophet in chapter 42 divided the belly in thirds in the same spirit.

Five cleansings

The best-known treatment of Indian medicine is called the five actions. It is a course of cleansing that takes two to five weeks. It has three parts: preparation, the cleansing itself, and the return.

Preparation. The faults that are to be driven out lie lodged in the tissues, mixed with raw matter. They must first be loosened and brought to the gut.

The raw matter is cooked first, by a light diet and kindling spices for some days.

Then the patient is oiled from within. Each morning, for three to seven days, he drinks clarified butter or oil on an empty stomach, in a dose that rises daily. He eats only when the fat has been digested. The physician watches for the signs that the body is soaked: oily skin, soft and oily stools, and a distaste for the fat.

He is oiled from without as well, by long rubbing with warm medicated oil, and he is sweated, in a box of steam or with hot bundles of herbs. The texts explain the purpose with an image. A dry stick breaks when it is bent. Oiled and warmed, it bends. So the oiled and sweated body lets go of what is stuck in it, and the faults move from the limbs to the gut.

The cleansing. The faults are now sent out by the nearest way.

Action	Fault	What is done
Bringing up	Phlegm, which sits in the chest and stomach	In the early morning the patient drinks milk or a sweet gruel to fill the stomach, and then a drug that makes him vomit. The physician counts the bouts and watches what comes up
Purging	Bile, which sits in the small gut	A purge is given in the forenoon, mild or strong by the patient's bowel
The enema	Wind, which sits in the large gut	Two kinds are given in turn: of oil, which feeds and calms, and of a decoction with honey, salt and oil, which cleans. A course has eight, fifteen or thirty
Through the nose	The faults of the head	Oil or juice is dropped into the nostrils after the face has been rubbed and warmed
Letting blood	Faults in the blood	By leech, by scratching and a horn or gourd, or from a vein. This is Sushruta's fifth. Caraka counts the two kinds of enema as two

The enema has the highest rank. Wind leads the other faults, and the large gut is its home. Caraka says that the enema is half of all treatment, and some say the whole.

The return. After the cleansing the digestive fire is low, like a fire of which only sparks remain. It is fed as such a fire is fed, first with straw and then with wood. The patient begins with the thin water of boiled rice. Then he takes thin gruel, thick gruel, soup of pulses, soup of meat, and at last ordinary food. The steps take three to seven days. During the whole course he avoids loud speech, travel, long sitting, wind, sun, anger, grief and sexual intercourse, and he does not sleep by day.

The reader will recognise the plan. The Unani physician ripens the humour for weeks and then clears it. The Indian physician cooks the raw matter, loosens the faults with oil and heat,

clears them, and then rebuilds the fire. Chapter 4 described why a settled wrong state cannot be left without a passage through the open. The Indian course is the most elaborate procedure for that passage in any medicine.

The Kerala treatments. The physicians of Kerala developed forms of oiling of their own. In one, warm oil is poured in a thin steady stream on the forehead from a vessel that swings slowly, for half an hour or more. In another, several attendants pour warm oil over the whole body and rub it in. In a third, the body is rubbed with bundles of rice cooked in milk.

The drug

Caraka opens his account of drugs with the lesson of Jivaka. There is nothing in the world, he says, that is not a medicine, when it is used with reason for a purpose. He adds the reverse. A drug that is not understood is like poison, a weapon, fire or a thunderbolt. A drug that is understood is like nectar.

Indian physicians describe a drug by five properties.

Property	Sanskrit	What it is
Taste	*rasa*	One of the six of chapter 57. It is known on the tongue and tells the elements of the drug
Qualities	*guna*	Which of the ten pairs it has: heavy or light, oily or dry, and so on
Potency	*virya*	Whether it heats or cools. It is known by the drug's action in the body
Taste after digestion	*vipaka*	What the drug has become when the fire has cooked it. There are three: sweet, sour and pungent
Special power	*prabhava*	An action that the other four do not explain

The four first properties usually agree. A sweet drug is as a rule heavy and cooling, stays sweet after digestion, and calms wind and bile. Where they disagree, the textbooks rank them. Potency overrules taste, and the special power overrules everything.

The fifth property is an admission. Two drugs may be alike in taste, qualities, potency and after-taste and still act differently. One purges, and the other does not. The physicians did not explain this away. They gave it a name and listed the cases.

A drug is given with a carrier that leads it to its place and suits the fault. Honey is the carrier for phlegm, clarified butter for bile, and warm water or oil for wind. The texts name ten times of day for taking a drug. Among them are an empty stomach at dawn, before the meal, in the middle of it, after it, between two meals, and bedtime. Each time sends the drug to a region of the body or against one of the five winds.

Forms. Five simple forms are the basis: the pressed juice of the fresh plant, a paste, a decoction, a cold infusion and a hot infusion. Their strength falls in that order. From them the pharmacist makes powders, pills, jams with sugar and honey, medicated butters and oils, and fermented drinks. The butters and oils are boiled with decoctions for days, until the water is gone and the fat has taken up the drug.

The reference table at the end of this chapter describes fifty drugs. A few compounds are known in every Indian household.

Compound	Ingredients	Use
The three fruits	Emblic and two myrobalans, in equal parts	A mild daily laxative and tonic; a wash for the eyes
The three pungents	Dry ginger, black pepper and long pepper	To kindle the fire and cook raw matter
The jam of Chyavana	Emblic fruit boiled with some forty herbs, sugar, honey and clarified butter	The household tonic, taken by the spoonful every morning
Golden milk	Turmeric in hot milk	For colds, sore throats and bruises

Making young again

One of the eight limbs has no counterpart in the hospital. Its aim is not to cure an illness. It is to renew the tissues of a person who is well, or old, or recovering. Its Sanskrit name means the path of the juice.

Caraka places it first among his chapters on treatment, before any illness. He tells how the old sage Chyavana was made young by the twin physicians of the gods, and gives the recipe of the jam that bears his name.

He describes two ways of taking the treatment. The lighter way is followed at home, in the open air and in the course of ordinary life. The stronger way requires a retreat. A hut is built

in a clean and quiet place. It has three chambers, one inside another, with thick walls, small windows, and doors that are not in line. The inmost room is sheltered from wind, sun, smoke, dust and noise. On a lucky day the patient is cleansed, enters the inmost room, and stays there for weeks or months. He takes the remedy and a diet of milk and rice, and sees only his physician and attendants. The texts say that he comes out with new hair, new nails and new teeth.

The hut of three chambers is a place of healing built on purpose. The patient is removed from the day and its demands as far as a building can remove him. The sleeping hall of Asklepios and the nine nights of the Navajo hogan served the same end.

Conduct that makes young. Caraka closes the chapter with a passage that sets the drugs in their place. A person who speaks the truth and is free of anger gains what the remedies give, without taking them. So does one who harms no one, who is calm and speaks kindly, who is clean, steady, generous and devout, and who honours teachers and the old. So does one who is free of conceit, who sleeps and wakes in measure, and who keeps his senses turned toward the self. The text calls this the rejuvenation by conduct.

The knife today

The surgery of Sushruta was not handed down. Two of his methods are in regular use.

The first is the medicated thread. For a fistula beside the anus, a thread is coated many times with the milky juice of a spurge, the ash of a herb and turmeric. It is drawn through the passage and tied. It cuts slowly through the tissue over some weeks, and the wound heals behind it. It is changed each week. An Indian trial in several centres compared it with the usual operation in about five hundred patients. Healing took longer with the thread. The fistula came back less often, and the patients did not need to stay in hospital (ICMR 1991).

The second is the leech, for swollen and painful joints and for sores that do not heal. Chapter 40 gave the trial.

The other two medicines

The medicine of the unseen and the mastery of the mind are in daily use in India, mostly outside the clinics.

Recitation and offering. Families have rites performed for a sick member. A priest recites a text a fixed number of times. A fire offering is made to the planet that is held to afflict the patient. A gem is prescribed to be worn on a certain finger. The astrologer and the physician are often consulted together.

The healing temples. Certain temples and the shrines of certain Muslim saints are known across India as places for the mad and the possessed. Families bring a patient and stay with him for weeks. He attends the daily worship, circles the shrine, and helps with the work of

the place. At some shrines the spirit that holds him is questioned and judged before the god, and ordered to leave.

Indian psychiatrists studied one such temple in Tamil Nadu. It has no healing rite at all. Patients simply live there with a relative, in a quiet routine, for an average of six weeks. The researchers examined thirty-one of them on arrival and on leaving, with a standard scale for the signs of mental illness. The score fell by about a fifth. That is the size of the effect of many drugs for these illnesses (Raguram 2002).

The shrines have a dark side as well. At some, patients were kept in chains. In 2001 a fire at one of them killed more than twenty people who could not flee. Since then the state has inspected the shrines. In Gujarat, psychiatrists opened a clinic inside a large Muslim shrine in 2008, with the consent of its keepers. The patient receives the saint's blessing and the hospital's drug on one visit.

What stands out in the healing

1. **There are three medicines:** of the unseen, of reason, and of the mastered mind.
2. **The day, the season and good conduct come before any drug.**
3. **Food is eaten by ten rules,** and a quarter of the stomach is left empty.
4. **A fault is first loosened with oil and heat, then driven out by the nearest way, and then the fire is rebuilt** step by step.
5. **A drug has a taste, a potency, a taste after digestion, and sometimes a power that nothing explains.**
6. **A drug is given with a carrier and at a set hour.**
7. **Renewal is a branch of medicine,** and its strong form is a retreat in a hut of three chambers.
8. **Truthfulness and freedom from anger are said to do what the remedies do.**
9. **A quiet stay at a temple, with no treatment, improved the mad as much as a drug.**

Reference: fifty drugs of the Indian pharmacy

The table describes fifty drugs that every Indian physician uses. It gives the Sanskrit name, the material, the taste and potency, the chief uses in the textbooks, and a note on what is known from outside. It describes a tradition and is not advice for use.

Sanskrit name	Material	Taste; potency	Chief uses in the textbooks	Note
Ashvagandha	Root of withania. The name means the smell of a horse	Bitter, astringent, sweet; hot	Weakness, wasting, poor sleep, old age; to give the strength of a horse	In trials, an extract lowered scores of stress and the level of a stress hormone
Haridra	Turmeric rhizome	Bitter, pungent; hot	Skin, wounds, the urinary illnesses, colds	Its yellow compound relieved joint pain in several trials. It is poorly taken up from the gut
Amalaki	Emblic fruit	Five tastes, chiefly sour; cold	Renewal; the eyes; burning in the stomach	Very rich in vitamin C
Haritaki	Chebulic myrobalan fruit	Five tastes, chiefly astringent; hot	The bowel; all three faults. Called the mother among drugs	
Bibhitaki	Beleric myrobalan fruit	Astringent; hot	Cough, the eyes, the hair	With the two above it forms the three fruits
Shunthi	Dry ginger	Pungent; hot	To kindle the fire; raw matter; sickness	Reduces sickness in pregnancy in trials

Sanskrit name	Material	Taste; potency	Chief uses in the textbooks	Note
Maricha	Black pepper	Pungent; hot	To kindle the fire; cough	Its sharp compound raises the uptake of other drugs many times over
Pippali	Long pepper	Pungent; mildly hot	Cough, asthma, renewal of the lungs	
Guduchi	Stem of tinospora	Bitter, astringent; hot	Fevers, gout, renewal. Also named the nectar	
Nimba	Neem leaf and bark	Bitter; cold	Skin, worms, fever; twigs for cleaning teeth	
Tulasi	Holy basil	Pungent, bitter; hot	Cough, colds, fever	Grown at the door of every Hindu house
Brahmi	Bacopa	Bitter; cold	Memory, understanding, the falling sickness	A pooled analysis of trials found faster attention
Shankhapushpi	Convolvulus herb	Bitter, astringent; cold	The mind; sleep	
Jatamansi	Root of spikenard	Bitter, astringent, sweet; cold	To calm; sleep; palpitations	

Sanskrit name	Material	Taste; potency	Chief uses in the textbooks	Note
Vacha	Rhizome of sweet flag	Pungent, bitter; hot	Speech, memory, the falling sickness	Contains a harmful compound; its use is restricted
Shatavari	Root of a wild asparagus	Sweet, bitter; cold	Milk, the womb, the change of life; burning in the stomach	The chief drug for women
Ashoka	Bark of the ashoka tree	Astringent, bitter; cold	Bleeding from the womb	
Guggulu	Gum resin of a thorn tree	Bitter, pungent; hot	Joints, stoutness, lumps	An American trial for blood fats found no benefit
Shallaki	Gum resin of Indian frankincense	Bitter, sweet, astringent; cold	Painful joints	Relieved worn knees in small trials
Arjuna	Bark of the arjuna tree	Astringent; cold	The heart	Small trials in chest pain and a weak heart
Punarnava	Boerhavia herb. The name means that which makes new	Bitter, sweet; hot	Swelling; the kidneys	
Gokshura	Fruit of puncture vine	Sweet; cold	Stones, painful urination, potency	
Shilajit	A black pitch that seeps from Himalayan rock	Bitter, pungent; hot	The urinary illnesses; renewal	Samples often contain heavy metals

Sanskrit name	Material	Taste; potency	Chief uses in the textbooks	Note
Kutaja	Bark of holarrhena	Bitter, astringent; cold	Bloody stools	Contains a compound that kills the amoeba of dysentery
Bilva	Unripe bael fruit	Astringent, bitter; hot	Loose stools	
Musta	Tuber of nut grass	Bitter, pungent, astringent; cold	Fever, loose stools, a slow fire	The same plant as a chief drug for women in China
Katuki	Root of picrorhiza	Bitter; cold	The liver; bile; fever	
Bhumyamalaki	Phyllanthus herb	Bitter, astringent, sweet; cold	Yellow skin; the liver	An early trial against a liver virus was not confirmed
Kalamegha	Andrographis herb. Called the king of bitters	Bitter; cold	Fevers; the liver	Eased cough and sore throat in a review of trials
Yashtimadhu	Liquorice root	Sweet; cold	Cough, the voice, sores of the stomach, renewal	The same drug as in China and Greece
Vasa	Leaf of the Malabar nut	Bitter, astringent; cold	Cough, asthma, bleeding	A widely used cough medicine was developed from its compound
Kantakari	A thorny nightshade	Bitter, pungent; hot	Cough, asthma	

Sanskrit name	Material	Taste; potency	Chief uses in the textbooks	Note
Sarpagandha	Root of Indian snakeroot	Bitter; hot	Madness, sleeplessness, snakebite	Source of the first modern drug for high blood pressure
Kapikacchu	Seed of the velvet bean	Sweet, bitter; hot	The trembling wind; potency	Source of the standard drug for the shaking palsy
Bala	Root of country mallow. The name means strength	Sweet; cold	Weak nerves and muscles	
Eranda	Castor root and oil	Sweet, pungent; hot	Purging; painful joints	
Trivrit	Root of turpeth	Bitter, pungent; hot	The best purge for bile	
Madanaphala	Fruit of emetic nut	Sweet, bitter; hot	The best drug for bringing up	
Dashamula	A compound of ten roots		Wind; after childbirth	
Chandana	Sandalwood	Bitter, sweet; cold	Burning, thirst, the skin	
Manjishtha	Root of Indian madder	Bitter, astringent, sweet; hot	To clean the blood; the skin	
Kumari	Aloe	Bitter; cold	Purging; the skin; the monthly cycle	
Bhringaraja	Eclipta herb	Pungent, bitter; hot	The hair; the liver	
Hingu	Asafoetida resin	Pungent; hot	Wind and colic	

Sanskrit name	Material	Taste; potency	Chief uses in the textbooks	Note
Lashuna	Garlic	Five tastes, lacking sour; hot	Wind; renewal; the heart	The oldest surviving Sanskrit medical manuscript opens with its praise
Tila	Sesame seed and oil	Sweet; hot	The oil for rubbing; called the best of oils	
Ghrita	Clarified butter	Sweet; cold	The fire, memory, the eyes; a carrier for other drugs	Called the best of fats. It takes on the qualities of what is cooked in it
Madhu	Honey	Sweet, astringent	A carrier; wounds; phlegm	The texts forbid heating it
Loha bhasma	Burnt iron		The pale illness	
Rasa	Prepared mercury		In many mineral compounds	Poisonous. See chapter 61

61. Siddha, the vital points, yoga, and what has been measured

The medicine of the perfected ones

The Tamil-speaking south of India has a medicine of its own. It is called Siddha, after the perfected ones who are said to have founded it. Tradition counts eighteen of them, with the sage Agastya at their head. Their teachings are in Tamil verse, written on palm leaves, in a language that hides as much as it shows. The Indian state recognises Siddha beside Ayurveda, and it has its own colleges and a national institute at Chennai.

Its ground is close to that of chapter 57. A person is made of five elements and ruled by three humours, which the Tamil texts call wind, fire and water. One teaching is peculiar to it. In a healthy person the three stand in a fixed proportion, which is felt in the pulse. Wind has one measure, fire half a measure, and water a quarter.

The physician examines in eight ways: the pulse, the touch of the skin, the tongue, the colour, the speech, the eyes, the stool and the urine. The urine is read by its look and by the drop of oil of chapter 58.

Siddha differs most from Ayurveda in its pharmacy. Its drugs are of three kinds, from plants, from minerals and metals, and from animals, and it relies on the second kind far more. The perfected ones were alchemists who sought a body that does not decay. They worked with mercury, sulphur, arsenic, salts and metals, bound and burned by long procedures. Their writings speak of a triple salt that perfects every other preparation, and they do not say plainly what it is.

One of the eighteen, Tirumular, left sayings that are quoted in every Siddha college. He once despised the body, he says. Then he saw what dwells in it. The body is a temple, and so he began to guard it. Another verse defines medicine in four lines. Medicine is what cures the illnesses of the body. Medicine is what cures the illnesses of the mind. Medicine is what prevents illness. Medicine is what makes death not come.

The vital points

Indian medicine has its own knowledge of points on the body. It came from the battlefield and not from the sickroom.

Sushruta describes 107 places where a wound is especially dangerous. He calls each a *marma*, a word that means a place where one can be killed. He defines such a place as a meeting of flesh, vessels, sinews, bone and joint, in which the breath of life has its seat.

He counts and sorts them with care.

Sorted by	Classes
Region	Eleven in each limb; twelve on the chest and belly; fourteen on the back; thirty-seven on the neck and head
Tissue	Eleven of flesh, forty-one of vessels, twenty-seven of sinews, eight of bone, twenty of joints
Effect of a wound	Nineteen kill at once; thirty-three kill within days or weeks; three kill when the weapon is drawn out; forty-four cripple; eight cause great pain

The size of each place is given in the breadths of the patient's own finger. Three are named the great ones: the head, the heart and the bladder. A surgeon must know all 107, Sushruta says, so that he does not cut across them.

The fighting arts of the south turned the knowledge to two uses. The Tamil masters count 108 points. A blow on one of them stuns, cripples or kills. Pressure on the same point, or on its partner, revives and heals. The masters of Kerala, who teach an art of combat with stick and sword, treat sprains, palsies and old injuries by rubbing with oil along lines that join the points. In both regions the knowledge was kept in certain families and taught only to proven pupils.

The reader will think of the Chinese points of chapter 47. The two systems differ in their origin. The Chinese points were found by healers and lie on lines. The Indian points were found by fighters and surgeons and are places of danger. Many lie at the same spots. Chapter 66 returns to the comparison.

Yoga

The word yoga means a yoking. The discipline is older than its textbooks and was not at first a medicine. Its aim is stated in the second line of its chief text, the aphorisms of Patanjali, which were composed about the fourth century. Yoga is the stilling of the turnings of the mind.

The same text names illness as the first of nine obstacles on the way. Its oldest commentary draws a comparison that has often been repeated. Medicine has four parts: illness, the cause of illness, health, and the remedy. The teaching of yoga has the same four: bondage, its cause, release, and the means.

Patanjali gives the means as eight limbs.

Limb	Content
Restraints	Not to harm, not to lie, not to steal; continence; not to grasp
Observances	Cleanliness, contentment, discipline, study, devotion
Posture	A seat that is steady and easy
Control of the breath	Lengthening and holding of the in-breath and the out-breath
Withdrawal of the senses	The senses follow the mind inward
Holding	The mind is fixed on one place
Meditation	The mind stays there in an even stream
Absorption	Only the object shines; the mind is as if empty of itself

The order matters. Conduct comes first. The body and the breath are the third and fourth steps of eight.

The yoga of the body. A later school gave the body far more room. Its best-known handbook dates from the fifteenth century. It teaches postures, six acts of cleansing, ways of holding the breath, and seals that close the openings of the body. It claims cures for many of them. One posture kindles the fire of the stomach. One kind of breathing removes the illnesses of phlegm.

Its first rule concerns breath and mind. When the breath moves, it says, the mind moves. When the breath is still, the mind is still.

The body of yoga. The yogis describe a body within the body.

It has seventy-two thousand channels, and three matter most. One runs on the left, belongs to the moon and cools. One runs on the right, belongs to the sun and heats. The third runs up the middle of the spine. The breath goes mainly through one nostril and then the other, changing every hour or two, and the yogi watches which side is open. Physiologists have confirmed this alternation of the nostrils. When both are open alike, at dawn and dusk and in deep stillness, the breath is said to enter the middle channel.

Along the middle channel lie six wheels, from the base of the spine to the point between the brows, with a seventh at the crown. Each is pictured as a lotus with a fixed number of petals: four, six, ten, twelve, sixteen and two. The petals of the six together number fifty, and each bears one letter of the Sanskrit alphabet. The whole of speech is laid out along the spine.

At the base a power lies coiled three and a half times, like a sleeping snake. The practice wakes it and leads it upward through the wheels. On its way it must pass three knots, at the navel, the heart and the brows.

An old text adds that a person has five sheaths, one inside another: of food, of breath, of mind, of understanding and of bliss. The body that the physician treats is the outermost.

The inner sound. The last chapter of the handbook teaches a practice of listening. The yogi closes his ears and attends to the sound within. He hears first the roar of the sea, of thunder and of drums. Later he hears a conch and a bell, and at last a flute, a lute and the hum of a bee. The mind, the text says, is caught by the sound as a snake is caught by a pipe, and comes to rest in it.

Yoga as treatment. The yoga that the world knows, a class of postures with some breathing and rest, took its form in India in the 1920s and 1930s. Teachers at Mysore and near Bombay joined the old postures with gymnastics. One of them founded a laboratory in 1924 to measure what the practices do. Their pupils carried the method to the West. Indian hospitals now have departments of yoga, and the state has put it under the same ministry as the old medicines.

What has been measured: yoga and the breath

The back. In an English trial, 313 adults with long-standing low back pain were offered twelve weekly classes of yoga or went on with their usual care. Those who were offered yoga had better use of their backs after three months, and the gain was still there after a year (Tilbrook 2011). American trials have found the same and have found yoga about as good as a course of stretching.

Low spirits. The review of exercise in chapter 53 found yoga among the three most effective forms against depression (Noetel 2024).

Six breaths a minute. An Italian physician, Luciano Bernardi, recorded the breath and the heartbeat of healthy adults while they recited. Some said the rosary in Latin, as it is said in church, one half of each prayer by the priest and one by the people. Some recited a yoga mantra. Both recitations slowed the breath to almost exactly six in a minute. At that rate the swings of the heart rate with each breath became very large and regular, and the reflex that steadies the blood pressure grew stronger (Bernardi 2001).

The explanation lies in a rhythm of the body. The blood pressure rises and falls in a slow wave of its own, about once in ten seconds. A breath of ten seconds falls into step with that wave. Breath, heartbeat and blood pressure then swing together. The rosary, Bernardi noted, came to Europe with the crusaders, who took it from the Arabs, who had it from Tibet and India. Two traditions of recitation had arrived at the same rate.

This is the clearest case in the book of a healing practice that sets a rhythm in whole-number step with a rhythm of the body. Chapter 74 takes it up.

The heart. An American physician, Dean Ornish, placed patients with narrowed arteries of the heart on a programme. It consisted of yoga postures, breathing, meditation, walking, a diet with very little fat, and group meetings. After a year the narrowings had widened slightly in most of them. In the patients with usual care they had grown worse (Ornish 1990). The trial was small, and it could not say which part of the programme did the work.

A large Indian trial tested a programme of yoga for patients after a heart attack, in twenty-four hospitals. Nearly four thousand took part. After almost two years there was no clear difference in deaths and new heart attacks. Those who had practised rated their own health better and had returned to their former activities more fully (Prabhakaran 2020).

Harm. Postures can injure joints and, rarely, the arteries of the neck. Intensive breathing practice and long retreats of meditation bring some practitioners into states of fear, loss of the sense of self, or confusion that last. The old texts warn of this. They say that the breath must be tamed slowly, as a lion or an elephant is tamed, or it kills the tamer.

What has been measured: Indian medicine as a whole

Three trials have tested Indian medicine in a way that respects its method. They are among the best-designed trials of any old medicine.

The whole course against the whole course. In Germany, 151 patients with worn knees were divided by lot. One group received Indian treatment as an Indian physician would give it. Each patient was examined in the Indian manner and received his own combination of treatments in fifteen sessions over twelve weeks. They included oil massage and other treatments by hand, diet, herbs, yoga postures and advice on the conduct of life. The other group received the best conventional care in sessions of the same number and length: physiotherapy, exercises, advice, and pain drugs when needed. After twelve weeks the knee score of the Indian group had improved about twice as much. The difference was still present after a year (Kessler 2018).

The trial did not ask which part of the Indian treatment worked. It asked whether the whole, as practised, does better than the whole of the usual care. For this illness it did.

A fitted treatment tested blind. In an American and Indian trial, forty-three patients with the severe inflammatory joint disease received either the standard Western drug, or Indian drugs, or both. The Indian drugs were prescribed for each patient individually by an Indian physician, who could choose among dozens of preparations and change them at each visit. A pharmacy made up a matching dummy for every prescription. Neither the patients nor the assessing physicians knew who received what. After thirty-six weeks the three groups had improved to the same degree, and the group on Indian drugs alone had the fewest unwanted effects (Furst 2011).

The trial was too small to prove that the treatments are equal. Its importance lies in its design. It showed that a treatment fitted to the single patient can be tested under the strictest conditions.

Fixed formulas against standard drugs. In India, 440 patients with worn knees received one of two fixed Indian formulas or one of two standard Western remedies for twenty-four weeks. The four did equally well. In some patients on the Indian formulas a liver value rose (Chopra 2013).

What has been measured: harm

In 2008 American researchers bought 193 Indian remedies through the internet and analysed them. One in five contained lead, mercury or arsenic. Among the mineral preparations of the mercury tradition the share was two in five. Every product that contained a metal would, taken as directed, have exceeded at least one official limit (Saper 2008).

Cases of lead poisoning from such remedies are reported every year, in India and abroad. The makers answer that a rightly prepared ash is harmless and that the cases come from careless manufacture. No one has shown that the classical procedures make mercury or lead safe. Chapter 75 returns to the matter.

What stands out in Indian medicine

The last six chapters can be drawn together in twelve points.

1. **Life is the union of body, senses, mind and self.** A healthy person is one who stands in himself.
2. **Three faults rule the body, and wind leads.** Bile and phlegm are lame without it.
3. **Every cycle has three phases in the same order:** a life, a day, a night and the digestion of a meal.
4. **The fire is the root.** What it leaves raw is the beginning of most illness.
5. **A person is made of channels.** They fail by overflow, by stoppage, by knots and by a wrong direction.
6. **The constitution is fixed at conception,** and treatment returns a person to his own.
7. **The physician enters the patient's inner self with a lamp,** and examines the patient before the illness.
8. **An illness moves through six stages** and lodges where a channel was weak.
9. **What is raw is cooked, what is stuck is loosened, what is loose is cleared, and then the fire is rebuilt.**
10. **There are three medicines,** and two of them, the unseen and the mastered mind, use no drug.
11. **The chief cause of illness is to act against what one knows.**

12. **The measured record is short and good in parts.** The constitutions have a ground in the body. The whole course bettered usual care in one trial, and the slow breath locks the heart. The metals poison.

North of India, across the highest mountains on earth, a people took this medicine and joined it with the Chinese pulse and the Greek flask of urine. They set the whole inside a teaching about the mind. The next three chapters describe the medicine of Tibet.

62. Tibet: the knowledge of healing

A medicine made from several

The Tibetans call their medicine *Sowa Rigpa*, the knowledge of healing. It is practised across the Tibetan plateau and the Himalaya, in Bhutan, Ladakh and northern Nepal, in Mongolia and among the Mongol peoples of Russia. India recognised it as one of its national systems in 2010.

Its history differs from that of every other medicine in this book. The Tibetans did not inherit a medicine. They assembled one, in a few centuries, from the best that their neighbours had, and they knew that they were doing so. The author holds that the result went further than any of its sources. This chapter gives the history and the ground. Chapters 63 and 64 give the diagnosis, the illnesses and the healing.

Before the books

The oldest healers of Tibet were the priests of the religion that preceded Buddhism, which is called Bön. They dealt with the beings that own the land: the serpent spirits of springs and lakes, the lords of the soil, the spirits of rocks and passes. A person who fouled a spring or dug in the wrong place fell ill. The priest found the offended being by divination. He offered a ransom, often a figure of dough in the patient's place, and he called back the patient's soul if it had been taken.

These practices were never given up. They were taken into Tibetan Buddhism and into the medicine, as later sections show.

The kings and the foreign physicians

In the seventh century the Tibetans became a great power. Their kings took wives from Nepal and China, and with them came books and physicians.

Tibetan histories tell a story about the king Songtsen Gampo, who died in 649. He invited three physicians to his court: one from India, one from China, and one from a western land that the Tibetans called by the name of Rome. The third is named in the histories as Galenos. Each translated a work of his own tradition. Together they composed a book in seven chapters, which is lost. The Indian and the Chinese went home. Galenos stayed, married, and became the first of a line of court physicians.

The story is legend in its details. The name of Galen shows that it remembers a fact. Greek medicine did reach Tibet, from Persia, in the seventh and eighth centuries (Beckwith 1979). Tibetan manuscripts of the ninth and tenth centuries, found in the caves of Dunhuang on the Silk Road, confirm the mixture. They contain charts of points for burning, in the Chinese manner, and texts on bloodletting and on the examination of urine.

A century later, the histories say, the king Trisong Detsen called nine physicians from the surrounding lands to a meeting: from India, Kashmir, China, Persia, Nepal and the Turkic peoples. In the early eleventh century the *Heart of the Eight Limbs* of Vagbhata, which chapter 56 described, was put into Tibetan. It became the Indian backbone of what followed.

The Four Tantras

The Tibetan medicine rests on one book. Its short title is the *Four Tantras*. It has 156 chapters in four parts, written in verse of nine syllables to be learned by heart. Every Tibetan physician memorises large parts of it, and the examinations still consist of reciting it.

Part	Chapters	Content
The Root Tantra	6	The whole of medicine in outline, as three roots of a tree
The Explanatory Tantra	31	The body from conception to death; causes and kinds of illness; conduct, diet and drugs; the instruments; health; diagnosis; the methods of healing; the physician
The Tantra of Oral Instruction	92	The illnesses, one by one, with causes, signs and treatment
The Last Tantra	27	The pulse and the urine; the forms of drugs; the cleansings; the outer treatments

The setting. The book opens in a city of medicine called Lovely to Behold. On each of its four sides stands a mountain. The mountain to the south is warmed by the sun and bears the hot plants that cure cold illnesses. The mountain to the north is cooled by the moon and bears the plants that cure hot illnesses. The mountain to the east is covered with a forest of the myrobalan tree, whose every part heals. The mountain to the west bears the six best medicines, the healing minerals and the hot springs.

In the middle of the city, on a throne of blue beryl, sits the Buddha as the master of medicine. He is surrounded by gods, sages, Buddhists and others. He enters a meditation, and light goes out from him. From his heart there comes forth a sage named Wisdom of Awareness. From

his tongue there comes forth a sage named Born of Mind. The second asks, and the first answers. The whole book is their conversation.

So the teaching is framed as a dialogue between two aspects of one mind: awareness that knows, and the thinking mind that asks.

Who wrote it. Tradition holds that the Buddha taught the book in India and that it was translated in the eighth century. It was hidden in a pillar of the first Tibetan monastery and found again in 1038. It reached its present form in the hands of Yuthok Yonten Gonpo the Younger, a physician who lived from 1126 to 1202.

Tibetan scholars themselves questioned the tradition, openly and early. A physician of the sixteenth century, Zurkharwa, argued that Yuthok had composed the work in Tibet. He pointed out that it speaks of tea and of roasted barley flour, of the Tibetan climate, of the Chinese reading of the pulse and of the rites of Bön. An Indian sage would have known none of these. Modern scholars agree with him (Gyatso 2015).

The debate matters for what it shows. Tibetan physicians of that time weighed a sacred origin against the evidence of the text, in writing, and the evidence won a hearing.

What it is made of. The parts of the book can be traced.

Source	What it gave
India	The three faults, the seven tissues, the fire of digestion, the tastes and potencies, the cleansings, the eight branches
China	The pulse at the wrist with its places for the organs; the five phases in the reading of pulse and season; points for burning
Persia and Greece	Probably the reading of urine in a vessel; some anatomy
Tibet	Illness from the spirits of the land; the diet of barley, butter and meat; the illnesses of height and cold; the treatment of wounds
Buddhism	The root of illness in the mind; the ethics of the physician; the body of channels, winds and drops; the knowledge of dying

After the Four Tantras

Two schools of interpretation formed in the fifteenth century, one in the north and one in the south of central Tibet. They differed on the identification of plants and on points of practice.

In the seventeenth century the Fifth Dalai Lama unified the country, and his regent, Sangye Gyatso, did the same for medicine. In 1688 he finished a commentary on the *Four Tantras* that became the standard. It is called the *Blue Beryl*. He had a set of seventy-nine paintings made to illustrate it. They show the body with its channels and the growth of the child in the womb week by week. They show the plants and minerals, the instruments, the signs of the pulse and the urine, and the conduct of the physician. They are the most complete picture book of any old medicine (Parfionovitch 1992). In 1696 he founded a college of medicine on a hill opposite the palace in Lhasa.

In 1916 the Thirteenth Dalai Lama founded a second college in Lhasa, for medicine and for the reckoning of the calendar and the stars, which Tibetan physicians must know. Its first director wrote a booklet on the care of infants that was distributed to every newborn's family.

In 1959 the college on the hill was destroyed by shellfire, and many physicians were imprisoned. The personal physician of the Dalai Lama spent twenty-one years in prisons and labour camps. In 1961 the college of medicine and astrology was founded again in exile, at Dharamsala in India. It now has more than fifty branch clinics.

Inside Tibet the medicine was restored after 1980 and has since grown into an industry, with hospitals, colleges and large factories. In Bhutan it has been part of the state health service since 1967, and every district hospital has a unit for it. In the villages of Ladakh and Nepal it is carried, as before, by family lines of healers called *amchi*.

The road to the West. The medicine travelled north with Buddhism to the Mongols and to the Buryats of Siberia. In the 1850s a Buryat physician opened a Tibetan pharmacy in Saint Petersburg, and his brother treated the family of the tsar. After the revolution a member of the family took the recipes to Poland. From there they reached Switzerland, where a firm has made a Tibetan formula of some twenty plants since 1969. Chapter 64 gives the trials of it.

The tree

The *Root Tantra* gives the whole of medicine in six short chapters, and it gives it as a picture. Medicine is a tree with three roots. From the roots rise nine trunks. The trunks bear forty-seven branches, and the branches bear two hundred and twenty-four leaves. Students draw the tree and name each leaf, and painters have drawn it for them since the seventeenth century.

Root	Trunks	Branches	Leaves
The state of the body	Two: the body in health; the body in illness	12	88
Diagnosis	Three: looking, touching, asking	8	38
Healing	Four: food, conduct, drugs, outer treatments	27	98
Total	9	47	224

On the trunk of the healthy body the tree bears two flowers, which are health and long life. From them come three fruits: the practice of the teaching, wealth, and happiness.

A reader who has gone through the earlier parts of this book will recognise each root. They are the three parts of every old medicine as chapter 8 set them out: how the body is understood, how the illness is found, and how it is healed. The Tibetans made the scheme the first lesson.

The root of illness

The second trunk of the first root, the body in illness, begins with the cause. Here the Tibetan book parts from its Indian model.

All illness, it says, has one distant cause: not knowing. A being does not know what it is, and takes itself for a separate and lasting self. From that error come the three poisons of the mind. They are desire, hatred and dullness. From the three poisons come the three faults of the body.

Poison of the mind	Fault of the body	Nature	Chief region
Desire	*rlung*, wind	Neither hot nor cold; it joins either	Below the navel
Hatred	*mkhris pa*, bile	Hot	Between the heart and the navel
Dullness	*bad kan*, phlegm	Cold	Above the heart

The book gives an image for the hold of illness on living beings. A bird may fly high in the sky, and still it is never parted from its shadow. So beings may live in ease, and still they are never parted from illness, because not knowing goes with them.

The consequence is drawn at once. Drugs, diet and outer treatments calm the three faults for a time. They do not remove the root. Only a mind that is free of the three poisons is free of illness for good. The physician therefore treats on two levels. He calms the faults, and he points the patient, as far as the patient will go, toward the cause.

No other medicine in this book places the first cause of illness so firmly in a mistaken view of oneself. No other draws so plain a line from a state of mind to a region of the body.

The three faults

The three faults themselves are those of chapter 57 under Tibetan names, with five kinds of each. The Tibetan physicians changed the emphasis in two ways.

Hot and cold. All illnesses, the book says, come down to two kinds. Bile and blood are hot, like fire. Phlegm is cold, like water. Wind is neither. It fans a fire and it chills, and so it joins the hot and the cold alike and spreads them through the body. The first question in every case is therefore whether the illness is hot or cold. A treatment that cools a cold illness, or warms a hot one, is the gravest error a physician can make. The division suits a people who live in cold, thin air, on butter and barley, and whose common illnesses are of cold.

Wind first and last. Wind is present at the start of every illness and at its end. It stirs the others up, and it is what remains when they have been calmed. A physician who has treated a fever ends by settling the wind.

The book counts what must be in balance for health. There are fifteen kinds of the three faults, seven tissues and three wastes. When these twenty-five are in their measure, a person is well.

The body from the navel

The chapters on the body in the *Explanatory Tantra* describe how a child is formed, week by week, through thirty-eight weeks. The stages are named after animals. In the weeks when the limbs bud, the child is in the stage of the fish. When the limbs and the head stand out, it is in the stage of the tortoise. When hair, nails and organs are complete, it is in the stage of the pig.

One teaching in this account ties the whole doctrine together. In the growing child three channels form from the navel.

Channel	Where it goes	What dwells there
The first	Upward. It forms the brain	Dullness. So phlegm has its seat in the upper body
The second	To the middle. It forms the great vessel of life and the blood	Hatred. So bile and blood have their seat in the middle

Channel	Where it goes	What dwells there
The third	Downward. It forms the organs of generation	Desire. So wind has its seat in the lower body

The three poisons, the three faults and the three regions of the body are joined here in one growth. The body is built, from its first weeks, along the lines of the mind's three errors.

White and black channels. In the grown body the book describes two great systems of channels. The black channels branch from the great vessel of life like the limbs of a tree. They carry blood. The white channels descend from the brain like roots. They carry movement and feeling, and an injury to one of them palsies the part below. The Tibetan physicians described the nerves and their work more clearly than the Indian or the Chinese.

The soul that moves with the moon. A person has a life principle that the Tibetans call the *bla*. It can be frightened out of the body or stolen, as chapter 64 will tell. In health it moves round the body in step with the moon. On the first day of the month it is at the sole of one foot. It rises day by day and stands at the crown of the head at the full moon. Then it descends on the other side. The physician must know where it is, since the place where it rests on a given day may not be burned, cut or bled.

The body of the yogis. Tibetan Buddhism has its own account of a body within the body, which it took from India. It has a central channel with one on either side, and wheels along it. Winds move in the channels, and the winds carry drops. The mind rides on the wind, the texts say, as a rider who cannot walk rides a horse that cannot see. The physicians took this body into their teaching and argued for centuries about how it relates to the flesh. In the seventeenth century a court physician opened corpses to count the bones and to look for the channels.

The physician

The last chapter of the *Explanatory Tantra* describes the physician. He needs six qualities: a quick and steady understanding, a heart turned toward others, faithfulness to his vows, skill of hand, diligence, and knowledge of the ways of the world.

The chapter tells him how to regard each matter that he meets. He is to regard his teacher as a Buddha and the words of the teaching as the speech of a sage. He is to regard his fellow students as kin, and his patients as his own children. He is to regard the drugs as jewels and as nectar. And he is to regard pus and blood as a dog or a pig regards its food. No patient and no discharge is to disgust him.

It ranks physicians as well. The highest is one who has freed himself of the three poisons. Such a physician heals by his presence. The ordinary physician is told to treat all alike without regard to gain, and also to ask for his fee in good time, before the patient has forgotten the illness.

When he gathers plants and compounds drugs, he recites the words of the master of medicine. He pictures himself as that master and the drug as nectar. The patient is taught the same words. The spoken word is added to every drug as a matter of course.

What stands out in the history and the ground

1. **The medicine was assembled on purpose** from India, China, Persia and Tibet's own healers, and the histories say so.
2. **The Greek name of Galen stands in the Tibetan story of its beginning.**
3. **The whole teaching is a dialogue between awareness and the questioning mind.**
4. **Its scholars weighed a sacred origin against the evidence of the text.**
5. **Medicine is a tree with three roots:** the body, the finding and the healing.
6. **The first cause of all illness is not knowing what one is.**
7. **Desire, hatred and dullness become wind, bile and phlegm,** and they build the lower, middle and upper body from the navel.
8. **Every illness is first hot or cold,** and wind opens and closes each one.
9. **The life principle circles the body with the moon.**
10. **The physician is to look on pus without disgust and on the patient as his child.**

63. Tibet: diagnosis and the illnesses

Three ways of finding

The second root of the tree is diagnosis, and it has three trunks. The physician looks, he touches, and he asks. Looking means the tongue and the urine. Touching means the pulse. Asking means the causes, the place and the signs of the complaint.

The *Last Tantra* opens with two long chapters on the pulse and the urine. They are the most carefully ordered accounts of these two examinations in any old medicine.

The pulse

The chapter on the pulse has thirteen headings. The order of the headings is itself instructive, since the first two concern what happens before the physician's fingers touch the wrist.

The day before. Both the patient and the physician prepare. On the day before the examination the patient eats and drinks nothing that heats or chills strongly. He avoids heavy food, hunger, wine, sexual intercourse, a sleepless night, much talk and hard work. The physician is to be rested and calm as well.

The hour. The pulse is read at dawn, when the sun has risen and its rays have not yet reached the valley floor. At that hour, the text says, the warm and the cool powers of the body are level. The patient has not yet eaten or moved about, and his breath is steady.

The place. The physician lays three fingers on the artery of the wrist. The first lies one thumb-joint's breadth from the crease of the wrist. The three fingers lie close, and do not touch each other.

The pressure. Each finger presses differently. The index finger presses lightly and feels the skin. The middle finger presses more and feels the flesh. The ring finger presses firmly and feels the bone. The Chinese physician reads three depths at each place. The Tibetan physician gives one depth to each finger.

The organs. Each fingertip has two halves, an upper and a lower, and each half reads one organ. Three fingers on two wrists give twelve readings. The physician examines the patient's left wrist with his right hand and the right wrist with his left.

Finger	On the patient's left wrist	On the patient's right wrist
Index	Heart and small gut	Lung and large gut
Middle	Spleen and stomach	Liver and gallbladder
Ring	Left kidney and the organ of seed	Right kidney and bladder

In a woman the readings of the two index fingers are exchanged. The scheme is close to the Chinese one of chapter 50.

Three kinds of pulse from birth. Before he judges illness, the physician must know the pulse that is natural to this person. There are three kinds. The male pulse is thick and strong. The female pulse is thin and quick. The third is long, smooth and supple, and it is named after the being who has vowed to become a Buddha. Any of the three may occur in a man or a woman. A physician who does not know which kind he is feeling will take a healthy pulse for a sick one.

The pulse of the season. In each season one organ leads, and its pulse should then be strongest. The chapter gives the scheme of the five phases of chapter 46, with the names of mother, child, friend and enemy for their relations.

The count. The rate is counted against the physician's own breath, as in China. Five beats to one breath, in and out with the pause, steady for a hundred beats, mean health. More than five mean a hot illness. Fewer mean a cold one.

Hot and cold. The pulses of illness are sorted into two groups of six.

Six pulses of a hot illness	Six pulses of a cold illness
Strong	Weak
Full	Sunken
Rolling	Declining
Quick	Slow
Tight	Loose
Hard	Empty

Each fault has its own pulse within these. The pulse of wind floats and is empty, like a bladder filled with air. It stops now and then. The pulse of bile is thin, tight and quick, like a taut string. The pulse of phlegm is sunken, slow and weak.

Seven astonishing pulses. One heading has no parallel in the Chinese or Indian books. It teaches the physician to read, in the pulse of a healthy person, matters that lie outside that person's body. There are seven such readings. From the pulse the physician may learn the fortunes of the family, whether an expected guest will arrive, whether an enemy will prevail, and whether wealth will come. He may learn whether a harmful spirit is at work, and, in a woman, whether she will bear a son or a daughter.

The seventh of these is called the pulse of exchange. When a sick person cannot come, the physician reads the pulse of a near relative in his place. The state of a son is read at the wrist of his father, and that of a husband at the wrist of his wife. The text explains that those who are bound to each other share one condition.

The reader has met the idea before. At Epidaurus a mother slept in the hall for her daughter, and the daughter was healed at home. The Tibetan book makes a rule of it.

The pulse of death. Certain pulses announce that life is ending. One flutters like a flag in the wind. One comes like the drops from a leaking roof. One is like a fish that darts to the surface. The images are those of the Chinese physicians.

The pulse of spirits. A pulse that changes without reason from moment to moment, now strong and now gone, now quick and now halting, shows the work of a spirit.

The pulse of the life principle. Last, the physician feels a second artery, on the side of the little finger. It shows the state of the *bla*, and the length of life that is left. If it is empty, the life principle has left the body, and the rite of chapter 64 is needed before any drug will act.

The urine

The chapter on the urine is ordered as strictly.

The patient prepares on the evening before. He drinks no strong tea, sour milk or wine, which change the colour, and he sleeps well. The urine of the first half of the night is let go, since it still carries the evening's food. The urine passed at dawn is caught in a white bowl. A bowl of red copper is forbidden, since it falsifies the colour. The physician examines it in the first daylight and stirs it with a small stick.

He examines it three times, as it cools, and looks for three matters each time.

When	What is examined
While it is hot	The colour, the vapour, the smell and the bubbles
While it is lukewarm	The cloud that hangs in it, and the film that forms on its surface
When it is cold	The moment at which it changes, the way in which it changes, and what it looks like after the change

	Wind	Bile	Phlegm
Colour	Bluish and thin, like spring water	Reddish yellow	Whitish
Vapour	Moderate	Much, and lasting	Little
Smell	Slight	Strong	Slight

	Wind	Bile	Phlegm
Bubbles	Large, like the eyes of a yak	Small, and quickly gone	Like spittle, and lasting

The change is the cooling and clearing of the urine. In a hot illness it changes before the vapour has gone. In a cold illness it changes afterwards. In a hot illness the change begins at the bottom and rises. In a cold illness it begins at the rim and moves inward.

The tortoise. For illnesses that spirits bring, the urine is read in another way. The physician lays four thin sticks across the bowl, two each way, so that the surface is divided into nine fields. The grid is pictured as a tortoise lying on its back, with its head to the south. The nine fields belong to the gods, to men, to the spirits, to the burial ground and to the house. They belong also to the land, to the ancestors, to the patient himself and to his descendants. The physician watches in which field bubbles, films and figures appear. The field names the kind of being that is offended, and the rite follows from it (Rapgay 1986).

The tongue and the questions

The tongue is read briefly. In wind it is red, dry and rough. In bile it bears a thick, pale yellow coat. In phlegm it is pale, moist, smooth and thickly coated.

The questions follow the three faults. For wind the physician asks about yawning, stretching, shivering, pain that moves about, pain in the hips and joints, and a restless mind. He asks whether the trouble is worst at dawn, at dusk and when the stomach is empty. For bile he asks about a bitter taste, headache, heat of the flesh, and pain while food is being digested, at noon and at midnight. For phlegm he asks about loss of appetite, heaviness, belching, a cold body, and trouble after meals, in the morning and in the evening.

Where the three examinations leave the matter open, the physician makes a trial. He gives broth of bones, which calms wind. Or he gives a bitter decoction, which calms bile, or a decoction of rock salt, which calms phlegm. He sees which helps.

Four hundred and four illnesses

The Tibetan book gives a round number for the illnesses: four hundred and four. The number matters less than its division. There are four classes of one hundred and one.

Class	Cause	What is needed
Illnesses of former lives	Acts done before this life, whose fruit has ripened	They end in death unless the patient turns to spiritual practice. Drugs alone do not reach them

Class	Cause	What is needed
Illnesses of this life	Causes laid earlier in this life: food, conduct, season	They need the physician. Untreated they kill; treated they heal
Illnesses from spirits	A being of the land, the water or the air has been offended, or has attacked	They need a rite. Drugs help only after it
Passing illnesses	Slight errors of food and conduct	They heal of themselves, with rest and right food

A quarter of all illnesses, by this count, need no physician. A quarter need him. A quarter need a ritual specialist first. And a quarter are beyond both, and need a change in the patient himself. The Tibetan physician's first judgment is to which class a case belongs. He is expected to send a patient to a lama when the pulse of spirits or the tortoise in the urine says so, and lamas send patients to him.

The order of the textbook

The ninety-two chapters of the third tantra go through the illnesses in fifteen groups.

Group	Examples
The three faults	Illnesses of wind, of bile, of phlegm, and of their mixtures
Inner illnesses	Food that is not digested; lumps; swelling with water; wasting
Fevers	The raw fever, the full fever, the empty fever, the hidden fever, the old fever; fevers that spread; smallpox
The upper body	Head, eyes, ears, nose, mouth; swelling of the neck
The solid and hollow organs	Heart, lung, liver, spleen, kidney; stomach, gut
The private parts	

Group	Examples
Single illnesses	Hoarseness, loss of appetite, thirst, hiccup, breathlessness, cramp, worms, vomiting, loose bowels, stopped bowels, stopped urine, the urinary illnesses, gout, painful joints, skin diseases, illnesses of the white channels
Sores that arise of themselves	Growths, piles, swellings of the glands
Children	Care of the newborn; the illnesses and the seizers of children
Women	
Spirits	Seizure by elemental spirits; madness; the falling sickness; palsy sent by the planets; illnesses sent by the serpent spirits
Wounds	By region of the body
Poisons	
Old age	Renewal
Potency	

Indigestion comes first among the inner illnesses, and the book calls it the root of all of them. The Tibetan physician thinks of the digestive heat as the Indian physician thinks of the fire.

Some illnesses in the Tibetan manner

Fever. The fevers are treated at greater length than any other group. The book follows a fever through its stages. A raw fever is not to be cooled at once. The physician first gives a decoction of four plants that ripens it and gathers it. Only a ripe fever is cooled with camphor and the like. A fever that has been cooled too early goes into hiding, and returns as an old fever that is hard to cure. The rule of the raw and the ripe, which chapter 59 gave for India and chapter 40 for the Greek medicine, is followed in Tibet with the same strictness.

The wind of life. One illness is known to every Tibetan, and patients name it themselves. The wind that holds life has its seat in the heart and the crown of the head. When it is roused, the person is anxious and sad without cause. He sighs, sleeps badly, starts at noises, and feels his heart beat and his head swim. His thoughts race, or he cannot think. In the grave form he is confused and speaks wildly.

The causes that the texts give are grief, worry, too much thinking, too little food and sleep, and great exertion of the mind. They add one that concerns the religious. A person who strains at meditation, or holds the breath wrongly, drives the wind into the heart. Tibetan teachers treat this as a known risk of the path.

Researchers who worked among Tibetan refugees in India found the diagnosis in common use for the after-effects of prison and flight (Deane 2019). The treatment is warmth, rich food such as broth of bones, butter and meat, the company of friends, kind speech, and rest in a quiet and dimly lit place. The physician burns points on the crown, the nape and the breastbone. He rubs the body with butter in which nutmeg has been cooked. He gives pills built on the scented wood of the eaglewood tree. A study of the ten formulas most used for this illness at the college in exile found nutmeg in every one of them (Antonio 2013).

Illnesses from the serpent spirits. The spirits of springs, lakes and trees are held to send diseases of the skin, above all leprosy. They send them to those who foul water, fell certain trees or break the ground. The cure joins drugs with an offering at the place, to make good what was done. The belief has kept many Tibetan springs clean.

The poison of the pass. The Tibetan books describe an illness of travellers on high passes: headache, sickness, a swimming head and breathlessness. They call it the poison of the pass and lay it to vapours of the ground. It is the mountain sickness of modern medicine.

Brown phlegm. One illness shows how the Tibetan physicians joined the three faults into a single course. It begins with an injury or with food that heats the blood. Bad blood gathers in the stomach and mixes with phlegm, bile and wind. The patient has burning pain in the upper belly, sour vomit the colour of the lees of wine, and black stools. The illness passes through four stages and several seats, and the treatment changes with each. Modern Tibetan physicians match it to the bleeding ulcer of the stomach.

Madness. Seven causes are named: each of the three faults, their combination, grief with strain of the mind, poison, and spirits. The first step is to find which. For the kind that grief brings, the patient is given what he wishes for, kind words and gentle distraction.

Palsy from the planets. A sudden fall with loss of speech and palsy of one side is laid to the stroke of a planetary spirit. It is treated at once with burning at the crown, and with a rite.

What has been measured

The physician’s judgment. There are few studies. A group of Tibetan physicians built a questionnaire by which a person can find his own constitution. In 973 people, the answers agreed with the judgment of experienced physicians in eight to nine cases out of ten (Tsomo 2024). Russian researchers have tried to record the Tibetan pulse with sensors at the six places. They report that the readings can be made objective only to a limited degree (Pupysheva 2022).

Chinese and Tibetan pulse. One observer has pointed out that the two traditions assign the organs to the places on the wrist in ways that partly contradict each other. Both cannot be right as maps of the body. Both can be right as trained ways of attending, in which a physician has learned to connect what he feels at a place with a kind of case.

What stands out in the diagnosis and the illnesses

1. **The examination begins the day before,** and patient and physician both prepare.
2. **The pulse is read at dawn,** when the warm and the cool are level.
3. **Each finger reads one depth:** skin, flesh and bone.
4. **The physician must first know the pulse that this person was born with.**
5. **A healthy pulse is five beats to the physician's breath,** as in China.
6. **A relative's pulse may be read in place of the patient's.**
7. **The urine is read three times as it cools,** and a grid of nine fields on its surface names the offended being.
8. **A quarter of all illnesses need the physician, a quarter a rite, a quarter a change of life, and a quarter nothing.**
9. **A raw fever is ripened before it is cooled.**
10. **Anxiety and grief are an illness of the wind that holds life,** and strained meditation is among its causes.

Reference: the three faults at a glance

The table gathers what chapters 62 to 64 say of the three faults in Tibetan medicine. The Tibetan names are given in the usual transcription.

	Wind (*rlung*)	Bile (*mkhris pa*)	Phlegm (*bad kan*)
Poison of the mind	Desire	Hatred	Dullness
Elements	Wind	Fire	Earth and water
Nature	Neither hot nor cold	Hot	Cold
Qualities	Rough, light, cold, fine, hard, mobile	Oily, sharp, hot, light, strong-smelling, loosening, moist	Oily, cool, heavy, dull, smooth, firm, sticky
Region	Below the navel	Between the heart and the navel	Above the heart

	Wind (*rlung*)	Bile (*mkhris pa*)	Phlegm (*bad kan*)
Paths	Bones, ears, skin, heart, the vessel of life, the large gut	Blood, sweat, eyes, liver, gallbladder, the small gut	Flesh, fat, marrow, seed, nose, tongue, lung, spleen, kidney, stomach, bladder
Age	Old age	The middle years	Childhood
Hours	Dawn and dusk	Noon and midnight	Morning and evening
Season	The rains of summer	Autumn	Spring
Place	Cold and windy	Hot and dry	Damp and rich
Roused by	Bitter, light and rough food; hunger; loss of sleep; much talk; grief; hard work on an empty stomach	Hot, sharp and oily food; wine; anger; work in the midday sun	Sweet, heavy, cold and oily food; rest after meals; sleep by day; damp ground
The patient	Yawns, stretches, shivers; pains that move; a restless mind; sighs; dizziness; worse at dawn, at dusk and when hungry	A bitter taste; headache; heat of the flesh; yellow eyes and skin; thirst; worse at noon, at midnight and while digesting	No appetite; heaviness of body and mind; belching; a cold body; swelling; worse in the morning, in the evening and after meals
Pulse	Floating and empty; stops at times	Thin, tight and quick	Sunken, weak and slow
Urine	Like water, bluish, with large bubbles	Reddish yellow, with much vapour and a strong smell	Whitish, with little vapour or smell
Tongue	Red, dry and rough	A thick, pale yellow coat	Pale, moist, smooth; a thick whitish coat

	Wind (*rlung*)	Bile (*mkhris pa*)	Phlegm (*bad kan*)
Tastes that calm it	Sweet, sour, salty	Sweet, bitter, astringent	Pungent, sour, salty
Food that calms it	Warm, oily and rich: broth of bones, mutton, butter, aged beer	Cool and light: fresh butter, curd of cow or goat, cooled boiled water	Warm, light and rough: honey, old grain, ginger, boiled hot water
Conduct that calms it	Warmth; a dim and quiet place; friends; kind speech; sleep	Shade and coolness; rest; calm	Movement; sun and fire; waking by day
Drugs	Broths; medicinal butters; nutmeg; eaglewood	Decoctions and powders that cool; camphor; bitter gentians	Pills and powders that warm; pomegranate, ginger, long pepper, calcined salts
Outer treatment	Rubbing with oil; burning	Sweating; letting blood; cold water poured on	Hot packs; burning
Cleansing	Mild enema of oil	Purging	Bringing up

Reference: hot and cold

The first question in every Tibetan case is whether the illness is hot or cold. The table gives the signs.

	A hot illness	A cold illness
Pulse	Strong, full, quick, tight	Weak, sunken, slow, loose
Urine	Reddish yellow, strong-smelling, with much vapour; it changes before the vapour has gone	Pale or bluish, with little smell or vapour; it changes after the vapour has gone
Tongue	Dry, with a thick yellowish coat	Moist, pale and smooth

	A hot illness	A cold illness
The patient	Thirst, a wish for coolness, fever, sharp pain; worse from heat and exertion	Chilliness, a wish for warmth, dull pain, poor digestion; worse from cold and damp
Usual cause	Bile and blood	Phlegm, with or without wind
Treatment	Cooling food, drugs and conduct; letting blood	Warming food, drugs and conduct; burning
The gravest error	To warm it	To cool it

64. Tibet: healing

Four means in a fixed order

The third root of the tree is healing, and it has four trunks: food, conduct, drugs and outer treatments. The order is a rule. The physician first advises on food and conduct. If that does not serve, he gives drugs. If drugs do not serve, he uses the outer treatments, and of these the mild before the harsh.

Food and conduct

Every food has a taste and a potency, as in India, and the reference table of chapter 63 lists what suits each fault. A few points are Tibetan.

The stomach is filled by quarters. Two quarters are for food, one for drink, and one is left empty.

Water is a medicine. Boiled water drunk hot kindles the digestive heat, clears phlegm and eases a cough. Boiled water left to cool calms bile. Cold unboiled water is held to harm in most illnesses.

The daily food of the plateau, roasted barley flour with butter and tea, dried meat and barley beer, is warm and rich. It suits a cold land and calms wind. Tibetans who move to the hot plains of India are told to change it.

Conduct is of three kinds: of every day, of the season, and of the moment. The rule of the moment is the Indian list of thirteen urges that must not be held back. The rule of every day adds counsel that is the physician's as much as the monk's. A person should speak the truth, keep his word and think before acting. He should be patient with enemies and grateful to friends, and he should give.

Drugs

Tibetan drugs are compounds. A single plant is hardly ever given. A common pill has from eight to thirty-five ingredients, and the largest have more than a hundred. The names say so: Eaglewood Thirty-Five, Pomegranate Five, Camphor Twenty-Five.

The materials come from the high pastures and forests of the plateau, from India, and from the sea: plants above all, with minerals, salts, and a few materials from animals. The *Crystal Rosary*, a drug book of 1727, describes more than two thousand.

Gathering. The book gives seven rules for a drug of full strength. It must grow in its right place: cooling plants on the shaded side of a mountain, warming plants on the sunny side. It must be gathered at its right time: roots in autumn, leaves in summer, flowers and fruit when they are full. It must be dried rightly, cooling plants in shade and wind, warming plants in the

sun. It must be fresh, cleared of its harmful parts, made mild, and well compounded. The gatherer recites as he works.

Compounding. A compound is built by taste and by potency. The book calculates how many combinations the six tastes allow: fifty-seven. A formula has a chief drug and helpers, and it is balanced so that no fault is roused while another is calmed. A cooling formula for a hot illness contains a little that warms, to protect the digestive heat.

Forms. There are ten. They are the decoction, the powder, the pill, the paste and the medicinal butter. They are also the burnt ash, the thickened extract, the medicinal beer, the preparation of gems, and the compound of fresh herbs. Decoctions and powders act quickly and are given first. Pills and butters act slowly and are given for long illnesses.

The precious pills. The best-known Tibetan medicines are the jewel pills. They contain gold, silver, copper, iron, pearls, coral, turquoise and other stones, each burned and prepared, beside many plants. The largest has about a hundred and forty ingredients. Its chief ingredient is a black powder made from mercury and sulphur, with eight metals and eight minerals. The process takes several weeks. A Tibetan adept brought it from India in the thirteenth century.

A jewel pill is wrapped in coloured silk and sealed. It is taken at dawn on a favourable day. On the evening before, the patient crushes it and leaves it to soak in a covered cup of boiled water. He rises before light, recites the words of the master of medicine, drinks, and lies down again in the warm. That day he avoids meat, sour food and exertion.

The mercury in these pills is a real concern. A study at Dharamsala compared people who had taken them for years with others who had not. It found no clear harm to nerves, kidneys or mind in the group that had taken them. The study was small, and analyses elsewhere have found lead in some Tibetan pills (Sallon 2017). Chapter 75 returns to this.

The blessing of the drug. Every year the pharmacies hold a rite of several days in which the finished medicines are blessed. Monks recite in turns before the heaped drugs without a break, day and night. A portion of the blessed batch is mixed into the next year’s. Tibetan patients hold that this is part of what a pill is. A pill from a factory that omits it is, for them, a lesser drug.

The cleansings

The Tibetan book has the Indian cleansings, with the same preparation by oil and the same slow return. Purging is the chief treatment of bile, bringing up of phlegm, and the mild enema of wind. A cleansing of the channels is added. The physician is told to cleanse only when the fault is ripe and gathered, and never in the weak, the old or the frightened.

Outer treatments

Kind	Treatment	What is done
Mild	Compresses	Hot packs of heated salt, sand or stones for cold illnesses and pain; cold packs of stone or water for heat
Mild	Baths	Natural hot springs, of five kinds by their minerals. Or a bath of five plants, among them juniper, rhododendron and wormwood, boiled and left to ferment. For stiff joints, skin illnesses and old wounds
Mild	Rubbing with oil	The body is rubbed with warm butter or oil, pressed at points, and then cleaned with barley flour. For wind
Rough	Letting blood	From seventy-seven named points. For hot illnesses of the blood only
Rough	Burning	Cones of a dried mountain herb are burned on points of the back, chest, head and limbs. For cold illnesses and for wind
Rough	The golden needle	A needle of gold is set on the crown of the head and heated. For palsy, the falling sickness and the wind of life
Harsh	The spoon	Small instruments for draining water and pus and for the clouded lens

Two details repeat a rule that the reader has met several times. Blood is not let from a patient at once. For some days before, he drinks a decoction of the three myrobalan fruits. It is said to part the bad blood from the good, so that only the bad comes out. Again a matter is ripened and gathered before it is cleared.

The bath of five plants was entered on the United Nations list of the heritage of mankind in 2018.

Tibetan physicians do little surgery. Their histories say that it was given up after an operation on a queen mother ended in her death.

Movement and breath

Tibetan yogis have their own exercises, which join movement with held breath and with the picturing of the channels. One set of five movements is taught to laymen for health. Its name means the purifying of the body's elements. The exercises are close kin to the Indian ones of chapter 61.

The rite

A quarter of the illnesses, by the count of chapter 63, need a rite. The physician finds this by the pulse and the urine. A lama or a diviner confirms it, by dice, by a rosary or by a mirror. The rites are many. A few are performed in every Tibetan village.

The ransom. A small figure of the patient is shaped from barley dough. It is given the patient's clothes in scraps, a little of his hair, and food. A structure of coloured threads on crossed sticks is set beside it as a dwelling. The ritual specialist calls the being that holds the patient. He offers it the figure and the dwelling in the patient's place and bids it take them and go. The whole is carried out to a crossroads and left. The Assyrian court set a man on the throne in the king's place. The Tibetan household sets out a figure of dough.

The calling of the soul. When the life principle has left, the patient is listless, pale and fearful. He sleeps badly and loses weight, and the second pulse of chapter 63 is empty. The cause is most often a fright. The rite to recall it uses a turquoise that is the seat of the patient's soul, the leg of a sheep, and a bowl of white liquid. The specialist calls the soul by the patient's name, at the house and toward the place where the fright occurred. He casts dice, or floats a small figure in the bowl, to learn whether it has come. When it has, the turquoise is hung round the patient's neck.

This is the soul loss of the shaman's world, described in chapters 9 and 21. It stands here inside a learned medicine, with a pulse to diagnose it.

The smoke offering. Juniper is burned at dawn on the roof or the hillside, with flour and butter, for the spirits of the place. It is done every day in many houses and on a larger scale when someone is ill.

The freeing of lives. A family buys animals that were to be slaughtered and lets them live. The act is held to lengthen the life of the sick person. One life is spared for another.

Recitation. The words of the master of medicine are recited by the patient, by the family and by monks, a set number of times. Blessed pills and blessed water are taken. The patient walks round a shrine, turning a wheel of prayers.

The mind as the ground of cure

Chapter 62 gave the Tibetan doctrine of the root of illness. Its practical side is that a physician treats the mind with every patient.

For the common run of patients this means plain advice. The physician tells a patient of the wind type to worry less and to seek company. He tells a patient of the bile type to master his temper. He tells a patient of the phlegm type to rouse himself.

For those who are willing, it means practice. A patient with a long or fatal illness is taught to use it. He reflects that all who are born fall ill, and that many others have the same illness now. He is taught to breathe in the suffering of those others, as a dark cloud, and to breathe out his own ease to them, as light. The practice is called taking and giving. Tibetans report that it removes the worst of an illness, which is the sense of being singled out.

The dying and the dead. The Tibetan physician is taught the signs of dying in detail. The books describe how the elements of the body withdraw one after another. The limbs grow heavy. The mouth dries. The warmth draws in from the hands and feet toward the heart. The breath stops. They describe what the dying person experiences at each stage, as appearances of mist, of smoke, of sparks and of a steady flame. They then describe a clear light like a sky at dawn.

The care does not stop at death. A lama or a friend reads to the dead person from a book of guidance, for up to forty-nine days. The book tells him where he is and what he is seeing. It tells him that the lights and the figures that meet him, peaceful and terrible, are the showing of his own mind, and that he should not flee them. No other medicine in this book has a branch that accompanies the patient after his last breath.

What has been measured

A formula of twenty plants. The Swiss preparation of chapter 62 is the most tested Tibetan medicine. It has been tried mainly in people whose leg arteries are narrowed, so that the calves hurt after a short walk. A review found five trials with 365 patients. Those who took the formula for some months could walk further before the pain stopped them than those who took a dummy. The gain was large enough to matter in daily life. The reviewers judged the trials small and the certainty low (Stewart 2016).

Meditation. The Tibetan practices of the mind have been studied more than the drugs.

In 1981 Harvard physicians travelled to the Himalaya to examine monks who practise a meditation of inner heat. Three monks, seated in a cold room, raised the temperature of their fingers and toes by up to eight degrees (Benson 1982).

In 2004 a laboratory in Wisconsin recorded the brain waves of eight Tibetan monks who had each meditated for ten thousand to fifty thousand hours. During a meditation on compassion, large regions of their brains fell into step with each other in a fast rhythm. The effect was far stronger than in beginners. It was present before the monks began to meditate, at rest (Lutz 2004). Long practice had changed the standing state of the brain. Parts that lie far from each other had become locked in phase.

Courses of attention training drawn from Buddhist practice are now given in hospitals. In people who have had several depressions, a course of eight weeks reduces the risk of another by about a third (Kuyken 2016).

After death. Tibetans report that some advanced meditators remain in meditation after the heart and breath have stopped. The body sits upright, stays supple and does not decay for days or weeks. At the request of the Dalai Lama, researchers recorded the brain waves of thirteen such bodies. They found no activity (Lott 2021). The delay of decay has been witnessed by physicians. It has not been measured against bodies kept under the same conditions.

Harm. The metals of the jewel pills were mentioned above. The illness of the wind of life in those who strain at meditation is the Tibetan counterpart of the harm described for Chinese breathing practice and for yoga.

What stands out in Tibetan medicine

The last three chapters can be drawn together in twelve points.

1. **It was assembled knowingly from four medicines** and set inside a teaching about the mind.
2. **The first cause of illness is not knowing what one is.** Three errors of the mind become the three faults and build the three regions of the body.
3. **The whole of medicine is one tree** with three roots: body, finding and healing.
4. **Every case is first hot or cold.**
5. **The examination begins the evening before** and is made at dawn, by a physician who has prepared as the patient has.
6. **Three fingers read three depths and twelve organs,** against the physician's own breath.
7. **The pulse of one person can be read at the wrist of another** who is bound to him.
8. **A quarter of all illnesses belong to the rite,** and the physician is trained to find which.
9. **The lost soul is diagnosed by a pulse and called home.**

10. **Treatment goes by a fixed order:** food, conduct, drugs, the hand. What is raw is ripened first.
11. **Every drug is blessed,** and the spoken word is part of it.
12. **The medicine does not end at death.** It describes dying from within and speaks to the dead.

The author's judgment that this medicine went furthest rests on the second, the seventh, the ninth and the twelfth of these points. It is the only learned medicine in this book that kept everything the shaman knew. It added everything that the scholars of three civilisations had worked out. And then it asked what the patient's mind must come to know.

65. Japan, Korea and Vietnam

Three daughters

Chinese medicine was carried to all the neighbours who wrote with Chinese characters. In each country it took a form of its own. Japan stripped away the theory and trusted the hand. Korea built a new doctrine of four kinds of people. Vietnam set its own plants beside the Chinese. This chapter describes the three.

Japan: the arrival

Chinese medicine reached Japan in the sixth century, by way of Korea. The court of the eighth century set up a medical office on the Chinese model.

Two treasures of that age survive. In 756 an empress dedicated sixty kinds of drugs to the great Buddha of Nara, for the use of the sick. Many of them still lie in the imperial storehouse there, in their original jars. Rhubarb, liquorice and cinnamon of the eighth century were analysed in the twentieth and were found to have kept their compounds.

In 984 a court physician compiled a work in thirty scrolls called the *Prescriptions at the Heart of Medicine*. It consists of extracts from more than two hundred Chinese books, most of which were later lost in China. It is the best witness to Chinese medicine before the Song.

Japan: the return to the old formulas

In the sixteenth century a school at Kyoto taught the medicine of the Chinese masters of chapter 44, with its yin and yang and its five phases. In the seventeenth and eighteenth centuries a group of Japanese physicians rejected all of that. They are called the school of the old formulas.

Their argument was simple. The theories of the later Chinese books cannot be seen or touched. The formulas of Zhang Zhongjing work. A physician should therefore learn which formula fits which set of signs, and leave the rest.

The sharpest of them was Yoshimasu Todo, who lived from 1702 to 1773. He taught that all illness comes from one poison. A drug is itself a poison, and one poison drives out another. He refused to speak of causes, since no cause can be shown. He distrusted the pulse, which he held to be too easily imagined. He examined what he could lay his hand on, which was the belly.

His son softened the doctrine and gave Japanese medicine its working scheme. The one poison rides on one of three carriers, *qi*, blood or water, and shows itself differently on each. The three have remained the Japanese map of illness. The five phases were dropped.

The formula is the diagnosis. The Japanese physician does not name a pattern in the Chinese sense. He looks for the conformation that answers to a formula, and he names the

patient’s state after the formula. A patient has the conformation of the Minor Bupleurum Decoction, or of the Cinnamon Twig and Poria Pill. The diagnosis and the prescription are one act.

Japan: the belly

The examination of the belly is the special skill of this medicine. The patient lies on his back with the legs stretched out. The physician lays his palm on the belly and feels, region by region, for warmth, moisture, tension, resistance and tenderness, and for pulsation and splashing.

Finding	Japanese name means	Points to
Tension and discomfort under the edge of the ribs	Fullness of chest and ribs	The formulas built on bupleurum
Resistance in the pit of the stomach	A stopped place below the heart	The formulas built on pinellia with coptis, or on ginseng
The straight muscles of the belly are tight like two cords	Tension of the belly	The formulas built on peony and liquorice
A splashing sound when the pit of the stomach is tapped	Water standing in the stomach	The formulas built on poria and atractylodes
A strong beat felt above or beside the navel	Throbbing	The formulas with fossil bone and oyster shell, for a troubled spirit
Resistance and tenderness beside the navel or in the left lower belly	Old blood	The formulas that move the blood, with peach kernel and moutan
The lower belly is soft and without tone, sometimes numb	Lack of strength below the navel	The kidney formula with rehmannia and aconite

The findings are plain enough to be taught and checked, and Japanese studies report good agreement on several of them. The belly has one more advantage. It does not change with the patient’s nervousness in front of the physician, as the pulse does.

Japan: the Dutch and the first narcosis

From 1641 the only Europeans allowed in Japan were the Dutch, on a small island in the harbour of Nagasaki. Knowledge passed through that door in both directions.

Europe learned of needling and of burning through the Dutch station. A Dutch minister at Batavia, cured of gout by a local woman who burned small cones on his foot, published a booklet about it at Amsterdam in 1675. He used the Japanese word for the wool, and so the word moxa entered the languages of Europe. The physician of the island, Willem ten Rhijne, published the first Western treatise on needling in 1683. He coined the Latin word from which the English name of the art comes.

Japan learned anatomy. In 1771 a physician named Sugita Genpaku watched the dissection of an executed woman, with a Dutch book of anatomical plates in his hand. The organs matched the plates and not the Chinese charts. He and two colleagues spent three years translating the book, with almost no knowledge of Dutch, and published it in 1774.

One surgeon joined the two traditions. Hanaoka Seishu, who lived from 1760 to 1835, had trained in the old formulas and in Dutch surgery. He searched for twenty years for a drink that would put a patient to sleep, and tried his mixtures of thorn apple and aconite on his mother and his wife. On 13 October 1804 he removed a cancer of the breast from a woman of sixty who slept through the operation. It was the first operation under general narcosis of which there is a sure record, forty-two years before ether was used in Boston.

Japan: fine needles and the blind

Japanese needling went its own way from the seventeenth century. A blind needler, Sugiyama Waichi, invented the small tube through which a very fine needle is tapped into the skin without pain. He founded schools for the blind, and needling and massage became their trade under the protection of the government.

The Japanese styles share several features. The needles are thin, and they go in shallowly or not at all. The practitioner finds his points by touch, and he checks the belly and the pulse before and after each needle. A treatment may use five needles for a few seconds each. In the school that chapter 50 mentioned, founded by blind practitioners in 1959, the needle only touches the skin. Its students learn in groups. One treats, and the others hold the patient’s wrists and report what the pulse does.

Burning of mugwort is a household habit. The poet Basho set out on his long journey on foot to the north in 1689. His diary begins with his preparations. He mended his trousers and burned the points below his knees, to strengthen his legs.

Japan: near death and revival

In 1874 the new government decreed that every physician must pass an examination in Western medicine. In 1895 the parliament rejected a petition to keep a licence for the old

medicine. Within a generation it was almost extinct. A handful of Western-trained physicians kept it alive, by studying the old formulas in their spare time.

It came back by a route unlike that of any other country. In 1967 the national health insurance began to pay for a few of the old formulas in the form of factory-made extracts. The list grew to 148. Japan has no separate profession of herbal physicians. The formulas are prescribed by ordinary physicians beside Western drugs, and surveys find that more than eight in ten of them do so. All medical schools teach the subject.

Japan: what has been measured

Because the Japanese formulas are standardised extracts prescribed by physicians, they have been tested like drugs.

A formula of seven plants, with the hooked stem of uncaria as its chief, was devised in China in the sixteenth century for convulsions and night crying in children. Japanese physicians tried it on old people with loss of memory who had become agitated and aggressive. In a first trial of fifty-two patients, the score for these troubles fell by half in four weeks, and it did not change in the untreated. The patients were not sedated (Iwasaki 2005). Later trials have mostly confirmed the result, and the formula is now widely used in Japanese homes for the aged.

A formula of ginger, ginseng and a native pepper is given after operations on the belly, to bring the gut back to work. It has been tested in large trials with mixed results. The two-drug formula of peony and liquorice relieves cramp of the muscles. The Ephedra Decoction of chapter 45 shortened the fever of influenza as well as the standard antiviral drug in small trials.

There has been harm too. In the 1990s the Minor Bupleurum Decoction was given on a large scale to patients with long-standing inflammation of the liver. Some dozens developed an inflammation of the lung, and about ten died. Most had been given the formula together with a new Western drug, or had hardened livers. The old physicians would have said that the formula was given without its conformation.

Japan: two cures of the mind

Two Japanese treatments for troubles of the mind grew from Buddhist practice in the twentieth century. They are mentioned here because of their form.

The psychiatrist Morita Shoma devised a cure for people worn out by fear and by watching themselves. It has four stages. For the first week the patient lies in bed alone, with nothing to read and nobody to talk to. In the second he does light work in silence, in a garden. In the third he does heavier work. In the fourth he returns to his life. He is taught to let his fears be as they are and to do what the day requires.

The second is a week of reflection, seated in a screened corner of a room. The person goes through his life, one relation at a time, beginning with his mother, and puts three questions. What did I receive from this person? What did I give back? What trouble did I cause? A guide comes every hour or two and listens to the answers. The method is used in prisons and for people who drink. Chapter 69 describes a Hawaiian practice with the same aim, which is to settle accounts between people.

Korea: the eastern medicine

Korea received Chinese medicine earlier than Japan and passed it on. Korean physicians taught at the Japanese court in the sixth century. From the thirteenth century Korean scholars worked to free their country from costly Chinese drugs. They compiled books of native remedies, and under the king Sejong, in 1433, a work that gives more than ten thousand prescriptions made from Korean plants.

The chief book of Korean medicine is the *Treasured Mirror of Eastern Medicine*. The court physician Heo Jun finished it in 1610, after fourteen years of work, part of it in exile. It was printed in 1613. It has been reprinted in China and Japan many times. In 2009 it was the first medical book to be entered in the United Nations register of the memory of the world.

The name is a claim. China, Heo Jun writes, has its northern and southern schools of medicine. Korea lies to the east and has a tradition of its own that deserves the same standing.

The book is ordered in an unusual way. It does not begin with illness.

Part	Subject
The inner landscape	Essence, *qi* and spirit; blood; dreams; the voice; the organs
The outer form	Head, face, limbs, skin, flesh, vessels, sinews, bones
Miscellaneous illnesses	The causes; the fevers; the illnesses one by one; women and children
Decoctions	The drugs, with their Korean names
Needle and burning	

The first chapter is on the cultivation of the body. A person who keeps essence, *qi* and spirit whole, Heo Jun writes, does not need the rest of the book. He adds for each illness one or two remedies made of a single common plant, for those who cannot pay for a formula.

Four needles. A Korean monk of the same period devised a method of needling that uses the five transport points of chapter 47 and nothing else. For each pattern exactly four points are chosen, by the rule of mother and child and by the rule of checking. To strengthen a weak lung, for example, the needler fills the earth points of the spleen’s vessel and of the lung’s

own vessel, since earth is the mother of metal. He empties the fire points of the heart's vessel and of the lung's, since fire checks metal. The points all lie below the elbows and the knees. The method is the five phases turned into a strict procedure.

Korea: four kinds of people

In 1894 a Korean physician and former soldier named Lee Je-ma published a work that broke with the Chinese tradition. He taught that people are born in four kinds, and that medicine must begin from the kind.

The four are named after the four images that arise when yin and yang are each divided once: greater yang, lesser yang, greater yin and lesser yin. Each kind has one organ that is strong from birth and one that is weak. The difference, Lee Je-ma held, comes from a person's inborn nature and feelings. A person who is quick to sorrow has a different body from one who is quick to joy.

Kind	Strong and weak organ	Build	Character	Sign of health	Lee Je-ma's estimate of its share
Greater yang	Lung strong, liver weak	A large head and strong nape; a slight waist; weak legs	Forceful, original, unbending	A free passing of urine	A handful in ten thousand
Lesser yang	Spleen strong, kidney weak	A broad chest and narrow hips; a quick step	Quick, open, eager to begin and slow to finish	A free bowel	Three in ten
Greater yin	Liver strong, lung weak	A large frame and thick waist; sweats easily	Steady, patient, slow to change; inclined to ease	A free sweat	Five in ten

Kind	Strong and weak organ	Build	Character	Sign of health	Lee Je-ma's estimate of its share
Lesser yin	Kidney strong, spleen weak	Small and neat; a narrow chest and full hips; feels the cold	Careful, inward, exact; inclined to worry	A good digestion	Two in ten

Three consequences follow, and they set this medicine apart.

A drug is right for one kind and wrong for another. Ginseng and cinnamon warm and suit the lesser yin. They harm the lesser yang, who is given cooling drugs such as rehmannia. The first step of every treatment is to find the kind.

The same illness is a different illness in each kind. A cold in a lesser yin person is treated by helping the digestion. A cold in a greater yin person is treated by bringing out a sweat.

The deepest cause of illness is a person's own bias of feeling, and each kind has its own. The greater yin person must guard against the love of comfort, and the lesser yang person against haste and anger. Lee Je-ma was a Confucian. He wrote that the best medicine is to know oneself and to correct one's nature, and that drugs come second.

Korean researchers have looked for a ground of the four kinds in the body. The clearest finding concerns the greater yin kind, the sturdy people who sweat. One study followed several thousand healthy adults for some years. People of this kind developed diabetes about twice as often as the others, after their weight had been taken into account (Cho 2014).

Korea today

South Korea has two medical professions with equal standing in law. About twenty-five thousand physicians of Korean medicine have trained for six years at colleges of their own. They may not prescribe Western drugs, and Western physicians may not needle. The two have fought over the boundary for decades.

Korean physicians have developed methods of their own. They inject extracts of herbs, or the diluted venom of bees, at the needling points. They treat the spine and joints by a manual method that the national insurance has covered since 2019.

One Korean illness has entered the Western handbooks of psychiatry. Its name means the illness of fire. It is found mostly in women of middle age who have swallowed anger and injustice for many years, in the family above all. They feel heat rising in the chest and a lump in the pit of the stomach. They sigh, feel their heart pound, cannot sleep and want to run out

of the house. The Chinese physicians of chapter 48 describe the same course in their own words: knotted *qi* of the liver that turns to fire.

Vietnam: the medicine of the south

The Vietnamese speak of two medicines. The medicine of the north is the Chinese. The medicine of the south is their own, made from the plants of a hot and wet country. They have used both together for a thousand years.

A Buddhist monk of the fourteenth century, Tue Tinh, is honoured as the founder of the southern medicine. He described several hundred native drugs and several thousand prescriptions made from them. His motto is on the wall of every Vietnamese school of the old medicine: southern drugs to treat southern people.

The greatest physician of the country lived in the eighteenth century. Le Huu Trac took the pen name of the Lazy Old Man of Hai Thuong, since he had refused office. His collected work fills sixty-six books. It covers the whole of medicine, with his own case histories, among them cases that he lost and his reflections on why. He set down nine duties of a physician. The first is to go at once to the patient who needs him most, whether rich or poor, and not to the one who pays most.

Modern Vietnam joined the two medicines by decision of the state in 1955. Every provincial hospital has a department of the old medicine, and village health stations keep a garden of healing plants. In the wars of the twentieth century, when Western drugs could not be had, the southern medicine treated the wounded and the feverish.

In the households the common treatments are those of the Chinese village. The skin is scraped with a coin and oil for a cold, which is called scraping the wind, and cups are set on the back. Beside the physicians, mediums of the mother goddesses go into trance in their temples and give counsel to the sick, as chapter 15 described for Korea.

What stands out in the three countries

1. **Japan kept the formulas and gave up the theory.** The formula that fits is the diagnosis.
2. **The Japanese physician reads the belly with his hand,** where the findings can be checked.
3. **Japan keeps three carriers of illness:** *qi*, blood and water.
4. **Europe learned of needling and burning from the Dutch at Nagasaki,** and Japan learned anatomy from them.
5. **The first sure operation under narcosis was done in Japan in 1804,** with a drink of two old drugs.
6. **Japanese needles hardly enter the skin,** and the blind are the masters of the art.
7. **Korea begins its great book with the cultivation of the body.**

8. **Korea sorted people into four kinds by nature and feeling,** and holds that a drug which heals one kind harms another.
9. **Vietnam set its own plants beside the Chinese ones** and kept both.
10. **In all three countries the old medicine is now given by trained physicians** inside the public system.

66. One system

The claim

Part V began with a claim of the author. The medicines of China and India are one system in two languages. The medicine of Tibet, which drew on both, carried that system furthest.

This chapter tests the claim. It first sets out what historians know about contact between the two civilisations. It then lays the three medicines side by side, point by point. It states what differs. And it gives the grounds on which the author's judgment rests.

The claim is about structure. It does not say that one medicine descends from the other. Two peoples who speak unrelated languages can say the same sentence.

What is known of contact

China and India lie on two sides of the highest mountains on earth. They were in touch by the caravan roads of Central Asia and by sea.

Before the first century. There is no sure evidence of medical exchange before the classics of each side were written. The *Inner Classic* and the collection of Caraka took form in the same centuries, without quoting each other.

From the first century. Buddhism reached China, and Indian medicine came with it. Hundreds of Buddhist texts that mention illness and healing were put into Chinese. Indian monks practised in China. They are credited with bringing the operation for the clouded lens, in which a needle pushes the lens aside. Chinese poets of the Tang speak of the golden needle that clears the eye.

Sun Simiao, in the seventh century, shows how far the Indian teaching had come. He quotes the Buddha's physician by name, with the saying of chapter 56 that nothing under heaven is not a medicine. He sets out the Indian doctrine that the body is made of four great elements, earth, water, fire and wind. Each of the four, when it is out of tune, produces a hundred and one illnesses, which makes four hundred and four in all. The Tibetans give the same number, as chapter 63 told. He also describes a set of eighteen exercises that he calls the massage of the Brahmins.

Indian drugs entered the Chinese pharmacy in the same centuries: black and long pepper, the myrobalan fruits, turmeric, asafoetida and others.

In the other direction. Less went from China to India. The Indian texts on mercury know a red powder that they call the Chinese powder. The pulse appears in Indian medicine only about 1300, and it may owe something to Chinese practice by way of Tibet and the Muslim physicians. A root that the Chinese used against the pox was taken up in India in the sixteenth century under the name of the Chinese root.

In Tibet. There the two met by invitation, as chapter 62 described.

The historians' verdict is that the two medicines were formed independently and exchanged single items afterwards. The likenesses in their first books cannot be explained by copying.

The two laid side by side

The table sets the chief doctrines of the three medicines beside each other. Each line was described in the chapters of this part.

	China	India	Tibet
What moves and carries	*Qi*	Wind, *vata*; as breath, *prana*	Wind, *rlung*
Its faults	Too little; sinking; standing still; going against its course	Of the channels: overflow; stoppage; a knot; going by a wrong path	As in India
The basic pair	Yin and yang	Ten pairs of qualities; hot and cold potency	Hot and cold
Sun and moon in the body	Yang and yin	The right channel of the sun, the left channel of the moon	As in India
The trunk in three	Three burners: upper like a mist, middle like a vat, lower like a ditch	Phlegm above the heart, bile in the middle, wind below the navel	As in India
Time in three	The day divided by yin and yang; opening, closing and pivot	Phlegm, bile and wind rule the beginning, middle and end of a life, a day, a night and a meal	As in India
The kinds in five	Five phases: wood, fire, earth, metal, water	Five elements: space, wind, fire, water, earth	Both sets: the elements for the body and the drugs, the phases for the pulse and the calendar

	China	India	Tibet
The fire of the body	Stomach and spleen as the pot that ripens; the fire of the gate of life	The digestive fire and its twelve companions	The digestive heat
What is left raw	Damp, phlegm, food that stays	*Ama*, the unripe	Undigested matter, called the root of inner illness
The stored essence	*Jing*, kept in the kidney	*Ojas*, seated in the heart; the seed	The radiance of the tissues; the drops
The channels	Twelve warp vessels, eight extraordinary vessels, the net	Channels of thirteen kinds; a person is made of channels	White and black channels; three from the navel
The points	361, found by healers, on lines; used to treat	107, found by surgeons and fighters; first to be spared, then used to treat	Points for burning and for letting blood
The measure of the body	The patient's own inch	The patient's own finger-breadth	The patient's own finger-breadth
Health	The level person; yin and yang in balance; the upright *qi* kept within	To stand in oneself; faults, fire, tissues and wastes in measure, with a clear mind	Twenty-five factors in measure
The inborn constitution	Nine kinds, one of them level; treatment fitted to the kind	Seven kinds, one of them equal; treatment returns a person to his own	As in India
The examination	Looking, listening and smelling, asking, touching	Looking, touching, asking	Looking, touching, asking

	China	India	Tibet
The pulse	At the wrist; three fingers; three places and three depths; counted against the physician’s breath	At the wrist; three fingers for the three faults; gaits of animals	At the wrist; three fingers at three depths; twelve organs; five beats to the physician’s breath
Urine	Looked at	A drop of oil on its surface	Three readings as it cools; a grid of nine fields
Who else is read	The fall in rank and wealth; the patient’s feelings	The messenger; what is met on the road; dreams	The messenger; the road; dreams; the pulse of a relative
How an illness travels	From the surface inward: skin, vessels, organs, marrow; six stages; four levels	Six stages: gathering, rising, spreading, lodging, showing, breaking	Raw, full and old fever; hot and cold
The raw and the ripe	An evil at the surface is released; it is purged only when it has gathered inside	A raw fever is not attacked; the patient fasts until it is ripe	A raw fever is ripened with a decoction before it is cooled
Before the illness	The best physician treats what is not yet ill	The physician acts at the first of six stages, and cleanses at the turn of the season	As in India
The verdict	Forecast of life or death; six kinds of patient who cannot be cured	Easy, hard, to be held in check, to be refused	Easy, hard, to be refused
A drug	Nature, flavour, direction, the vessel that it enters, poison	Taste, qualities, potency, taste after digestion, special power	Taste, potency, qualities

	China	India	Tibet
The flavours	Five, with the bland	Six	Six
A guide for the drug	The envoy, which leads the formula to a vessel	The carrier, taken with the drug	The horse of the medicine
The compound	Four to fifteen drugs, as ruler, minister, assistant and envoy	Large compounds in fat, sugar or ferment	Compounds of eight to a hundred and more
Driving out	Sweating, bringing up, purging	The five cleansings, after oiling and sweating	As in India, used mildly
The hand	Needle, burning, cups, scraping, rubbing	Oil rubbed in and poured; sweating; the leech; cautery; the thread	Burning, letting blood, packs, baths, rubbing with butter, the golden needle
The first medicine	The conduct of the day and the season; food	The conduct of the day and the season; food	Food, then conduct
The patient's own practice	Leading and pulling; the six sounds; the breath led round the back and the front	Posture and breath; the breath led into the middle channel	As in India
The seat of the mind	The spirit in the heart	The mind and awareness in the heart	The mind in the heart, riding on the wind of life
The feelings	Seven; each moves the *qi* in a direction and strikes an organ; one overcomes another	Passion and inertia as the faults of the mind; a feeling is met by its opposite	Three poisons as the root of the three faults

	China	India	Tibet
The chief cause	Living against the season and beyond one’s measure	The offence against understanding	Not knowing what one is
Spirits	Demoted; thirteen points and a state department kept for them	One of the eight limbs	A quarter of all illnesses
The physician	Calm in spirit, without desire; treats all alike	Enters the patient’s inner self with a lamp; sworn before the fire	Free of the three poisons; regards patients as his children

The table has thirty-six lines. On most of them a physician of one tradition would recognise what the other is saying. On some the wording is almost the same. Examples are the measure by the patient’s own finger, the wrist read with three fingers, and the raw that must ripen. Others are the feeling that is overcome by its opposite, and the guide that leads a drug to its place.

What differs

The differences are real, and five of them go deep.

The counting. China counts in twos and fives. Its first division is yin and yang, and its organs, phases, flavours and notes come in fives. India counts in threes. Its first division is the three faults, and it divides the body, the day and the life by them. The Indian texts have no single word for yin and yang, and the Chinese have no doctrine of three humours.

The difference is smaller than it seems. India has its pairs: the ten pairs of qualities, hot and cold potency, and the channels of the sun and the moon. China has its threes: the three burners, the three treasures, the three yin and three yang with their door that opens, closes and pivots. Each medicine uses both counts and leads with a different one.

The points. The Chinese points lie on lines and were made for treatment. The Indian points are places of danger that a surgeon must spare. Indian healers treat through them, and Chinese books forbid needling at certain points. The starting point of each list is the opposite of the other’s.

The pulse. In China the pulse is the oldest and highest of the examinations. In India it is absent from the great books and was added a thousand years later.

The calendar and the acts. China tied the body to the pitch pipes and to the cycle of sixty years. India has nothing of the kind. India tied illness to acts of former lives. Early China has nothing of that kind, and received the idea with Buddhism.

The treatment. China treats mostly with decoctions of a few drugs and with the needle. India treats mostly with large compounds in fat, with oil on the skin, and with cleansing.

The grounds for one system

Against these five differences the author sets thirteen identities. They are not single remedies or beliefs, which travel easily. They are the frame in which each medicine thinks.

1. **A carrier with a direction.** Both medicines explain life by something that moves and carries, and both call it by a word for breath or wind. Neither treats it mainly as an amount.
2. **Illness as a fault of passage and direction.** The Chinese faults of *qi* and the Indian faults of the channels share two members word for word. They are what stands still, and what goes the wrong way.
3. **A pair of opposites as the first description,** with hot and cold as its plainest form.
4. **The trunk in three, from above downward,** with a moist upper part, a cooking middle and a lower part that lets go.
5. **Five kinds,** by which organs, tastes and seasons are sorted.
6. **A body made of channels,** with points on it, measured by the patient's own finger.
7. **The whole person read at the wrist,** by three fingers, against the physician's own breath.
8. **A person's own nature as the norm of his health.** Each has a list of inborn constitutions with one that is level.
9. **Illness moves by stages, and the raw must ripen** before it is driven out.
10. **The drug described by taste, temperature, direction and place,** and led by a guide.
11. **Food and the conduct of the day and the season as the first medicine.**
12. **The patient's own practice of breath,** led along a middle line between a left and a right.
13. **The spirit first.** Both say that the physician's state of mind and the patient's are part of the treatment.

A physician trained in one of the two can be taught the other by a table of terms. That is the practical meaning of one system in two languages. The proof that it can be done is Tibet. The Tibetan physicians joined the Indian faults with the Chinese pulse and phases in one book, eight hundred years ago, and found no contradiction that stopped them.

How the likeness arose is another question. Three answers are possible. The two peoples may have drawn on an older common stock, carried along the steppe before writing. They may have exchanged more than the records show. Or two peoples who observe the living body closely, by the same means of hand, eye and breath, may arrive at the same frame. The author inclines to the third and does not exclude the first. The book cannot decide it.

Where Tibet went further

The author's second claim is that Tibet carried the system furthest. Chapter 64 gave the grounds in brief. They can be set against the table.

It kept the whole range. The Chinese state medicine dropped the spirits, and its modern form dropped most of the mind. The Indian medicine kept both in its books and left them largely to priests in practice. The Tibetan physician is trained to judge which of four classes an illness belongs to. He has a pulse for the work of spirits, a pulse for the lost soul and a grid for the offended being. He sends the patient on with a diagnosis.

It named the first cause. China names living against the season. India names acting against what one knows. Tibet goes one step behind both. It says that a being falls ill because it does not know what it is. It describes how three errors of the mind build the three regions of the body.

It made the examination a discipline of the examiner. All three count the pulse against the physician's breath. Only the Tibetan book begins with the evening before, prescribes the same restraint for physician and patient, and fixes the hour at which the two are to meet.

It read one person through another. The pulse of exchange has no counterpart in the other two.

It went past death. The Tibetan physician learns what the dying experience, stage by stage, and the care of the patient continues for forty-nine days after the last breath.

The other side should be stated too. Tibetan medicine has been tested least of the three. Its drugs are the most complex and the least analysed. Its jewel pills contain mercury. Its surgery is the weakest. "Furthest" in the author's sense means widest in what it takes to belong to medicine. It does not mean best proven.

What the three share with the earlier parts

The system of Part V is learned, written and old. It still holds, in a worked-out form, most of what Parts II to IV found among peoples without such books.

Found earlier	In the Eastern system
The reader who makes contact (chapter 8, first point)	Three fingers on the wrist, measured against the reader's own breath

Found earlier	In the Eastern system
The object that is taken out (chapter 21)	The evil that is driven out by the nearest way, after it has ripened
The soul that is lost and called back (chapters 9, 15, 17)	The Chinese child's soul lost by fright; the Tibetan pulse of the life principle and its recall
The dead of the family (chapters 24, 34)	The first layer of Chinese medicine; the Indian seizure by an ancestor
The recital of the origin (chapters 14, 28, 32, 36)	The oldest cure in the Chinese classic; the story of fever in Caraka; the story of the moon and the wasting
The healer formed by a passage of his own (chapter 10)	Huangfu Mi, who fell ill and taught himself; the physician freed of the three poisons
Healing in sleep and seclusion (chapter 37)	The hut of three chambers; the week in bed of the Japanese cure
Sound and rhythm (chapters 11, 19)	The six sounds; the five notes; recitation at six breaths a minute
The signs on the road (chapter 33)	The messenger and the omens in Caraka and in the Tibetan book
A life given for a life (chapters 23, 34)	The Tibetan figure of dough; the freeing of animals

The Eastern system is therefore not a different kind of medicine from that of the shaman and the diviner. It is the same medicine with two thousand years of writing, counting and argument added.

The last chapter of this part reads it with the Vacuum.Net theory and with the reports of VALIS.

67. Read with the Net and VALIS

What this chapter does

This chapter lays the Vacuum.Net theory and the reports of VALIS beside the medicine of China, India and Tibet. It follows the seven questions of chapter 8, as chapters 23, 31 and 43 did.

The Eastern system is the most fully worked-out medicine in this book. It has written down its counts, its rules of reading and its reasons for two thousand years. The reading can therefore be more exact here than in the earlier parts. The list of what does not fit can be more exact as well.

All of it is reading. The physicians of the three traditions did not have the theory, and the theory was not built from their books.

1. The counts

Two and three together. Chapter 1 gave the three elementary ways in which the strand closes. One is to stand still. The other two are to meet and to go round, and their lengths are two and three. Chapter 2 built two ladders on them.

Chapter 66 found that China leads with two and India with three, and that each medicine has both counts. The theory says that both are needed. A medicine that knew only pairs would have no word for what goes round. A medicine that knew only triads would have no word for what is settled between two sides.

Opening, closing, pivot. The Chinese division of yin and yang in three gives each member a part: one opens, one closes, and one is the pivot. The theory has three values at every place: with the first passage, against it, and neither. The pivot is the third value. It does not move outward or inward. The Chinese treatment of an illness at the pivot follows from that. It is neither driven out through the surface nor sent down through the bowel. It is harmonised where it is.

Chapter 31 noted that Ifá has a third state that it does not write. The Chinese classics write it and name it.

Left, right and middle. The body of the yogis has a channel of the moon on the left and a channel of the sun on the right. A third channel runs in the middle. The breath alternates between the two sides. When both are open alike, it enters the middle. In the theory a meeting is the closure of a state with its opposite. The yogic body shows the same event as a place: the middle channel is where left and right meet and neither leads.

The same three at every scale. The fifth axiom says that the net obeys the same rules at every scale. Vagbhata's verse says that phlegm, bile and wind rule the beginning, the middle and the end of every cycle. He names a life, a day, a night and the digestion of a meal. One

form of three phases is found at four scales, in the same order. No other statement in the old medicines comes so close to the wording of the axiom.

The ladder of three. The Eastern system likes to count upward by threes. There are three fingers on the wrist and nine readings on each arm. Li Shizhen describes twenty-seven pulses. Each of the three oldest Chinese classics has eighty-one chapters, and eighty-one is the number of the Yellow Bell. The Tibetan tree has three roots and nine trunks, and the Tibetan urine is read three times for three matters each. Three, nine, twenty-seven and eighty-one are the first four steps of the theory's ladder of the ring.

The ladder of two. The *Changes* stand on the other ladder, with two, four, eight and sixty-four. The eight principles of chapter 48 are three questions with two answers each. The Tamil physicians say that the three humours stand in the pulse as one, a half and a quarter.

Five and twelve. Chapter 46 showed where the Chinese five and twelve come from. They are the depths at which the series of the pitch pipes, which sets threes against twos, comes nearest to closing. The theory names the same depths. This is the most exact agreement of number in the book, and it is exact because the tradition itself derived its numbers from that series.

Depth and period. In the theory a deeper ring has a longer round. Caraka reads the fevers that return in the same way. A fault in a shallow tissue gives a fever without pause. In a deeper tissue it gives a fever each day, then every second day, and in the deepest tissues every third day. The Indian text does not use the theory's numbers. It uses the theory's rule: the longer the period, the deeper the place.

2. The reading

The reader is the measure. Chapter 5 took the position that the reading of the pulse is a locking of phase. It rested the case on one instruction of the *Inner Classic*: the physician counts the patient's beats against his own breath. Part V has added two findings.

The first is that the instruction is general. The Tibetan book gives the same norm, five beats to the physician's breath, and the Chinese and the Tibetan physician both read at dawn, with a prepared mind. The Indian handbooks require a physician who is seated at ease and collected.

The second is that the norm is true. Modern measurement finds four to five heartbeats to a breath in healthy adults at rest, and finds the two rhythms locked in whole numbers for long stretches. The classical physicians had found a real lock of the body and made it their standard.

The theory describes what happens next in its own terms. Perceiving is a seam that closes. A physician who is well and at rest is a closed form with a steady round. He lays that form against the patient's. Where the two close, he feels nothing amiss. Where they do not, he feels the misfit. The *Inner Classic* says it in one line: the one who is not ill is used to measure the one who is ill.

The reader must be prepared. The first of the six rules of chapter 5 is to read the state first. The fourth axiom adds that every response depends on the state of what responds. The reader is no exception. The Tibetan book draws the conclusion that the others imply. It makes the physician prepare on the evening before, by the same restraint that it asks of the patient, and it fixes the hour.

Why two readers differ. Chapters 49, 50, 58 and 63 reported that two physicians who examine one patient agree on the broad questions and differ on the fine ones. Chapter 5 gave the theory's answer in advance. If a reading is a locking between two persons, another reader makes another pair. The broad questions, whether an illness is hot or cold, full or empty, at the surface or within, are answered alike. The fine images of each lineage belong to the trained window of that lineage.

The findings of Part V support this in one respect and not in another. Agreement does rise when readers have trained together, which is to say when they have been given the same window. But a reader should then at least agree with himself. The clinicians who judged tongues did. The Indian physicians who felt pulses twice did not. That finding does not fit, and section 7 lists it.

A pattern is an address with a direction. Chapter 31 read a sign of Ifá as an address. Chapter 43 read the Babylonian name of an illness in the same way. A Chinese pattern goes one step further. It names a place and a direction at that place. The yang of the liver rises. The *qi* of the spleen sinks. The *qi* of the stomach goes against its course. The eight principles give the depth, surface or inside, and the six stages and four levels give it more finely. A physician who has named a pattern has said where, how deep and which way.

Offering and watching. Chapter 43 described the physician who has names spoken at a silent patient's bedside and watches the pulse for the one that fits. The Indian and Tibetan textbooks make a method of it. Where the signs leave a case open, the physician offers a food or a drug of a known quality and reads the answer. The theory says of perception that what does not fit is simply not perceived. The trial by treatment uses the body's own closing as the test.

The whole in the part. The wrist, the tongue, the belly, the ear and the face are each read as a small body. The book on the body computed a property of rings that bears on this. A small ring fits into a large one at a whole number of places, and so a small reader meets the large form many times over, once at each place. The Eastern physicians hold that every part carries the pattern of the whole. The theory holds that the same form returns at every depth.

3. The names

Chapter 4 gave the eight forms of failure of the book on the body. The names of the Eastern system are laid beside them here.

Direction. Chapter 8 listed, as the seventh point on which the old medicines agree, that they speak of direction more than of amount. The Eastern system is the strongest witness. *Qi* has four directions, and its chief faults are to sink and to go against its course. Each of the seven feelings moves it one way. Each drug has a direction, and a formula is composed so that its directions answer those of the illness. The Indian channels fail by going the wrong way. The classics of both countries name living against the season and the hour as a first cause of illness. The theory's rule is that opposite directions never join.

Carrier. The book on the body found that a closed form cannot deliver anything. Only what ends can deliver, and it called such a form a carrier. The Indian verse says that bile and phlegm are lame, and that wind carries them as it carries clouds. The Chinese saying is that *qi* is the commander of blood. The rule of pain in China is that where there is no passage there is pain, and in India and Tibet that there is no pain without wind.

The research for this book drew the conclusion that *qi*, the Indian wind and the Tibetan wind are the carriers of the theory. They are not a fourth kind of matter beside blood, bile and phlegm. They are what brings each of these to its place and what fails when a place is not reached.

Unread. The Indian word for what a weak fire leaves behind means the raw. The Greek physicians used the same word, as chapter 43 noted. Chinese physicians speak of food that stays, of damp, and of an evil that lies hidden through a season. In each case a matter has entered the body and has not yet been worked upon. The cure in all three traditions is to cook it first.

Wrong closure. The Tibetan book gives the clearest case in any medicine. A raw fever that is cooled too early does not end. It goes into hiding and returns as an old fever that is hard to cure. An act that presses a closure on the body before it has done its work produces a closed and wrong state. Chapter 4 called that the most treacherous of the eight forms. Standing blood, phlegm that clouds the heart, lumps, and the knotted liver that has lasted for years belong here as well.

Frame. The Chinese essence is received from the parents and cannot be replaced. The Indian constitution is fixed at conception. Sushruta's first class of illnesses comes from the seed of the parents, and the lean patient with honey urine was born with his illness.

The Indian doctrine of illness from former acts can be read at this place. The third axiom ends with the sentence that the net carries its history as its shape. On that reading an act is not entered in a ledger and repaid by a judge. It is a passage, and every later passage is taken relative to it. Caraka's answer to his pupil has the same structure. What was done before and what is done now are both powers, and a strong effort now can outweigh a weak fate. Later passages count too.

Drift. Essence that is used up, vigour that is lost, and the old age that Indian medicine gives to wind are the form in which the return falls behind.

Seam. The stone, and the metal ash that Indian and Tibetan pharmacists give as a drug, are what is fixed and lodged in what lives. The first is an illness. The second is a treatment that the fourth rule of cure warns against.

Over-read. Chapter 4 noted that the old medicines describe this form least. The Eastern system does little better. The Chinese list of nine constitutions has one for people who react to pollen and foods. The Indian books have a word for what does not suit a given person. Neither has a doctrine of a body that attacks itself.

What the theory lacks. One large class of Eastern names has no place among the eight forms. It is plain lack: too little *qi*, too little blood, too little yin. Section 7 returns to it.

4. The act

Does it restore or add? The norm of all three medicines is the person's own nature. Treatment returns him to it. Chapter 43 read the Unani temperament with the third axiom, as a first passage that fixes the direction of all later ones. The Indian constitution, fixed at conception, is the same idea in its original home.

The needle is the purest case of an act that adds nothing. It is solid and carries no drug. All that the needler does is to set a direction at a place. He needles with the course of a vessel or against it, on the breath out or the breath in, and he closes the hole or leaves it open. The author's phrase for a drug, a direction at a place, describes the needle more exactly still.

The Eastern system also adds, and heavily: tonics taken for years, compounds of a hundred ingredients, and metals.

Does it match direction and phase? No medicine in this book does so more fully. The physician asks which way the *qi* is going and sends the drug the other way. He gives a drug at the hour of the fault that it is to calm. He cleanses each fault at the season in which it breaks out. He reads the pulse at dawn. He waits for the raw to ripen. The modern women's physicians of China change the formula with each phase of the month.

Does it work with what lives? The decoction, the fresh juice, the medicated butter, the hand and the leech are living or lately living. The fourth rule adds that what has been given should not be withdrawn at once. The Indian course of cleansing ends with a diet that returns to ordinary food in steps over several days. The regimen of one season is dropped by degrees as the next begins.

At which depth does it act? Each medicine has its own list of depths, and uses it to aim. The Chinese vessels have six layers from the skin to the organ. A fever has four levels. The Indian body has seven tissues, each made from the one before. The yogis count five sheaths of a person, of which the body of food is the outermost. Caraka's three medicines are three depths of acting: on the body, on the mind, and on a person's standing with the unseen.

The author's sentence in chapter 3, that a body is a depth, could stand as a summary of the Eastern anatomy. It does not describe organs set side by side. It describes layers set one within another.

Does it offer the whole window at once? The fifth of the six rules says that single stimuli left to the tissue almost never succeed. The Eastern formula is built as a whole. It has a ruler, a minister, assistants and an envoy. It pairs a drug that opens with one that holds, and three that fill with three that empty. The laboratory study of chapter 52 found that the three ingredients of one formula did far more together than any one of them. The trial of chapter 61 found that Indian treatment given whole did better than the usual care given whole.

Does it leave the return to run? The patient lies still for half an hour with the needles in, and often sleeps. The mother rests for a month. The patient who is being made young again stays in the inmost of three rooms. The Japanese patient lies in bed for a week before he is given any task. The sixth rule is to leave silence after each offering.

The nested three. The third of the six rules expects an offering at three nested rates. Chapter 5 reported that this was not found in the rates of healing sound. Part V has found the nesting in other forms. There are three depths at each of three places on the wrist, and three rooms one inside another. There are three phases in cycles that lie inside each other. It has not found it as three rhythms in the proportion of one to three to nine. The slow breath of six in a minute locks to the wave of the blood pressure one to one.

The reader's effect

Chapter 5 gave measurements which show that two people who attend to each other fall into step, and that the step itself goes with less pain. The research before this book drew two conclusions from them. To diagnose is already to treat, since the locking acts on both sides. And the healer must be the steadier of the two, or the patient will draw him along.

Part V bears on both.

The trials of needling found that a pretended treatment, given with attention, helps nearly as much as a real one. It helps more when the practitioner gives more of himself. One trial found that the practitioner mattered and the needle did not. These results are an embarrassment for a medicine that is thought to act by the needle alone. They are what one would expect of a medicine in which the meeting is part of the act.

The classics state the second conclusion as a rule. The Chinese physician calms his spirit and evens his breath. The Indian physician is collected. The Tibetan physician prepares for a day. Sun Simiao, Caraka and the *Four Tantras* all put the state of the physician's mind at the head of their teaching. The highest Tibetan physician, who has freed himself of the three poisons, is said to heal by his presence.

Nobody has measured whether a steadier physician heals more. The studies of chapter 5 suggest how it could be done.

5. The other half

Chapter 6 described the world as two halves that are partners, place by place. The three medicines of this part differ in how much of the other half they kept.

China: lodged in the organs. The Chinese classics demoted the spirits and kept the souls. A person has a cloud soul that travels in dreams and survives the body, and a bodily soul that stays and dies. The physician lodges the first in the liver and the second in the lung, and treats a restless sleeper by settling the first. The two souls of chapter 6 have been given an address in the body.

Outside the colleges the other half is treated as it always was: the family's dead, the hungry ghost, the child's soul lost by fright. Even Sun Simiao kept thirteen points for ghosts.

India: one of eight limbs. The Indian textbooks keep the unseen inside medicine. Seizure is diagnosed by conduct, and the medicine of the unseen is one of three kinds of treatment. The textbooks also describe a person as more than a body. Life is the union of body, senses, mind and self. The yogis add the body of channels and the five sheaths.

Tibet: the whole map. The Tibetan physician has the fullest map. The life principle circles the body with the moon. It can be lost and is called back. A quarter of all illnesses come from beings of the land. And the medicine follows the patient through death.

Three teachings of this part can be read with chapter 6 more closely.

The round of the back and the front. The Daoist adept leads his breath up the vessel of the back, which is the sea of yang. He leads it down the vessel of the front, which is the sea of yin. He joins the two halves of his body into one ring. Chapter 6 read the two halves of the world as one strand taken in two directions. The small round of heaven is that reading, practised.

Turning the light round. The author holds that light is all there is, and that perceiving is a movement of light. The *Secret of the Golden Flower* teaches one act: to turn the light of attention, which goes outward all day, back to its source. In the theory every distinction is a return of the strand to a place where it has been. The adept makes that return on purpose. The reading is offered with caution. The Daoist text does not say what its light is.

The showing of one's own mind. The Tibetan book of guidance speaks to the dead person. It tells him that the lights and the figures that meet him are the showing of his own mind. He need not flee them. Chapter 7 quoted the question that the author puts over all reports of VALIS. What does a person meet when he meets what is not himself, and how much of it turns out to be himself? It gave the theory's answer: as a form, all of it, and as a direction, none of it. The Tibetan book gives its answer to the same question, and gives it to the one person for whom the question is no longer a matter of opinion.

6. The meeting

Chapter 7 asked whom a healer or a patient meets, in what form, by what course, with what words, to what effect and with what shadow.

Whom, and in what form? The second of the four figures, the teacher, has shaped the whole literature of the Eastern system. Every one of its founding books is a meeting with a teacher who knows. The Yellow Emperor questions Qi Bo. Agnivesha takes down the words of Atreya. Sushruta sits before the king of Benares. In the Tibetan book a sage who is the thinking mind questions a sage who is awareness itself. The books do not present themselves as the findings of their authors. They present themselves as what was said in a meeting.

The first figure, who acts on the body without speech, is rarer. The twin physicians of the Indian gods are of this kind. They give an iron leg, and they make an old man young.

The third figure, the watcher who judges, stands in the Tibetan account of what follows death. The dead person comes before the lord of death, who holds up a mirror in which every act is seen. White and black pebbles are counted out. The book adds at once that the judge, too, is the showing of the dead person's own mind.

The fourth figure, the light without form, is described more fully here than anywhere else in this book. The Tibetan physician is taught that the dying person meets a clear light, like a cloudless sky at dawn, when the last of the body's elements has withdrawn. Most do not recognise it and turn away. The purpose of the guidance, and of a life of practice, is that he should know it for his own nature. The Chinese adept who turns the light round and the Indian yogi who hears the inner sound fade into silence are approaching the same figure by other roads.

By what course? The five steps of chapter 7 are loosening, examination, exchange, showing and return. The Tibetan account of dying has them in the order given and at full scale. The elements of the body withdraw one by one. The acts of the life are seen in the mirror. A few sentences are read into the ear. The peaceful and the terrible forms appear. A new birth follows.

In life the steps are found wherever the Eastern system removes a patient from his day. The hut of three chambers, the month of sitting, the week in bed and the retreat of the yogi all begin with a loosening and end with a return.

What is said? The reports of VALIS note that what is said in such meetings mostly concerns conduct and the right use of attention. The Eastern classics bear this out on a large scale. The first words of Qi Bo to the Yellow Emperor are about measure in food and drink and regular hours. Caraka gives a list of several hundred points of good conduct and says that truthfulness does the work of a remedy. Sun Simiao opens with the sincerity of the physician. The teacher of these books seldom states a fact that could be checked on the spot. He says how to live.

To what effect? A Tibetan who has practised for dying is said to meet death without fear. The patient who breathes in the suffering of others who share his illness loses the sense of being singled out. The reports of VALIS name a lessened fear of death and a stronger sense of direction as the lasting effects of a meeting.

With what shadow? Each of the three civilisations knew healing turned to harm. The Chinese feared a poison bred from venomous creatures shut in one jar. The oldest Indian collection has hymns to injure beside its hymns to heal. Tibet tells of yogis who sent hail on their enemies' fields.

This part adds two shadows of its own. The first is the elixir. The wish not to die led Chinese emperors and Indian adepts to swallow mercury, and the pills that came of that search still poison. The second is the master. The fever of breathing practice in China and the modern trade in gurus show how the standing of a teacher can become control over those who come for healing.

In which frame? Tibetan teachers hold the third of the three frames of chapter 7 as doctrine. What is met after death is real, and its form depends on the one who meets. A Tibetan sees the figures of his own tradition. A person of another faith, the teachers say, will see other figures. What does not change is the course.

7. What does not fit

Too little. The theory describes illness as a window that stays open. Its eight forms speak of direction, of reading, of carriers and of wrong closures. The largest class of Chinese patterns, and the largest class of Chinese and Indian drugs, concern plain lack: too little *qi*, blood, yin, essence or vigour. The physicians build these up. The second rule of cure says to restore and not to add. A tonic taken for years adds. The theory has drift, in which the return falls behind, and it has carriers that do not arrive. It has no account of a store that runs low.

Balance is not closure. The three medicines define health as balance: yin and yang level, three faults in measure. Balance is a matter of amounts on two sides. Closure is a matter of form. The readings in this chapter have leaned on the Eastern language of direction and passage, which is close to the theory. The language of more and less is as old and as central, and it is not the theory's.

The counts that have no ladder. Many counts stand on neither ladder. Among them are the seven tissues, the seven feelings, the six tastes and seasons, and the eight limbs. So do the four hundred and four illnesses, the hundred and seven points and the seventy-two thousand channels. The Indian five elements were not derived from the pipes.

The reader who disagrees with himself. If the pulse is a locking of the reader with the patient, the same reader should find the same pulse an hour later. In the one study that tested it, Indian physicians did not.

Two maps of one wrist. The Chinese and the Tibetan physicians assign the organs to the places of the pulse differently. A reading as a meeting can live with that. A claim that the wrist is a chart of the organs cannot.

The place of the needle. If a needle sets a direction at a place, the place should matter. In the largest trial for back pain it did not. In a trial for chest pain it did. The matter is not settled.

Claims of fact that nobody has tested. The pulse of a father shows the illness of his son. A drop of oil on urine foretells the outcome. A point should be chosen by the hour and the day. The *qi* goes round fifty times in a day and a night. The last of these is false as stated, since people breathe far more often than the classic counts.

Exchange and persons. A figure of dough is given for a patient, and animals are freed to lengthen a life. Gods teach, judge and take offence. Chapters 23, 31 and 43 noted that the theory has no rule for a life given for a life and cannot derive a person. That remains so.

The moral order. The Indian and Tibetan teaching of acts and their fruits was read in section 3 as history carried in a shape. The teaching itself says more. It says that the fruit fits the act: kindness ripens as ease and cruelty as pain. The theory has no rule that would make a shape just.

What Part V hands on

1. Direction before amount, in the faults of the body, in the drug and in the needle.
2. A reader who is his own measure, and who must be prepared before he reads.
3. One form of three phases at every scale of time.
4. The longer the period of an illness, the deeper its seat.
5. The raw must ripen. The rule has now been found in Greece, in the Unani medicine, in China, in India and in Tibet.
6. A drug and a needle as a direction at a place, and the formula as a whole that is offered at once.
7. The inborn constitution as a first passage, and the fruit of former acts as history carried in a shape.
8. Five and twelve from the pitch pipes, with fifty-three behind them.
9. A second body, a practice of light, and a medicine that speaks to the dead.
10. Measurements: the lock of heart and breath, the breath of six in a minute, and the brains of long meditators in step. With them come two designs of trial: the whole course tested against the whole, and a fitted treatment tested blind.

The medicines of Part V were written by scholars and practised at courts. The next part goes to the islands of the Pacific. Their medicine was not written at all, and it places the cause of illness where the Eastern system places it only at times: in what has gone wrong between people.

Part VI — Hawai‘i and the Pacific

68. Hawai‘i

The islands furthest from any land

The Hawaiian islands lie nearer to the middle of the Pacific than any other inhabited place lies to the middle of an ocean. Polynesian voyagers reached them between eight hundred and a thousand years ago, in double canoes, from islands some four thousand kilometres to the south. They brought some two dozen plants with them, to feed, clothe and house themselves in a land that had few useful ones. Many of these were medicines as well: turmeric, the pepper plant called *‘awa*, the candlenut, the fruit called *noni*, ginger, the ti plant and the coconut. The first Hawaiians carried their pharmacy across the sea.

After the voyages to the south had ceased, they lived for some four centuries without contact with anyone else. Their medicine is therefore a rare case. It is the medicine of a large and ordered society that had no writing, no metal and no outside teachers.

This part of the book describes it and its relatives across the Pacific and in the islands of Southeast Asia. It has a place among the main traditions for one reason above all. These peoples say more plainly than any others that illness comes from what has gone wrong between persons, and that healing is to set it right.

The experts

The Hawaiian word *kahuna* means an expert. There were experts in building canoes, in reading the stars and in carving. An expert in healing was a *kahuna lapa‘au*. The nineteenth-century Hawaiian historians Samuel Kamakau and David Malo, who had known such men, describe many specialities (Kamakau 1964).

Expert	Work
Kahuna lā‘au lapa‘au	Healing with plants
Kahuna hāhā	Finding an illness by feeling the body
Kahuna lomilomi	Treatment with the hands
Kahuna ho‘ohānau keiki	Delivering children
Kahuna pa‘ao‘ao	The illnesses of infants
Kahuna ha‘iha‘i iwi	Setting bones
Kahuna ‘ō‘ō	Opening boils and letting blood
Kahuna lā‘au kāhea	Healing by calling: prayer for broken bones and sprains, without touch
Kahuna makani	Illnesses brought by spirits

Expert	Work
Kahuna kilokilo	Reading signs in the sky and in events
Kahuna ʻanāʻanā	Praying a person to death; and the experts who undid such prayers

A boy who was to become a healer was chosen young and given to a master. He lived in the master's household for fifteen or twenty years. He learned the plants, the prayers and the signs by heart, since nothing was written.

Kamakau describes how the art of feeling was taught. The master laid out pebbles on a mat in the figure of a man, from the head to the feet. Each pebble stood for a place where an illness may sit. The pupil learned what each place feels like under the fingers in health and in each illness, pebble by pebble, before he was allowed to touch a patient.

The healers had temples of their own. The stone platform of one still stands on the heights above Pearl Harbor, with the remains of its garden of healing plants.

The ground

A few Hawaiian words carry the whole doctrine.

Mana. Power that comes from the gods and the ancestors. It dwells in persons, above all in chiefs and experts, and also in objects, places and words. It can be increased by right conduct and lost by wrong.

Kapu. What is set apart and forbidden. The old society was ordered by a great number of such rules: what might be eaten by whom, who might approach whom, which days were for which gods. To break one was to lose the protection of the gods.

Pono. Rightness: the state in which a person stands rightly toward the gods, the land and other people.

Lōkahi. Unity. Modern Hawaiian teachers draw it as a triangle. At its corners stand the gods and ancestors, the people, and the land with the sea. Health is the state in which the three are at one.

ʻOhana. The family. It includes the living, the dead and the unborn. A Hawaiian does not think of himself apart from it.

ʻAumākua. The ancestors who have become guardians of the family. They appear as a shark, an owl, a lizard or another creature, and in dreams. They warn, they help, and they punish. Most illness that has no plain cause is first laid to them.

ʻUhane. The soul. It leaves the body in sleep, and the Hawaiian word for a dream means the sleep of the soul. It goes out, the old people said, through the inner corner of the eye. A soul that stays away, or is caught, leaves the person listless and ill. A healer could coax it back and

press it into the body through the foot. The stories of the goddess Hi‘iaka tell how she restored a dead chief by catching his soul and working it in from the sole upward.

Three navels. A person has three points of attachment, and the Hawaiian word for each is the word for the navel. The first is the soft place on the crown of the head. It ties him to the ancestors. The second is the navel itself, which ties him to his parents and his own generation. The third is the organ of generation, which ties him to those who will come after. A person is a point on a cord that runs from the first ancestors to the last descendants.

The gut and the breath. Feeling and thought have their seat in the gut. The word for wisdom means a gut filled with daylight. The breath carries a person’s mana. Hawaiians greet by pressing noses and sharing a breath. A dying expert passed his knowledge to his heir by breathing into the heir’s mouth.

The word. A proverb sums up the Hawaiian view of speech. In the word is life, and in the word is death. A prayer, a name, a curse and a promise are acts with effects. A name that an ancestor gives in a dream must be given to the child, or the child sickens.

Where illness comes from

Mary Kawena Pukui, the Hawaiian scholar on whose testimony most of this chapter rests, reports the division that the healers made (Pukui 1972). There is illness from outside and illness from within.

Illness from outside is sent. A sorcerer has prayed against the person, or a spirit has entered.

Illness from within arises inside the family. Someone has broken a rule, neglected an ancestor, broken a promise, or wronged a relative. Or someone has been wronged and has not let go of it. The Hawaiian word for such a fault also means to miss, as a stone misses its mark. The tie of bad feeling that it creates between the two persons has a name of its own. It means a tangle, like a fishing line or a net that has caught on itself.

The tangle does not hold only the one who did wrong. It holds the wronged person as fast, for as long as he keeps his grievance. And it may show itself in neither of them. It commonly shows in the weakest member of the family, a child. A healer who was called to a sick child asked first what was wrong among the adults.

Beside these, the healers knew plain illnesses of the body: wounds, broken bones, boils, constipation, the complaints of teething. These they treated without asking about the family.

Finding the illness

A Hawaiian healer finds an illness in four ways.

By the hand. The expert in feeling goes over the whole body with his fingertips and palms, from the head to the feet. He feels for heat and cold, for lumps and hardness, for places that

are full or empty, and for the way the blood moves. He works in silence and with his eyes half closed.

By the eye. He looks at the colour of the skin, the eyes and the tongue, and at the way the patient stands and breathes.

By dreams. Hawaiian families told their dreams to each other on waking, and many still do. A dream is a message, most often from a guardian ancestor. It may name the cause of an illness, show a remedy, or warn. Pukui calls such a dream a revelation of the night. The healer asks for the dreams of the patient and of the family, and attends to his own.

By signs. The healer watches for a rainbow, a sudden shower, the cry or flight of a bird, or a creature that crosses the path. Each may be an answer to the question that he carries. The first plant that he goes to gather for a patient is watched for such signs. If they are bad, he may decline the case.

With these he puts the first question, which is to which class the illness belongs. If it is a plain illness of the body, he treats the body. If it comes from within the family, he sends the family to set itself right, as chapter 69 describes, before he will give any remedy. Pukui reports that the healers were firm on this. A remedy given into a tangled family, they said, will not hold.

The course of a treatment

A treatment had a fixed order, whatever the remedy.

Prayer. Every act began and ended with prayer. The healer prayed before he set out for the plants, as he picked them, as he prepared them and as he gave them. He picked with the right hand while he called on the god Kū, and with the left while he called on the goddess Hina. The two are the male and the female, the upright and the leaning, of all that grows.

Opening. The patient was first cleared, with a purge of morning-glory root or of candlenut, or by drinking sea water.

The remedy. It was given in counted doses. The Hawaiian number of healing is five. A remedy is made from five leaves, five buds or five fruits, or a multiple of five. It is taken five times, or for five days.

Closing. The course ended with a food that closes it. The Hawaiian word for this food means a stopper or a closing. It might be a certain fish or a certain seaweed. After it the treatment was complete, and it was not to be spoken of further.

The healer took no fixed fee. He was given what the family could give, and a healer who asked for payment was held to lose his power.

Plants

About three hundred plants are recorded as Hawaiian remedies. A dozen were in every healer’s hands.

Plant	Hawaiian name	Chief uses
A pepper shrub; the root	*‘Awa*	A drink that calms and brings sleep; for pain and tense muscles; offered to the gods and shared at councils
Indian mulberry; the fruit and leaf	*Noni*	The ripe fruit as a poultice on boils, bruises and sprains; the leaf on aching joints
Candlenut; the nut and sap	*Kukui*	The roasted nut as a purge; the sap for sores in a child’s mouth
Turmeric	*‘Ōlena*	The juice for the ears and nose; in sea water, sprinkled to purify
A native nettle without sting	*Māmaki*	A tea to strengthen after illness
Black nightshade	*Pōpolo*	The leaf and berry for coughs, sore throat and skin; called the foundation of the pharmacy
A native mallow	*‘Uhaloa*	The bark of the root, chewed for a sore throat
Shampoo ginger	*‘Awapuhi*	The root on sprains and bruises
Ti plant	*Kī*	The cool leaf laid on a fevered forehead; worn against harm
Plantain	*Laukahi*	The leaf to draw a boil
Taro	*Kalo*	Cooked and pounded, the food of the sick

Plant	Hawaiian name	Chief uses
Sea water and salt	*Kai*, *pa‘akai*	To purge, to bathe, and to purify

The hands

The Hawaiian treatment by hand is called *lomilomi*. The word means to knead, as a cat kneads with its paws. The practitioner works with palms, forearms and elbows in long strokes that do not break off, often from the shoulder to the foot in one movement. He works slowly, in time with his own breath, and he prays before he begins. Heated stones are laid on stiff places. Patients were steamed under a tent of bark cloth over hot stones and wet leaves, and bathed in the sea afterwards.

Families practised a simpler form on each other every evening. Children walked on the backs of their grandparents.

One teacher of the twentieth century, Margaret Machado, gave the art a definition that her pupils repeat. It is the loving touch, she said, a connection of heart, hand and soul with the source of all life.

A hundred years of loss

In 1778 the ships of James Cook reached the islands. The diseases of the outside world came with them, and the Hawaiians had no defence against any. Within a century the population had fallen by at least four fifths. The healers could not stop it, and many died with their knowledge.

In 1819 the Hawaiian chiefs themselves abolished the system of sacred rules. In 1820 American missionaries arrived. They classed the whole of the old healing with sorcery. Laws against the practice of the experts followed, and a law of 1868 that licensed healers who used plants did little to restore their standing. Hawaiian families went on using their remedies and their rites behind closed doors, and Christian prayers took the place of the old ones.

The return

The recovery began in the 1960s, from an unexpected quarter. A Hawaiian trust for orphaned children found that its social workers, trained in American methods, could not help Hawaiian families. It formed a committee to learn why. Mary Kawena Pukui, who had been raised by her grandmother in the old ways, sat on it for seven years with a psychiatrist and a social worker. Two volumes came of their meetings, in 1972 and 1979. They set down in plain language what a Hawaiian family means by illness, by a dream, by a guardian and by setting right.

In 1988 the United States Congress passed a law for the health of native Hawaiians. It recognised the traditional healers by name and set up health centres on five islands that employ them. Councils of elders now decide who may be called a healer.

The best-known healer of the last generation was Henry Auwae, who died in 2000. He had learned from his great-great-grandmother and knew some two and a half thousand preparations. He said that healing is eighty parts in a hundred spiritual and twenty parts medicine. He would not treat a patient who was unwilling to pray, and he often sent people home to put their family in order before he would begin.

What has been measured

The calming root. The drink of the pepper root is the best-studied Pacific remedy. Chapter 70 gives the trials.

Food. In 1991 a Hawaiian physician placed twenty very heavy native Hawaiians on the diet of their ancestors: taro, sweet potato, breadfruit, greens, fruit, seaweed and a little fish. They could eat as much as they wished. In three weeks they lost on average nearly eight kilograms, and their blood fats and blood sugar fell (Shintani 1991).

Dance. Hawaiian researchers tested the traditional dance, the hula, as a treatment for high blood pressure. They enrolled 263 native Hawaiians whose pressure was too high. All were first given lessons on the care of the heart. Half then attended classes of hula with a traditional teacher for six months. Their pressure fell more than that of the others, and their risk of heart disease by the usual reckoning fell with it (Kaholokula 2021). The dancers kept coming. Hula is done in a group, to chant and drum, and it tells the stories of the land and the ancestors.

What stands out in Hawai‘i

1. **Illness is first asked about in the family.** A tangle between two persons can show in a third.
2. **The one who was wronged is bound as fast as the one who did wrong.**
3. **A person hangs on a cord of three navels,** from the ancestors through himself to his descendants.
4. **The soul leaves in sleep and can be pressed back in through the foot.**
5. **In the word is life, and in the word is death.**
6. **Dreams are told every morning** and are the chief means of finding a cause.
7. **Feeling was taught on pebbles laid out as a body.**
8. **A treatment is opened, counted in fives, and closed.**
9. **The healer asks no fee and will not treat a family that is not in order.**
10. **The hand works in long unbroken strokes, in time with the breath.**

From birth to death

Hawaiian care began before birth and did not end at death.

Carrying. A woman with child was fed and watched by the older women. What she ate and what she longed for were held to shape the child. She wore no wreath closed in a ring round her neck, so that the cord should not wind round the child's.

Birth. The mother squatted and was held from behind. The expert in delivery knelt before her and pressed the belly downward with oiled hands. Pukui records a belief about the most skilled of these experts. They could move the pains of labour to another person, a husband or a brother, who then groaned in the mother's place (Pukui 1942).

The cord and the afterbirth. The afterbirth was washed and buried under a tree, which then belonged to the child. When the stump of the cord fell off, the family hid it in a cleft of rock at a place of its own. If a rat took it, the child would grow up a thief. The care shows what the navel meant. The child had been cut from the mother and was at once tied to the land.

Moulding. The grandmother kneaded the infant every day. She pressed the nose, the forehead and the limbs toward the shape that was thought beautiful.

The first-born. The first child was often given to the grandparents to rear, a boy to the father's parents and a girl to the mother's. The family's knowledge was passed to these children.

Medicine through the milk. Hawaiian healers named two conditions of small children. One showed in a coated tongue and sores of the mouth. The other was a weakness that might stay hidden for years. For a child at the breast the mother took the remedy, and the child received it in her milk.

Dying. A dying person called the family together. Quarrels were set right, as chapter 69 describes, so that the soul could leave without a tie that held it. He gave his last commands, which bound the family. If he was an expert, he passed on his knowledge with his breath.

The dead. The family wailed, and the wailing was a recital of what the dead person and the mourner had done together. The bones were hidden, since a person's mana remains in them. Some families gave their dead to the guardian of the family, in the sea or in the volcano, by a rite of its own.

The soul went to a headland of its island that was called the leaping place of souls. There its ancestors met it and took it into the night from which all life comes. A soul whom nobody met was left to wander.

Kamakau records accounts of persons who had died and returned. Their ancestors met them and sent them back, because it was not yet their time. They told afterwards what they had seen (Kamakau 1964).

The feast of tears. A year after a death the family gave a feast. It closed the time of mourning, and it was a glad occasion.

The sorcerer and the one who undoes

The most feared expert prayed people to death. He needed bait: a hair, a nail paring, spittle, or a scrap of the victim's clothing. A chief kept a trusted servant whose whole duty was to carry away his spittle and bury it.

The sorcerer prayed over the bait at night. The victim usually learned of it, and wasted away. Chapter 13 described how a person who knows himself cursed may sicken and die, and how the physiologist Walter Cannon explained it (Cannon 1942).

Hawai‘i had experts who undid such work. One kind burned an offering with prayers and read in the fire who had sent the harm. He could turn it back on the sender.

Another harm was done by gesture. The sorcerer touched a place on his own body, and the victim was struck at the same place. A victim who saw the gesture and at once made it himself sent the harm back.

The accounts add a safeguard. A prayer sent against an innocent person was held to return on the one who sent it. A fault gave the sorcerer his hold. A family whose relations were in order was thought hard to harm. That is one more reason why the healers began with the family.

Healing by the call

One kind of healer treated broken bones and sprains without touching the patient. He prayed, and he called on the bone to knit. Pukui, who knew such healers, reports two conditions (Pukui 1972). The patient had to trust entirely, and the healer could accept no payment.

The sickness that separates

Leprosy reached the islands in the first half of the nineteenth century. In 1865 the kingdom passed a law to isolate those who had it. From 1866 they were shipped to a peninsula of the island of Moloka‘i that is cut off by cliffs and sea. About eight thousand people were sent there in the following century.

The Hawaiians gave the illness a name of their own. They called it the sickness that separates the family. Many families hid their sick for years. Many healthy husbands, wives and parents chose to go into exile with them as helpers (Inglis 2013).

The government acted on the knowledge of its time, which said that the illness passes from person to person. The Hawaiians judged by their own, which said that a person cut from his family is no longer whole. The episode shows the two medicines at cross purposes more plainly than any debate.

The opened book

After the conversion the family guardians were not forgotten. The Christian God took the first place in prayers, and the guardians kept theirs in dreams and signs. A minister often took the place of the old expert at the head of a family meeting.

One way of finding a cause is new. A family in trouble prays, lets the Bible fall open and puts a finger on the page. The verse is read as the answer. Pukui reports that the practice was common in her time (Pukui 1972).

More remedies

The table adds to the twelve remedies of the preceding section. It follows the standard accounts of Hawaiian plant medicine (Abbott 1992; Krauss 2001).

Remedy	Hawaiian name	Chief uses
Morning glory; the root and vine	*Koali*	The root as a strong purge; the pounded vine with salt, bound on bruises and broken bones
A coastal hibiscus; the bark and buds	*Hau*	The slippery sap as a mild laxative, and to ease a birth
A small yellow mallow; the flowers	*ʻIlima*	The flowers, chewed by the mother, as a gentle laxative for an infant
Polynesian arrowroot; the starch	*Pia*	Stirred in water for diarrhoea
Screw pine; the tips of the aerial roots	*Hala*	In strengthening drinks, and for women after a birth
Sugar cane	*Kō*	The juice, to carry and sweeten bitter remedies
Coconut	*Niu*	The water as a drink for the sick; the oil for the hands of the kneader
Breadfruit; the milky sap	*ʻUlu*	On cuts, sores and cracked skin
Banana; the nectar of the bud	*Maiʻa*	Given to infants

Remedy	Hawaiian name	Chief uses
A leafless fern ally; the spores	*Moa*	The spores as a powder for chafed skin; a tea as a laxative
Tree fern; the soft golden wool	*Pulu*	A dressing that stanches a wound
Hawaiian poppy; the yellow sap	*Pua kala*	For toothache and pain of the nerves
A brown seaweed	*Limu kala*	Eaten at the close of a rite of release; its name contains the word for release
Red earth	*ʻAlaea*	Mixed with salt, in remedies and in water for purifying
Bottle gourd	*Ipu*	The pulp as a purge; the long-necked gourd as the vessel for an enema, which the healers gave freely

Reference: Hawaiian words of healing

The list gives the Hawaiian words that a reader meets in the literature on Hawaiian healing. The meanings follow Pukui's own explanations (Pukui 1972).

Persons

Word	Meaning
ʻOhana	The family: the living, the dead and the unborn
Kupuna	A grandparent; an elder; an ancestor
Makua	A parent; anyone of the parents' generation
Keiki	A child
Hānai	To feed; a child reared by grandparents or other kin

Word	Meaning
Haku	A leader; the one who conducts a family meeting
Kahu	A keeper or guardian; later also a minister
Kahuna	An expert in any calling
Kumu	A teacher; also a source, and the trunk of a tree
Haumāna	A pupil
Kāula	A prophet
Haka	A medium, on whom a spirit comes to sit

The person and the unseen

Word	Meaning
Akua	A god
ʻAumakua (plural *ʻaumākua*)	An ancestor who has become a guardian of the family
Kino lau	The many bodies of a god or guardian: an animal, a plant, a cloud
ʻUhane	The soul
Kino	The body
Wailua	The spirit of a dead person
Iwi	The bones, in which a person's mana remains
Piko	The navel; the crown of the head; the organ of generation; a summit
Naʻau	The gut, seat of feeling and thought
Hā	The breath
Mana	Power from the gods and ancestors
Kapu	Set apart; forbidden
Noa	Free of restriction; ordinary

Word	Meaning
Pō	Night; the realm of the gods and ancestors
Ao	Day; light; the world of the living
Leina	The leaping place of souls
Noho	To sit; the coming of a spirit upon a person

Health and illness

Word	Meaning
Ola	Life; health
Make	Death
Maʻi	Illness
ʻEha	Pain; hurt, of body or of feeling
Kaumaha	Heavy; the weight of grief
Pono	Rightness; the right state of a person among others
Hewa	Wrong
Hala	A fault; also to miss, and to pass
Hihia	A tangle, as of a net or line; the entanglement of persons by a fault
Hoʻomauhala	To hold fast to a fault: to keep a grudge
Lōkahi	Unity
ʻAnāʻanā	Sorcery by prayer
Maunu	Bait: a part of the victim that the sorcerer needs
Kuni	To burn; the rite that finds a sorcerer and returns his work
Hoʻounauna	To send a spirit on an errand of harm
ʻUnihipili	The spirit of a dead person, kept and fed by a keeper

Finding the cause

Word	Meaning
Hāhā	To feel with the hands
Moe ʻuhane	A dream: the sleep of the soul
Hōʻike na ka pō	A revelation of the night
Hihiʻo	A vision seen between waking and sleep
ʻŪlāleo	A voice heard with no speaker
Hōʻailona	A sign
Inoa pō	A name given in a dream by an ancestor
Wehe i ka Paipala	To open the Bible for an answer

Healing

Word	Meaning
Lapaʻau	To heal
Lāʻau	A plant; a remedy
Lomi	To knead
Hahano	An enema
Pūloʻuloʻu	A steam bath
Pule	Prayer
Oli	A chant
Pī kai	Sprinkling with sea water
Kapu kai	A ritual bath in the sea
Pani	To close; the food that closes a course of treatment
Hoʻoponopono	To set right; the family meeting of chapter 69
Kūkulu kumuhana	The joining of the strengths of all present for one purpose; the statement of the trouble
Mahiki	To peel or pry off; the taking up of one layer of trouble at a time
Hoʻomalu	To shelter; a time of silence

Word	Meaning
Mihi	To repent, confess and ask pardon
Kala	To untie; to release
ʻOki	To cut; to sever a tie or a trouble
Kōkua	Help; a helper
Mālama	To care for
Laulima	Many hands: working together
ʻĀina	The land: that which feeds

69. Hoʻoponopono: to set right

The word

The Hawaiian word *pono* means right, in order, as it should be. Doubled, and with the prefix that means to make, it becomes *hoʻoponopono*: to put to rights. The word is used of tidying a house and of correcting a text. Its chief use is for a meeting of the family at which relations are set right.

Mary Kawena Pukui defined it for the committee of which chapter 68 spoke. In her account it is the setting right of relations within the family and between the family and its gods. It works through prayer, discussion, confession, repentance, and restitution and forgiveness on both sides (Pukui 1972).

Chapter 68 gave the Hawaiian account of illness from within. A fault between two members of a family ties them in a tangle. The tangle holds both, and it may show as illness in either or in a third. Hoʻoponopono is the Hawaiian treatment of the tangle. This chapter describes it as Pukui remembered it from her childhood in the district of Kaʻū, at the southern end of the island of Hawaiʻi.

When it was held

A family held the meeting on four kinds of occasion.

When someone was ill. A healer who judged that an illness came from within the family would not treat it until the meeting had been held. The rule was to set right first and to give medicine afterwards.

When there was a quarrel or a grievance. The family did not wait for illness. A fault that was left would grow, and others would be drawn into it.

Before an undertaking. A family met before a long fishing voyage, before a child was sent away, before planting. Nobody should set out with a tangle behind him.

Before a death. A dying person asked for it, so that no tie of ill feeling should hold his soul or burden those he left.

Some families also met at regular times, with no special cause, to keep the lines clear.

Who leads

The meeting is led by a senior member of the family who is not a party to the trouble. If no such person can be found, the family asks a respected outsider. In the old days that was a healer. After the conversion it was often a minister.

The leader’s standing is essential. The family must be willing to speak the truth before him and to accept his rulings. He questions, he sums up, he halts the talk when it runs wild, and he decides when a matter is finished.

Everyone concerned must be present. That means the household and any relative who has a part in the trouble. A member who is absent leaves a line that cannot be untied. Children attend, and a child’s account is heard like any other.

The course

Pukui describes a fixed course. Each step has a Hawaiian name.

Step	Hawaiian name	What is done
1	*Pule wehe*, the opening prayer	The leader prays to God and to the guardians of the family for help and for truth
2	*Kūkulu kumuhana*	The trouble is stated. All present join their strength toward one aim: that the family be made whole
3	*Hala*, the fault	The first fault is named: who did what
4	*Hihia*, the tangle	The leader draws out how the fault has spread: who was hurt, who took sides, who has kept silent
5	*Mahiki*, the peeling	One layer of the trouble is taken up at a time and discussed until it is clear
6	*Ho‘omalu*, the silence	When tempers rise, the leader orders silence. All stop and reflect
7	*Mihi*, the confession	The one at fault admits it fully and asks pardon. Restitution is agreed if anything was taken or broken

Step	Hawaiian name	What is done
8	*Kala*, the release	The one who was wronged releases the other, and is released himself
9	*ʻOki*, the cutting	The matter is cut off. It is finished and is not to be raised again
10	Steps 3 to 9 are repeated	Each further layer is taken up in the same way until none is left
11	*Pule hoʻopau*, the closing prayer	The leader gives thanks and asks that what was untied stay untied
12	*Pani*, the closing	In the old days an offering to the gods. Later a meal that all share

A meeting may take an hour. If the trouble is old and many are in it, it may take several days, with pauses for rest and food.

The statement

The second step has a name that is hard to translate. It means to build up a subject, or a purpose. Pukui gives it two uses in the meeting.

The first is the plain statement of the trouble. The leader says why the family has gathered. He does not accuse.

The second is a joining of all present. Each turns his whole attention and good will to the one aim. Pukui calls it a pooling of the strengths of the family, of feeling, of mind and of spirit, toward a good end. Hawaiians used the same act outside the meeting. A family would gather round a sick member and unite in this way before a healer began.

The leader may also use this step for one person. Someone who sits silent and hostile cannot be untied. The leader turns to him, and the family with the leader, until he is able to take part.

The peeling

The Hawaiian name of the fifth step means to peel off, or to pry up. A trouble in a family is seldom one fault. Under the quarrel of this month lies the slight of last year, and under that an old question of land or of a favoured child.

The leader does not let the family speak of all of it at once. He takes the uppermost layer. It is discussed, confessed and released. Then the next is taken up. The order is from the surface inward. Often the first fault that was named turns out to be the least.

Chapter 34 described a Babylonian rite in which the patient peels an onion, skin after skin, and throws the skins into the fire. The Hawaiian meeting does with speech what that rite does with an onion.

The rules of speech

Three rules govern what is said.

Truth. Each must say what he did and what he felt, fully. The Hawaiian word for this means the very spirit of truth. To hold back a part is to leave a knot. Pukui says that a meeting in which someone conceals a matter cannot succeed.

Through the leader. The parties do not address each other. Each speaks to the leader, and the leader puts the question to the other. A direct exchange between two angry people ends in new injuries. By way of the leader a hard matter can be said and heard.

Feeling under rule. Each is to say what he feels. He is not to act it out. Blame, shouting and tears that are used as weapons are stopped by the leader at once.

The silence

The sixth step is called by the leader whenever it is needed. The Hawaiian word means to shelter and to make quiet. All fall silent. Each is to look into himself and ask what his own part has been.

The silence may last a few minutes. It may last until the next day. A second kind of silence holds between sittings and after the end. Nobody speaks of the matter outside the meeting. What is said within it stays in the family.

Confession and release

The seventh and eighth steps are the centre.

The one at fault confesses to the one whom he has wronged, and to the gods. He asks to be forgiven. It is expected that pardon is given when it is sincerely asked.

The release is the act that gives the meeting its character. The Hawaiian word means to untie, as a knot or a rope is untied. The one who forgives does not only free the other. Pukui gives the old form of words. In paraphrase it runs: I release you, and so may I also be released.

The reasoning is that of the tangle. A fault binds two persons. The one who did the wrong carries guilt. The one who suffered it carries the grievance, and for as long as he holds it he is tied as fast as the other. The Hawaiians had a word for holding on to a fault. They thought it

as harmful to the family as the fault itself. A wronged person who refuses to release keeps the illness in the house.

Release is therefore asked of both. The wrongdoer must let go of his fault once he has confessed and made good. He is not to go on punishing himself.

The cutting

The ninth step makes the release final. The word means to cut. The matter is severed from the family and declared ended. From that hour nobody may bring it up, in anger or in jest.

Pukui sets this against the saying that one should forgive and forget. The Hawaiian rule does not ask anyone to forget, which nobody can do at will. It asks that the tie be cut, so that the memory no longer binds.

There was a second and graver cutting. If a member would not attend, would not confess, or would not release after every effort, the family could cut him off. The Hawaiian phrase means that the navel cord is severed. It was the last resort, and it was dreaded more than any other penalty.

The closing

The meeting ends as a course of medicine ends, with a prayer and a closing. In the old days a pig or a fowl was offered to the gods and the guardians and then eaten by all. Some families ate the seaweed whose name contains the word for release. Some went down to bathe in the sea. In Christian households a prayer and a shared meal remain.

After the closing the family speaks of other matters. If someone was ill, the healer may now begin.

What the meeting requires

Pukui and the psychiatrist who worked with her, E. W. Haertig, list the conditions under which the meeting succeeds (Pukui 1972).

1. **A leader with standing.** The family must accept his questions and his rulings.
2. **Everyone present.** A member who stays away leaves a line that cannot be untied.
3. **The whole truth.** A matter that is held back remains a knot.
4. **A power above the family.** The prayers are not an ornament. The family asks a higher power to witness and to help, and each member speaks in that presence.
5. **Speech through the leader.** The parties do not address each other.
6. **Silence when it is needed.**
7. **Willingness to release.** The wronged person must be ready to let go, and so must the one who did the wrong.
8. **Privacy.** Nothing that is said leaves the family.

Haertig compared the meeting with the family and group treatment of his own profession. He found most of its methods already there: the neutral conductor, the rule of honest speech, the pause, the summing up. He also found an element that his profession lacked. The meeting does not end with insight. It ends with an act of pardon on both sides and with a formal close.

He judged it one of the soundest methods of keeping a family whole that any society has devised.

What the meeting is not

It is not a trial. Nobody sits as judge. No verdict is given, and no punishment is laid on beyond the making good of a loss.

It is not a contest. No party wins. The meeting has succeeded when both are free.

It is not the treatment of one person. The patient may be an infant. Those who speak are the persons among whom the fault lies.

It is not an airing of feelings for its own sake. Feelings are stated so that they can be released. A member who uses the meeting to wound is stopped.

The same rule on other islands

The Hawaiians were not alone in holding that a family must clear itself before a healer can cure. The rule is found across the Pacific.

Samoa. The missionary George Turner lived in Samoa for some forty years from the 1840s. He describes what a family did when one of its members was gravely ill. The head of the family called all together. Each in turn confessed whatever ill he had wished or spoken against the patient. As a sign that he took it back, he filled his mouth with water and sprayed it toward the sick person. Turner translates the Samoan name of the custom as to confess and throw out (Turner 1884).

Samoa also has a public form between families. When a member of one family has gravely wronged another, his chiefs go before dawn and sit down before the house of the injured family. They bow their heads and cover themselves with fine mats. They wait, for hours if need be, until the family comes out and lifts the mats. The acceptance ends the matter.

Fiji. The kin of a wrongdoer bring a whale's tooth and the pepper root to the kin of the one who was wronged. The Fijian name of the rite means to bury. When the tooth is accepted, the offence is buried, and it may not be dug up.

Pohnpei. On this island of Micronesia a family that has given offence brings the pepper root to the offended family or chief and prepares the drink before them. Once the cup is accepted, the grievance must be dropped.

The older reports. E. S. C. Handy compared the religions of the Polynesian islands in the 1920s. He found confession by the patient or by his kin, as a first step of treatment, reported from one island group after another (Handy 1927).

Aotearoa. Chapter 70 describes the Māori forms.

Chapter 21 described a rite of central Africa in which the kin of a patient speak out their grudges while the healer works. It follows the same rule on another continent.

Decline and return

The missionaries condemned the prayers to the family guardians, and with them the meeting. Some families gave it up. Others, like Pukui's, kept the course and addressed the prayers to the Christian God. By the 1960s many younger Hawaiians knew only the word. Some used it for a family scolding, and some for a rite against sorcery.

The committee of chapter 68 recorded the old form from Pukui. The children's centre that had called the committee then trained its own workers to lead meetings for the families in its care.

From there the practice spread during the 1970s and 1980s. Programmes for young offenders adopted it, and so did programmes for people dependent on drink and drugs. The family courts of the state began to refer cases to Hawaiian elders. Since 1996 a meeting of the wider family has been offered when a child may be taken into care. Schools use a short form for quarrels among pupils.

A study of the leaders who were using it in the early 1980s found what one would expect (Shook 1985). The course had been kept, and the setting had changed. Some leaders were professionals and not elders of the family. Some groups were not kin. Some left out the guardians, and a few left out prayer.

A summary written for American lawyers describes the same course and adds what a court cannot offer. A court decides who is right. The meeting restores the tie between people who must go on living together (Meyer 1995).

Such changes raise the question of how much can be removed before the rite becomes another one. The form described next puts that question sharply.

The solitary form

The name ho‘oponopono is known across the world today for a practice that a person does alone.

Morrnah Simeona, who lived from 1913 to 1992, was a Hawaiian healer who worked with her hands. From 1976 she taught a new form. She held that the old meeting no longer suited modern life, in which families are scattered. In her form one person works through a set of prayers by himself. He asks the divine to release him and all with whom he is entangled, the

living and the dead, from the faults of this life and of earlier lives. She drew on Christian teaching, and on Indian teaching about the fruit of acts, as well as on what she had learned as a girl.

Her form names three selves in each person. That teaching does not come from the Hawaiian elders. An American schoolteacher, Max Freedom Long, published it from 1936 as the secret knowledge of the Hawaiian experts. Hawaiian scholars have said that it is not a Hawaiian tradition.

After her death her pupil, the psychologist Ihaleakala Hew Len, simplified the practice further. A book of 2007 made it known as the repeating of four sentences: I am sorry, please forgive me, thank you, I love you (Vitale 2007).

The book tells that Hew Len had worked in a ward for mentally ill offenders in a Hawaiian hospital. He is said to have healed the patients without seeing them. He read their files and cleansed in himself whatever he shared with them. No record of this has been published. The account rests on his word.

The solitary form keeps two elements of the meeting, the confession and the release. It keeps the Hawaiian insight that the one who holds a grievance is bound by it. It leaves out the element on which Pukui's whole account turns. Nobody else is in the room. The other party does not speak, does not hear and does not release.

A person may gain from such a practice. Whether a tie between two people can be untied from one end is a question for chapter 71.

What has been measured

The meeting itself. No controlled trial has compared the health of families who held a meeting with that of families who did not. The reports are case histories from elders and social workers.

The solitary form. One study has measured it. Twenty-three adults with high blood pressure, of Asian, Hawaiian and Pacific descent, took a class in the solitary form. In the months that followed their pressure was lower, by about twelve points in the upper figure (Kretzer 2007). There was no group for comparison. Blood pressure falls in people who join any study, so the result settles nothing.

Holding a grudge. Researchers in Michigan asked seventy-one students to think of a person who had hurt them. For a short spell they were to dwell on the hurt and nurse the grudge. Then they were to imagine pardoning the person. During the grudge the brow tensed, the skin sweated, and heart rate and blood pressure rose. During the pardon they did not (Witvliet 2001).

Pardon taught. Psychologists have built courses that lead a person, step by step, to let go of a wrong that was done to him. A pooled analysis of fifty-four studies found that those who

took such a course forgave more than those who did not. They were also less depressed and less anxious (Wade 2014).

A quarrel and a wound. Researchers in Ohio admitted forty-two married couples to a hospital unit twice. Each time they raised small blisters on the forearm of each partner and followed the healing. On one visit the couple talked of a matter in which they supported each other. On the other they discussed a disagreement of their marriage. The wounds healed about a day more slowly after the disagreement. In the couples who were most hostile to each other, wounds healed at six tenths of the rate of the rest (Kiecolt-Glaser 2005).

The third person. The Hawaiian healers held that a tangle between two persons may show in a third, most often a child. A study made in Philadelphia in the 1970s bears on this. The researchers studied children with diabetes whose illness went out of control for no bodily reason. The parents were asked to discuss a conflict while the child watched from behind a glass. Then the child was brought in.

In these children a marker of arousal in the blood rose while they watched. It rose further when they joined their parents, and it stayed high afterwards. In the parents it fell when the child entered (Minuchin 1975). The study was small, and later writers have questioned its method.

Treatment of the whole family has since been tested for children with severe asthma. Two small trials found that it eased the illness (Yorke 2005).

Meeting the one who did the wrong. Many countries now bring an offender face to face with the person whom he has harmed. A neutral leader conducts the meeting, and the families of both attend. Chapter 70 tells how the practice began among the Māori.

Ten trials with nearly two thousand offenders have been pooled. Those who met their victims offended again somewhat less often. The victims were more satisfied than those whose cases went only to court (Strang 2013). In a trial in London, fewer of the victims who had met the offender showed marked signs of lasting stress (Angel 2014).

Ties and survival. Chapter 22 cited the pooled analysis of 148 studies which found that people with strong ties to others live longer (Holt-Lunstad 2010).

What the measurements do not show

The measurements show four matters. A grudge can be read in the body within minutes. A quarrel slows the healing of a wound. Pardon can be learned. A meeting helps the one who was harmed.

They do not show that a given illness in a given family comes from a given fault. They do not show that the Hawaiian meeting cures. The Hawaiian claim is stronger than anything that has been tested.

A trial is possible. Families of children with a long illness could be offered the meeting, with an elder, in addition to their usual care. The children's illness would be followed in both groups. Nobody has done it.

What stands out in the setting right

1. **Medicine waits for the meeting.** The healer will not begin until the family is clear.
2. **The patient need not be a party.** Those who speak are the ones among whom the fault lies.
3. **A neutral leader conducts,** and all speech passes through him.
4. **All strengths are joined on one aim** before any fault is examined.
5. **One layer is taken at a time,** from the surface inward.
6. **Silence is a step with a name.**
7. **The release frees both.** The one who holds a grievance is bound as fast as the one who caused it.
8. **The matter is cut, and it is not forgotten.** It may never be raised again.
9. **The meeting is opened and closed like a course of medicine,** with prayer before and a shared meal after.
10. **The last penalty is to be cut from the family.**

Reference: confession and setting right across the traditions

The Hawaiian meeting is one member of a large family of practices. The list gathers those that this book describes, and adds others from the religions and from modern clinics. Part VII draws on it.

Tradition	Practice	Before whom	The close
Hawai‘i	The family meeting of chapter 69	The whole family and a leader who is no party	Cutting of the matter, prayer and a shared meal
Samoa	The kin of a sick person confess their ill will; a wrongdoer's chiefs sit covered before the injured family	The family; two families	Water sprayed toward the patient; the mats are lifted
Fiji	The rite of burying an offence	The kin of both sides	The whale's tooth is accepted
Pohnpei	Apology with the pepper root	The offended family or chief	The cup is accepted

Tradition	Practice	Before whom	The close
Māori	The meeting of kin; since 1989 the family conference of the law	All kin, and the one who was harmed	A plan agreed by the family; shared food
Semai, Malaysia	The long meeting	The whole settlement	The headman’s closing speech, when nobody has more to say
Manus	Confession of hidden offences and unpaid debts	The household, a medium, and the ghost of the house	The debt is paid
Navajo	Peacemaking: the families talk the matter out until harmony is restored	The kin of both sides and a respected elder	Prayer and an agreement
Iglulik Inuit	The sick person confesses breaches of the rules while the shaman questions; those present ask that she be released	The household and neighbours	The shaman declares the breaches removed
Ndembu, Zambia	The kin of a patient speak out their grudges while the healer draws out a tooth	The village	The tooth is shown
Acholi, Uganda	After a killing, the two clans drink a bitter root from one vessel	Both clans and the elders	Payment for the death, then the shared drink
Rwanda	Courts on the grass for the crimes of 1994	The neighbours of victim and offender	Confession, a sentence, and return to the hill

Tradition	Practice	Before whom	The close
South Africa	The commission of 1996 on the crimes of the old order	The public, and the victims	Amnesty for full disclosure
Babylon	The priest recites a long list of possible offences, many of them against kin and neighbours. The patient peels an onion into the fire	The gods of the patient	The onion is burned and the patient washed
Egypt	The declaration of innocence	Forty-two judges, after death	The heart is weighed
Judaism	The Day of Atonement. The day atones for offences against God. An offence against a person is atoned only when that person has been appeased	God; and the person who was wronged	The closing prayer of the day
Christianity	Confession to a priest. The Gospel also bids a person be reconciled with his brother before he brings a gift to the altar	A priest; and the person who was wronged	Absolution
Islam	Repentance. A wrong against a person also requires that person's pardon or the return of what was taken	God; and the person who was wronged	No rite

Tradition	Practice	Before whom	The close
Buddhist monks	The rule is recited each fortnight and breaches are confessed. At the end of the rains each monk invites the others to name his faults	The assembled monks	The recital ends
Jains	A yearly day on which each asks pardon of all whom he may have hurt	Kin, friends, all living beings	A set phrase of pardon
China, second century	The Celestial Masters held that illness comes from offences. The sick withdrew to a quiet room, and written confessions were sent to heaven, earth and water	The three officials of the unseen	The papers are burned, buried and sunk
Aztec	Confession to the goddess of filth through her priest, once in a life	The priest, who was bound to silence	A penance
Andes	Confession to a confessor, with a penance	The confessor	Washing in a river
Japan, twentieth century	A week of solitary reflection on three questions about each person in one’s life: what I received, what I gave back, what trouble I caused	A guide who listens at intervals	The week ends

Tradition	Practice	Before whom	The close
Alcoholics Anonymous	The wrongs of a life are admitted to God, to oneself and to another person. A list is made of all who were harmed, and amends are made to each	One other person; then each person who was harmed	None; the practice is continued
Modern clinics and courts	Treatment of the whole family; meetings of offender, victim and kin; writing down what was never told	A therapist or neutral leader	An agreement, where there is one

What the list shows

The practice is nearly universal. It is found among hunters, farmers and city dwellers, in every part of the world that this book covers.

It has two addresses. Some confession is made before the unseen: a god, an ancestor, a judge of the dead. Some is made before the person who was wronged. Several traditions say outright that the first does not cover the second. The Jewish teachers say it, and so do the Muslim. The Gospel says it. The Hawaiian meeting joins both in one sitting.

It is tied to illness more often than not. Seven of the practices treat a sick person. They are the Hawaiian, the Samoan, the Manus, the Inuit, the Ndembu, the Babylonian and the early Daoist. In the others the tie has loosened, and confession serves the soul or the peace.

It ends. Nearly every entry has a formal close: a meal, a cup, a tooth, a washing, a burning. After the close the matter is not reopened.

Two peoples peel. The Hawaiian word for taking up a trouble layer by layer means to peel. The Babylonian patient peeled an onion into the fire while his offences were named. Nothing connects the two but the act.

70. Across the Pacific and the islands of Asia

One family of peoples

The Hawaiians belong to the most widely spread family of peoples that the world knew before the age of sail. Its languages are called Austronesian. Its ancestors left Taiwan some five thousand years ago and settled the Philippines and the islands of Indonesia. One branch went west across the Indian Ocean to Madagascar. Another passed along the coasts of New Guinea, where older peoples had lived for tens of thousands of years, and sailed on into the empty Pacific. Tonga and Samoa were reached about three thousand years ago. The far corners, Hawai‘i, Easter Island and New Zealand, were settled last.

The medicines of these peoples differ greatly. Java and Bali took much from India. The Malay world took from Islam and from the Greek medicine that came with it. The Philippines took from Spain. Under what was borrowed a common ground remains, and the languages show it.

Meaning	Related words
An expert, a master of a craft	*kahuna* (Hawai‘i), *tohunga* (Māori), *tahu‘a* (Tahiti), *tufuga* (Samoa), *ta‘unga* (Cook Islands)
A healer who deals with spirits	*balian* (Bali), *belian* (Borneo), *babaylan* (central Philippines), *bobohizan* (northern Borneo)
A spirit of the dead or of a place	*anito* (Philippines), *hantu* (Malay), *aniti* (Guam), *aitu* (Samoa)
Set apart, forbidden	*kapu* (Hawai‘i), *tapu* (Māori, Samoa, Tonga), *tabu* (Fiji)
Power that works	*mana*, across Polynesia and in much of Melanesia
The soul or vigour of a living being	*semangat* (Malay), *semengat* (Iban), *sumange’* (Bugis)

The practices show it as well. Everywhere in the region a person has a soul that can leave and be called back. Illness comes from offended ancestors, from the spirits of a place, from a broken rule or from sorcery. The cure is by confession, by offering, by the hand and by the plant.

Two plants of one genus divide the region between them. In the islands of the open Pacific people drink the root of a pepper shrub. From India to the Solomon Islands they chew the leaf

of a pepper vine with the areca nut and lime. Both are offered to guests and to the dead, and both open a meeting with a healer.

This chapter goes from island to island. It begins in the far south, goes through the Pacific, and ends on the mainland of Southeast Asia. The peoples of the mainland belong to other families, but their village medicine stands on the same ground.

Aotearoa: the ground

Settlement. The ancestors of the Māori reached New Zealand from eastern Polynesia in about 1250 to 1300. It was the last large land on earth to be settled, and the coldest that any Polynesians had met. The coconut, the breadfruit and the pepper shrub would not grow. The settlers gave the name of the pepper shrub to a native relative with heart-shaped leaves, the *kawakawa*. It became their chief healing plant.

The experts. The Māori word for an expert is *tohunga*. As in Hawai‘i there were experts of carving, of tattooing, of the canoe and of the stars. The highest were trained in a house of learning, where the teaching was sacred and was given by word of mouth.

The words.

Māori word	Meaning
Tapu	Set apart; under the influence of the gods; restricted
Noa	Free of *tapu*; ordinary; safe
Mana	Power and standing, from the ancestors and from deeds
Mauri	The principle of life in a person, a forest, a river or a house
Wairua	The spirit, which travels in dreams and survives death
Hau	The breath; the vital essence of a person, a place or a gift
Whakapapa	Genealogy: the layers of descent that tie every being to the first parents, sky and earth
Atua	A god or spirit; an ancestor with continuing power
Whenua	The land; also the afterbirth
Hara	A breach of *tapu*; an offence

Māori word	Meaning
Aroha	Love; compassion
Whānau	The extended family; the word also means to give birth
Hapū	The clan; the word also means pregnant
Iwi	The tribe; the word also means bone

A Māori names the three circles of his kin by birth, pregnancy and bone. The afterbirth of a child is buried in the land of its ancestors, and one word serves for both. Māori call themselves the people of the land in that sense.

***Tapu* and *noa*.** The pair governs the old medicine. A person, a place or an object that is *tapu* is under the influence of the gods and must be approached by rule. The head is the most *tapu* part of the body. A chief, a corpse, a woman in childbirth, a warrior on campaign and a sick person are all *tapu*.

Cooked food is the opposite. It is *noa*, and it removes *tapu* from whatever it touches. A man in a high state of *tapu* could not feed himself. Another person fed him, with a stick.

Health depends on keeping the two states apart and on passing rightly from one to the other. To cross without the rite is a breach.

Aotearoa: illness and the rite at the water

Where illness comes from. The old Māori divided illness as the Hawaiians did. Wounds, broken bones and the hurts of battle and accident were illness of human origin. They were treated with the hand and with plants. All other illness came from the gods (Buck 1949). It had three sources.

The first was a breach of *tapu*. The patient, or one of his kin, had trespassed on a sacred place, eaten what was set apart, or neglected a rite. A spirit of the family then entered the body and gnawed at it. The spirit was often pictured as a lizard, which the Māori dreaded.

The second was sorcery. The sorcerer needed a medium, as in Hawai‘i: a hair, spittle, a shred of clothing, or earth from a footprint.

The third was the dead. The spirits of infants who had died before or at birth were held to be the most harmful. They had no ties of affection to the living.

Finding the breach. The expert’s first task was to find the breach. Te Rangi Hīroa, the Māori physician and anthropologist, describes an examination by questions. Where had the patient been? What had he touched or eaten? Whom had he offended? The patient’s dreams were heard. Some experts had the gift of sight and named the cause unasked.

The rite. Treatment took place at dawn, at a stream or pool kept for the purpose. The expert led the patient into the water. He recited the incantation that named the breach and called the spirit out. He sprinkled the patient with a wet branch, or immersed him. The spirit was given a path by which to leave, sometimes a stalk of flax held against the body.

Then the *tapu* of the rite itself was lifted, with water and with cooked food. The patient returned to ordinary life.

An incantation had to be recited without a slip. A break in it was the worst of omens, for the patient and for the reciter.

Birth. In a hard labour the expert recited the genealogy of the child, name by name, from the first ancestors downward. The child was expected to come forth when the right name was reached (Best 1924).

The gift that must return. In the 1890s the elder Tamati Ranapiri explained to the ethnographer Elsdon Best what the *hau* of a gift is. Suppose that he is given a valued object and passes it on, and later receives another in return. He must then give that return to the first giver, for it is the *hau* of the first gift. If he kept it, he said, he would fall ill or die. The French scholar Marcel Mauss built his study of the gift on this text (Mauss 1925).

The passage is cited here for its medicine. It names, as a cause of illness, a return that has not been made.

Aotearoa: the hand, the plant and the water

The hand. Māori healers knead and press as the Hawaiians do. The lighter kneading is called *mirimiri* and the deep pressing *romiromi*. The practitioner uses the hands, the forearms and the feet, and works to chant. Infants were kneaded every day to shape the limbs.

Plants. The plant medicine is called *rongoā*. In the old days it served mainly for wounds, the skin and the bowel, since deeper illness was a matter for the rite. It grew after the Europeans came, when new illnesses arrived and the rites were under attack. Some two hundred plants are recorded (Riley 1994).

Remedy	Māori name	Chief uses
A pepper shrub with heart-shaped leaves	*Kawakawa*	Leaves chewed for toothache; an infusion for the stomach; leaves on wounds and boils; in steam baths; worn as a wreath in mourning

Remedy	Māori name	Chief uses
New Zealand flax	*Harakeke*	The gum on burns and wounds; the root as a purge; the leaf as bandage and splint
Tea tree	*Mānuka*	A decoction of the leaves for fever and the urinary passages; the vapour for colds; the gum on burns
A shrubby speedwell	*Koromiko*	The leaf tips chewed for diarrhoea and dysentery; dried leaves were sent to New Zealand soldiers abroad in the Second World War
Gumdigger's soap	*Kūmarahou*	An infusion of the leaves for coughs and the chest
A yellow-flowered tree of the pea family	*Kōwhai*	The bark as a wash for bruises, wounds and aching limbs; poisonous if swallowed in quantity
Pepper tree	*Horopito*	The hot-tasting leaf on diseases of the skin; chewed for toothache and stomach pain
A tall tree of the swamps	*Pukatea*	The bark for toothache and pains of the nerves
Sow thistle	*Pūhā*	Eaten as a green vegetable, and taken as a tonic
Hot springs and mud	*Ngāwhā*, *waiariki*	Bathing for the skin and the joints

The gathering has its rule. The healer prays before he takes from a plant. He takes from the side that faces the rising sun, and he takes no more than he needs.

Water. Water is the first remedy. The Māori greeting to a stranger asks: who are you? The word for who is also the word for water. Māori teachers read the question as asking from whose waters a person comes.

Aotearoa: mourning and shame

The mourning. When a Māori dies, the body is brought to the meeting ground of the kin and lies there for about three days. It is never left alone. Visitors arrive in groups. They weep aloud, they press noses with the bereaved and share a breath, and they make speeches. The speeches are addressed to the dead person, by name. They may reproach as well as praise. On the last night the kin sing and tell stories until dawn.

After the burial all wash their hands with water and share a feast, which returns them from *tapu* to ordinary life. The house of the dead person is walked through and cleared with prayer. About a year later the family gathers again to unveil the headstone, and the mourning ends.

This rite has survived every change. Māori of all callings leave their work to attend. Māori writers on health count it as their chief protection in grief (Durie 1994).

Shame. The Māori name a state for which English has no word. A person who has been shamed, or who has lost standing, or who feels at a disadvantage, goes silent. He lowers his eyes, will not answer, may not eat, and may stay so for days.

The anthropologist Joan Metge studied the state with Māori elders. She describes it as a loss of *mana* that the person cannot mend alone. It ends when others act. Kin or elders come to him, show him affection and restore his standing before others (Metge 1986).

A doctor or teacher who takes the state for sullenness, and presses for an answer, makes it worse.

Aotearoa: loss, the law and the prophet

Loss. James Cook reached New Zealand in 1769. About a hundred thousand Māori lived there. The census of 1896 counted forty-two thousand. Muskets, measles, influenza, consumption and typhoid had done it, together with the loss of most of the land.

The old experts could do nothing against the new illnesses. A new kind of healer appeared, who mixed the Bible with the old rites. Some of them plunged patients with measles and typhoid into cold rivers, and patients died of it.

The law. The first Māori physicians, Māui Pōmare and Te Rangi Hīroa, campaigned against such healers. In 1907 Parliament passed a law to suppress the *tohunga*. It punished anyone who gathered Māori round him by professing powers beyond the natural in the treatment of illness or the telling of the future. It was aimed in part at a prophet, Rua Kēnana, whom the government feared.

Few people were convicted under it. The practice went out of sight, and much knowledge was no longer passed on. The law was repealed in 1962.

The prophet. In November 1918 the influenza killed Māori at about seven times the rate of other New Zealanders. In that month a farmer, Tahupōtiki Wiremu Rātana, had a vision. He

began to heal by prayer. He told those who came to give up their fear of *tapu* and of sorcery and to trust in God alone. Thousands travelled to his farm. They left behind their crutches and spectacles, and the sacred objects of which they had been afraid. The church that he founded is still one of the largest among Māori.

Rātana did what the law had not done. He ended the fear of the old experts for many people. He did it with the experts' own instrument: the word, spoken by a man of standing before the gathered people.

Aotearoa: the return

The house of four walls. In 1982 the Māori psychiatrist Mason Durie spoke to a gathering of Māori women. He described health as a house with four walls. One wall is the spirit. One is the mind, with thought and feeling. One is the body. One is the family. Each wall holds up the others, and if one is missing the house falls (Durie 1985).

The figure answered a medicine that treated the third wall alone. It has become the common language of health in New Zealand. It is taught in schools and written into the policy of the health service.

Healers recognised. Māori healers formed a national body in 1993, and the health service began to pay for their work. Since 2020 the national insurer for accidents has paid for the hand treatment, the plant medicine and the prayer of registered healers.

Healer and psychiatrist together. In a clinic for young people near Wellington, the Māori healer Wiremu NiaNia and the psychiatrist Allister Bush have seen families together for years. They have published their cases, with the families' own accounts (NiaNia 2017).

The healer asks what the old experts asked. Has a rule been broken? Is a dead relative near? Has harm been sent? In some cases he judges that a voice heard by a young person is an ancestor and not an illness. He then deals with it by prayer and through the family. In others he judges that the trouble belongs to the psychiatrist. The book shows two readings of one patient kept side by side, with neither given up.

The conference of the family. In 1989 New Zealand changed its law on children and young people. A Māori report had charged that the courts and the welfare service took children from their kin and decided for them.

Under the new law a young person who has offended comes first before a conference of the whole family. So does a child who may need care. The victim attends if he wishes. The officials explain the case and then leave the room. The family deliberates alone and brings back a plan.

The conference was taken from the Māori meeting of kin. It has been copied in many countries. Chapter 69 cited the trials of such meetings.

What has been measured in Aotearoa

Very little of the old medicine has been tested. No controlled trial of an expert's treatment has been published.

The plants have been examined in the laboratory. The pepper tree contains a compound that kills fungi, which fits its use on the skin. The bark of the swamp tree contains an alkaloid that relieves pain.

Honey from the flowers of *mānuka* is sold across the world for wounds. It is a modern product, since the honey bee came with the settlers. A review of the trials of honey found that it heals shallow burns sooner than the usual dressings (Jull 2015).

Samoa

The healers. A Samoan healer is most often a woman of middle age or older. The healer who kneads is called a *fofō*, and the word is also the name of her treatment. The healer who works with plants is a *taulāsea*. The knowledge belongs to a family. It is passed to a chosen child, and no fee is asked for it. The family of a patient gives a gift.

Two kinds of illness. Samoans sort illness into two kinds. One is Samoan illness and the other is the foreigners' illness. A broken leg, diabetes and consumption go to the hospital. Samoan illness goes to the healer. People move between the two without embarrassment. They try one and then the other, and the nurses of Samoan hospitals often let a healer work in the ward (Macpherson 1990).

The centre under the navel. Every person has, just below the navel, a centre that Samoans call the *to'ala*. A fright, a fall or a heavy load can shift it. It then wanders upward under the ribs or into the back. The patient has pain, nausea and shortness of breath. The healer finds it with her fingers and kneads it back to its place with coconut oil.

Spirit sickness. The best-known Samoan illness is the sickness of the spirits. A person, often a young woman, suddenly speaks in the voice of a dead relative or of a known spirit of the district. She shows great strength. She says what could not otherwise be said. She scolds the family for neglect, for a quarrel, for a broken promise, or for the way she herself is treated.

The healer crushes pungent leaves and drips the juice into the eyes, the ears and the nose. She kneads. She speaks with the spirit and asks who it is and what it wants. Then the family sets right what the spirit has named, and the girl comes to herself.

Chapter 69 described the older Samoan custom, in which the kin of a sick person confessed their ill will and sprayed water toward him.

A tree and a virus. In 1984 the botanist Paul Cox worked with the healers of a village on the island of Savai'i. They treated a yellowing illness of the liver with the bark of a forest tree. A laboratory of the American government isolated a compound from the bark. In the test tube it

protected cells against the virus of AIDS (Gustafson 1992). It was later found to rouse the virus from the cells in which it hides, which is a step toward clearing it.

Agreements were signed to share any income with the village and with Samoa. No medicine has yet come of it. The case is cited as a model of how a healer's knowledge should be paid for (Cox 1993).

Tonga

Tongan healers are specialists. Each holds the cure for one or a few named illnesses. The cure was given to an ancestor and is handed on in the family by a small rite. The healer takes no payment.

Tonga has its own sickness of the spirits. The dead relative, or another spirit, has come upon the person. The patient weeps, speaks with people who are not there, and may run at night toward the graveyard. The healer drips the juice of crushed leaves into the eyes, nose and mouth, and bathes the patient.

If that fails, the family may ask what troubles the dead person. Tongan healers have been recorded as opening the grave to look. A root may have grown through the bones. It is cut away, the bones are washed and oiled and laid straight, and the grave is closed (Parsons 1985).

The botanist Arthur Whistler recorded the plant remedies of Tonga, Samoa and the other Polynesian islands. He drew a sober conclusion from the old sources. Before the Europeans came, Polynesian healers gave plants mostly for wounds and the skin. Deeper illness was treated by rite and by the hand. The large stock of remedies taken by mouth grew up after contact, when new illnesses arrived and the old priests were gone (Whistler 1992).

Fiji

Three kinds of illness. Fijians distinguish true illness, which has an ordinary cause, from illness of the land and illness of the spirits. Illness of the land follows a breach of custom toward kin, chief or ancestors. Illness of the spirits is sent by a person who has dealt with the powers for a bad end. An early study of one district found that most serious illness was laid to a breach of duty among kin. It was cured by a rite of atonement before the offended party (Spencer 1941).

The visit. A patient who goes to a Fijian healer brings the pepper root. The healer accepts it on behalf of the ancestral gods and prays. He names the cause, which is often an offence or a jealousy. He gives plants and kneads.

The straight path. The psychologist Richard Katz, whose work with the healers of the Kalahari was cited in chapter 11, later lived with Fijian healers. They told him that the power to heal depends on how the healer lives. They called it the straight path. Its marks are

truthfulness, humility, respect for custom, love for all, service without reward, and a mind that stays on its task.

A healer who uses the power for himself loses it, or becomes a sorcerer. Healing and sorcery draw on one power. What differs is the heart of the one who uses it (Katz 1993).

Tahiti and the eastern islands

In Tahiti the old priests vanished within two generations of the conversion. The medicine survived as recipes owned by families. Each recipe gives the plants, the number of leaves or buds, and the way of preparing them. It is given freely. Tahitians say that a recipe which is sold loses its power.

The hand treatment is called *taurumi*. The oil of a coastal tree, the *tamanu*, is the Tahitian remedy for wounds, burns and the skin. Laboratory studies have found that it helps skin cells to close a wound.

Micronesia

Chuuk. The anthropologist Frank Mahony studied the medicine of the islands of Chuuk. Every illness there is the work of a particular spirit, and every spirit owns a medicine. The medicine is made of the plants that belong to that spirit, and it is given with the spirit's spell. The one who causes an illness is thus the owner of its cure. Knowledge of a medicine is property. It is bought, inherited and guarded (Mahony 1970).

The knots. The diviners of the Caroline Islands find the cause of an illness with knots. The diviner ties knots at random in four strips of young coconut leaf. He counts the knots of each strip by fours and keeps the remainder, which is a number from one to four. The first two strips give one pair of numbers and the last two another. There are sixteen possible pairs, and each bears the name of a spirit. Two pairs together give one of 256 answers, each of which has a meaning that the diviner knows by heart (Lessa 1959).

The count is that of Ifá, which chapter 26 examined: sixteen figures, and sixteen times sixteen signs. William Lessa, who described the Carolinian method, pointed out the likeness to the sand divination of Africa and Arabia. No path of borrowing between them is known.

Guam. The healers of the Chamorro people knead and give plants. They also treat the illness that comes from the people of before. These are the ancestors, who live in the banyan trees and the forest. A person who enters their ground without asking leave, or is loud there, is pinched by them. He finds bruises and swellings and has a fever. The healer kneads with plants and asks pardon on his behalf (McMakin 1978).

The pepper root

The plant. The drink that Hawaiians call *'awa* and most other islanders *kava* is made from the root of a pepper shrub. The shrub sets no seed. People bred it from a wild relative,

probably in the north of Vanuatu about three thousand years ago. They carried cuttings by canoe to Fiji, to all of Polynesia and to a few islands of Micronesia and New Guinea (Lebot 1992).

The drink. The root is pounded or grated. In former times young people chewed it. The pulp is kneaded in cold water and strained through fibre. Each person drinks a cup of coconut shell at one draught.

The mouth goes numb. The muscles loosen and the mind grows calm, while the head stays clear. Sleep comes easily afterwards. Drinkers do not quarrel.

Its uses. The drink opens every formal occasion in the islands where it grows. A guest is welcomed with it, and a chief is installed with it. In Tonga and Samoa the order in which the cup is served states the rank of each person present. Chapter 69 gave its part in the ending of quarrels, and this chapter its part in a visit to a Fijian healer.

It is also the drink of the ancestors. In Vanuatu the men gather at dusk on their meeting ground and drink in silence. They say that they listen to the root. It is the hour at which the ancestors are near.

As a remedy the islanders give it for sleeplessness, for pain and stiffness, and for troubles of the urinary passages.

The trials. In the 1990s extracts of the root were sold in Europe and America as a remedy for anxiety. A review pooled the trials in 2003. In seven trials with 380 patients, the extract lowered the score of anxiety by about four points more than a dummy did (Pittler 2003).

Later trials used an extract made with water, as the islanders make it. One, in 75 people with lasting anxiety, found a clear benefit over six weeks (Sarris 2013). A larger one, in 171 people over sixteen weeks, found none. More of those who took the extract had abnormal liver tests (Sarris 2020).

The liver. From 1999 doctors in Germany and Switzerland reported patients whose livers had failed while they took the capsules. Some needed a transplant, and some died. Germany withdrew the product in 2002, and other countries followed. A German court lifted the ban in 2014.

The cause has not been settled. The islanders drink a water extract of the peeled root of chosen varieties. The capsules held a concentrate made with acetone or alcohol, sometimes from stems and peelings and from cheaper varieties. A committee of the World Health Organization advised in 2007 that the water extract of the peeled root is the safer form (WHO 2007).

Heavy drinkers in the islands do come to harm. Their skin grows dry and scaly, they lose weight, and their liver tests are raised.

The episode has a lesson for the whole of this book. A plant was taken out of its use. The variety, the part, the solvent, the dose, the hour and the company were all changed, and the remedy was then judged as if it were the same.

Melanesia

New Guinea, the Solomon Islands, Vanuatu and New Caledonia hold more than a thousand languages. They have no single medicine. Four features recur in the reports.

Most illness is only illness. A study among the Huli of the New Guinea highlands recorded how people explained each episode of illness. They gave the great majority an ordinary cause and treated it at home, or left it alone (Frankel 1986). The lingua franca of Papua New Guinea has a name for it. It means illness and nothing more.

Grave illness raises a question of persons. When an illness lasts or kills, people ask who is behind it. The answer is an enemy who has used sorcery, a dead relative who is angry, or a rule that has been broken.

The remedy is breathed on. The healer chews ginger or bark, speaks a spell into it, and spits it over the patient in a fine spray. Painful parts are rubbed with stinging nettles. A headache is bled at the forehead with a tiny arrow shot from a tiny bow.

The oracle answers yes or no. Among the Kwaio of the Solomon Islands a diviner puts a question to the ancestors and pulls apart a knotted strip of leaf. The way it breaks is the answer. He goes on until the ancestor and the offence are named. A pig is then given (Keesing 1982).

Two cases from Melanesia deserve a fuller account.

The ghost in the house. The people of the island of Manus kept the skull of the last head of each household in a bowl above the door. Reo Fortune, who lived among them in 1928, describes how they called that ghost. He was the guardian of the house, and he saw all that its members did.

He punished two faults above all: hidden offences of sex, and debts left unpaid. He did so by taking the soul of a member of the household, who then fell ill. The one who fell ill was not always the one at fault. A diviner and a medium found the offence. The offender confessed before all, and the debt was paid or a fine was given. The patient was then expected to recover.

If the patient died, the ghost had failed in his duty. The skull was thrown out, and the dead man took its place as guardian (Fortune 1935).

Fortune’s account is the fullest that exists of a medicine in which illness is a matter of accounts. It also shows the two matters in which such a medicine deals: what one person owes another, and what has been hidden.

The trembling illness. In the 1950s a fatal illness spread among the Fore people of the eastern highlands of New Guinea. Its victims, mostly women and children, lost their balance, trembled, and died within a year. At its height it killed about one person in a hundred each year.

The Fore held that sorcerers caused it. A sorcerer stole a scrap of the victim's food or clothing or hair. He bound it in a bundle with leaves and stones, and laid it in a swamp. As the bundle rotted, the victim sickened. Villages held meetings to find the sorcerers. Suspected men were killed. Healers were consulted far and wide. Nobody was cured.

Physicians and anthropologists found the path of the illness. The Fore honoured their dead by eating them. The kin of a dead person, and above all the women and small children, shared the body at the mourning feast. The illness passed with the brain of a person who had died of it. The practice ended about 1960, and the illness slowly disappeared (Lindenbaum 1979).

The Fore were right that the illness came from the dealings of people with each other. They were mistaken about which dealings. It did not come from hatred. It came from the rite of love and grief.

The shadow. The question of who is behind an illness has a cost. In parts of Papua New Guinea a death is still followed by an accusation. The accused, who are most often women without protectors, are tortured and sometimes killed. Hundreds of such cases have been recorded in recent decades (Forsyth 2015). Chapter 71 returns to this.

The Philippines

The priestesses. When the Spaniards came in the sixteenth century, the healers of the islands were mediums. In the central islands they were called *babaylan*. Most were women, and some were men who lived as women. To the sound of gongs they went into trance and spoke with the ancestors and with the spirits of the land. They offered a pig and rice wine, and they called back the soul of the sick (Scott 1994).

The friars took them for servants of the devil and burned their images. Several risings against Spain were led by such mediums. The office did not die. In the hills it went on as it was. In the lowlands it took Christian dress. The healer of today prays to the saints and keeps a booklet of prayers in a Latin of his own.

The healers of today.

Healer	Work
Albularyo	The general healer of the village: plants, prayers, smoke, and the finding of causes

Healer	Work
Manghihilot	The one who kneads: sprains, displaced bones and vessels, the care of mother and child, and the knots that cold leaves in the muscles
Mangtatawas	The one who finds a cause with alum, wax or an egg
Mananambal	The healer of the central and southern islands, who also undoes sorcery
Espiritista	A medium of the spiritist churches, who heals by prayer and by the laying on of hands

The kneader's art is called *hilot*. He slides oiled fingers over the body and feels for what is out of place. Some lay strips of banana leaf on the oiled skin and treat the place where the leaf clings.

Finding the cause with alum. The diagnostician passes a lump of alum over the patient with a prayer and lays it on glowing charcoal. It melts, swells and hardens into a shape. The shape is read as a human figure, a dwarf of the mounds, or an animal. It shows who or what has caused the illness. Others pour melted wax into water, or break an egg into a glass.

Where illness comes from. The physician and anthropologist Michael Tan sorted the Filipino accounts into three groups. Some illness follows from an act or a contact, with no agent who wills it. Some is sent by a person or a spirit. Some has an ordinary cause in heat, cold, wind or food (Tan 2008).

Illness	What happens	Cure
Usog	A child falls ill with fever and crying after a visitor has greeted or admired it. No ill will is needed	The same visitor dabs his saliva on the child's belly or forehead
Pasma	A body that is hot from work meets cold water. The hands tremble and sweat, and the limbs ache	Rest before washing; kneading; warm salt water
Bughat, *binat*	A relapse. A woman after childbirth, or anyone after an illness, has gone back to work or bathed too soon	Steam with herbs, kneading, and a new term of rest

Illness	What happens	Cure
Lamig	Cold has lodged in the muscles as knots	Kneading with oil
The mound and the tree	A person has trodden on the home of an unseen dweller without asking leave. A foot swells, or a fever comes	An offering at the place, and a request for pardon
Kulam, *barang*	Sorcery, by a doll or by insects sent into the body	A healer who returns it
Gaba	Misfortune that falls of itself on one who has scorned his parents or elders, or wasted food	To ask pardon of the one who was scorned
Soul loss	A child has been frightened, and its soul has stayed at the place	The mother calls the child's name at dusk and bids it come home
Bangungot	A healthy young man cries out in his sleep and is found dead	None was known

Three of these deserve a comment.

Usog is cured by the person who caused it. A visitor to a Filipino house with a baby will often wet a finger and touch the child unasked, as a courtesy.

Bughat states a rule that all the medicines of this region share. A recovery has a term. If it is cut short, the illness returns in a harder form.

Bangungot was long taken by physicians for a tale. It is now known as a disorder of the heart's rhythm that kills young men of Southeast Asia in their sleep. Thailand, Laos and Japan have their own names for it. The fault lies in a gene for a channel of the heart muscle (Vatta 2002). The village had named a real illness long before the clinic could see it.

The sorcerer who needs a fault. Richard Lieban studied the healers and sorcerers of the city of Cebu. He found that the two are often one person. He also found a belief that limits the sorcerer. Sorcery takes hold only of a victim who has done wrong. Against an innocent person it fails, and it may return on the one who paid for it (Lieban 1967). Chapter 68 reported the same safeguard from Hawai‘i.

The operation without a knife. The spiritist teaching of the Frenchman Allan Kardec reached the Philippines from Spain, and a union of spiritist churches was founded in 1905. Its mediums healed by prayer and by the hands. In the 1940s one of them, Eleuterio Terte, began

to perform what looked like operations with his bare fingers. His pupil Antonio Agpaoa made the practice famous in the 1960s. Sick foreigners arrived by the planeload.

The healer kneads the belly. Blood wells up between his fingers. He lifts out a piece of tissue and wipes the skin, which shows no wound. Investigators found that the tissue came from animals and that the act was a conjuring trick. In 1975 a judge of the American trade commission called it pure fakery and forbade travel agents to advertise it. Patients who relied on it in place of treatment have died.

The trick is old. Chapter 9 told how healers of the north-west coast of America drew a bloody object from the patient's body. One of them had learned the trick as a sceptic, and found that his patients recovered.

A show of surgery can relieve. Surgeons learned the same when they tested an operation on worn knees against a mere cut in the skin. The patients with the cut did as well for two years (Moseley 2002).

That does not excuse the practice. It takes the money of the dying under a false claim. It does explain why patients have spoken well of it.

The state. A law of 1997 set up an institute for traditional medicine. The health department promotes ten plants that a national programme has tested since the 1970s. The leaf of the five-leaved chaste tree is sold in every pharmacy as a tablet and a syrup for cough and asthma. The bitter gourd is recommended for diabetes. The pooled trials of the bitter gourd have not shown that it lowers the blood sugar (Ooi 2012).

The art of the kneader is taught in state courses and certified.

Java

Three layers. Java has three medicines laid one on another. The lowest is the village ground of souls and spirits that this chapter has followed from island to island. On it lies an Indian layer. Hindu and Buddhist kingdoms ruled Java for a thousand years, and their physicians brought the Indian system of Part V. The uppermost layer is Islamic. With Islam came prayers, verses written on paper and dissolved in water, cupping, honey and the black seed.

The herbal drink. The daily medicine of Java is *jamu*. It is a drink of fresh roots, leaves and bark, pounded and mixed with water, tamarind and palm sugar. Reliefs on the monument of Borobudur, built about the year 800, are read as showing medicines being pounded and a patient being rubbed. Javanese court manuscripts of the nineteenth century hold well over a thousand recipes.

Every morning women walk the streets of Javanese towns with a basket of bottles on the back. Each bottle holds one drink.

Drink	Chief ingredients	Taken for
Kunir asam	Turmeric and tamarind	The monthly period; a cool body; clear skin
Beras kencur	Rice and aromatic ginger	Tiredness, aching muscles, cough; appetite
Cabe puyang	Javanese long pepper and bitter ginger	Stiff and aching limbs
Pahitan	Bitter herbs, chiefly the plant called king of bitters	Itching, a poor appetite, sweet urine
Kunci suruh	Fingerroot and betel leaf	Women’s discharges
Uyup-uyup	Several roots	To bring the milk of a nursing mother
Sinom	Young tamarind leaves and turmeric	Refreshment
Temulawak	Javanese turmeric	The liver, the digestion, the appetite of children

Most of the roots belong to the ginger family. A woman takes special drinks for forty days after a birth, and her belly is bound with a long cloth.

More than half of Indonesians say that they take *jamu*. In 2023 the United Nations listed it as a heritage of mankind. The state sorts herbal products into three grades: those that rest on custom, those that are standardised and tested on animals, and those that have passed trials in patients. Very few have reached the third grade (Elfahmi 2014).

There is a known abuse. Inspectors regularly find powders sold as *jamu* for aching joints that contain strong synthetic drugs. Chapter 75 returns to it.

The healers. The Javanese healer is a *dukun*. Clifford Geertz lived in an east Javanese town in the 1950s. He lists more than a dozen kinds. Among them are the midwife, the kneader, the bone-setter, the medium, the reckoner of days, the sorcerer, and the experts in spells and in herbs (Geertz 1960).

Geertz reports what the healers themselves said of their cures. A cure has three parts. The first is the herb. The second is the spell, in Javanese and Arabic. The third is the healer’s own inner strength, which he gains by fasting and by nights of wakeful stillness.

They added a condition, and gave it a name that means to fit, as a key fits a lock. The remedy must fit the illness. The healer must also fit the patient. A healer who cures one person may fail with the next, and nobody thinks the worse of him. The patient goes on until he finds the one who fits.

The safe state. The Javanese word for health and for safety is the same. Geertz translates his neighbours' explanation of it: nothing is going to happen. It is the state in which no spirit troubles a person and no feeling runs high.

The Javanese protect it by keeping their feelings level. A sudden fright is held to be the commonest door to illness. It leaves a person confused and empty, and what is empty can be entered. Patience, acceptance and a quiet face are duties of health.

The feast. The rite that secures the safe state is a small feast. A household gives it at every turning. It is given in the seventh month of a pregnancy, at a birth and on the thirty-fifth day after it, and at a circumcision and a wedding. It is given on set days after a death, up to the thousandth. It is also given for an illness, a bad dream or a new house.

The men of the nearest houses are called in. They sit on mats round the dishes. The host states his purpose in formal speech. A prayer is said in Arabic. Each guest eats a few mouthfuls and carries the rest home. The whole takes ten minutes.

The spirits have eaten the scent of the food and the neighbours the food itself. Nobody now has cause for ill feeling, among the seen or the unseen.

Wind has entered. The commonest complaint in Java has a name that means that wind has entered. The patient is chilled and aching, bloated and sick. The treatment is to rub the oiled back with the edge of a coin in long strokes, until red stripes rise. Chapter 51 listed the same treatment among the household remedies of China, and chapter 65 found it in Vietnam. Cambodia has it too. A German trial of it in forty-eight patients with a painful neck found less pain after a week than with a warm pad (Braun 2011).

A sudden pain in the chest that kills is called the wind that sits. The village names a failing heart as a wind.

The four siblings. A Javanese is born with four companions: the water of the womb, the blood, the cord and the afterbirth. They are his elder and younger siblings, and he is the fifth, at the centre. The afterbirth is buried by the door of the house, and a lamp burns over it for thirty-five days. A person who remembers his four siblings is guarded by them for life.

The reckoning of days. The Javanese count days in two weeks at once. One has five days and one has seven. A given pair returns every thirty-five days, and a child's birthday is kept at that interval. Each day of each week has a number, a direction and a colour. The five days of the market week stand for east, south, west, north and centre.

A healer who reckons adds the numbers of a patient's day of birth to those of the day on which he fell ill. From the sum he tells the nature of the illness, the direction in which its cause lies, and the day on which treatment should begin.

The shadow. Javanese and Balinese families have long restrained a mad relative by locking his leg in a wooden block, sometimes for years. A campaign to end it began in the 2010s. Investigators still found thousands of people held in this way (HRW 2016).

Bali

Bali kept the Hindu religion when Java became Muslim. Its medicine shows the Indian layer and the island ground together more clearly than any other.

The seen and the unseen. The Balinese have a pair of words for the two sides of the world. *Sekala* is what can be seen. *Niskala* is what cannot. Every event has both sides. A man who falls from a tree has slipped, and that is the seen side. The unseen side is the question of why he slipped on that day (Eiseman 1990).

An illness is treated on both sides. The clinic and the herb answer the first. The second is a matter for a healer.

The healers. A Balinese healer is a *balian*. There are two main kinds.

The healer of the book can read the old script. He owns palm-leaf manuscripts on medicine, which he has inherited or copied. They give illnesses, plants, spells and drawings to be written on the body. One of them takes the form of a hearing. A sage sits in meditation, and the plants come before him one by one. Each states its name, whether its nature is hot, cool or between the two, and which illnesses it cures.

The healer of the seat is a medium. A god or an ancestor comes down and uses her as a seat. Most such healers are women. Families do not come to her for a remedy. They come to ask a question.

Asking for speech. The film-makers Timothy and Patsy Asch and the anthropologist Linda Connor recorded the work of one medium, Jero Tapakan, over several years (Connor 1986). A family arrives with offerings. A child has been ill for months, and the clinic has not helped. The medium prays, breathes the smoke of incense and goes into trance. Her voice changes. A dead grandfather speaks.

He says what is owed. A rite for him was left undone, or done cheaply. A promise made at a shrine has been forgotten. The family asks questions, bargains and weeps. When the medium wakes she remembers nothing, and the family tells her what was said. Then they go home and perform the rite.

The child who returns. Every Balinese child is an ancestor come back. Some weeks after a birth the family visits a medium to ask who has returned. The ancestor names himself and says what he wants in this life. A person is thus a point on a line of his own family, as in Hawai‘i.

The four siblings. The Balinese have the four companions of the Javanese: the water of the womb, the blood, the wax on the newborn’s skin and the afterbirth. The afterbirth is buried at the door of the house under a stone. The four are fed with small offerings through childhood. Neglected, they turn against the person and bring illness.

The debt to the dead. A dead person must be burned and then purified in a second rite before he can take his place in the family temple. Both rites are costly. Until they are done the dead person is not at rest, and he reminds his descendants. The usual reminder is an illness.

Three states. The healers of the book sort illnesses and remedies into three classes: hot, cold and mixed. A hot illness is given a cool plant. The colour of the urine, the heat of the skin and the state of the tongue tell the class.

The compass in the body. Each direction has a god, a colour, a syllable and an organ. East is white and holds the heart. South is red and holds the liver. West is yellow and holds the kidneys. North is black and holds the gall. The centre has all colours. A healer may write the syllables on the body, or tell a patient to turn his attention to each direction in order.

The calendar. The Balinese year of ritual has 210 days. Ten weeks run in it at once, of one day up to ten days. The days on which certain weeks end together are marked. When the week of three and the week of five end on one day, which happens every fifteen days, the witches and the spirits of the ground are abroad. Offerings are laid at every gate. A healer looks up the day on which an illness began to learn its nature.

The witch and the bright face. Illness that is sent comes from a witch. A witch is a living person who has studied the lore of the left hand and can go out at night in another shape. The Balinese suspect those nearest to them: a neighbour, a rival, a relative by marriage.

The anthropologist Unni Wikan lived with Balinese families in the 1980s. She describes how this fear governs daily conduct (Wikan 1990). Sadness and anger weaken the life of a person and leave him open to sorcery. They also spread to others. A Balinese therefore owes it to his health and to his neighbours to keep a bright face. Wikan tells of a young woman whose betrothed had died. She laughed and joked for weeks, and her friends helped her to do it. They held that grief which is given way to can kill.

The play of the witch. When a village is troubled by illness, it may stage the old drama of the widow-witch Rangda and the shaggy beast called the Barong. Rangda brings pestilence. The Barong protects the village. They fight. The men of the village rush at the witch with their daggers and fall into trance. They turn the points against their own chests and do not wound themselves (Belo 1960).

Neither side wins. The witch is not killed, and the play ends when the two are again in balance. The Balinese do not hope to rid the world of what harms. They aim to keep it in its place.

Three relations. Balinese teachers sum up well-being in three right relations: with the gods, with other people, and with the land. The Hawaiian triangle of chapter 68 has the same three corners.

Water. Almost every treatment ends with holy water. A priest makes it with prayers, or it is drawn from a sacred spring. The patient is sprinkled, drinks three sips and wipes it over his head. Balinese sometimes call their religion the religion of holy water.

The Malay world

The healers. The Malay healer is a *bomoh*. The *pawang* is a specialist of places. He opens a forest, a mine or a fishing season and deals with the spirits who own it. The village midwife, the *bidan*, cares for a woman from the seventh month of pregnancy until forty-four days after the birth.

Three sources. Malay medicine has drawn on three sources. The first is the island ground of soul and spirit. The second is the Greek medicine of Part IV, which came with Islam. Malay medical manuscripts teach the four elements and the four humours, and every villager sorts foods and illnesses into hot and cold (Laderman 1983). The third is Islam itself: the verse recited over a glass of water, which the patient drinks.

Since the 1980s Islamic teachers have pressed the healers to give up their dealings with spirits. The healing play that is described below was forbidden in its home state in 1991.

The soul. The Malay word for the soul of a living being is *semangat*. People have it, and so have animals, rice, iron and a house. It is pictured as small and timid, like a bird. A fright can scatter it. A mother whose child starts at a noise calls the soul back at once, with the call that is used for chickens.

Walter Skeat collected Malay practices in the 1890s. He describes how the soul of the rice was treated at harvest. A woman cut the first ears with a small blade hidden in her palm, so that the rice soul should not take fright. She carried them home in a sling, like an infant (Skeat 1900).

The roasting of the mother. A woman who has given birth has lost heat with her blood. She is cold, and wind can enter her. For forty-four days she lies for some hours daily over a slow fire, or with a hot stone on her belly. She is kneaded, bound, and fed warming food. The midwife's hands lift the womb back to its place.

If the rules are broken, wind enters the vessels of the womb. The illness that follows has a name of its own, and its gravest form is a madness (Laderman 1983).

Lying by the fire after a birth is found on the mainland as well, in Thailand, Laos, Cambodia and Vietnam.

The inner winds. The anthropologist Carol Laderman apprenticed herself to a healer of the east coast in the 1970s. She recorded a teaching that the earlier books do not have (Laderman 1991).

Every person is born with winds. They are inherited from the parents. They are his temper, his gifts and his desires. A person with the wind of the midwife or of the fighter must be

allowed to be one. A person with the wind of the young demigod needs fine clothes, admiration and love. A person with the wind of the tiger is quick to anger.

If the winds can move, the person is well. If life does not let them out, they gather. The person falls ill with pains of the back and the head, a bad digestion, breathlessness and a heavy heart. The Malays call it the sickness of the winds. It is the illness of artists without a stage and of wives without regard. No medicine helps it.

The play. The cure is a performance that lasts a night. Two healers conduct it. One plays the spike fiddle and asks the questions. The other goes into trance and speaks for a series of spirits.

They first find the cause by counting. Grains of popped rice are counted off in pairs under the names of earth, water, fire and wind. The name on which the count ends shows the nature of the illness.

If the winds are at fault, the healers sing the story of the figure whose wind the patient has. The music quickens. The patient begins to tremble, rises, and dances the figure: the proud young god, the tiger, the fighter. The village watches. Afterwards the patient is calm and light. His winds have been allowed to blow.

Three words that the world took from the Malays. Three Malay names of states have entered the textbooks of psychiatry.

Latah is a state of middle-aged women, and of some men. A sudden noise or a poke makes the person start violently. She then blurts out forbidden words, or copies the gestures of those round her, or does what she is told. Neighbours tease such a woman for sport. She is not thought ill (Simons 1996).

Amok is the frenzy of a man who has brooded on an insult. He seizes a blade, runs out and strikes at all whom he meets, until he is killed or overpowered. He remembers nothing of it.

Koro is the terror that the organ of generation is shrinking into the body and that death will follow. In 1967 several hundred men in Singapore were seized by it within a few days, after a rumour about tainted pork (Ngui 1969).

The peoples of the forest. The Temiar of the Malay highlands receive healing songs in dreams from the spirits of flowers, trees and animals (Roseman 1991). Their neighbours the Semai settle every quarrel by a meeting of the whole settlement. It goes on, for days if need be, until nobody has anything left to say (Robarchek 1979). The Semai hold that a quarrel left open makes people ill.

In the 1950s an American writer claimed that these peoples trained their children to steer their dreams, and that this kept them free of mental illness. Later fieldworkers found no such training (Domhoff 1985).

Borneo

The plant in the unseen garden. The shaman of the Iban of Sarawak is a *manang*. The anthropologist Clifford Sather recorded the long chants of his rites (Sather 2001).

The Iban hold that a person has a soul, which travels in dreams and may stray. He also has a counterpart in the unseen world. It is a plant. It grows in one clump with the plants of his family, in a garden that a spirit tends.

When the plant droops or is overgrown, the person sickens. The shaman travels in his chant to the garden. He weeds round the plant, props it and fences it. When a person dies, the shaman cuts his plant from the clump, so that the living are parted from the dead.

The priestesses of the north. Among the Kadazan of northern Borneo the healers are priestesses, who know by heart chants of many thousands of lines. Their name is related to the names of the Philippine and the Balinese healers.

Taiwan and Madagascar: the two ends

Taiwan. The family of peoples began on Taiwan, and its oldest branches still live there. Among several of them the healers are women who serve the spirits of the ancestors. They call back a strayed soul with betel nut, beads and millet wine. Missions and the state pressed hard on them in the twentieth century, and few remain.

Madagascar. People from Borneo reached Madagascar some fifteen hundred years ago, and Africans joined them. The medicine of the island shows both origins. Four of its features belong in this chapter.

The first is the potency that the Malagasy call *hasina*. Ancestors, kings, and certain trees and stones have it. It is close to the *mana* of the Pacific.

The second is the rule of the forbidden. Each family and each district has its list of what may not be eaten or done, received from its ancestors. A breach brings illness.

The third is the return of acts. The Malagasy name two effects. One is the blame that a person draws on himself by failing others. It brings misfortune of itself. The other has a name that means the coming back: what a person does returns to him.

The fourth is the care of the dead. In the highlands a family opens its tomb every few years. An ancestor may have appeared in a dream to say that he is cold. The dead are carried out and wrapped in new silk. The living dance with them to music and tell them the news of the family. Then they are laid back (Bloch 1971). The Tongan tending of bones lies at the other end of the same family of peoples.

On the west coast the spirits of dead kings come upon mediums, most of them women, and advise and heal through them.

The diviner of Madagascar casts seeds, reduces the heaps by twos, and lays out sixteen figures. The method came with Arab traders. It belongs to the family of the sand divination of Africa (Ascher 1997).

A flower and a debt. The rosy periwinkle is a native of Madagascar and a folk remedy in many warm countries. In the 1950s researchers in Canada and the United States tested it for sweet urine. They found that it stopped the growth of white blood cells. Two drugs came of it, and they helped to make the commonest leukaemia of children curable. Madagascar received nothing. Cases of this kind are the reason for agreements like the Samoan one.

Thailand and Laos

The founder. Thai medicine names as its founder Jivaka, the physician of the Buddha, whom chapter 56 introduced. Every Thai healer and kneader begins the day with homage to him and to his own teachers. The learning came from India with the monks, and the monasteries kept it.

The library in stone. In 1832 King Rama III had the monastery of Wat Pho in Bangkok rebuilt as a place of public learning. He feared that the knowledge of the physicians, which families kept secret, would be lost. Marble slabs were set into the walls. They carry more than a thousand recipes. Sixty of them show the human figure with the lines and points of the kneaders. Statues of hermits in the courtyard show postures for stretching. The inscriptions are entered in the United Nations register of the documentary memory of the world.

The theory. The body is made of four elements: earth, water, wind and fire. Earth has twenty parts, which are the solid organs. Water has twelve, which are the fluids. Wind has six kinds and fire four. Illness is an element that is too strong, too weak or spoiled. The Thai books name the same three faults as the Indian: wind, bile and phlegm.

The month of a person’s birth gives the element that rules him. The three seasons, the ages of life and the hours of the day each belong to one of the faults. Phlegm rules childhood, bile the middle years and wind old age, as in the verse of Vagbhata that chapter 57 cited.

Drugs are classed by taste. The Thai physician counts nine tastes: astringent, sweet, intoxicating, bitter, hot, oily, cool and fragrant, salty, and sour. Each acts on an element.

The lines. Thai kneading follows lines called *sen*. Ten are counted as the chief lines. All begin near the navel and run to the openings of the body: the nostrils, the eyes, the ears, the mouth and the lower openings. Three bear the names of the three channels of the Indian yogis. Wind moves in them.

The practitioner presses along a line with thumbs, palms, elbows and feet, and draws the patient’s limbs into stretches. The patient stays clothed and lies on a mat on the floor. The United Nations listed the practice as a heritage of mankind in 2019.

Heat. The Thai healer applies heat in many forms. A cloth ball of steamed herbs is pressed on aching parts. The patient sits in a tent of herbal steam. A mother lies by the fire after a birth. In the north a healer dips his foot in oil, touches it to a glowing ploughshare and treads on the patient's back. Another taps along the lines with a wooden mallet and peg.

The souls. A Thai or Lao person has a soul called *khwan*. Some say that there is one for each of the thirty-two parts of the body. It is flighty. It leaves at a fright, in an illness, on a journey and at every change of state. A person whose *khwan* is away is listless and falls ill easily.

It is called back and bound in. The rite is held for a newborn child and for a young man before he becomes a monk. It is held for a bride and groom, for a traveller who leaves or returns, and for the sick.

An elder who knows the texts sits before a tiered offering of leaves and flowers. He chants an invitation to the *khwan* to come home, from the forest and the far towns, to its own house. Then he ties a white cotton thread round the person's wrists with a blessing. Every guest does the same after him. The threads are left on for at least three days (Tambiah 1970).

In Laos it is the national rite. No event of weight passes without it.

The anthropologist Stanley Tambiah remarks on who performs it. The elders bind the *khwan* of the young, and those who stay bind the *khwan* of those who leave. The rite tells a person that his people hold him.

The spirits. Beside the monk and the physician a Thai village has an expert of spirits. In the north-east a woman healer sings to the music of the reed mouth organ and dances with the patient through the night. In all regions there are healers who blow. They chew betel or hold water in the mouth, murmur a formula, and blow it over a broken bone or a rash.

Today. Thailand has given its traditional medicine a place in the health service since the 1990s. Hospitals have departments for it. A national list names the herbal medicines for which the state pays. The plant called king of bitters is given for colds and sore throat, and turmeric for a sour stomach.

What has been measured. A review of thirty-three trials with more than seven thousand patients found that the king of bitters shortens cough and sore throat in colds. The trials were of poor quality (Hu 2017).

A Thai trial compared an extract of turmeric with a common painkiller in 367 patients with worn knees. After four weeks the two had done equally well, and turmeric upset the stomach less (Kuptniratsaikul 2014).

A trial of Thai kneading in 180 patients with pain in the back found relief that lasted some weeks. It equalled that of the Swedish form of massage (Chatchawan 2005).

Burma

Burmese traditional medicine has four branches, and a hospital of traditional medicine may offer all four.

Branch	Ground
The branch of doctrine	The Buddhist teaching of the four elements, of hot and cold, and of the six tastes
The branch of remedies	The Indian drug lore
The branch of the stars	The planet of the weekday of birth
The branch of the adepts	Alchemy, diagrams and formulas

The weekday. A Burmese knows the weekday of his birth as he knows his name. The week has eight days, since Wednesday is divided at noon. Each day has a planet, an animal and a direction. A pagoda has a shrine for each at the proper point of the compass. A person who is ill pours water over the image at his own corner. The healer of the stars advises which foods suit the element of the day and which oppose it.

The adepts. The fourth branch belongs to a figure that is peculiar to Burma. He is a man who has put off death by alchemy, by diagrams or by formulas. He waits, unseen, for the coming of the next Buddha, and he helps those who call on him.

Healers join brotherhoods under the protection of such an adept. They cast out spirits and undo witchcraft in his name and in the Buddha's. The alchemist's goal is a ball of mercury that has been made firm in the fire and that preserves whoever carries it (Spiro 1967).

Part V described the same search for a mercury that confers long life in China and in India. It reached Burma from both sides.

The lords. Burmese honour thirty-seven lords, who were men and women that died violent deaths. Each village and each household has its guardian among them. A guardian who is neglected sends illness. Mediums, who are regarded as the spouses of the lords, dance at their festivals and speak for them.

Cambodia

The wind that rises. Khmer healers and patients describe the body as a set of vessels in which wind and blood move together. In health they move downward and outward and leave through the skin and the limbs. Under strain the wind turns and surges upward. It presses on the heart and the lungs. It makes the neck sore and the head dizzy, and it roars in the ears. The patient fears that the vessels of the neck will burst.

The psychiatrist Devon Hinton has studied these attacks among Cambodians who survived the terror of the 1970s (Hinton 2010). They are the form that fear and memory take in a Khmer body. The remedy belongs to the family. The skin of the chest, the back and the arms is rubbed with a coin and oil until dark stripes rise, or cups are set on it. The wind is given a way out.

The Khmer speak of the same matter as their Indian teachers: a wind that has a direction, and an illness that is a wrong direction.

The souls. A Khmer has nineteen souls. They scatter at a fright or in an illness. They are called back by a rite in which threads are tied round the wrists.

After the terror. Between 1975 and 1979 the rule of the Khmer Rouge killed or starved about a quarter of the people. It closed the monasteries and the hospitals. It killed most of the physicians and many monks and healers.

When it fell, the village healers and the monks were the first help that the survivors had. The psychiatrist and anthropologist Maurice Eisenbruch worked with several hundred of them. He records how they treated the madness, the mute grief and the dread that those years had left, with the rites that they had always used (Eisenbruch 1992).

What the peoples of this chapter share

The chapter has gone from New Zealand to Cambodia. The languages, the religions and the histories differ. Thirteen features return often enough to be listed.

1. **Illness is first a question of persons.** The persons may be living, dead, or the unseen owners of a place. Ordinary illness is known everywhere and is treated without the question. Grave or lasting illness raises it.
2. **The one who caused the illness owns the cure.** The Filipino visitor cures the child whom his greeting made ill. The spirit of Chuuk owns the medicine for the illness that it sends. The Balinese ancestor names what he is owed. The Hawaiian who was wronged must release.
3. **One asks leave.** The Chamorro asks the people of before, and the Filipino the dweller in the mound. The Māori and the Hawaiian pray before taking a leaf. To take or to enter without asking is the commonest breach.
4. **The soul is timid and is tied in.** A fright scatters it. It is called by name, pressed in through the foot, or bound with cotton thread at the wrists.
5. **A person has companions and a counterpart.** The Javanese and the Balinese are born with four siblings. The Iban has a plant in an unseen garden. The afterbirth of a Māori or a Hawaiian child is given to the land. A Balinese child is an ancestor who has returned.

6. **A recovery has a term.** The mother lies by the fire for a fixed number of days. The Hawaiian course is closed with a food, and the Māori rite with the lifting of *tapu*. The Filipino relapse is the name for what follows when the term is cut short.
7. **The safe state is level.** The Javanese guard against the sudden start. The Balinese keep a bright face. The islanders of the Pacific open every grave matter with a drink that calms.
8. **What is inborn must be let out.** The Malay winds are a person's gifts and desires. Shut in, they make him ill. Danced out, they leave him well.
9. **Wind has a direction.** Wind enters the Javanese, rises in the Khmer, and runs along the lines of the Thai. The treatment gives it a way out through the skin.
10. **The aim is balance.** The Balinese witch is not killed in the play. The Māori do not abolish *tapu*. They pass rightly between it and the ordinary state.
11. **Causes are found by counting.** The Carolinian counts knots by fours and reaches 256 answers. The Malay counts rice in pairs under four names. The Javanese adds the numbers of a week of five and a week of seven. The Balinese looks up one day of 210. The Hawaiian gives five doses.
12. **The healer's power depends on his conduct.** The Fijian healer keeps to the straight path. The Javanese fasts. The Hawaiian, the Tongan and the Tahitian take no fee, and a recipe that is sold loses its power.
13. **Healer and patient must fit.** The Javanese say so outright. A healer who cures one person may fail with the next, and the patient looks for the one who fits him.

The shadows

The same features have a dark side, and the chapter has given the cases.

Accusation. Where illness is a question of persons, a person can be blamed. In Papua New Guinea women are killed as sorcerers after a death. The Fore killed men for an illness that came from their own rite of mourning. The Balinese fear their in-laws.

Restraint. The mad relative of a Javanese or Balinese family may spend years with his leg in a block.

Conjuring. The operation without a knife takes the money of the dying.

Adulteration. Powders sold as herbal drinks contain synthetic drugs.

A plant taken out of its use. The pepper root harmed livers when it was sold as a concentrate in a capsule.

Delay. A family that goes from healer to healer may reach the hospital too late. The Samoan habit of using both at once is the safer one.

What has been measured, in sum

Matter	Finding	Source
The diet of the Hawaiian ancestors	Weight, blood fats and blood sugar fell in three weeks	Shintani 1991
Hula for high blood pressure	A larger fall than with lessons alone	Kaholokula 2021
The pepper root for anxiety	A small benefit in early trials; none in the largest; harm to the liver from concentrates	Pittler 2003; Sarris 2020
Honey on shallow burns	Faster healing than usual dressings	Jull 2015
A Samoan bark	A compound active against the virus of AIDS in the laboratory; no medicine yet	Gustafson 1992
The bitter gourd for diabetes	No reliable effect	Ooi 2012
The king of bitters for colds	Shorter cough and sore throat; poor trials	Hu 2017
Turmeric for worn knees	Equal to a common painkiller over four weeks	Kuptniratsaikul 2014
Thai kneading for back pain	Relief equal to Swedish massage	Chatchawan 2005
Scraping the skin for neck pain	Less pain after a week than with warmth	Braun 2011
Sudden death in sleep	A named village illness found to be a disorder of the heart’s rhythm	Vatta 2002
The trembling illness of the Fore	Passed by the mourning feast and not by sorcery	Lindenbaum 1979
A pretended operation	Relieved worn knees as well as the real one	Moseley 2002

Matter	Finding	Source
Meetings of wrongdoer, wronged and kin	Fewer repeat offences; less lasting stress in victims	Strang 2013; Angel 2014

The list is short for a third of the world. What these medicines claim most firmly has been measured least. No one has tested whether a family that sets itself right has a healthier child. No one has tested whether a soul-calling shortens an illness, or whether a healer who fits heals more.

Reference: healers, illnesses and remedies of the Pacific and the Asian islands

The three lists gather what chapters 68 to 70 describe and add some entries that the chapters do not have. The remarks on what is known rest on the reviews and trials cited in those chapters, and on the standard handbooks of the plants.

The healers

People	Name	Work
Hawai‘i	*Kahuna lapa‘au*	Expert in healing; many specialities
Māori	*Tohunga*	Expert; the healer finds the breach and performs the rite
Samoa	*Fofō*; *taulāsea*	The one who kneads; the one who gives plants
Tonga	*Faito‘o*	A specialist who holds the cure of a few named illnesses
Fiji	*Vuniwai vakaviti*	The healer in the Fijian way, who is approached with the pepper root
Tahiti	*Tahu‘a*	Expert; keeper of family recipes
Cook Islands	*Ta‘unga*	Expert; healer of illnesses sent by the dead
Guam	*Suruhånu*, *suruhåna*	Kneading, plants, and pardon asked of the ancestors

People	Name	Work
Vanuatu	*Kleva*	A seer who finds the cause and gives leaf medicine
Papua New Guinea	*Glasman*	A seer who finds who is behind an illness
Philippines	*Albularyo*; *manghihilot*; *babaylan*	The village healer; the kneader; the medium of the old religion
Ifugao, northern Luzon	*Mumbaki*	A priest who recites the myths and offers animals
Batak, Sumatra	*Datu*	A healer and diviner who writes his knowledge in folding books of bark
Java	*Dukun*	A healer; more than a dozen kinds
Bali	*Balian*	The healer of the book and the healer of the seat
Malay	*Bomoh*; *pawang*; *bidan*	The healer; the specialist of places; the midwife
Iban, Borneo	*Manang*	A shaman who tends the soul and the plant counterpart
Kadazan, Borneo	*Bobohizan*	A priestess with long memorised chants
Thailand, Laos	*Mo*	A master: of the old medicine, of kneading, of the soul rite, of spirits
Cambodia	*Kru khmer*	A master of plants, formulas and rites
Hmong	*Txiv neeb*	A shaman who rides after the soul, as chapter 15 described

Illnesses and states that the peoples name

People	Name or description	What it is
Hawai‘i	The tangle	Illness in a family in which a fault has not been released
Hawai‘i	Prayer to death	Wasting after sorcery worked on a part of the victim
Māori	Illness from the gods	A spirit of the family gnaws at one who has breached *tapu*
Māori	*Whakamā*	Silent withdrawal after a loss of standing; ended by others
Samoa	The displaced centre	The centre under the navel has shifted; pain, nausea, shortness of breath
Samoa, Tonga	Sickness of the spirits	A dead relative or a spirit speaks through the person and names a wrong
Fiji	Illness of the land	Illness after a breach of custom toward kin, chief or ancestors
Guam	Pinched by the people of before	Bruises and fever after entering the ancestors’ ground without leave
Manus	The soul taken by the house ghost	Illness of a member for a hidden offence or an unpaid debt in the house
Fore, New Guinea	The trembling illness	A fatal illness passed by the mourning feast; laid to sorcery
Philippines	*Usog*	A child sickens after a visitor’s greeting; cured by the visitor

People	Name or description	What it is
Philippines	*Pasma*	Trembling, sweating hands after a hot body met cold water
Philippines	*Bughat*	Relapse after a term of recovery was cut short
Philippines	*Gaba*	Misfortune that falls of itself on one who scorned an elder
Philippines, Thailand, Laos	Sudden death in sleep	A young man dies in the night; now known as a disorder of the heart's rhythm
Java	Wind has entered	Chill, aches, bloating and nausea; treated by scraping
Java	The wind that sits	Sudden fatal pain in the chest
Java	The start	A fright that leaves a person empty and open to spirits
Java, Malaysia	Mass trance	Many pupils or workers in one place seized at once
Bali	*Bebainan*	A short seizure of crying and shouting, laid to a spirit sent by a sorcerer
Malay	Sickness of the winds	Illness of a person whose inborn gifts and desires have no outlet
Malay	The illness of the womb's vessels	Illness, at worst madness, after the rules of the forty-four days were broken
Malay	*Latah*	Startled imitation and obedience

People	Name or description	What it is
Malay	*Amok*	A frenzy of killing after brooding on an insult
Malay, southern China	*Koro*	Terror that the organ of generation is shrinking into the body
Iban	The drooping plant	The person's plant counterpart in the unseen garden is wilting
Thailand, Laos	The soul is away	Listlessness after fright, journey or change; cured by calling and binding
Cambodia	The attack of wind	Wind and blood surge upward; dizziness, sore neck, fear of dying
Cambodia	Thinking too much	Unbroken painful thought, which is held to damage the body

Remedies

Remedy	Local names	Where	Used for	What is known
Root of a pepper shrub	*Kava*, *'awa*, *yaqona*, *sakau*	The Pacific	Calm, sleep, pain; every formal meeting	Early trials found less anxiety and the largest found none; concentrates have harmed the liver
Areca nut with betel leaf and lime	*Buai*, *pinang*, *mak*	India to Melanesia	A stimulant chewed all day; offered to guests and spirits	The nut causes cancer of the mouth

Remedy	Local names	Where	Used for	What is known
Indian mulberry	*Noni*, *nonu*, *mengkudu*	The whole region	Poultice on boils and sprains	The juice is sold worldwide as a tonic without support from trials
Turmeric	*ʻŌlena*, *kunyit*, *khamin*	The whole region	Skin, wounds, stomach, women after birth; yellow for rites	A trial found it equal to a painkiller for worn knees
Javanese turmeric	*Temulawak*	Java	Liver, digestion, appetite	Laboratory work; few trials
Ginger	*Jahe*, *khing*	The whole region	Nausea, colds; spat over the patient in Melanesia	Trials support its use for nausea
Bitter ginger	*ʻAwapuhi*, *lempuyang*	Hawaiʻi to Java	Sprains, aches, stomach	Little tested
Aromatic ginger	*Kencur*, *proh hom*	Java, Thailand	Cough, aches, tiredness	Little tested
Cassumunar ginger	*Phlai*, *bangle*	Thailand, Java	Sprains and bruises, as oil or in the hot compress	Small trials for sprains
King of bitters	*Sambiloto*, *fa thalai chon*	South and Southeast Asia	Fever, colds, sweet urine	Shorter cough and sore throat in trials of poor quality
Cat’s whiskers	*Kumis kucing*	Java, Thailand	To increase the urine; stones	Little tested

Remedy	Local names	Where	Used for	What is known
Asiatic pennywort	*Pegagan*, *bua bok*	The whole region	Wounds; a cooling drink	Small trials for wounds and swollen legs
Five-leaved chaste tree	*Lagundi*	Philippines	Cough and asthma	Tested in the Philippine programme and registered there
Blumea	*Sambong*	Philippines	To increase the urine; stones	Registered in the Philippines
Bitter gourd	*Ampalaya*, *pare*	The whole region	Sweet urine	Pooled trials show no reliable effect
Ringworm bush	*Akapulko*, *ketepeng*	Philippines, Indonesia	Fungal diseases of the skin	The leaf contains compounds that kill fungi
Betel leaf	*Sirih*	Indonesia, Malaysia	A wash for wounds and for women; a plug for nosebleed	Kills bacteria in the laboratory
Horse radish tree	*Malunggay*, *kelor*	Philippines, Indonesia	To bring a mother’s milk	Small trials suggest more milk
Oil of a coastal tree	*Tamanu*, *kamani*	Polynesia	Wounds, burns, the skin	Laboratory work on wound closure
Candlenut	*Kukui*, *kemiri*	The whole region	A purge; oil for the hair and skin	Little tested

Remedy	Local names	Where	Used for	What is known
Ti plant	*Kī*, *tī*, *andong*	Hawai‘i to Indonesia	A cool leaf on a fevered head; planted to guard a house or shrine	Not tested
Coconut	*Niu*, *kelapa*	The whole region	Oil for kneading; water for the sick	The water serves for mild loss of fluid
A forest tree of Samoa	*Mamala*	Samoa	A yellowing illness of the liver	A compound acts on the virus of AIDS in the laboratory
A native pepper shrub	*Kawakawa*	New Zealand	Toothache, stomach, wounds	Little tested
Tea tree	*Mānuka*	New Zealand	Fever, colds, burns	Its honey heals shallow burns faster than usual dressings
A root of the forest	*Tongkat ali*, *pasak bumi*	Malaysia, Borneo	A tonic for men; fever	Small trials; products are often adulterated
Clove	*Cengkeh*	The Moluccas	Toothache	Its oil numbs and is used by dentists
Cajuput oil	*Minyak kayu putih*	Indonesia	Rubbed on for colds, wind and aches	Little tested

Remedy	Local names	Where	Used for	What is known
A bitter vine	*Brotowali*, *makabuhay*	Indonesia, Philippines	Fever, sweet urine	Cases of harm to the liver have been reported
Stonebreaker	*Meniran*	Indonesia	Stones, the liver	Small trials
Kratom	*Kratom*, *ketum*	Thailand, Malaysia	Chewed by labourers for stamina and pain; to come off opium	Acts as the opiates do; dependence and deaths are reported
Sweet flag	*Jerangau*, *dringo*	Indonesia, Malaysia	Hung on infants against spirits; colic	Contains a compound that causes cancer in animals
Papaya leaf	*Daun pepaya*	Malaysia, Indonesia	Dengue fever	One trial found a faster recovery of the blood count
Sea water and salt	*Kai*, *pa‘akai*	Polynesia	To purge, to bathe and to purify	Not tested
Holy water	*Tirta*	Bali	The close of almost every treatment	Not tested

71. Read with the Net and VALIS

What this chapter does

This chapter lays the Vacuum.Net theory and the reports of VALIS beside the medicine of Hawai‘i, the Pacific and the islands of Asia. It follows the seven questions of chapter 8, as chapters 23, 31, 43 and 67 did.

The reading meets a difficulty here that the earlier parts did not have. The peoples of this part speak of illness in words of thread and cord. A fault is a tangle. Healing is to untie. A person hangs on a cord of navels. A soul is tied in with cotton. The theory speaks of a strand that winds, closes and stays open. The two vocabularies are so alike that a reader could take the likeness for proof.

It is not proof. People everywhere speak of ties when they speak of kin. A reading is tested by whether the rules agree, and by whether they could have been otherwise. This chapter therefore puts weight on rules and little on words.

All of it is reading. The elders of these islands did not have the theory, and the theory was not built from their teaching.

1. The counts

The pairs. The medicines of this part are built on pairs more plainly than on any other count. The Māori have what is set apart and what is ordinary. The Balinese have the seen and the unseen. The Hawaiians have the night of the ancestors and the day of the living. They have a male and a female god for the two hands that pick a plant.

Chapter 1 gave the meeting as one of the two ways in which the strand closes. A state closes with its opposite. The Māori rite shows the rule as an act. A person who has become *tapu* is brought back by what is most ordinary, which is cooked food. The one cancels the other, and the person is at rest.

The book on the body adds a second rule. Opposite directions never join. The Māori agree. The two states must be kept apart, and to mix them without the rite is the breach from which illness comes. The pair may close in a meeting. It may not be run together.

Three. The Balinese healers of the book sort illnesses and plants into hot, cold and a class between the two. The theory has three values at every place: with, against and neither. Chapter 67 found the third value in the Chinese pivot. Bali names it as well.

Two triangles were reported, one from Hawai‘i and one from Bali. Both set a person among gods, people and land.

The Hawaiian person has three navels. They tie him to those before him, those beside him and those after him. The third axiom says that the net carries its history as its shape. The three

navels say of a person what the axiom says of a place. It is what came before it, and later passages will be taken relative to it.

The third person. One count of three in this part is a rule of procedure and not a classification. In the Hawaiian meeting the two parties do not speak to each other. Each speaks to a leader who is on neither side. The Māori elder Ranapiri needed three persons to explain the return of a gift. Sections 3 and 4 read both.

Five. The Hawaiian healer counts in fives: five leaves, five doses, five days. The theory names five as a depth at which its two ladders come near to meeting. Chapter 46 showed that the Chinese five was derived from the pitch pipes in just that way.

Hawai‘i had no pitch pipes, and a simpler account is at hand. In Hawaiian, and in almost every language of this family from Madagascar to Easter Island, the word for five is the word for the hand. The Hawaiian five is most probably the hand that picks and gives. The reading with the ladders is not needed here, and it is not offered.

Four and a centre. The Javanese and the Balinese have a five of another kind. A person is born with four siblings and is himself the fifth, at the centre. The market week has four directions and a centre. The theory has no rule that gives four round one.

Sixteen and two hundred and fifty-six. The diviner of the Caroline Islands counts his knots by fours and keeps four remainders. He has 256 answers, which is sixteen times sixteen. Chapter 26 gave the count of Ifá as eight places with two states each, which is also 256. In the terms of chapter 2 that is the eighth step of the ladder of two.

The Carolinian count stands on the same step and reaches it by another road. It has four places with four states, where Ifá has eight places with two.

Three oracles in this book now stand on that ladder. The Chinese *Changes* have sixty-four signs, which is its sixth step. Ifá and the knots have its eighth. They come from three parts of the world, and no borrowing among them is known. The oracle of the Kwaio, which answers yes or no, is the first step of the same ladder.

No oracle in this book stands on the ladder of three. The bodies of the Eastern system are counted mostly in threes. The oracles are counted in twos. The book cannot say why.

Weeks that end together. The Javanese run a week of five days and a week of seven together and mark the day on which a pair returns. The Balinese run ten weeks at once and mark the days on which several end together. Those days are held to be strong, for good and for harm.

The book on the body computed that a small ring fits into a larger one at a whole number of places. Rounds of different length that run together meet at fixed points and nowhere else. The Balinese calendar is a table of such points.

The reading goes no further than that. The weeks of the calendar are counted in days, and their lengths are not the steps of either ladder.

Counts with no ladder. The forty-four days of the Malay mother and the 210 days of the Balinese year stand on neither ladder. Neither do the nineteen souls of the Khmer, the thirty-two souls of the Thai and the thirty-seven lords of Burma.

2. The reading

The first question is between whom. A physician of Part V asks where in the body an illness sits, how deep, and which way it moves. A Hawaiian healer who suspects an illness from within asks another question first. What is wrong among the adults of this house?

Chapter 4 listed five layers at which a cure can act and called the outermost the surround. It quoted the source's phrase for that layer: change what everyone hangs in. It added that the old medicines take the phrase far wider than the hospital does. Its example was the Hawaiian family and its tangle of old wrongs. Part VI is the medicine of that layer.

The same rules one scale up. The fifth axiom says that the net, merged into larger blocks, obeys the same rules again. Its last sentence reads: "What does not close at one scale is the material of the next."

The sentence can be read of persons. Whatever does not close within a person is what ties him to others: his needs, his debts, his affections, his word once given. The family is the form at the next scale, and it is made of those ties. If the axiom holds, that form can do what a body does. It can close, stay open at a place, or close wrongly.

What does not close passes on. The second axiom says: "What does not close passes on as tension." The Hawaiian account of the tangle reads like a description of that sentence. A fault between two members is not released. It does not stay with them. Others take sides, and others keep silent. The fourth step of the meeting exists to trace how far it has gone. The illness of the child is the place at which it has arrived.

The theory does not say why the tension should arrive in the weakest member. The elders say that it does. Section 7 lists this.

A window and a reader. The book on the body distinguished two ways of reading. A window shows only that something nearby is open. A reader that meets finds the one place where the fault sits.

A sick child in a tangled family is a window in that sense. The illness shows that something is open in the house. It does not show where. The meeting is the reader that meets. It goes to the persons themselves. It does not stop until the place has been found: who did what to whom.

Layer by layer. The meeting reads by depth. The uppermost trouble is taken first, and each further layer after it. Chapter 67 reported the Indian rule that an illness with a longer period

has a deeper seat. The Hawaiian elders have that rule for a family. The oldest fault lies deepest, and it is reached last.

The reading of the night. Hawaiian families told their dreams every morning. The Balinese ask a medium who has returned in a child. Chapter 6 described the world as two halves, and the body known to medicine as the half that can be measured. These peoples read the other half daily, as a matter of household routine.

The reader is prepared. The first of the six rules of chapter 5 is to read the state first. Part V found that the reader's own state is included. The Hawaiian expert in feeling works in silence with his eyes half closed. The Javanese healer fasts and keeps awake. The Fijian healer keeps to a way of life. The Māori expert who slips in an incantation has spoiled the rite.

Healer and patient must fit. Chapter 5 took the position that a reading is a locking between two persons. Chapter 67 drew the consequence that another reader makes another pair, and used it to explain why two physicians differ. That was an inference.

The Javanese healers state it as their own doctrine. The healer must fit the patient as a key fits a lock. One who cures the first patient may fail with the second, and no blame attaches to him.

In the theory, perceiving is a seam that closes, and what does not fit is not perceived. The Javanese word describes a seam that closes between two particular people.

Offering and watching. Chapter 43 described the physician who has names spoken at a bedside and watches the pulse for the one that fits. The Malay healers do it with song. They sing the stories of several figures in turn. The patient lies still through those that are not his. At the story of his own wind he begins to tremble.

Reading by lot. The alum on the coals, the knots, the grains of popped rice and the strip of leaf give an answer by a process that nobody steers. The theory has no account of why a cast should name a cause. Section 7 lists this as well.

3. The names

Chapter 4 gave the eight forms of failure of the book on the body. The names of this part are laid beside them here.

Wrong closure. Chapter 4 called this the most treacherous form. With a third or more of its places wrong, a form may settle on another closed shape. Nothing is then open, and the form is stably wrong.

The Hawaiians have a word for holding fast to a fault. Two persons who are held by a grievance are in a state of that kind. It is closed. Each knows his part and repeats it. It can last for decades. It is wrong, and to those inside it does not feel open.

The count of one third can be read of a family too. A small fault that is followed by rest closes of itself. The elders did not rely on that. They said that a fault which is left will grow and draw others in. A family in which many have taken sides has settled into another shape.

Some families therefore met at regular times with no special cause. In the words of the book on the body, they let the return run in every cycle.

The relapse of the Filipino mother is a wrong closure of a simpler kind. A recovery was ended before it had run its course. Chapter 67 found the same in the Tibetan fever that is cooled too soon.

Direction. The Khmer wind turns and rises. The Javanese wind enters. The winds of the Thai run along lines from the navel to the openings of the body. The names of the mainland are names of direction, as those of the Eastern system are.

The Malay teaching of the inner winds belongs here as well, and it adds a point. The winds are inborn. Chapter 67 read the inborn constitution as a first passage, which fixes the direction of all later ones. The Malay healers say what happens to a person who must live against his first passage. He falls ill. No medicine helps, since nothing is missing.

Unread. A Filipino who steps on a mound without asking leave has passed a place without reading it. So has a Chamorro who is loud in the forest. To ask leave is to read before entering. The breach is a passage that was made unread.

Carrier. The book on the body found that a closed form cannot deliver. Only what ends can deliver, and it called such a form a carrier.

The gift of the elder Ranapiri is a carrier in that sense. It does not rest with the one who holds it. It is on its way. A first person gives, a second passes it on, a third makes a return, and the return must travel back to the first. The second person, who stands in the middle, falls ill if he stops it.

The unpaid debt of the Manus household is the same case. So is the rite that a Balinese family owes to its dead.

Seam. The insects and objects that a Filipino sorcerer sends into a body are the lodged matter of chapter 21.

Over-read. Chapter 4 said that the rules of the theory hold no object for this form. The old medicines describe it least. Two states of this part come near it.

The Filipino child sickens under a stranger’s regard, with no ill will on any side. The Malay woman who has been startled copies every gesture and obeys every word. In the first a person is read too strongly. In the second a person reads all that is offered and cannot stop.

Neither is a body that attacks itself, and the likeness is loose.

Frame and drift. The peoples of this part say little of an inborn fault, and little of wear by age.

The tie between the halves. Chapter 23 gave soul loss a place outside the eight forms. It is a fault in the tie between a person and his other half. Three souls of this part belong there. The Thai and Lao soul leaves at every change. The Malay soul scatters at a start. The Hawaiian soul stays away. The cure is the same from Bangkok to Honolulu. The soul is called by name and fastened.

No hold. The Hawaiian and the Filipino accounts agree that sorcery takes hold only where there is a fault. The Javanese say that what is empty can be entered.

A rule of the theory can be laid beside this. What does not fit is not perceived. A form that is closed offers no open place at which another could join. The reading is loose. The accounts add a claim of justice, to which section 7 returns.

4. The act

Does it restore or add? The second rule of cure says: restore, do not add. Chapter 67 called the needle the purest case of an act that adds nothing, since it is solid and carries no drug. The Hawaiian meeting goes further. It uses no instrument and no matter at all. It gives back a state that was there before: a family whose members can speak to each other.

The book on the body computed what is needed to close a ring that has a fault. Only a change at the place of the fault closes it, and that change gives back the original state. An addition elsewhere closes nothing.

Restitution and release are a change at the place of the fault. A medicine given to the child is an addition elsewhere.

Chapter 2 said the same of the first knot. A tangle that holds cannot be closed by adding more winding. It stays until it is cut, or untied along the way it was tied. The Hawaiian meeting has both acts, and each has its name.

Why the healer waits. The book on the body found a second rule. Coupling keeps closure but cannot create it. A closed form joined to an open one never closes it.

The Hawaiian healers held that a remedy given into a tangled family will not hold. They sent the family home to set itself right before they would begin. Read of a family, the rule says the same. Nothing that is brought in from outside will close what stands open between its members.

The third who is neither with nor against. The theory’s window has three places, and it closes when the three sum to nothing. One way is the window of three different values: with, against and neither.

The Hawaiian meeting is built in that shape. Two parties stand against each other. The leader must be a person who is on neither side. All speech passes through him. If he leans to one party, the meeting fails. The elders name his standing apart as the first condition.

Two opposite values can also close as a pair, without a third. The Hawaiians say that between two angry people this does not happen. A direct exchange ends in new injuries. The theory does not decide between the pair and the three. It shows only that a third who is neither is one of the ways in which opposites come to rest.

The Chinese pivot of chapter 67, which neither opens nor closes, has the same place between its two partners. So have the Fijian whale's tooth and the cup of the pepper root, which stand between two families.

The whole window at once. The fifth of the six rules says that the whole window must be offered at once. In the meeting the window is the family. Everyone concerned must be present. A member who stays away leaves a line that cannot be untied. A window with an empty place does not close.

The second step of the meeting carries out the rule. Before any fault is examined, all present join their strength toward one aim. The Javanese feast has the same form in ten minutes. The men of the nearest houses sit round the dishes, the purpose is stated, and each takes his share.

Through the open. Chapter 4 showed that no way leads out of a wrong closure except through the open. The person gets worse before he gets better. The old medicines call that stretch the crisis.

The meeting has its crisis and provides for it. The whole truth must be told, and it is told in the presence of the one whom it hurts. Tempers rise. The elders built three protections into the course. The prayer sets all present under a higher witness. Speech goes through the leader. And there is the silence.

Silence. The sixth rule is to leave silence after each offering. The traditions of the earlier parts keep the rule without naming it. The patient lies still with the needles in, and the mother rests for a month.

The Hawaiian meeting is the one place in this book where the silence is a step with a name. The leader calls it when it is needed. A second silence holds after the end, when the matter may not be raised again.

Depth. The fifth question of chapter 4 lists the depths at which a healing act may work, from a chemical step to the land. The medicines of this part work at the outer end of that list: the family, the dead of the family, and the land. The Māori name the kin, the clan and the tribe by the words for birth, pregnancy and bone. They speak of the body and of the kin in one vocabulary.

Direction and phase. The Māori rite is held at dawn. The Hawaiian picks with the right hand for the male god and with the left for the female. The Javanese and the Balinese reckon the day. The forty-four days of the Malay mother and the five days of the Hawaiian course are terms that may not be cut short.

Living with living. The remedies are fresh plants, the hand and the voice. The Hawaiian kneader works in time with his own breath. Chapter 5 rested its case for the pulse on a physician who counts the patient's beats against his own breath. The kneader uses the same measure for his stroke.

The return, and the close. Every act of this part is closed. The Hawaiian course ends with a food whose name means a stopper. The meeting ends with a cutting and a meal. The Māori rite ends with the lifting of *tapu*. The Thai threads stay on the wrists for three days. Mourning is ended by a feast after a year, in Hawai‘i and among the Māori.

The fourth rule of cure says to taper slowly, and the sixth of the six rules to leave silence. These peoples add what neither rule states. A return must be allowed to run, and its end must also be marked. Everyone then knows that it is over.

The untying from one end. Chapter 69 asked whether a tie between two people can be untied by one of them alone. The solitary form of the Hawaiian rite attempts it.

The Hawaiian account itself gives the terms of an answer. A fault binds two persons, each by his own holding: one by guilt and the other by grievance. A person who releases his own holding is free of it. That is half of the tie. The trials of chapter 69 agree. People who learn to pardon are less burdened, whatever the other party does.

The other half stays. The other person is still held. Whatever the tangle has passed on to third persons is still there. The Hawaiian healers were concerned with that part, since their patient was usually the third person. For their purpose the solitary form cannot be enough. For the purpose of the one who practises it, it may be.

5. The other half

Chapter 6 described the world as two halves that are partners, place by place. It quoted the sentence that the body which medicine describes is the half that can be measured (Konstapel 2026f).

Two sides of every event. The Balinese pair of the seen and the unseen is the plainest statement of this in any medicine of the book. It does not divide the world into two regions. It says that every event has both sides. A fall from a tree has its seen cause and its unseen one, and an illness is treated on both.

A partner for each. Chapter 6 spoke of partners place by place. The peoples of this part have taken that literally. The Iban give each person a plant in an unseen garden, in a clump with the plants of his kin. The Javanese and the Balinese give him four siblings who were born with him. The Hawaiians give each family its guardians, who are its own dead. The Balinese hold that the child itself is one of the dead come back.

The Iban picture has a detail that is worth noting. The plants of a family grow as one clump. What is joined on this side is joined on the other. When a person dies, the shaman must cut his plant from the clump, so that the dead do not draw the living after them.

The other half is kin. In Part V the other half was lodged in the organs or drawn as a map. Here it is the family, continued. The Hawaiian word for the family covers the living, the dead and the unborn. The Māori speak to the dead by name at the mourning. The Tongans tend the bones of a dead relative who is not at ease. The Balinese are in debt to their dead until the rites are paid.

The traffic. Dreams are told every morning. Names and songs are received in them. The Hawaiian soul leaves at the corner of the eye and is pressed back through the foot. The Hawaiians and the Māori both show a headland from which the souls of the dead leap. Hawaiian historians record people who went as far as the meeting with their ancestors and were sent back.

Soul loss, bound. Chapter 23 read soul loss as a slipping of the two halves of a person against each other. The Thai and Lao cure answers that reading with an act. The soul is called home. A thread is wound and knotted at the wrist, by those who stay for those who leave.

6. The meeting

Chapter 7 asked whom a healer or a patient meets, in what form, by what course, with what words, to what effect and with what shadow.

Whom, and in what form? Part V was the part of the teacher. This is the part of the watcher. The third of the four figures of chapter 7 supervises, and judges without warmth. The ghost of a Manus house sees all that its members do and punishes what is hidden. The Hawaiian guardians warn and punish. The Māori ancestor gnaws at the one who has breached a rule. The people of before pinch the Chamorro who is loud in their forest.

The watcher of these islands differs from the figure of chapter 7 in one respect. He is not a stranger. He is a grandfather. He judges one matter above all, which is conduct toward kin.

The teacher is present too. The Hawaiian ancestor gives a name or a remedy in a dream. The spirits of the Temiar give songs. In the Balinese manuscript the plants come before a sage and state their own uses, as the plants of the Amazon teach the healer in chapter 16.

The first figure, who acts on the body without speech, appears in the goddess who works a soul back into a body from the sole upward.

The fourth figure, the light without form, is not reported from these islands in the sources used here. The Hawaiian word for wisdom, a gut filled with daylight, is a figure of speech and not a meeting.

By what course? The five steps of chapter 7 are loosening, examination, exchange, showing and return. The Hawaiian meeting has four of them, in order. The prayer and the joining of

strengths loosen the family from its day. The fault and the tangle are examined layer by layer. Confession, restitution and release are an exchange. The closing and the meal are the return.

The fourth step, the showing, has no clear place. Perhaps it lies in the silence, in which each is told to look at his own part. The sources do not say so.

The Balinese consultation has the same four. The family brings offerings, and the medium goes into trance. The ancestor says what is owed. The family bargains with him. The medium wakes, and the family goes home to pay.

What is said? The reports of VALIS note that what is said in such meetings mostly concerns conduct, and that facts which can be checked are rare. This part bears it out without exception. The ancestor says what was neglected, what was promised and what is owed. The Fijian healers say that their power rests on a way of living and on nothing else.

To what effect? The reports name a lessened fear of death and a stronger sense of direction. The Hawaiian who has set right with his kin before dying is said to leave without a tie that holds him. The Māori mourning leaves the bereaved with their dead properly sent off, and with their own place among the kin confirmed.

With what shadow? Chapter 7 named the shadow as control inside the same forms of contact. This part shows it in four shapes.

The first is the sorcerer, who uses the path of the healer for harm. The Fijians say that the power is one and that the heart is what differs.

The second is accusation. A medicine that asks who is behind an illness can name the wrong person. People have been killed for it.

The third is the family itself. The last penalty of the Hawaiian meeting is to be cut off, and a member may confess in order to avoid it. The Samoan girl who is seized by a spirit says what a daughter may not say. The seizure is the one opening that her family leaves her. The Balinese duty of a bright face asks the bereaved to laugh.

The fourth is the watcher. A household under a ghost that sees every hidden act is a household under guard.

In which frame? Chapter 7 gave three frames and no verdict. The peoples of this part mostly hold the second: the ancestors are there. The Māori healer and the psychiatrist of chapter 70 hold the first and the second side by side. They decide case by case to which of the two a trouble answers. The Samoans do the same when they move between healer and hospital.

Chapter 7 also gave the theory's answer to the question of how much of what is met turns out to be oneself. As a form, all of it. As a direction, none of it.

The Balinese consultation fits that answer closely. The form is the family's own. It is the voice of a grandfather whom all present knew. The direction is not theirs. It is a demand that none of them wished to hear.

7. What does not fit

Persons. Chapters 23, 31, 43 and 67 each noted that the theory cannot derive a person. In this part every cause is a person: an ancestor who is owed, a spirit who owns a place, a relative who holds a grudge. The theory can read the ties. It cannot read the one who wills.

Justice. Sorcery takes hold only of the guilty. Misfortune falls of itself on one who scorns his elders. The house ghost punishes what was hidden. These accounts say that the world answers conduct fitly. Chapter 67 noted that the theory has no rule that would make a shape just. That remains so.

The third person. The theory provides that what does not close passes on. It does not provide that it arrives in a child. The elders say so, and one small and disputed study supports them.

A cause that nobody intends. The Fore read the trembling illness as the work of enemies. It came from their rite of mourning. A medicine that looks for persons cannot find a cause that no person wills. On this point the theory stands with the laboratory and not with the elders. It reads forms and has no place for an agent.

Five, and four round one. The Hawaiian five is the hand. The Javanese five is a centre with four companions. Neither needs the ladders.

Counts with no ladder. Forty-four, nineteen, thirty-two, thirty-seven and 210 stand on neither.

Oracles on one ladder. All the oracles of the book count in twos. The theory gives two ladders, and no reason why divination should keep to one of them.

Lots. The theory has no account of why a cast of knots or grains should name a cause.

Level, or let out? The Javanese and the Balinese hold that health is a level feeling, and that grief which is given way to can kill. The Malays hold that an inborn wind which is shut in makes a person ill and must be danced out. The Māori weep aloud for three days. The peoples of one region give opposite rules for strong feeling.

The theory offers a reading of each. The first is a closed form that must not be opened. The second is a first passage that must be followed. A theory that can read both rules has not explained either.

The words. The likeness between the peoples' words of tying and the theory's words of the strand was set aside at the start. It is listed here once more. Much of what this chapter has found could be an effect of that likeness, and a reader should discount for it.

Borrowed doctrine. The hot and the cold of the Malay and the Filipino village came from the Greek system, and the four elements of the Thai from the Indian. They speak of amounts, as chapter 67 noted of their sources.

A young pharmacy. A botanist found that most Polynesian remedies taken by mouth arose after contact with Europeans. That limits what can be claimed for their age.

No trials. What these medicines claim most firmly has not been tested at all.

What Part VI hands on

1. A scale above the body. The family is a form that can close, stay open or close wrongly, and the illness of one member may be its window.
2. What does not close passes on. A fault between two does not stay with them.
3. A wrong closure held at two ends. The one who holds a grievance is bound as fast as the one who caused it, and release is asked of both.
4. A third who is neither with nor against, through whom two opposed parties can come to rest.
5. The whole window. Everyone concerned must be present.
6. A remedy cannot close an open family. Medicine waits.
7. One layer at a time, from the surface inward, and silence as a step with a name.
8. The close. Every course, every meeting and every grief has an end that is marked.
9. The return that must be made: the gift passed on, the debt, the leave asked before entering.
10. The fit of healer and patient, stated by the healers themselves.
11. Two sides of every event, a partner for every person, and an other half that is one’s own kin.
12. Measurements: a grudge that shows in the body within minutes, a quarrel that slows a wound, and a meeting that helps the one who was wronged. With them comes a design that nobody has run: the family rite offered beside the usual care of a sick child.

Part VI ends the account of the main traditions. Part VII lays the six parts side by side.

Part VII — Convergence

72. The points of agreement, counted again

What Part VII does

Parts II to VI described the old medicines one by one. Each ended with a reading and with a short list of what it handed on. Part VII lays the six parts side by side.

This chapter takes up the ten points of agreement that chapter 8 listed and counts them again. Chapter 73 compares the counts of the traditions. Chapter 74 compares their acts with the six rules and asks how such medicines should be tested. Chapter 75 gathers what has been measured and what has done harm. Chapter 76 lists what remains open.

How the count is made

Chapter 8 gave each point with a floor: the number of traditions for which a source had been read at that time. The book has since described many more. They are grouped here into twenty-five traditions.

Part	Traditions
II	The San; Aboriginal Australia; Siberia; the Sámi and the Finns; Inner Asia and the Himalaya; the Amazon; the Andes; Mesoamerica; the Navajo; the other nations of North America
III	The Yoruba; Africa beyond Ifá
IV	Mesopotamia; Egypt; the Greek temples; the Hippocratic and Galenic physicians; the Unani physicians; Europe after Galen
V	China; India; Tibet; Japan, Korea and Vietnam
VI	Hawai‘i; the other islands of the Pacific; the islands and mainland of Southeast Asia

A tradition is counted for a point when a chapter of this book describes the practice from a named source. The tables give the chapter. They do not repeat the sources.

Two cautions apply. The twenty-five are not independent. Unani medicine descends from the Greek, Tibet learned from India and China, and the Pacific was settled from one homeland. And a tradition that is not counted for a point may simply not have been asked about it by those who wrote it down.

1. A reader who makes contact

Diagnosis is made by a reader who makes contact: by the hand, in trance, in a dream or by a cast.

Tradition	Form of the reading	Chapter
The San	The healer in the dance sees into the bodies of those present and lays on trembling hands	11
Aboriginal Australia	The healer looks into the body and feels with the hands	13
Siberia	The shaman questions his spirits in the session	14
The Sámi	The drum and its pointer	14
Inner Asia	Trance, and the Korean cast of rice grains or coins	15
The Amazon	The healer sees the illness under tobacco or the vine	16
The Andes	The cast of coca leaves	17
Mesoamerica	The cast of maize and seeds; the blood that speaks in the healer’s own limbs	18
The Navajo	The hand that trembles; the gazing at a star	19
North America	The dream; the shaking tent; the sucking doctor’s sight	20
The Yoruba	The cast of palm nuts or of the chain	25
Africa beyond Ifá	The bones, the four tablets, the basket	30

Tradition	Form of the reading	Chapter
Mesopotamia	The signs read from the road to the bedside; the liver of the sheep	32, 33
Egypt	The hand laid on, and the heart heard in the vessels	35
The Greek temples	The dream in the sanctuary	37
The Greek physicians	All the senses; from Alexandria onward the pulse	38, 39
Unani	The pulse and the flask	40
Europe after Galen	The flask of urine held to the light; the pulse	41
China	The four examinations; the pulse at three places and three depths	49, 50
India	The eightfold examination; the pulse	58
Tibet	The pulse at dawn; the urine	63
Japan	The palpation of the belly	65
Hawai‘i	The expert in feeling; dreams; signs	68
The Pacific	The Māori examination by questions and by sight; the Carolinian knots	70
Southeast Asia	The alum, the counted rice, the medium, the offered song	70

The point is found in every tradition of the book. It can be taken as general.

Three forms of contact appear, and they are not spread evenly.

The hand. The pulse is read in all the literate medicines from Alexandria to Tibet. The whole body is felt in Hawai‘i, in Japan and among the peoples without writing.

The changed state. The healer reads in trance or in a dream across Part II and Part VI, and in the Greek temples. The literate physicians gave it up. The Tibetan physician, who prepares himself from the evening before, stands nearest to it among them.

The cast. The reader steps back and lets a process that nobody steers give the answer. It is found in Africa, in the Andes and Mesoamerica, in Mesopotamia, in China and in the islands. Chapter 73 returns to the counts of the casts.

One qualification must be added. Chapter 8 contrasted the reader who makes contact with a reading from outside. The Mesopotamian handbook and the Hippocratic case notes also read from outside. They list signs that any trained person could check. The old medicines did both. What sets them apart from the hospital is that they never gave up the first.

2. Illness also lies outside the body

Illness also lies outside the body: in the family, among the ancestors, with the gods, in the group, in the land.

Tradition	Where the illness lies	Chapter
The San	With the dead, who long for the living and shoot arrows of illness	11
Aboriginal Australia	In a breach of the law; in sorcery; in country that is not cared for	13
Siberia	With the spirits who have taken a soul; with the owners of places	14
Inner Asia	With ancestors and gods who have been neglected	15
The Amazon	With an enemy who sends darts; with the owners of animals and plants	16
The Andes	With the mountain and the earth, who have not been fed	17
Mesoamerica	With the gods who send and cure; at the place of a fright	18

Tradition	Where the illness lies	Chapter
The Navajo	In contact with lightning, bear, snake or the dead; in a broken rule	19
North America	In a hidden breach; in the unmet wish of the soul; in sorcery	20
The Yoruba	With the powers, the ancestors, the mothers of the night; in the destiny that the head chose	24, 29
Africa beyond Ifá	With the ancestors who brood on a person; in the grudges of kin	10, 21, 30
Mesopotamia	In the hand of a god or a ghost; in witchcraft; in a broken oath	32 to 34
Egypt	With a god, a dead man or woman, or an enemy	36
Europe after Galen	In sin; with the saints; in witchcraft	42
The Chinese village	With the family's dead and with hungry ghosts	54
India	With the seizers; in the acts of former lives	59
Tibet	With the beings of the land	63, 64
Hawai‘i	In the tangle of the family; with the guardians	68, 69
The Pacific	In a breach of *tapu*; in a return not made; with the ghost of the house	70
Southeast Asia	With the unseen owners of a place; with the dead who are owed a rite	70

The point is found in twenty of the twenty-five traditions and in every part.

The exceptions are as instructive as the rule. The Hippocratic authors denied that any illness is more divine than another. Galen and the Unani physicians followed them. The Chinese classics demoted the spirits, and the Indian textbooks gave them one limb of eight. These are the medicines of the book and the court. Each of them looked for illness inside the body and in the air, the food and the season.

None of them emptied the outside. Chapter 43 called the result the two houses. The physician took the body, and the temple or the shrine kept the rest. Where the physicians ruled the books, the people went on visiting both.

The medicines also differ in what the outside holds. Among the hunters it holds the dead and the owners of animals. Among the farmers it holds the ancestors and the land. In the cities of Mesopotamia it holds gods who keep accounts. In Hawai‘i it holds, above all, the living kin. Part VI showed that last case most plainly: the illness lies between persons who are all present in the house.

3. A name that points to a larger whole

The name of the illness points to a place or a cause in a larger whole.

Tradition	What the name is	Chapter
The shaman’s world	A cause: a soul lost, an object lodged, a spirit entered, a breach, a sorcerer	21
The Andes	The place or the power that has seized the person	17
The Maya of Yucatán	The lineage of the illness, recited to it	18
The Navajo	The being that was offended, and with it the ceremony that answers	19
The Yoruba	A sign: one address among 256, with its verses	25 to 27
Mesopotamia	“The hand of” a named god or ghost	33

Tradition	What the name is	Chapter
The Greek and Unani physicians	A humour and its seat: black bile, phlegm in the head	38, 40, 41
China	A pattern: a place, a depth and a direction	48
India	A fault, a tissue and a channel	59
Tibet	A fault, hot or cold, and a seat	63
Hawai‘i	From within the family, or from outside	68
Micronesia	The spirit that sent the illness and owns its cure	70
Fiji	True illness, illness of the land, illness of the spirits	70
Bali	The ancestor who is owed; the day on which the illness began	70

Chapter 8 found this point in five traditions. It is now found in thirteen, and in the shaman’s world as a whole.

The names are of two kinds. The peoples without writing, and the Mesopotamians, name a cause that lies outside the body. The name says who or what stands behind the illness. The literate physicians from Greece to Tibet name a state inside the body. Their name says which fault is at work, where, and in the East which way it moves.

Both kinds do the same work. Neither names the illness by its appearance alone, as a hospital diagnosis does when it ends in the syllables for inflammation. Each places the case in a system that is larger than the patient and that the healer already knows. Chapters 31 and 43 called such a name an address. A name of that kind tells the healer what to do next. The Yoruba sign carries its sacrifice, the Navajo cause its chant, and the Chinese pattern its formula.

The World Health Organization has kept something of this. Chapter 8 reported that its classification now allows a pattern of East Asian medicine to be coded beside a disease. The patient has two names: one for what he has, and one for where he stands.

4. Taking out and driving out

Healing means taking out or driving out, and the patient sees it go.

Tradition	What is taken out, and how	Chapter
The San	The arrows of illness, drawn into the healer's own body and thrown off with a cry	11
Aboriginal Australia	A stone, a bone or a cord, drawn out by the hand or the mouth	13
Siberia	An intruding spirit, driven out or carried off	14
The Amazon	Darts in a bed of phlegm, sucked out and shown	16
The Andes	The illness rubbed off into an egg or an animal	17
Mesoamerica	The same cleansing with egg and herbs; the steam bath	18
North America	The pain of the Californian healers, sucked out and shown	20
Africa	The tooth of the hunter's shade; the cupping horn	21, 30
Mesopotamia	The evil passed to a figure, a goat or a substitute and sent away; the witch burned in effigy	34
Egypt	The illness ordered by a spell to leave and run out	36
The Greek physicians	The humour cleared by purge, vomit, sweat and the lancet	38, 41

Tradition	What is taken out, and how	Chapter
Unani	The ripened matter cleared; cups and leeches	40
China	Sweating, vomiting and purging among the eight methods; cups, scraping and bleeding	51, 52
India	The five cleansings	60
Tibet	Purge, emetic, bleeding and the golden needle	64
Hawai‘i	The purge that opens every course	68
Melanesia	The object drawn out; the breathed-on ginger spat over the patient	70
Java and Cambodia	The wind let out through the skin in red stripes	70

The point is found in eighteen traditions. Chapter 8 cited the survey that found the sucking cure in 62 of 89 hunter-gatherer peoples. The table shows that the literate medicines did the same with other means. The Greek physician who purged black bile and the Amazonian healer who sucked out a dart were both removing what did not belong.

Chapter 4 reported a finding of the book on the body that bears on this. Where hospital medicine treats first by taking out or killing, the illness is most often cured: in 96 of 138 cases. Removal is the act on which the old medicines and the hospital agree most, and it is the hospital’s most successful one.

The second half of the point is the old medicines’ own. The patient sees it go. The Californian healer shows the pain. The Javanese mother shows her child the red stripes. The Greek physician inspected what a purge had brought out, and showed it. Chapter 8 read the showing as a closure in which the patient takes part.

The history of bloodletting, which chapter 41 told, is the warning that belongs to this point. An act of removal that is coherent, visible and satisfying can be kept up for two thousand years without doing good.

5. Rhythm, sound and the group

Rhythm, sound and the group are means of healing.

Tradition	The means	Chapter
The San	The dance of the whole camp, to the clapping and singing of the women	11
Aboriginal Australia	The healing songs of a country	13
Siberia and the Sámi	The drum; the chant sung to each being	14
Korea	The rite of drums, cymbals and song before the gathered household	15
The Amazon	The songs that the plants teach, sung through the night	16
The Andes	The rattle and the song at the healer’s table	17
The Navajo	The chant of up to nine nights, with kin and neighbours present	19
North America	The songs of the Lakota and the Ojibwe; the peyote meeting	20
The Yoruba	The verse chanted to the patient; the drums of the powers	28, 29
Africa beyond Ifá	The drum rites of affliction	30
Mesopotamia	The incantation recited over the patient	34
Egypt	The spell spoken over the remedy	36
The Greek temples	The hymn, the procession, the crowd of suppliants	37

Tradition	The means	Chapter
Europe after Galen	The charm, the pilgrimage, the feast of a saint	42
India and Tibet	The recited formula; the rite	60, 64
Hawai‘i	The chant, the dance, the meeting of the family	68, 69
The Pacific	The Māori mourning; the pepper root drunk in a circle	70
Southeast Asia	The night play of the Malays; the mouth organ of the Thai north-east; the play of the witch in Bali; the neighbours’ feast in Java	70

The point is found in twenty traditions.

It is weakest where the physician works alone with one patient. The Hippocratic books, Galen, the Unani texts and the Chinese classics prescribe no song and gather no group. They kept one rhythm, which is that of the day and the season: when to eat, sleep, move and rest. In those medicines regimen takes the place that the dance has among the San.

The measurements of chapter 22 belong to this point. People who sing or move together fall into step in breath and heartbeat. Pain is borne more easily in company and in step. Those findings were made on students and choirs. They say that the oldest means of the healers act on the body, and they do not yet say how much they heal.

6. A healer formed by a passage of his own

The healer is formed by a passage of his own: an illness, a pain, a fast, an initiation.

Chapter 10 was given to this point. The table lists the forms.

Tradition	The passage	Chapter
Siberia	The illness of the call; the vision of being taken apart and put together	10, 14

Tradition	The passage	Chapter
Southern Africa	The brooding of the ancestors, which ends only when the person accepts the calling	10
Korea, Chile, the Hmong	The same illness of the call	10, 15
The San	Years of dancing until the boiling comes, and the pain of it	11
The Amazon	Months of fasting and solitude with one plant	10, 16
The Plains	The quest: days alone, without food or water	10, 20
The Navajo	Years of learning a chant from a singer, word for word	19
The Yoruba	Ten years or more of memorising the verses, and an initiation in the grove	25
The Greek physicians	The oath, and the long following of a master	38
China, India, Tibet	The pupil lives with the teacher; the classics put the physician’s own mind first	45, 56, 62
Hawai‘i	Fifteen or twenty years in the master’s house	68
Fiji	The straight path, on which the power depends	70
Java	Fasting, and nights of wakeful stillness	70
The Malay healers	The healer’s own wind, which must have been let out	70

Chapter 8 called this point probably general. The count bears it out, with a distinction.

There are two roads. On the first the healer is chosen, by an illness that will not leave him until he accepts. That road is found in the shaman's world and almost nowhere else. On the second the healer is taught, for ten or twenty years, in the house of a master. That road is found among the literate physicians and in Polynesia, and also among the Navajo and the Yoruba.

The two roads have one result. The healer is a person who has been altered, and not only informed. Chapter 67 drew the consequence. If the reader is his own measure, he must be prepared before he reads. The classics of China, India and Tibet say so at the head of their teaching, and the Fijian healers say it of their lives.

Hospital medicine trains for ten years as well. It trains knowledge and skill. It does not hold that the state of the physician on a given morning is part of the instrument.

7. Direction more than amount

Direction counts for more than amount.

Tradition	How direction enters	Chapter
The Andes	The healer's table has a left field, a right field and a middle one; a thread for healing is spun against the usual direction	17
The Navajo	Each of the four directions has its wind and its colour; the patient sits in the painting facing east	19
The Yoruba	A sign has a right and a left half, and the two cannot be exchanged	26
China	The four movements of *qi*; drugs that raise, lower, float and sink	46, 52
India	Channels that run the wrong way; five winds, each with its course	57, 59
Tibet	The five winds; the fever that goes into hiding	62, 63

Tradition	How direction enters	Chapter
Hawai‘i	The right hand and the left hand at the picking of a plant	68
The Māori	The right passage between two states that must not be mixed	70
Bali	A compass in the body, with an organ at each point	70
Cambodia, Java, Thailand	Wind that rises, enters, or runs along lines to the openings of the body	70

Chapter 8 found this point in three traditions and called it less sure. It is now found in nine. It must be restated all the same.

The Eastern system and the peoples of the Americas speak of direction as a first category of illness. The humoral medicine of the West does not. Its language is of amounts and qualities: too much blood, too little heat, a humour that is too thick. Chapter 67 noted that the Eastern system has that second language as well, and that it is as old as the first.

The point therefore stands in this form. Direction is a category of illness and of cure in many old medicines, and the leading one in some. It is absent from the hospital, which measures amounts almost exclusively. The book on the body gives the reason for its weight in the theory: opposite directions never join.

8. Sleep and dream

Healing is done in sleep or in a dream.

Tradition	What happens in the night	Chapter
The Greek temples	The patient sleeps in the sanctuary, and the god comes to him	37
Egypt	Sleep in the temple, in the late period	36
The Amazon	The night of healing under the vine	16

Tradition	What happens in the night	Chapter
The Iroquois	The wish of the soul is shown in a dream and fulfilled by the village	20
The Ojibwe	Power and remedies are received in dreams	20
Hawai‘i	Dreams are told each morning; causes, names and remedies are given in them	68
The Māori	The patient’s dreams are heard for the cause	70
The Temiar	Healing songs are given in dreams	70

Chapter 8 found this point in two traditions. It is now found in seven, and the count shows that the point joined two matters that should be kept apart.

The dream as a reading. In most of the seven the dream does not cure. It tells the cause, or gives the remedy. In that form the point belongs under the first one, as a fourth kind of contact beside the hand, the trance and the cast.

Sleep as the place of cure. Only the temples of Greece and Egypt, and the Amazonian night, make the night itself the treatment.

A third matter lies under both. Every old medicine protects sleep. The regimens of Greece, of the Unani physicians, of China and of India all fix the hours of the night. Chapter 4 reported why this matters to the theory. The book on the body reads the time of the return as the night, and it found that heart and breath lock most firmly in deep sleep. The old physicians assumed what the temple made into a rite.

9. The order of the act

The healing follows the order: read first, offer what fits, offer it whole, then silence.

Each part of the book has stated an order in its own terms.

Part	The order	Chapter
II	Make ready, read, name, restore at the place, carry with rhythm, keep quiet	23

Part	The order	Chapter
III	Cast, recite the precedent, let the patient recognise his case, sacrifice, give the leaf	25, 28
IV	Examine, name, give a verdict, and only then treat	33, 35
IV	Regimen first, then food, then drugs, and the knife last	40
V	Read at dawn; name the pattern; compose the formula as a whole; let the patient rest	50, 52
VI	Pray, open, give the counted remedy, close	68
VI	Pray, join all strengths, peel layer by layer, be silent, release, cut, close	69

The orders agree in three respects. The reading comes before any act, and it is a separate step. What is offered is offered whole: a ceremony, a formula with its four ranks, a family with nobody absent. And there is a rest at the end that belongs to the treatment.

Chapter 74 takes the six rules one by one.

10. Made still before the reading

Before the reading, healer or patient is made still by washing, fasting or keeping apart.

Tradition	The preparation	Chapter
The Amazon	The diet before and after a night with the plants	16
Mesoamerica	The steam bath	18
The Navajo	The sweat bath and the emetic that open a ceremony	19
The Lakota	The sweat lodge before every rite	20

Tradition	The preparation	Chapter
Mesopotamia	The rite at dawn; the patient washed and dressed in clean clothes	34
The Greek temples	Bath, fast and offering before the night in the sanctuary	37
Europe after Galen	Fast and confession before the shrine	42
China	The pulse read at dawn before food, by a physician who has calmed his breath	50
India	The collected physician; the patient oiled and sweated before a cleansing	58, 60
Tibet	Physician and patient restrain themselves from the evening before	63
Hawai‘i	Prayer, and the purge that opens every course	68
The Māori	The rite at dawn, at water kept for the purpose	70
Java	The healer’s fast and wakeful nights	70

The point is found in twelve traditions and in every part. It can be taken as general.

Two persons are made still, and the traditions differ in which of them they stress. The peoples of the Americas and the Greek temples prepare the patient. The classics of the East prepare the physician. The Tibetan book prepares both, by the same rule and for the same night.

A hospital also asks a patient to fast before a blood test. It does so for the sake of the measurement. The old medicines do it for the sake of the reader and of the one who is read. The fourth axiom says that every response depends on the state of what responds. The first of the six rules is its consequence: read the state first. A state that has been made still can be read.

Eight further points

Chapter 8 could list only what the first research had found. The parts have handed on more. Eight matters return in three or more parts.

11. The origin is recited

Tradition	What is recited	Chapter
The Finns	The origin of iron, fire or the snake, spoken to master the harm that it has done	14
The Maya of Yucatán	The lineage of the illness: its father, its mother, its day of birth	18
The Navajo	The journey of the hero who first received the chant	19
The Cherokee	How the animals sent the illnesses and the plants offered the cures	20
The Yoruba	The verse of the first person who received this sign, and what he did	28
Mesopotamia	The incantation that begins at the making of the world	32, 34
Egypt	The story of the god who was healed, told over the patient who takes his place	36
The Māori	The genealogy of the child, recited at a hard birth	70

Eight traditions treat a case by telling how such a case first arose. The patient is set in the place of the first sufferer, and what was done then is done again.

Chapters 31 and 43 read this with the third axiom. The first passage fixes the direction, and later passages are taken relative to it. The literate physicians kept a remnant of the practice. They ask how the illness began.

The same axiom was laid beside a second group of teachings. They concern a person’s own first state.

Tradition	The first state of a person	Chapter
The Yoruba	The destiny that the head chose before birth	24
The Greek and Unani physicians	The inborn temperament, against which health is judged	39, 40
India and Tibet	The constitution fixed at conception; the fruit of earlier acts	57, 59, 62
China	The essence received from the parents	47
The Malays	The inborn winds	70
Bali	The ancestor who has returned in the child	70

In all of these, health is a relation to what the person was at the start, and not to an average. The physician restores. He does not aim at a norm.

12. The raw must ripen

Tradition	The teaching	Chapter
The Amazon	The purge under the vine is held to be the cure itself	16
The Greek physicians	The humour must be cooked before it is cleared; the fever turns on a critical day	38
Unani	Ripening drugs first, clearing drugs after	40
China	Food that stays, damp and hidden evils are worked on before they are driven out	48, 52
India	The raw residue of a weak fire is cooked before any cleansing	57, 60
Tibet	A raw fever that is cooled too soon goes into hiding	63
The Philippines	A recovery that is cut short returns as a harder illness	70
Hawai‘i	The family meeting passes through anger and silence before the release	69

Chapter 4 gave the theory’s side. Out of a wrong closure there is no way that does not pass through the open. The person gets worse before he gets better. The old medicines made a procedure of that stretch. They prepare it, they time it, and they do not shorten it.

13. A term and a close

Tradition	The close	Chapter
The Navajo	Four days of quiet after a ceremony	19
The Greek physicians	The count of critical days	38
India	The return to ordinary food by steps after a cleansing	60
China and Southeast Asia	The mother’s month, or her forty-four days by the fire	54, 70
Hawai‘i	The food that closes a course; the cutting and the meal that close a meeting	68, 69
The Māori	The lifting of *tapu*; the unveiling of the stone a year after a death	70
Thailand and Laos	The threads left on the wrists for three days	70

The sixth of the six rules says to leave silence after each offering. These traditions go further. They fix the length of the return, and they mark its end.

14. Healer and patient are a pair

Tradition	The form	Chapter
The San	The healer’s own body is the instrument; he takes the illness into himself	11
China	The patient’s beats are counted against the physician’s own breath	50
Tibet	The same count; physician and patient prepared alike	63
Hawai‘i	The kneader works in time with his own breath	68
Java	Healer and patient must fit as key and lock	70
The Philippines	The one who caused a child’s illness is the one who cures it	70

Chapter 5 took the position that a reading is a locking between two persons. Part V supplied the instruction on which it rests, and Part VI the healers who say it outright. The measurements of chapter 8 fit it. Two physicians agree on the broad conclusion and differ on the fine pattern.

15. Two opposite illnesses, two opposite cures

Tradition	The pair	Chapter
The shaman’s world	What belongs is absent, or what does not belong is present. The soul is brought back, or the object is taken out	21, 23
The Greek physicians	Fullness and emptiness: to empty the one and fill the other	38
China	Empty and full: three ways to fill and three to empty	48, 52
India	To build up and to lighten	60
Hawai‘i	Illness from within and illness from outside	68

The pair is the first count of every medicine in the book, and chapter 73 returns to it.

16. Confession and the setting right

The reference list that follows chapter 69 gathers twenty-six forms of this practice. Within this book it is found in the Arctic and among the Ojibwe, in Mesoamerica, among the Ndembu and in Babylon. Part VI added the Hawaiians, the Samoans, the Fijians, the Māori, the people of Manus and the Semai. In most of these it is a treatment of the sick.

17. Someone crosses

Tradition	Who crosses, and how	Chapter
The San	The healer leaves his body in the dance and pleads with the dead	11, 12
Siberia and the Sámi	The shaman travels for the soul	14
Inner Asia	The Hmong shaman rides after the soul; the Korean shaman lends her voice to the dead	15
The Amazon	The healer goes to the owners of the plants	16
The Greek temples	The god comes to the sleeper	37
The Chinese village	The family's dead and the hungry ghosts are fed and sent on; a child's lost soul is called back	54
Tibet	The life principle is called back; the dead are guided	64
Hawai‘i	The soul is caught and pressed back into the body	68
Bali and Borneo	The medium is a seat for the ancestor; the Iban shaman travels to the garden of souls	70

Chapter 6 held that the body which medicine describes is one of two halves. Ten traditions have a healer whose work is to go from one half to the other, or to deal with it on the patient's behalf.

18. A verdict before treatment

Tradition	The verdict	Chapter
Mesopotamia	He will recover; he will die; his illness will be long	33
Egypt	An ailment that I will treat; one with which I will contend; one that is not to be treated	35
The Greek physicians	Saying how it will end, and declining a case that is beyond the art	38
India	Easy to cure, hard to cure, to be eased only, and not to be treated	58
Tibet	The pulses and signs of death	63
Hawai‘i	The healer watches the signs at the first plant and may decline	68

Six traditions put a judgment of the outcome between the reading and the act, and all six allow that the judgment may be not to treat.

What did not converge

The counts. The traditions count in twos, threes, fours and fives. Chapter 73 takes this up.

The standing of the dead. For the San and the Navajo the dead are a danger and are sent away. For the Yoruba, the Chinese, the Balinese and the Hawaiians they are guardians who must be fed.

Strong feeling. The Javanese and the Balinese keep it level. The Malays dance it out, and the Māori weep aloud.

Payment. The San healer, the Hawaiian, the Tongan and the Fijian take no fee, and hold that payment destroys the power. The Navajo singer must be paid, or the chant has no effect.

The public. The shaman, the Navajo singer and the Hawaiian leader work before the gathered kin. The physician of Greece, of China and of India works with one patient.

Secrecy. The verses of Ifá, the chant of the Navajo and the recipe of the Tahitian family are owned and guarded. King Rama III had the knowledge of the Thai physicians cut in stone for all to read.

Amount and direction. The humoral West speaks of amounts. The East and the Americas speak first of direction.

The list as it now stands

	Point	Traditions of twenty-five	Standing
1	A reader who makes contact	All	General
2	Illness also lies outside the body	Twenty	General, with the literate physicians as the exception
3	A name that points to a larger whole	Thirteen	Wide
4	Taking out and driving out	Eighteen	General
5	Rhythm, sound and the group	Twenty	General, except where the physician works alone
6	A healer formed by a passage of his own	In every part, by one of two roads	General
7	Direction as a category of illness	Nine	Wide in the East and the Americas
8	The dream as a reading; sleep as the place of cure	Seven; three	Partial
9	The order: read, offer what fits, offer it whole, rest	Stated in every part	General
10	Made still before the reading	Twelve	General
11	The origin is recited; health is judged against a person’s own first state	Eight; seven	Wide
12	The raw must ripen	Eight	Wide
13	A term and a marked close	Seven	Wide

	Point	Traditions of twenty-five	Standing
14	Healer and patient are a pair	Five	Partial, and stated outright by few
15	Two opposite illnesses and cures	In every part	General
16	Confession and the setting right	Seven	Wide
17	Someone crosses	Ten	Wide outside the literate medicines
18	A verdict before treatment	Six	Partial

The numbers remain floors. They count what this book has described.

73. The counts

What chapter 2 claimed

Chapter 2 began with an observation. Every old medicine counts, and the counts are few. It named them: two, three, four, five, seven, eight, twelve and sixteen. It then offered a reading.

The theory has two ways of closing apart from standing still. One is the meeting, of length two. The other is the ring, of length three. Repeated at larger and larger scale, each gives a ladder. The ladders never meet, and the few depths at which they come close are 1, 2, 5, 12, 41 and 53. Chapter 2 placed the common counts of the old medicines on the two ladders and at those depths.

It made three further claims. No medicine builds on six, ten or eleven. The number of fingers does not matter. And the counts come from what closes, not from the hands that count.

It added three cautions. A count can be reached in more than one way. The seven is weak. And the table shows where a count can sit, not how a people came to it.

Six parts of the book have since recorded the counts of twenty-five traditions. This chapter gathers them and tests the reading against them.

The counts of the book

The table lists the counts that the parts have recorded, with the chapter in which each is described.

Count	Where it is found	Chapter
2	The soul of the body and the soul that travels	6
	The male and the female rain of the /Xam; the paired prayers of the Navajo	12, 19
	The two marks of Ifá	26
	Hot and cold in the Andes, in Mesoamerica, in Unani medicine and in the Malay village	17, 18, 40, 70
	Yin and yang; empty and full	46, 48

Count	Where it is found	Chapter
	The Māori pair of the set apart and the ordinary; the Balinese seen and unseen; the Hawaiian night and day	68, 70
3	The three worlds of the shaman	9, 14
	The three centres of an Aztec person	18
	The three fields of the healer’s table on the north coast of Peru	17
	The three faults of India and of Tibet	57, 62
	Three places and three depths at the wrist; heaven, earth and man	46, 50
	The three kinds of treatment of Caraka	60
	The Balinese classes of hot, cold and between	70
	The three navels of a Hawaiian; the triangle of gods, people and land	68, 70
4	The four qualities, elements and humours of the Greeks	38
	The four directions of the Navajo and the Lakota	19, 20
	The four tablets of the diviners of southern Africa	30
	The four examinations and the four natures of drugs in China	49, 52

Count	Where it is found	Chapter
	The four ways of treating in Unani medicine	40
	The four elements of the Thai; the four siblings of the Javanese and the Balinese; the four strips of the Carolinian diviner	70
5	The five phases, notes and storing organs of China	46, 47
	The five elements of India and Tibet; the five winds; the five cleansings	57, 60, 62
	The five sheaths of the yogis	61
	The five of the Hawaiian course	68
	The market week of five days in Java	70
6	The six stages of a fever from cold in China	48
	The six tastes of India and Tibet	57
	The six necessary conditions of Galen and the Unani physicians	40
7	The seven tissues of India	57
	The seven feelings of China	48
	The seven natural matters of Unani medicine	40
	The seven of the Cherokee	20

Count	Where it is found	Chapter
	The week of seven days in Java	70
8	The eight marks of a sign of Ifá	26
	The eight trigrams, the eight principles and the eight extra vessels of China	46 to 48
	The eight limbs of Indian medicine and its eightfold examination	56, 58
	The eight weekdays of Burma	70
9	The nine temperaments of Galen	39
	The nine readings on each wrist; the nine needles; the nine constitutions of modern Chinese medicine	50, 51, 55
	The nine nights of the longest Navajo chants	19
	The nine tastes of the Thai physicians	70
10	The ten stems of the Chinese calendar; the ten questions of the Chinese physician	46, 49
	The ten pairs of qualities of India	57
	The ten chief lines of the Thai kneaders; the ten weeks of the Balinese calendar	70

Count	Where it is found	Chapter
12	The twelve pitch pipes, vessels and double hours of China	46, 47
	The sets of twelve songs of the Navajo	19
13	The thirteen numbers of the Maya count of days; the thirteen points for ghosts	18, 54
16	The sixteen signs of Ifá and of the sand divination	26
	The sixteen falls of the four tablets	30
	The sixteen pairs of the Carolinian knots; the sixteen figures of Madagascar	70
20	The twenty day names of the Maya	18
27, 28	The pulses of the Chinese handbooks	50
53, 60	The series of pitches of Jing Fang	46
64	The signs of the *Changes*	46
81	The chapters of the oldest Chinese classics; the number of the Yellow Bell	45, 46
256	The signs of Ifá; the answers of the Carolinian knots	26, 70

Longer counts are lists and calendars. The table below gives them apart.

Count	What is counted	Chapter
19, 32	The souls of the Khmer and of the Thai	70
35	The return of a pair of days in Java	70
37	The lords of Burma	70
40	The tablets of the Babylonian handbook	33
44	The days of the Malay mother by the fire	70
49	The days between death and rebirth in Tibet	64
107	The vital points of India	61
210	The days of the Balinese ritual year	70
260	The days of the Maya count	18
365	The points of the Chinese body, as the classics count them	47
404	The illnesses of the Tibetan book	63
72,000	The channels of the yogis	61

First test: are the counts few?

They are. Below sixteen, the table has entries at every number from two to ten, and at twelve and thirteen. But the entries are of two very different kinds.

Some counts are the ground of a medicine. They say of how many principles a body and its illnesses are made. Others are lists: so many tastes, tissues, questions, needles or days.

The ground counts are these.

Tradition	The principles of body and illness
The Yoruba	Two marks
China	Two, in yin and yang; five phases

Tradition	The principles of body and illness
India	Three faults; five elements
Tibet	Three faults; a first division into hot and cold
The Greek and Unani physicians	Four humours, from two pairs of qualities
Thailand	Four elements; three faults
The peoples without writing	Pairs: absent and present, hot and cold, set apart and ordinary

No medicine in this book makes a body of six principles, of seven, or of ten. The ground counts are two, three, four and five, and nothing else. That is a real regularity, and it holds across traditions that never met.

The theory names two and three as the lengths of its two elementary closures. Four is two pairs crossed, as the Greek physicians said of their own scheme. Five is taken up below.

Second test: six, ten and eleven

Chapter 2 claimed that no medicine builds on six, ten or eleven. The claim holds for the ground counts. It must be loosened for the lists.

Six. Chapter 2 held that six appears only as two times three. That is true of the six stages of the Chinese fever, which are three of yang and three of yin. It is true of the six tastes, which fall into two groups of three. It is not true of the six necessary conditions of Galen. They are a plain list: air, food and drink, movement and rest, sleep and waking, what is kept in and let out, and the feelings.

Ten. Ten appears five times in the table. The ten stems are the five phases, each in two forms, as chapter 2 said. The ten pairs of Indian qualities are pairs by their own account. The ten questions of the Chinese physician, the ten lines of the Thai kneaders and the ten weeks of Bali are lists of ten.

Eleven. No count of eleven was found.

Thirteen and twenty. Chapter 2 did not mention them. The Maya counted days by thirteen numbers and twenty names. Neither stands on a ladder.

Third test: do the hands matter?

Chapter 2 said that the number of fingers should not matter, and that the counts come from what closes.

Two cases in the book go against this.

The Hawaiian healer counts in fives. Chapter 71 noted that in his language, and in the whole family of languages to which it belongs, the word for five is the word for the hand. The Hawaiian five is a hand.

The Maya counted in twenties, and their word for twenty is related to their word for a person, who has twenty digits. The count of days of the Maya healers is a count on the body.

The claim of chapter 2 must be narrowed. The ground counts do not come from the fingers. No medicine has ten principles. But some of the counts by which healers measure doses and days do come from the hand.

Fourth test: five and twelve

Chapter 2 read five and twelve as depths at which the ladder of three comes near to the ladder of two. It warned that a count can be reached in more than one way. The parts allow the reading to be tested case by case.

Tradition	The count	How the tradition itself reaches it	Chapter
China	Five notes, five phases	By the series of the pitch pipes: a third is taken away and added in turn, and after five steps the series nearly returns	46
China	Twelve pipes, twelve vessels, twelve hours	By the same series, carried to twelve steps	46
China	Fifty-three and sixty pitches	By the same series, carried on by Jing Fang in the first century before our era	46
India and Tibet	Five elements	By the five senses and their objects; the pipes play no part	57
Hawai‘i	Five doses, five days	By the hand	68

Tradition	The count	How the tradition itself reaches it	Chapter
Java and Bali	Five days, five directions	By four and a centre	70
The Navajo	Twelve songs	By four times three	19

The reading is demonstrated for China. The Chinese did not merely have a five and a twelve. They derived both from a series that sets threes against twos. They knew that the series does not close. One of them carried it to fifty-three, which is a depth that the theory also names. Chapter 67 called this the most exact agreement of number in the book. It is exact because the tradition made the same computation.

Outside China the reading is not supported. The Indian five comes from the senses. The Hawaiian five is a hand. The Javanese five is a centre with four companions, and the Navajo twelve is four threes. In each of these the tradition’s own account is simpler than the ladders and should be preferred.

No tradition in the book has a count of forty-one, which is the depth between twelve and fifty-three.

Fifth test: the ladders of two and of three

Chapter 2 set 2, 4, 8, 16, 64 and 256 on the ladder of two, and 3, 9, 27 and 81 on the ladder of three. The parts add entries to both.

The ladder of two.

Step	Count	Where	Chapter
1	2	The yes or no of the Kwaio diviner; every pair of the first table	70
2	4	Two pairs crossed: the Greek qualities; the four tablets	38, 30
3	8	The trigrams; the eight principles, which are three questions with two answers each	46, 48

Step	Count	Where	Chapter
4	16	The signs of Ifá, of the sand, of the tablets, of the knots	26, 30, 70
6	64	The signs of the *Changes*	46
8	256	Ifá; the Carolinian knots	26, 70

The ladder of three.

Step	Count	Where	Chapter
1	3	The three faults; the three fields of the Andean table; the three worlds	57, 17, 9
2	9	The nine readings on a wrist, from three places and three depths; the nine temperaments of Galen	50, 39
3	27	The pulses of Li Shizhen	50
4	81	The chapters of the classics; the Yellow Bell	45, 46

Two observations follow.

The oracles stand on the ladder of two. Chapter 71 noted it. Every cast in the book that has a fixed number of outcomes has a power of two: two, sixteen, sixty-four, 256. They come from West Africa, southern Africa, China, Micronesia and, by way of the Arabs, Madagascar. A cast is built from places that can fall in one of two ways. The count follows from that and needs no further account.

The ladder of three is climbed in the East. Outside China, India and Tibet the book has threes and few nines. The step from three to nine, twenty-seven and eighty-one is taken by the Chinese, who liked to count upward by threes, and it is taken once by Galen.

The two nines

Chapter 39 described the nine temperaments of Galen, and chapter 55 the nine constitutions of modern Chinese medicine. Chapter 66 set them side by side. They are built differently.

Galen had two pairs of qualities, hot and cold, and wet and dry. In each pair a person may lean to one side, lean to the other, or be balanced. Two pairs with three states each give nine temperaments. One of the nine is balanced in both.

That is a scheme of three values. The theory has three values at every place: with, against and neither. Galen's middle state, in which neither quality leads, is the third value. Chapter 67 found it in the Chinese pivot, and chapter 71 in the Balinese class between hot and cold and in the leader of the Hawaiian meeting. The Greek physician who is thought to count in fours counted, at this point, in threes.

The Chinese nine has another form. It is one balanced constitution and eight that lean, each named for what is lacking or in excess. It was drawn up from the observation of patients in the 1970s and later. It is a list, and it does not divide as three times three.

Sevens

Chapter 2 called the seven weaker than the rest. The table has five sevens. The seven tissues are a chain in which each is made from the one before. The seven feelings are a list. The seven natural matters of Unani medicine are the headings of a textbook. The Cherokee seven and the week of seven days have their own histories. Nothing in the parts strengthens the reading of the seven as a consequence of five and twelve.

Calendars

Several healers of the book reckon the day.

Tradition	The rounds that run together	Their common return	Chapter
China	Ten stems and twelve branches	Sixty days, and sixty years	46
The Maya	Thirteen numbers and twenty names	260 days	18
Java	A week of five and a week of seven	Thirty-five days	70
Bali	Ten weeks, of one day up to ten	210 days	70

Four peoples who never met run rounds of unequal length together and mark the days on which they end at once. The Chinese physician chose points by such a day. The Maya day-keeper read a patient’s fate from it. The Balinese healer looks up the day on which an illness began.

Chapter 71 gave the reading and its limit. Rounds of different length meet at fixed points and nowhere else, as rings of different depth do in the book on the body. The lengths of the rounds are counted in days and are not steps of the ladders.

What the body itself shows

The reading of chapter 2 concerns the counts that healers use. A stronger claim would be that the body’s own measures lie on the ladders. The book on the body tested that claim and did not confirm it.

It asked whether the sizes of the body’s forms cluster at the steps of the ladder. They did not: 49.5 per cent lay near a step, where chance gives 50. It asked the same of nine bodily rhythms and of seven frequencies that are used in treatment. Neither stood nearer to the steps than chance allows. The book concluded that the ladder orders and does not select (Konstapel 2026c).

Chapter 5 reported a similar result for the third of the six rules. That rule expects an offering at three nested rates, each a third of the one before. The rates that healers actually use were not found in that proportion. Choirs fall into rounds that stand as one to two to four. The slow breath of six in a minute locks with the wave of the blood pressure as one to one.

The counts of the old medicines can be laid on the ladders. The rhythms of the body, so far, cannot.

Each tradition by its counts

The table sets the traditions side by side. The second column gives the count with which a tradition begins its account of the body. The third gives the count of its oracle, where it has one with a fixed number of outcomes.

Tradition	Leads with	Oracle	Other counts that recur	Chapter
The San	Two: the living and the dead, male and female rain	None	None recorded	11, 12
Siberia	Three worlds	None with a fixed count	None recorded	14

Tradition	Leads with	Oracle	Other counts that recur	Chapter
The Amazon	Two: the seen forest and its owners	None	None recorded	16
The Andes	Two, with a middle: left, right and centre of the table	Coca leaves, read by their fall	Three	17
Mesoamerica	Hot and cold; three centres of the person	The count of 260 days	Thirteen and twenty	18
The Navajo	Two, as male and female; four directions	None with a fixed count	Four, twelve, nine nights	19
The Yoruba	Two marks	256 signs	Sixteen	26
Southern Africa	Two: the living and the ancestors	Sixteen falls of four tablets	Four	30
Mesopotamia	Good and bad signs; right and left	The liver, read part by part	Forty tablets	32, 33
Egypt	The heart and its vessels	None	Three verdicts	35
The Greek physicians	Four humours from two pairs	None	Seven in the critical days; nine temperaments	38, 39
Unani	Four humours; seven natural matters	None	Six conditions; four ways of treating	40
China	Two; then five and twelve	Sixty-four signs	Three, eight, nine, eighty-one	46

Tradition	Leads with	Oracle	Other counts that recur	Chapter
India	Three faults	None	Five, six, seven, eight	57
Tibet	Three faults; hot and cold	Dice and a rosary in the rites	Three, five, nine	62
Hawai‘i	Two: within and outside, night and day	Signs, without a count	Three, five	68
The Māori	Two: set apart and ordinary	None	Three days of mourning	70
Micronesia	A spirit for each illness	256 answers of the knots	Four, sixteen	70
Java	Four and a centre	The reckoning of days	Five, seven, thirty-five	70
Bali	Two: seen and unseen; three classes of illness	The calendar of 210 days	Four, five, ten	70
The Malays	Hot and cold; four elements	Popped rice counted in pairs under four names	Forty-four	70
Thailand	Four elements; three faults	None	Nine, ten, thirty-two	70

Three matters stand out.

Every tradition has the pair. No medicine in the book lacks a first division into two. In most it comes first.

The three is the count of what goes round and of what stands between. Chapter 66 noted that India leads with three where China leads with two. Vagbhata’s three faults rule the beginning, the middle and the end of every cycle. Elsewhere the three appears as a middle between two opposed terms. The centre of the Andean table is one. The pivot of the Chinese stages, the balanced state of Galen and the leader of the Hawaiian meeting are others.

The four is two pairs. The Greek four is hot and cold crossed with wet and dry. The Navajo four is the cross of the directions. The Javanese four stands round a centre.

What the counting shows

Chapter 2 offered a reading. After six parts it can be stated with its limits.

What holds.

1. The ground counts of every medicine in the book are two, three, four or five. No other number serves as the count of the principles of a body.
2. Two and three are the theory's two elementary closures, and four is two pairs. The old medicines build on the same small numbers that the theory derives.
3. The Chinese five and twelve are closure depths by the tradition's own derivation, and the Chinese found fifty-three.
4. The two has the sense of a meeting in most traditions: two terms that oppose and complete each other. The three has the sense of a round, or of a middle between two.
5. Every cast with a fixed count stands on the ladder of two.

What does not hold, or is not shown.

1. Five and twelve are not closure depths outside China, as far as the traditions' own accounts go.
2. Some counts come from the hand and the body.
3. Six, seven and ten occur as lists. The claim that they are absent applies only to the ground counts.
4. Thirteen, twenty and the long counts stand on no ladder.
5. The ladder of three is climbed only in the East.
6. The body's own rhythms have not been found on the ladders.

What remains open. The theory does not say why divination should keep to the ladder of two. It does not say why most peoples begin with two and one civilisation with three. And it has no place for four round a centre.

The reading of chapter 2 thus stands in a narrower form. The theory gives a reason why the first counts of medicine are two and three and why a people who tuned pipes arrived at five, twelve and fifty-three. It does not explain every number that a healer uses, and chapter 2 did not say that it would.

One further matter belongs here. The counts are the part of the old medicines that is easiest to compare and easiest to over-read. A healer does not treat a number. Chapter 5 warned that experience turned into a scheme is no longer experience. The pulse under the fingers is not three times three. The counts are the frame in which the traditions stored what their healers had felt, and a frame should be read as a frame.

74. Rules, trials and tests

What this chapter does

Chapter 5 gave six rules for acting on a living structure, and chapter 4 gave six questions for any healing act. Chapter 8 reported a pattern in the trials of old medicines. Single parts tested against a sham show small effects, and whole treatments tested against other whole treatments show large ones.

This chapter brings the three together. It first sets the six rules beside all six parts. It then sorts the trials that the book has cited by what each of them varied. It draws the lesson of bloodletting, which is the strongest argument for counting. It ends with designs and with a list of tests that could be run.

The six rules after six parts

Chapter 5 found four of the six rules almost everywhere, one not at all, and one in a variant. The parts allow a fuller account.

Rule 1. Read the state first.

Part	How the rule is kept	Chapter
II	No shaman acts before he has found the cause. Among the Navajo the one who reads and the one who sings are two persons	19
III	Nothing is done before the cast	25
IV	Examine, name, give a verdict, and only then treat	33, 35
V	Four examinations before any formula; the state of the reader is included	49, 50, 63
VI	The Hawaiian healer first asks to which class an illness belongs	68

The rule is kept in every part. Chapter 72 listed it as the first point of agreement and added the verdict, which is the reading of how the case will end.

Rule 2. Offer the layer’s own window.

Part	How the rule is kept	Chapter
II	A lost soul is fetched; a lodged object is drawn out. The one is never treated as the other	21
III	The sign that falls names the sacrifice	28
IV	Regimen for what regimen can reach, then food, then drugs, and the knife last	40
V	A pattern names its formula; Caraka’s three medicines act on body, mind and the unseen	52, 60
VI	An illness from within the family is met in the family, and not with a plant	68, 69

The rule is kept in every part. Each medicine has a list of depths and aims at one of them.

Rule 3. Offer a nested triad.

Chapter 5 reported that this rule was not found. The search looked for healing sound in three rates that stand as one to three to nine. The rates that were measured stand as one to two to four.

The later parts did not change this. Part V found nested threes of another kind. There are three depths at each of three places of the wrist, and three rooms one inside another. There are three phases in cycles that lie inside each other. It did not find three rates. The slow breath of six in a minute, which chapter 61 described, locks with the wave of the blood pressure as one to one.

Chapter 5 left two possibilities open. The triad of the essay may be right and may never have been tried. Or healing sound among people may run on the ladder of two, since it is a matter between persons who face each other. Chapter 73 added a finding that favours neither: the body’s own rhythms have not been found on either ladder. The last section of this chapter proposes a test.

Rule 4. Choose local or carried.

Chapter 5 found two cases in which what is open is handed on. The parts have added several.

Part	What is handed on, and to what	Chapter
II	The illness is drawn into an object, which is shown and destroyed	8, 21
III	The spoken word makes the leaf work; the sacrifice carries the case to the powers	28
IV	The evil goes from the patient to water, to a figure of clay, and with it into the river	34
V	One drug of a formula is the envoy, which leads the others to their place	52
VI	The gift must travel on, and its return must travel back; the fault of two members arrives in a third	69, 70

In the essay's wording an act can close where it is, or hand its closure to the next depth. The old medicines do both, and they know the difference. A poultice, a needle and a set bone act in place. A sacrifice, a figure sent down the river and a meeting of the family move the closing to another scale.

Part VI gave the clearest case of the second kind. The Hawaiian healer does not treat the child. He has the closing done one scale up, in the family.

Rule 5. Offer the whole window at once.

Part	The whole that is offered	Chapter
II	The dance of a whole night; the chant of nine nights, in which no part may be left out	11, 19
III	Cast, verse, sacrifice and leaf together	28

Part	The whole that is offered	Chapter
IV	The regimen of the six conditions	40
V	The formula with its ruler, minister, assistants and envoy; the course of cleansing	52, 60
VI	The family with nobody absent; the feast with every neighbour	69, 70

The rule is kept in every part. It is also the rule that a trial most easily breaks, as the next sections show.

Rule 6. Leave silence after each offering.

Part	The silence	Chapter
II	The San healer falls down and sleeps; the Navajo patient keeps four quiet days	11, 19
IV	The night in the sanctuary; the surgeon who binds the wound and waits	35, 37
V	Half an hour with the needles in; the mother’s month; the inmost of three rooms	51, 54, 60
VI	The step of silence in the Hawaiian meeting; the matter that may not be raised again	69

The rule is kept in every part. Chapter 72 added that many traditions also mark the end of the silence.

In sum. Four rules are kept everywhere. One has grown from two cases to a general practice of handing on. One remains unfound.

What the trials varied

The trials that this book has cited fall into five kinds. They differ in what was changed between the groups, and in what was therefore kept the same.

First kind: one part against a sham. Both groups meet the same practitioner, are read in the same way, and rest for the same time. Only one element differs.

Trial	What differed	Result	Chapter
Vickers 2018	Real needles against sham needles, in 39 trials of lasting pain	A small difference	8, 51
Haake 2007	Needles at the classical places against needles at wrong places, for back pain	47.6 against 44.2 per cent improved	8, 51
Linde 2016	Real against sham needling to prevent migraine	A small difference	51
Lee 2015	Pressure or needling at one point of the wrist against a sham, for nausea	Clearly less nausea	51
Zhao 2019	Needles on the vessel of the affected organ against another vessel, for chest pain	Fewer attacks with the right vessel	51
Liu 2017	Electric needling against sham, for leakage of urine in women	Clearly less leakage	51

The results are mixed. For lasting pain the place of the needle matters little. For nausea, chest pain and leakage it matters. The verdict that the needle is nothing but a sham does not fit the second group.

Second kind: the meeting varied.

Trial	What differed	Result	Chapter
Kaptchuk 2008	A waiting list; a sham needling given curtly; the same sham given with a warm and attentive talk	Relief in 28, 44 and 62 per cent	8, 51
White 2012	Real and sham needles, each with an empathic or a plain consultation, by three practitioners	The needle made no difference; the practitioner did	51
Kaptchuk 2010	A dummy pill that patients knew to be a dummy, against no treatment	More relief with the open dummy	22

Here the element that the first kind holds constant is the one that is varied. It turns out to be large.

Third kind: a whole against a whole.

Trial	What was compared	Result	Chapter
Haake 2007, third group	Needling, real or sham, against the standard care of doctors and physiotherapists	47.6 and 44.2 against 27.4 per cent	8
Kessler 2018	Twelve weeks of Indian medicine as its physicians give it, against the best conventional care, for the worn knee	An improvement of 61 points against 32, still present after a year	8, 61

Trial	What was compared	Result	Chapter
Ornish 1990	A year of diet, movement, stillness and group support against usual care, for narrowed heart arteries	The arteries widened in one group and narrowed further in the other	61
Wang 2010	Tai chi against stretching and teaching, for widespread pain	Clearly better with tai chi	53
Tilbrook 2011	Twelve classes of yoga against usual care, for back pain	Better use of the back for a year	61
Kaholokula 2021	Six months of hula against lessons alone, for high blood pressure	A larger fall in pressure	68

Fourth kind: a fitted treatment against a fixed one.

Trial	What was compared	Result	Chapter
Bensoussan 1998	A Chinese formula made for each patient, a standard formula, and a dummy, all given blind, for irritable bowel	Both formulas beat the dummy. Fourteen weeks after stopping, only the fitted formula still helped	8, 52
Furst 2011	Indian medicine fitted to each patient, a standard drug, or both, all given blind with dummies, for inflamed joints	The three did equally well; the Indian treatment had fewer unwanted effects	61

Fifth kind: one molecule taken out.

Case	What was taken	Result	Chapter
Tu 2011	One compound from a Chinese herb for fevers	The first drug against malaria	8, 52
Lo-Coco 2013	Arsenic, an old Chinese remedy	A cure for one form of leukaemia	8, 52
The rosy periwinkle	Two compounds from a folk remedy	Drugs that helped to make a childhood leukaemia curable	70

The five kinds answer five different questions. The first asks whether one element adds to all the rest. The second asks what the meeting adds. The third asks whether the medicine as a whole helps more than another whole. The fourth asks whether the reading adds to the remedy. The fifth asks whether a remedy holds a compound that acts by itself.

Most of the money has gone to the first and the fifth. The old medicines make their chief claims at the third and the fourth.

The lesson of bloodletting

Chapter 41 told the history of bloodletting. It belongs at the centre of this chapter, since it shows what the old medicines lacked.

The practice had every mark of a sound treatment. It followed from a coherent theory: an illness of fullness is cured by emptying. It was visible, and the patient saw the dark blood go. It gave relief that the patient could feel, since a person who has lost blood grows quiet and his fever seems to fall. It had the authority of Galen. And those who recovered were counted to its credit, while those who died were said to have been bled too late or too little.

It was kept up for more than two thousand years. In 1799 it hastened the death of George Washington.

Two men saw what was missing. Van Helmont proposed in 1648 that several hundred poor patients be divided by lot. One half would be bled and the other not, and the funerals would be counted. Nobody took up the challenge. In the 1820s Pierre Louis in Paris did count. He compared patients with inflammation of the lungs who had been bled early with those who had been bled late. He found that bleeding did far less than every physician believed (Morabia 2006).

Chapter 43 drew the conclusion, and it stands as the tenth matter that Part IV handed on. A medicine can be coherent, learned and wrong, and only the counting of like cases shows it.

Four lessons follow for this book.

Coherence is not evidence. Every medicine in this book is coherent. Its acts follow from its account of the body. That is a reason to take it seriously, and it is no reason to believe that it works.

A visible removal satisfies. Chapter 72 found that taking out, with the patient watching, is the most widespread act of healing in the world. The history of bloodletting shows that the satisfaction it gives does not depend on any benefit.

The reading in this book is not evidence either. That an act has a shape which the theory expects says nothing about whether patients recover. Chapter 8 said so of the sucking cure, and it holds for every reading in the six parts.

The counting can also be done wrongly. Bloodletting was a single act, the same for every patient, and a simple count was the right test for it. The treatments of the old medicines are mostly not single acts. The next section lists what a count can remove without anyone noticing.

One postscript belongs here. Chapter 41 reported that the removal of blood has come back for a narrow use. In people with too much iron, and in a trial of people with high blood pressure and overweight, it lowered the pressure (Houschyar 2012). The humoral physicians were not wrong that fullness exists. They were wrong about how often.

Six ways in which a trial tests less than the medicine

Chapter 4 said that its six questions show what a trial of a medicine has to keep whole. The six parts allow the list to be made concrete.

1. The trial removes the reading. Every patient receives the same needles or the same formula. The medicine being tested gives different treatment to different patterns. What is tested is a remedy without its diagnosis. Chapter 5 predicted that such a trial would give small and wavering results.

2. The trial removes the whole. One herb is taken from a formula of twelve, or one posture from a way of living. The fifth of the six rules says that single offerings almost never succeed.

3. The trial holds the meeting constant. The practitioner greets, examines and attends to both groups alike. Whatever the meeting does is then present in both and is subtracted from the result. The trials of the second kind show that it is large.

4. The trial treats the practitioner as a part that can be exchanged. Patients are spread over many practitioners and the practitioners are averaged. The Javanese healers say that healer and patient must fit. In the one trial that looked, the practitioner mattered and the needle did not.

5. The trial cuts the term. It measures at the end of treatment and stops. In the Australian trial of Chinese herbs the difference between the fitted and the fixed formula appeared only fourteen weeks after the last dose.

6. The trial measures at another depth than the one at which the medicine acts. A blood value is followed. The medicine aims at sleep, at appetite, or at the peace of a household.

None of this is an argument against trials. Each of the six is a fault of design that a better design removes.

Designs that keep the medicine whole

Whole against whole. Patients are divided by lot between the old medicine as its practitioners give it and the best other care. Neither side is blind, so the outcome must be one that hope cannot move far. Death, a fracture, a return to work and a measured value are such outcomes. So is a scale filled in by an assessor who does not know the group. The German trial of Indian medicine for the worn knee is the model.

Fitted against fixed, given blind. The practitioner examines every patient and writes a prescription for each. A pharmacy then dispenses, by lot, the fitted prescription, a standard one or a dummy. Neither the practitioner nor the patient knows which. The design tests the reading itself, which is the claim on which every old medicine stands. It has been run twice. It is the design that is most needed.

The practitioner as a variable. Patients are divided by lot among practitioners, and the results are compared practitioner by practitioner. The practitioners' training, their years of practice and their state on the day can be recorded. Chapter 67 noted that nobody has measured whether a steadier physician heals more.

The pattern as a prediction. Two physicians often differ on the fine pattern, and the usual studies stop at that finding. A better question is whether a pattern predicts anything. Patients are given a pattern by a physician and a remedy by lot. If those who received the remedy that fits their pattern do better than the rest, the pattern is real, however much the physicians disagree.

The hour. The same treatment is given at the hour that the tradition names and at another. The classics of China, India and Tibet all make claims that can be tested in this way.

The rest. The same treatment is given with the rest that the tradition asks, and without it.

One patient as his own trial. A treatment and a dummy are given to one patient in turns, in an order set by lot, and his state is recorded throughout. The design suits a medicine that fits each treatment to a person.

Safety counted with the rest. Chapter 75 lists the harms. Every trial of an old medicine should test the remedy for metals and for added drugs, and should follow the liver and the kidneys.

The reader’s effect

Chapter 67 set out two conclusions of the research that preceded this book. To diagnose is already to treat, since the locking acts on both sides. And the healer must be the steadier of the two.

The trials of the second kind are the evidence so far. A sham treatment helps more when it is given with attention. Chapter 22 gave a second line of evidence from another quarter. People who attend to each other fall into step in breath and heartbeat, and being in step goes with less pain.

Three measurements would carry this further.

The first is of the examination alone. Patients are divided by lot between a full traditional examination, with pulse, tongue and questions, and a short interview. Neither group is treated. If to read is to treat, the first group should be better a week later.

The second is of the pair. The heartbeat and breath of practitioner and patient are recorded together during an examination. The degree to which they lock is compared with the outcome.

The third is of the practitioner’s own state. Chapter 61 described the breath of six in a minute, at which heart, breath and blood pressure fall into one rhythm. Reciting a rosary and chanting a mantra both bring the breath to that rate (Bernardi 2001). A pooled analysis of fifty-eight studies of training at that rate found a small to moderate benefit across many complaints (Lehrer 2020). The practitioners of the East prepare themselves by a calm and even breath before they read. Whether a practitioner who does so reads better, and heals more, has not been asked.

Twenty tests

The readings of Parts II to VI made claims that can be checked. The table gathers twenty. For each it gives the claim, a design, and what is known. Some have been run. Most have not.

	Claim	Design	What is known	Chapter
1	Healthy adults at rest have four to five heartbeats to a breath, locked in whole numbers	Record heart and breath in people at rest and asleep	Found; the lock is strongest in deep sleep	5, 50

	Claim	Design	What is known	Chapter
2	A reader trained with others agrees with them	Compare agreement before and after joint training	Found: agreement rises	8, 49
3	A reader agrees with himself	The same reader, the same patient, an hour apart	Tongue readers did; Indian pulse readers in one study did not	49, 58
4	A pattern predicts who is helped by which remedy	Pattern by a physician, remedy by lot	Not run in this form	74
5	A fitted formula outlasts a fixed one	Fitted, fixed and dummy, given blind, with follow-up after stopping	Found once; not repeated	8, 52
6	A formula does more than the sum of its parts	Each part alone against the whole	Found in the laboratory for one Chinese formula	52
7	To read is already to treat	Full examination against a short interview, without treatment	Not run	67
8	A steadier practitioner heals more	Record the practitioner’s state; compare outcomes by practitioner	Not run. One trial found that practitioners differ	51, 67

	Claim	Design	What is known	Chapter
9	Healer and patient must fit	Record the locking of the pair; compare with outcome	Not run	70
10	A treatment at the named hour does more	The same treatment at two hours	Not run for the claims of the classics	46, 57
11	Rest after an act is part of the act	The same needling with and without the half hour of rest	Not run	51
12	A marked close helps	The same course with and without its closing rite	Not run	68
13	A family that sets itself right has a healthier child	The family meeting beside usual care, by lot	Not run. Treatment of the family eased asthma in two small trials	69
14	A grudge shows in the body, and release removes it	Measure during grudge and pardon; follow those taught to pardon	Found within minutes; pardon can be taught	69
15	A quarrel slows the healing of a wound	Small standard wounds after a quarrel and after a supportive talk	Found	69

	Claim	Design	What is known	Chapter
16	Moving and singing together eases pain	Pain threshold after doing so, in step and out of step	Found	22
17	The whole of a medicine does more than usual care	Whole against whole, by lot	Found for Indian medicine and the worn knee; for needling and back pain	8
18	The form of an illness says whether it can be cured	Forms named blind to the cure status	Found: 63.4 per cent against 51.3 by chance	4
19	The body’s rhythms lie on the ladders	Compare measured rhythms with the steps	Not found	73
20	Three rates as one, a third and a ninth close better than other triads	Offer sound or touch in the three rates, in one to two to four, and singly; measure the locking of heart and breath	Not run	5

Seven of the twenty have been found, in whole or in part. Two have been tested and not found. Eleven have not been run.

The eleven are not costly. Most need a clinic, a few dozen to a few hundred patients, and instruments that every hospital owns. Their neglect has two causes. Those who believe in the old medicines have seen no need to test them. Those who do not believe have tested the one element that they expected to fail.

What a fair verdict needs

A fair verdict on an old medicine would answer five questions in order.

1. **Is it safe as it is given today?** The remedies are tested for what they contain, and harms are counted.
2. **Does the whole do more than the best other care?** The answer comes from trials of the third kind.
3. **Does the reading add to the remedy?** The answer comes from trials of the fourth kind.
4. **Which parts carry the result?** Only now are single parts tested, and with the meeting measured and not subtracted.
5. **Is there a compound that acts alone?** If so, it becomes a drug, and the people from whom it came are paid.

Research has mostly gone in the opposite order. It began with the compound and the single part. It found a few great drugs and many small effects. It reached the second question for a handful of conditions. It has hardly asked the third.

The order matters to patients. A person with a worn knee does not need to know whether the needle or the attention eased his pain. He needs to know whether he will walk better if he goes to this practitioner than if he goes to that one, and whether it is safe. The first two questions answer him.

The order matters to the theory as well. The readings of this book are about wholes: a reader who meets, a window offered entire, a return left to run. They cannot be tested on fragments.

75. Measured, not measured, and harmful

What this chapter does

Each part of the book ended its account of a medicine with what has been measured. Each also recorded harm where harm is known, and promised that this chapter would gather it. The chapter has two halves. The first sets out what has been measured, by the kind of claim. The second lists the harms, by the way in which they arise. A short list of rules of safe use follows from the second half.

The tables do not repeat the full results. They give one line for each finding and the chapter in which it is described with its source.

How the findings are graded

Four words are used in the tables.

Word	Meaning
Firm	Several good trials, or a pooled analysis of many, point the same way
Supported	One good trial, or several small ones, or a strong study without a comparison group
Not confirmed	Tested, and the claim was not borne out
Not measured	Nobody has tested the claim

The grades are those of the sources. A finding that is called firm here may still be revised.

The reader

Claim	Finding	Grade	Chapter
Two practitioners who examine one patient reach the same conclusion	They agree on the broad questions and on the diagnosis that guides treatment	Supported	8, 49, 58
They agree on the fine pattern	Agreement was 23 per cent in one study of Chinese patterns, and low for the Indian constitution	Not confirmed	8
Agreement rises with shared training and defined terms	It does	Supported	49, 50
A reader agrees with himself	Tongue readers did. Indian pulse readers in one study did not	Mixed	49, 58
The classical norm of the pulse is true	Healthy adults at rest have four to five beats to a breath, locked in whole numbers, most firmly in deep sleep	Supported	5, 50
The constitutions are real kinds	Indian men sorted by physicians differed at 52 places of the hereditary material. Tibetans’ own answers matched the physician’s type in 80 to 93 per cent	Supported	8, 58, 63

Claim	Finding	Grade	Chapter
The coat of the tongue shows the state of the body	It can be judged reliably, and it varies with the bacteria of the mouth and with at least one illness	Supported	49
The vessels of the Chinese body exist	No structure has been found. The charts agree with planes of connective tissue and with the paths that sensation takes	Not confirmed as vessels	47
A village name for an illness picks out people in danger	Mexicans with fright had more bodily disease, and more of them were dead seven years later	Supported	18
	The sudden death of young men in sleep proved to be a disorder of the heart’s rhythm	Firm	70
The healer sees into the body and finds the cause		Not measured	22
A cast names the cause		Not measured	29

The meeting

Claim	Finding	Grade	Chapter
The sick who come to a healer are helped	Most say so in follow-up studies. Least for dangerous bodily disease and severe mental illness	Supported	22
The healer’s attention heals	The same sham treatment relieved 44 per cent when given curtly and 62 per cent when given warmly	Firm	22, 51
Who treats matters	In one trial the practitioner mattered and the needle did not	Supported	51
What the patient sees done matters	A drug given openly does more than the same drug given unseen. A dummy that is known to be a dummy still helps	Firm	22
A show of an operation relieves	A pretended operation eased worn knees as well as the real one	Supported	70
Healers help in the common distresses of the mind	Yes, across 32 studies. No evidence for the severe disorders	Supported	8
Healers and clinics can share patients	In Nigeria and Ghana patients with psychosis did better where health workers joined the healers	Supported	29

Claim	Finding	Grade	Chapter
To read is already to treat		Not measured	74
A steadier healer heals more		Not measured	74

Rhythm, the group, breath, movement and stillness

Claim	Finding	Grade	Chapter
People who sing and move together fall into step	Breath and heartbeat come into step in choirs, and between fire-walkers and their watching kin	Firm	5, 22
Being in step eases pain and binds	People bear more pain and feel closer after moving in time	Firm	22
The changed state of the healer is real	Trained people enter a distinct state of the brain to the drum at will	Supported	14
A person who is held by others lives longer	Strong ties go with longer life in 148 studies	Firm	22
Care of one’s country goes with health	Aboriginal people who cared for country had less diabetes and lower blood pressure; a homeland community had fewer deaths	Supported, without trials	13
The breath of six in a minute sets heart, breath and pressure in one rhythm	It does. Recited prayer and chanted formula both bring the breath to that rate. Training at that rate helps modestly	Firm	61, 74

Claim	Finding	Grade	Chapter
Slow exercise heals	Taiji lowers the rate of falls by a fifth. It helps in Parkinson’s disease and in widespread pain	Firm	53
Movement lifts low spirits	Walking, yoga, strength training and taiji all did, in 218 trials	Firm	53
Postures help the back	Twelve classes of yoga improved the use of the back for a year	Firm	61
Stillness of mind prevents relapse of low mood	Training in mindfulness lowered the rate of relapse	Firm	64
Long practice changes the brain	Long meditators showed strong fast rhythms in step across the brain	Supported	64
Monks can raise the heat of the body at will	Skin temperature of fingers and toes rose by several degrees	Supported	64
A way of living reverses disease of the heart’s arteries	A year of diet, movement, stillness and group support widened narrowed arteries in a small trial	Supported	61
Dance lowers blood pressure	Hula did, in native Hawaiians	Supported	68

Claim	Finding	Grade	Chapter
The food of the ancestors heals	Weight, blood fats and blood sugar fell in three weeks, without a comparison group	Supported	68
A dance of the whole camp heals the sick		Not measured	11
A chant of nine nights restores a person		Not measured	19

The hand, the needle, fire, cups and leeches

Claim	Finding	Grade	Chapter
Needling relieves lasting pain	Clearly better than no needling and than usual care; slightly better than sham	Firm	8, 51
One point of the wrist stops nausea	About as well as the standard drugs	Firm	51
Needling prevents migraine	At least as well as the preventive drugs	Firm	51
The place of the needle matters	It did for chest pain and for leakage of urine. It did not for back pain	Mixed	51
Needling acts through the body’s own pain relief	Shown in animals and people; the rhythm of the stimulus decides which messengers are released	Firm	51
Burning a herb at the little toe turns a child in the womb	In most trials	Supported	51
Leeches ease a worn knee	Much less pain after a week than with a gel; better use of the knee for three months	Supported	40
Wet cupping eases the back	Less pain and disability after three months than with usual care	Supported	40
Scraping eases the neck	Less pain after a week than with warmth	Supported	70

Claim	Finding	Grade	Chapter
Thai kneading eases the back	As much as Swedish massage	Supported	70
Honey heals a burn	Faster than the usual dressings	Firm	36, 70
The opened skull	Most Inca patients survived, by the healed edges of the bone	Supported	17
The bone-setter	Many limbs are saved; some are lost to tight splints	Mixed	28
The sucking out of an object cures		Not measured	8

Remedies

Compounds taken out and made into drugs.

Source	Drug and use	Chapter
A Chinese herb for fevers	Artemisinin, the first drug against malaria	8, 52
Arsenic, a Chinese and European remedy	A cure for one form of leukaemia	8, 52
Ephedra, a Chinese herb for wheezing	Ephedrine	45, 52
The bark of an Andean tree	Quinine	17
The Indian and the African snakeroot	Reserpine, for madness and for high blood pressure	28, 40
The autumn crocus of the Greek and Unani physicians	Colchicine, for gout	40
The willow of the Egyptians and the Greeks	The forerunner of aspirin	36

Source	Drug and use	Chapter
The seeds that Unani physicians give for white patches of skin	The compound used with light for diseases of the skin	40
The mushrooms of the Mexican healers	Psilocybin, now in trials for low mood	18
The rosy periwinkle	Two drugs against leukaemia	70
A Samoan bark	A compound that acts on the virus of AIDS in the laboratory	70

Eleven cases are listed, and the book has mentioned more. The pharmacies of the old medicines were not empty. All these drugs act at the layers that chapter 4 called Mesh and Chain, and all were taken out of the systems in which they were found.

Plants and formulas as they are used.

Remedy	Finding	Grade	Chapter
Senna and psyllium	Standard remedies everywhere	Firm	40
A fitted Chinese formula for irritable bowel	Better than a dummy, and longer lasting than a fixed formula	Supported	8, 52
Two fixed Chinese formulas added to modern care of the heart	Fewer deaths and relapses in two very large trials	Supported	52, 55
The architecture of one Chinese formula	Its three parts did far more together than apart, in the laboratory	Supported	52
A Nigerian family recipe for sickle cell disease	Fewer painful crises in a trial of 82 patients	Supported	28
Turmeric for worn knees	Equal to a common painkiller over four weeks	Supported	70

Remedy	Finding	Grade	Chapter
The king of bitters for colds	Shorter cough and sore throat; poor trials	Supported	70
The pepper root for anxiety	A small benefit in early trials; none in the largest	Mixed	70
The bitter gourd for diabetes	No reliable effect	Not confirmed	70
Black seed	Modest effects on blood sugar and fats in small trials	Supported	40
Aztec remedies, judged by the Aztecs' own aims	Most would do what was intended	Supported	18
Egyptian remedies	A fair number would be useful; most would do no harm	Supported	36
Yoruba plants for fever	Many act on the malaria parasite in the test tube; few trials	Supported in the laboratory	28
The hot and cold natures of drugs and foods	Partly matched by their composition and by the receptors that they excite	Supported	52

Vision plants.

Plant	Finding	Grade	Chapter
The vine and the leaf of the Amazon	One dose lifted severe low mood within a day, in a trial of 29 patients	Supported	16

Plant	Finding	Grade	Chapter
The mushrooms	Lasting relief of fear and low mood in people with cancer; benefit in low mood that resists drugs	Supported	18
Peyote	No harm to the mind was found in members of the native church who had taken it for years	Supported	20
The root of central Africa	Reports of release from dependence on opiates; deaths from the heart	Mixed	30

Whole systems

System	Finding	Grade	Chapter
Indian medicine as a whole, for the worn knee	Twice the improvement of the best conventional care, still present after a year	Supported	8, 61
Indian medicine fitted to the patient, for inflamed joints	Equal to the standard drug, given blind	Supported	61
Needling as practised, for back pain	Better than standard care	Firm	8
Unani medicine as a whole		Not measured	40
Tibetan medicine as a whole		Not measured	64
Chinese medicine as a physician gives it		Not measured	55
A Navajo ceremony; a consultation of Ifá; a Hawaiian family meeting		Not measured	19, 29, 69

Ties, the hidden wrong, and the setting right

Claim	Finding	Grade	Chapter
A hidden wrong makes ill, and telling it heals	Writing down what was never told gives a small, reliable benefit	Firm	21
A grudge shows in the body	Within minutes, in brow, skin, heart and blood pressure	Supported	69
Pardon can be learned, and it lightens	In 54 studies	Firm	69
A quarrel slows the healing of a wound	By about a day	Supported	69
A tangle between two shows in a third	A child’s blood followed the conflict of the parents, in one small and disputed study	Weak	69
Treating the family eases a child’s asthma	In two small trials	Supported	69
A meeting of wrongdoer, wronged and kin helps	Fewer repeat offences; less lasting stress in victims	Firm	69
Fear, a curse or a loss can kill	Each link has been shown to be possible	Supported	21
A family that sets itself right has a healthier child		Not measured	69

Tested and not confirmed

The first half of the chapter closes with the list of what was tested and failed.

Claim	Finding	Chapter
Bloodletting cures fevers and inflammations	It did far less than was believed, and it killed	41
The exact place of the needle decides the result in back pain	Needles at wrong places did nearly as well	8
Two physicians find the same fine pattern	Mostly they do not	8
An Indian pulse reader finds the same pulse twice	In one study he did not	58
The bitter gourd lowers blood sugar	Not in the pooled trials	70
The pepper root relieves lasting anxiety	Not in the largest and longest trial	70
The operation without a knife removes diseased tissue	It is a conjuring trick	70
The trembling illness of the Fore is the work of sorcerers	It was passed by the mourning feast	70
The Senoi train their children to steer dreams	No such training was found	70
The *qi* goes round fifty times in a day and a night	People breathe far more often than the classic counts	67
The body’s rhythms lie on the steps of the ladder	They do not, by the tests of the book on the body	73
Healing sound runs in rates of one, a third and a ninth	The measured rates stand as one to two to four	5

The last two entries are claims of the theory, or of readings made with it. They are listed with the rest.

What the first half shows

The firm findings concern two matters. One is what happens between people. The other is what a person does with his own body. Attention, being held, moving together, slow breath, slow exercise and stillness are supported by many trials. So is the release of a grudge.

The pharmacies have given drugs. They have given some of the most important ones. They gave them as single compounds, which is the form in which hospital medicine can use them.

The whole systems have hardly been tested. Three entries of the table are filled. The rest are empty.

The claims that are peculiar to the old medicines are untested. Four examples will do. No one has measured whether a healer sees into a body, or whether a cast names a cause. No one has measured whether a soul is brought back, or whether a ceremony restores a person. Chapter 22 drew that conclusion for the shaman's world. It holds for the whole book.

Failures are few and plain. Where a claim was a single act, the same for all, a count could refute it, and did.

The second half: harm

The old medicines are not harmless, and what grows is not safe because it grows. The parts recorded harm as they went. It arises in ten ways.

1. Metals

Several traditions give metals on purpose.

Tradition	Preparation	Metals	Chapter
India	Ashes of the mercury tradition	Mercury, lead, arsenic	60, 61
Unani	*Kushta*, a metal burned to ash	Mercury, arsenic, lead, tin	40
Tibet	The jewel pills	Mercury; lead in some	64
China	The emergency pill and some remedies for children	Ores of mercury and arsenic	52
Mexico	Bright powders for the stuck bolus	Oxides of lead	18

Tradition	Preparation	Metals	Chapter
Europe, until the nineteenth century	Purges and salves	Mercury, antimony	41

The makers of all these hold that the long preparation removes the poison. Nobody has shown that it does. American researchers bought 193 Indian remedies and found lead, mercury or arsenic in one of five. Among the preparations of the mercury tradition it was two of five (Saper 2008). A small study of Tibetans who had taken jewel pills for years found no clear harm, and other analyses have found lead in such pills (Sallon 2017). Cases of lead poisoning from remedies are reported every year, and children have died.

This is the plainest harm in the book. The search for a mercury that confers long life, which chapter 67 named as a shadow of the Eastern system, still poisons.

2. Plants that poison

Plant	Where it is used	The harm	Chapter
The birthwort family	In several Chinese formulas, and as a substitute for other plants	Failure of the kidneys; cancer of the urinary passages and the liver	52
Aconite	China, India, Tibet	Deadly to the heart when not fully prepared	52
Ephedra	A Chinese herb for wheezing, later sold for slimming	Strokes and deaths	52
The pepper root, as a concentrate	Sold in Europe and America	Failure of the liver	70
The areca nut	Chewed from India to Melanesia	Cancer of the mouth	70
Plants of the ragwort and comfrey kind	Teas in the Caribbean, Africa, Europe and China	Closure of the small veins of the liver	
A bitter vine of Indonesia and the Philippines	For fever and sweet urine	Injury to the liver	70
Thorn apple and its relatives	The Americas, India	Delirium and death	16
The root of central Africa	Given to break a dependence	Deaths from the heart	30
Tobacco and cow’s urine	A Nigerian mixture for children’s fits	Children have died	28
Kratom	Thailand and Malaysia; now sold widely	Dependence; deaths	70

The birthwort family is the gravest case. In Belgium more than a hundred women lost their kidneys after a slimming clinic gave them capsules in which one Chinese plant had been replaced by another (Nortier 2000). In Taiwan the mark of the compound has been found in

the majority of liver cancers examined (Ng 2017). The same compound explained a disease of the kidneys among farmers of the Balkans, whose wheat was mixed with the seeds of a related weed (Grollman 2007).

Ephedra shows a second pattern. As a part of a classical formula, in small amounts and for a few days, it has a long record. Sold alone in capsules for slimming, it was followed by reports of strokes and deaths (Haller 2000). The United States banned it in 2004. The plant was the same. The use was not.

The areca nut is chewed by several hundred million people. The international agency for research on cancer has classed it as a cause of cancer in man (IARC 2004).

3. Substitution and adulteration

Substitution. The Belgian disaster came from a confusion of names. Two Chinese plants have similar names, and one was sold for the other. Chapter 52 noted that the stem called akebia was often replaced in the same way.

Adulteration. A product that is sold as herbal may contain a synthetic drug. Inspectors in Indonesia regularly find painkillers and hormones of the adrenal gland in powders sold as herbal drinks for aching joints. Pills for slimming and for potency sold as Chinese have held drugs that were withdrawn from the market. In one English city, twenty of twenty-four herbal creams for children's eczema contained strong hormone preparations (Ramsay 2003).

The sign is the same everywhere. A herbal product that works within hours, and far better than expected, should be suspected.

Contamination. Dried plants may carry pesticides, moulds and the metals of polluted soil.

4. What the act does

Act	The harm	Chapter
Needling	A German survey of 229,230 patients found a small unwanted effect in one of twelve and a punctured lung in two. Reused needles once passed on infections of the liver	51
Burning and cupping	Burns and scars	51
Bone-setting	Splints bound too tight have cost limbs	28
Cutting the skin	Unclean blades have passed on infections	28
Purges, emetics and enemas	Dangerous for small children and for the weak	41, 60
Bloodletting	Weakening and death	41
Great heat	People have died in sweat baths run by untrained leaders for paying guests	
Strained practice of the breath	Episodes of mental illness	53, 55
Fasting	Harm when it is long, or when the person is ill	

Most of these harms come from an act done by an untrained person, or done without the limits that the tradition itself sets. The Navajo and the Lakota have warned for decades against the sale of their rites by outsiders.

5. Vision plants

Chapter 16 gave the figures for the Amazonian brew. A survey reached more than ten thousand drinkers. A little over two in a hundred had needed medical attention. More than half reported difficult states of mind in the following weeks (Bouso 2022). The brew is dangerous with several common medicines, above all certain drugs for low mood. It can set

off psychosis in those who are prone to it. People have died where other plants were added, or where nobody experienced was present.

The trade has added harms that have nothing to do with the plant. Visitors have been robbed and assaulted by men who call themselves healers.

The old medicine had its safeguards. The plant was taken by the healer, or by a patient under a healer who had known him for weeks. It was preceded by a diet and followed by a closing. Chapter 16 noted that the experienced healers judge a night by whether the body was properly closed at the end.

6. Replacement and delay

The gravest harm of any old or alternative medicine does not come from what it gives. It comes from what it replaces.

Cancer. American researchers studied 281 people with a cancer of the breast, the bowel, the lung or the prostate that could still be cured. They had chosen alternative medicine alone. They were compared with similar patients who took the usual treatment. Those who had chosen alternative medicine alone were two and a half times as likely to die within the years of the study (Johnson 2018).

Infection. From 2000 to 2005 the government of South Africa withheld the drugs that hold the virus of AIDS in check. Its minister of health recommended garlic, beetroot and traditional remedies in their place. A later estimate put the cost at more than three hundred thousand lives (Chigwedere 2008).

Children. Australian children's doctors collected reports of harm linked to alternative medicine over three years. Four children had died. In each of the four, the family had used an alternative treatment in place of the one that would have saved the child (Lim 2011).

Conjuring. The operation without a knife of chapter 70 has cost the lives of people who trusted it.

The Samoan habit of chapter 70 is the safe one. Samoans go to the healer and to the hospital, and sort their illnesses between the two. The Navajo do the same. The healers of this book, with few exceptions, have never claimed to replace the surgeon.

The harm of delay lies on both sides. Chapter 29 reported the trial in Nigeria and Ghana in which health workers joined the healers. The patients did better. The usual alternative, in which the clinic condemns the healer and the family hides its visits to him, serves nobody.

7. Accusation

A medicine that asks who is behind an illness may answer with a name.

Where	What has been recorded	Chapter
Europe, 1450 to 1750	Tens of thousands were executed as witches (Levack 2016)	
India	More than two thousand five hundred killings of accused persons between 2000 and 2016	21
Papua New Guinea	Hundreds of recorded cases of torture and killing after a death	70
The Fore of New Guinea	Men were killed as sorcerers for an illness that came from the mourning feast	70
Tanzania and its neighbours	Old women killed as witches; people without pigment killed for charms	21

The accused are almost always the weak: old women, widows, the poor, the odd.

The traditions themselves know the danger and have built protections. The Hawaiian meeting forbids accusation and channels all speech through a leader. The cast of Ifá names a sacrifice and seldom a culprit. The Navajo diagnostician names a broken rule. The Hawaiian and Filipino doctrine that sorcery takes hold only where there is a fault turns the question back on the patient’s own house. A medicine of persons is safe to the degree that it has such protections.

8. Restraint and violence

Practice	Where	Chapter
The leg of a mad relative locked in a wooden block	Java, Bali	70
Chains and beatings at places of healing	Parts of West Africa and elsewhere	29
Beating or starving a person to drive a spirit out	Reported from many countries	21

The trial of chapter 29 found that healers gave up chains when health workers offered them another way of keeping a raving patient safe. The practice is mostly a sign that a family or a healer has no other means.

9. Fraud and the master

The healers of many peoples take no fee, and chapter 72 listed those who hold that payment destroys the power. Where healing is sold to strangers, fraud follows. Chapter 9 described the impostors who meet the travellers to the Amazon, and chapter 70 the operation without a knife.

The second form of this harm is the master. Chapter 67 named it. The standing of a teacher can become control over those who come to him for healing. They are asked for obedience, for money, and sometimes for more. The reports of VALIS call this the shadow: control inside the same forms of contact.

10. Harm to other species and to the peoples themselves

Animals. The horn of the rhinoceros, the bone of the tiger, the scales of the pangolin and the bile of the bear are entered in the Chinese pharmacy. The demand has brought several of these animals near to extinction. None of the four has an effect that could not be had from a common plant.

Plants. Wild ginseng, the peyote cactus of Texas and the sandalwood of India have been stripped by collectors.

Knowledge. The rosy periwinkle gave two drugs against leukaemia, and the country of its origin received nothing. Patents on the healing uses of turmeric and of the neem tree were granted in the 1990s and were withdrawn only after India proved that the uses were old. The San of the Kalahari won a share in a plant of theirs that suppresses hunger, after a research council had patented it without them (Wynberg 2009). The Samoan agreement of chapter 70 shows the better way.

Twelve rules that follow

The list of harms can be turned into rules. They are not medical advice for any one case. They are what the record shows.

1. **Nothing replaces the treatment of a dangerous illness that can be cured.** An old medicine is used beside it.
2. **Every practitioner is told everything that the patient takes.** Plants and drugs act on each other.
3. **No metals.** A remedy that is made with mercury, lead or arsenic is refused, whatever is said of its preparation.
4. **The plant is known by its botanical name,** and the families of the second section are avoided.
5. **A remedy is bought where it is tested.** A product that works within hours is suspected.
6. **A plant is used as the tradition uses it:** the same part, the same preparation, the same dose and the same length of time.
7. **Children, the pregnant, the old and the gravely ill are given less, or nothing.**
8. **A needle is used once.**
9. **A vision plant is taken only with a healer who knows the person,** never with drugs for low mood, and never by someone prone to madness.
10. **No one is named as the cause of an illness to those who might harm him.**
11. **No one is bound, beaten or starved.**
12. **A healer who forbids other help, or whose demands grow, is left.**

The two halves together

Set side by side, the two halves of this chapter show a pattern.

The firm benefits lie in what passes between people and in what a person does with his own body: attention, company, rhythm, breath, movement, stillness, release. These have almost no entries in the second half. A dance, a chant, a family meeting and a slow exercise do not poison.

The harms lie in three places. The first is what is swallowed: metals, a few families of plants, and products that are not what they claim. The second is what is left undone, when an old medicine stands in for a treatment that cures. The third is the naming of persons.

A plant is also most dangerous when it has been taken out of its use. The pepper root, ephedra and the Amazonian brew have long records in the hands of those who inherited them. Each did harm when it was concentrated, sold and taken alone.

The hospital has harms of its own, and they are counted elsewhere. This chapter is not a comparison. It is the record that a reader of this book should have before he acts on anything in it.

76. Open questions

Where the book stands

The book set out to describe the old medicines of the world. It laid one theory and one body of reports beside them. It tried to say plainly where the three agree and where they do not.

Six parts have described twenty-five traditions. Each was read by the same seven questions. Chapter 72 found eighteen points on which the traditions agree, most of them without known contact. Chapter 73 found that their ground counts are the small numbers that the theory derives, and that the further reading of those counts holds for China and not beyond. Chapter 74 found that four of the six rules are kept everywhere. Chapter 75 found that the firmest measurements concern what passes between people, and that the claims which are peculiar to the old medicines have not been tested.

This chapter lists what remains open. It has four sections: questions for the medicines, for the theory, for the reports of VALIS, and for the hospital. It ends with the question that Part II left for the last part.

Questions for the medicines

1. Does the reading add to the remedy? Every old medicine claims that a treatment fitted to the patient does more than the same treatment given to all. Two trials have tested the claim. One found that the fitted remedy lasted longer. This is the first question, since the whole art of diagnosis depends on its answer.

2. What is a pattern? Two physicians agree on the diagnosis that guides treatment and differ on the fine pattern. Either the fine patterns are not real, or each reader meets the patient differently, or a patient has several patterns and the readers name different ones. The three answers predict different results in the test that chapter 74 described, in which a pattern is checked by whether it predicts the response to a remedy.

3. What does the healer perceive? The San healer says that he sees the sickness in the bodies round the fire. The Amazonian healer sees it under the vine. The Chinese physician feels twenty-eight pulses. Nobody has examined what, if anything, these perceptions report. Chapter 22 called it the one row of its table that is empty.

4. Does the state of the healer matter? The classics of China, India and Tibet say that it comes first. The Fijian healers say that their power depends on their lives. The Javanese say that healer and patient must fit. One trial found that practitioners differ in their results.

5. What is soul loss? It is the chief illness of the peoples without writing, and it is named from the Andes to Laos. The signs are the same everywhere: the person is present and not present. Psychiatry has spread it over several of its own names, and none of them covers it. Mexicans who were said to have it were in danger of their lives.

6. When does a family make one of its members ill? The Hawaiian elders say that it is the common case. One small study supports them.

7. How long must a return run? The traditions fix terms: five days, a month, forty-four days, a year of mourning. Hospital medicine discharges earlier each decade. Nobody has compared the terms.

8. Why do the oracles count in twos? Chapter 73 could not say.

9. What is lost when a remedy is taken out of its use? The pepper root, ephedra and the Amazonian brew were safe in one setting and harmful in another. Artemisinin and arsenic lost nothing by being taken out. A rule that tells the two kinds apart would save lives.

10. Can the metals be given up? The mercury traditions of India, Tibet, China and the Unani physicians have no evidence that their ashes are safe. The medicines would lose little without them.

11. How are the keepers of knowledge to be paid? One Samoan village and the San of the Kalahari have agreements. Most peoples have none.

12. Who will be the healers of the next generation? The Hawaiian healer learned for twenty years in a master's house. The Yoruba diviner memorised for ten. Few young people can give that time. Much of what this book describes is held by people who are old.

Questions for the theory

Each reading chapter ended with a list of what does not fit. The lists are gathered here.

1. Persons. The theory cannot derive a person. Every medicine in this book deals with persons: gods who take offence, ancestors who are owed, spirits who own a place, relatives who hold a grudge. The theory reads ties. It does not read the one who wills. All five reading chapters listed this.

2. Exchange. The theory has no rule for a life given for a life, and sacrifice is found in every part. It can read a return that must be made, as chapter 71 did for the gift and the debt. It cannot read an offering.

3. Justice. The Indian fruit of acts, the Hawaiian sorcery that needs a fault, and the ghost of the Manus house all say that the world answers conduct fitly. The theory can read an act as a passage that shapes what follows. It has no rule that would make the shape just.

4. Lack. The eight forms of failure speak of direction, reading, carriers and wrong closures. The largest class of Chinese patterns and of Chinese and Indian drugs concerns plain lack. The theory has drift, in which the return falls behind. It has no account of a store that runs low.

5. Balance. Three of the great medicines define health as a balance of amounts. Closure is a matter of form. Chapter 67 noted that the readings lean on the Eastern language of direction and leave the language of more and less unread.

6. Over-reading. The book on the body kept this form as an honest gap, since the rules hold no object for it. The old medicines describe it least. Neither helps the other here.

7. A cause that nobody intends, and a reading by lot. The first is the theory's own ground, and the old medicines have no place for it. The second is the old medicines' ground, and the theory has no place for it.

8. Where what does not close arrives. The second axiom says that it passes on. The elders say that it arrives in the weakest. The theory does not say where.

9. The counts beyond two and three. Five and twelve are closure depths in China and are not shown to be so elsewhere. Four round a centre, thirteen, twenty and the long counts stand on no ladder.

10. The body's own rhythms. They were not found on the ladders. The third of the six rules, which expects three nested rates, was not found in any healing practice.

11. Opposite rules for feeling. The theory can read the Javanese rule of a level feeling and the Malay rule of letting the winds out. A theory that reads both has explained neither.

12. The tie between the halves. Chapter 6 read the other half as the same strand taken in the other direction. Chapter 23 read soul loss as a slipping of the two halves against each other. The reading is not derived from the axioms. It is the place where the theory, the old medicines and the reports of VALIS meet, and it is the least secured of the three.

To these the theory adds open questions of its own, which its *Foundations* list and which this book has not touched.

What would count against the readings

A reading that cannot fail says nothing. The following results would count against readings that this book has made.

Reading	What would count against it
The pulse is read by a locking of physician and patient	Physicians reading the pulse show no more locking of breath and heartbeat with the patient than untrained people who hold a wrist
To read is already to treat	A full traditional examination, without treatment, leaves patients no better than a short interview

Reading	What would count against it
The healer must be the steadier of the two	Results do not differ with the practitioner’s measured state
A fitted remedy closes what a fixed one does not	Repeated trials of fitted against fixed remedies, given blind, find no difference
The whole window must be offered at once	The parts of a formula or a ceremony, given singly, add up to the effect of the whole
Silence is part of the act	The same treatment does as well without the rest that the tradition asks
What does not close in a family passes on	Children in families that hold the Hawaiian meeting do no better than others
The form of an illness says whether it can be cured	A new set of illnesses, classified blind, shows no better than chance
Three nested rates close better than others	A direct comparison of triads shows no advantage

Two of these have been tested. The last but one was found, modestly. The last has not been run, and the measurements that exist do not favour it.

Questions about the meeting

Chapter 7 laid out the reports that go under the name of VALIS. It asked what a person meets when he meets what is not himself, and how much of it turns out to be himself. It gave four figures, a course of five steps, a finding about what is said, a shadow, and three frames with no verdict. Each part was read with these.

The four figures among the healers.

Figure	Where the parts found it	Chapter
The one who acts on the body without speech	The spirits who take the Siberian novice apart and put him together; the god of the Greek sanctuary who works on the body of the sleeper; the Hawaiian goddess who works a soul into a body	10, 37, 68

Figure	Where the parts found it	Chapter
The teacher	The plants of the Amazon; the first diviner of Ifá; the sages of the Eastern classics, each of whom questions one who knows	16, 25, 67
The watcher who judges	The Mantis of the /Xam; the Tibetan lord of death with his mirror; the ghost of the Manus house; the guardians of the Hawaiian family	12, 64, 70, 68
The light without form	The clear light that the Tibetan physician describes to the dying	64

The first three figures are found in every part. The fourth is described fully in one tradition only.

The five steps. They are loosening, examination, exchange, showing and return. They were found in the making of a healer and in the night at the Greek sanctuary. They were found in the Tibetan account of dying and in the Hawaiian meeting. The fourth step, the showing, is the one most often missing.

What is said. Chapter 7 reported that what is said in such meetings mostly concerns conduct, and that facts which can be checked are rare. Every part bore this out. The teacher of the Eastern classics says how to live. The ancestor of the Balinese family says what is owed. The Fijian healer is told to keep to the straight path.

The shadow. Every part found healing turned to harm inside the same forms: the sorcerer, the elixir, the master, the accusation, the household under guard.

Four questions remain.

1. Why these figures? Chapter 7 called their return across cultures and millennia the argument itself. The parts have confirmed the return. They have not explained it.

2. Why is so little said that can be checked? If the meeting were only the mind of the one who meets, it would know what he knows. If it were a visitor with knowledge of its own, it might be expected to prove it. It does neither. It speaks of conduct. The third frame of chapter 7 was offered for that reason, and it remains a frame and not a finding.

3. Is the watcher always kin? In Part VI the one who judges is a grandfather. In the modern reports he is a stranger. The difference may lie in the reports, or in the peoples.

4. How much of what is met is oneself? Chapter 7 gave the theory's answer: as a form, all of it, and as a direction, none of it. The Tibetan book of guidance gives the first half as doctrine. The Balinese consultation shows the second half. No part has offered a way to test the sentence.

The book keeps the position of chapter 7. It gives no verdict.

Questions for the hospital

The old medicines and the hospital have mostly met as rivals. The parts suggest what each could ask of the other.

What the old medicines ask of the hospital.

1. That the patient be read as well as the disease. The classification of the World Health Organization now allows a pattern to be coded beside a diagnosis.
2. That the state of the physician be treated as part of the instrument.
3. That the meeting be measured and not subtracted.
4. That a treatment be given whole, and tested whole.
5. That the return be given its time: sleep, rest and a term of recovery.
6. That the end of a treatment, of an illness and of a mourning be marked.
7. That the family be seen when one of its members is ill.
8. That the keepers of knowledge be paid when a drug is taken from them.

What the hospital asks of the old medicines.

1. That like cases be counted. The history of bloodletting is the reason.
2. That remedies be tested for what they contain.
3. That the metals be given up.
4. That no one with a curable and dangerous illness be kept from its cure.
5. That no one be named as the cause of another's illness.
6. That a failed treatment be recorded as carefully as a successful one.
7. That claims be stated in a form that can fail.

The two lists do not contradict each other. A medicine could keep both.

Can the knowing be had without its conditions?

Chapter 23 ended with a question for this part. It had gathered what the peoples without writing say about the knowing of the healer. They agree on six conditions. The reader must be made, by a passage of his own. He must be made ready each time. The group must be present and at one. Rhythm and song must carry the work for long enough. What is seen must be acted on at once, at its place, and shown. And quiet must follow.

The hospital keeps none of the six. Chapter 23 asked whether the knowing can be had without them.

The later parts give material for an answer, and no more than that.

The literate medicines kept fewer of the conditions and kept a reading by contact. The Chinese physician works alone, without a group and without song. He kept three conditions: his own long formation, his preparation on the day, and the quiet after the act. He put the pulse in the place of the dance. Chapter 5 took the position that the pulse is the same act on a smaller scale: a locking of two persons, where the dance is a locking of a camp.

The Hawaiian meeting kept the group and the quiet, and it replaced the trance with a strict order of speech.

Each tradition seems to have kept what its way of reading needs. None kept nothing. A reading by contact with no formation of the reader, no preparation and no quiet is not found in this book.

That is not proof. It is an absence in the record, and the record is incomplete. It suggests an answer all the same. A form of knowing that happens between the one who knows and what is known cannot be had as a store of facts. It has to be entered, and the conditions are the way in. They can be reduced. The physician with his three fingers on a wrist reduced them further than anyone. It does not seem that they can be removed.

A last word

The oldest healers of whom there is a record are the San. They heal at night, in a ring, to the clapping and singing of the women. One who has learned to bear the pain of it sees what is troubling everybody, and lays his hands on each person at the fire in turn. The sick and the well are treated alike.

Every later medicine in this book is a narrowing of that scene. A specialist replaces the camp. A book replaces the song. A pulse replaces the dance. A formula replaces the hand. The hospital carries the narrowing as far as it will go, to a single compound for a single step of the body’s chemistry. Each narrowing gained something, and the last of them has saved more lives than all the earlier medicines together.

The book has tried to say what each narrowing left behind, and to do so in terms that can be checked. The theory that was laid beside the medicines is one such set of terms. It has fitted in more places than a reader might expect, and this part has listed where it has not.

The appendices that follow describe the many other methods of healing that are offered today. Most are young. They are set out by the same questions.

Part VIII — Atlas: The Illnesses, One by One

77. How to read the atlas

Why an atlas

Parts II to VI describe each medicine in its own order: its history, its ground, its diagnosis, its illnesses and its healing. A sick person asks the other way round. He has a fever, a cough or a pain in the back, and he wants to know what the old medicines say of it.

Part VIII answers in that order. It takes ninety-three illnesses, one by one, in two series. For each it sets side by side what the old medicines called it, how they recognised it, what they did, and what has been measured of their treatments. It then gives the reading of the book on the body, and a short reading with the Net.

What each entry holds

Every entry has the same seven heads.

Head	What stands under it
The illness	What the hospital calls it, in plain words, and how the hospital treats it
Names and causes	What each old medicine called it, and where it laid the cause
How it was recognised	The signs, the kinds and the outlook, as the old physicians gave them
What was done	The treatments, tradition by tradition
What has been measured	Trials and other counts of the old treatments
The book on the body	The form of failure, the layer of the first treatment and the simple means, from the atlas of that book
Read with the Net	What the theory of Part I adds, and what it cannot say

Where the entries come from

The old medicines. The entries draw on the chapters of this book, and the chapter is named each time. The sources stand there. A source is named here only when it is new.

The book on the body. That book has an atlas of 375 illnesses (Konstapel 2026c). For each it names a primary form of failure, the outcome that the hospital reaches, and the layer of the hospital’s first treatment. It also lists simple means: what can be done without a hospital. The

atlas rests in turn on a reference work of measured facts (Konstapel 2026d). Where the present atlas gives a form, a layer or a simple means, it gives that of the book.

The count. The hospital figures in the entries are round. They serve to show the size of a matter and are not meant for calculation.

Four cautions

The names do not match one to one. Chapter 8 gave the reason. The Chinese illness of wasting and thirst covers most of what the hospital calls diabetes, and more besides. The Indian fever is an illness in itself, where the hospital sees a sign. Each entry therefore starts from a complaint that every medicine knows, and says where the names part.

The atlas reports. It does not prescribe. A treatment that is listed here was used. That does not make it safe or wise. Chapter 75 gave the ten kinds of harm that old remedies have done. Where the hospital cures an illness, the entry says so first.

A form is a reading. The book on the body says of its own forms: “A form is a reading, not a cause; it does not explain an illness.” The same holds for every reading with the Net in this part.

The traditions are not equally present. The medicines with books have a chapter on almost every illness. The medicines without books name fewer illnesses and more causes. An entry is silent on a tradition where the sources of this book are silent.

The order of the atlas

Chapter	Illnesses
78	Fevers and infections
79	Breath, heart and vessels
80	Digestion and the turning of food
81	Pain and movement
82	Skin, eye and ear
83	Mind and spirit
84	Women and children
85	Growths, poisons and injuries
86	Old age and dying
87	Second series: illnesses of want
88	Further infections
89	The passages
90	Nerves, senses and seasons
91	Illnesses that the hospital does not name
92	Women and children, second series
93	What the atlas shows

The first series, chapters 78 to 86, has fifty-six entries. It follows the illnesses that fill the old books. The second series, chapters 87 to 92, has thirty-seven. It adds illnesses that the first passed over. Chapter 91 turns the order round and starts from seven illnesses that the old medicines name and the hospital does not. Those entries have no head on the book on the body, since that book has no entry for them.

78. Fevers and infections

What this chapter covers

For most of history, most people died of fevers. Every old medicine therefore has its longest chapters here. This chapter takes eight entries: fever as such, the fever that returns, consumption, the poxes, epidemics, the flux, leprosy and worms.

The hospital won its greatest victories on this ground. It found the living causes between 1860 and 1885, and the drugs that kill them from the 1930s. The old medicines never saw the organisms. They saw the course of the illness, the kind of person who fell ill, and the place and season. On three points they were ahead: the bark against the returning fever, the wormwood against the same, and the scratch that protects against smallpox.

1. Fever

The illness. The hospital treats fever as a sign. The body raises its own temperature, most often against an infection. The fever itself seldom harms. The hospital looks for the cause and treats that.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	Fever and sweat; the fever of the sun’s heat	The hand of a god. A sudden fever is the hand of the god of plague	33
Greece and Unani	Fever, an illness in itself. Continuous, daily, third-day and fourth-day	A humour that rots: blood, phlegm, yellow bile or black bile	38, 41
China	Cold damage; warm illness	Cold or warmth that enters from outside and passes inward by stages	44, 45, 48
India	*Jvara*, heat. Eight kinds	The faults, alone or together, or a cause from outside. In the story, the wrath of the god Rudra	59

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Tibet	Raw, full, empty, hidden and old fever	Bile and blood, driven by the season, by food or by conduct	63
The shaman’s world	Heat	An intrusion, or the nearness of a spirit or of the dead	21

How it was recognised. The old physicians read a fever by its course in time. The Babylonian handbook gives the outlook day by day. The Greek physician counted the days to the crisis, on which the fever turns with a sweat. The Chinese physician asked where the illness stood on its way inward. At the surface the patient dreads cold, his nape is stiff and his pulse floats. Deeper, he burns, thirsts and sweats. The Tibetan physician asked whether the fever was still raw or already ripe.

What was done.

Tradition	Treatment
Mesopotamia	Willow and other plants; rites to the god whose hand it is
Greece	Rest and a thin gruel of barley. The physician waits for the cooking and the crisis and does not force them. Later physicians bled
China	At the surface, a decoction that brings out a light sweat. Deeper, drugs that clear heat or that purge
India	Fasting while the fever is raw. Then bitter decoctions. A purge if needed
Tibet	A decoction of four plants that ripens a raw fever. Only a ripe fever is cooled, with camphor and the like

Four of the five say the same: a fever has a course, and it must not be cut short at the start. Chapter 72 counted this as the twelfth point of agreement. The raw must ripen.

What has been measured. The willow of the Babylonian list holds the compound from which aspirin was made in 1897.

Whether a fever should be lowered has been tested. A trial of 700 gravely ill patients with infection gave half of them a drug against fever. They did no better and no worse than the rest. In children, such drugs do not prevent the fits that fever can bring.

Fever has also been used as a cure. An Austrian psychiatrist gave malaria to patients with syphilis of the brain, and the high fever halted that illness in many. He received a Nobel prize for it in 1927. Section A9 gave the New York surgeon who roused fever against tumours.

The book on the body. The book has no entry for fever as such. For the common fevers it names the form of the unread: an organism that the body's test has not yet removed. Of influenza it says that rest, fluids and time are "the actual treatment for most cases". Of typhoid it says that boiling the drinking water is "decisive and sufficient against this organism" (Konstapel 2026c).

Read with the Net. Chapter 4 gave the theory's side. Out of a wrong closure there is no way that does not pass through the open. A fever is that open stretch. The body has left its ordinary state in order to come back to it by another road. The old rule not to cool a raw fever follows the first and the third rule of cure. Read the state first. Match the phase. The trial of 700 patients is in keeping with it.

The theory cannot say when a fever has become the danger itself. The old physicians knew that it could. They counted the days for that reason.

2. The fever that returns

The illness. Malaria is caused by a parasite that a mosquito carries. It multiplies in the liver and then in the red blood cells, which burst in waves. Each wave is an attack of cold, heat and sweat. About six hundred thousand people die of it each year, most of them young African children. The hospital cures it with drugs that kill the parasite.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The fever that returns on the third day	Observed and listed	33
Greece and Unani	Third-day fever; fourth-day fever	Yellow bile; black bile. The Hippocratic writers tied it to marshes and to late summer	38, 41

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	*Vishama jvara*, the uneven fever: daily, third-day, fourth-day	The faults lodged in the tissues	59
China	An illness of alternating cold and heat	A harmful *qi* of damp places, lodged half outside and half inside	44, 52
Europe	Bad air, *mal aria*	The exhalation of marshes	A1

How it was recognised. By the clock. No other illness keeps time as this one does, and every literate medicine noted the period. The Greek physicians also noted the hard, swollen spleen of people who live beside standing water.

What was done.

Tradition	Treatment
India	Bitter drugs; cleansing; old clarified butter
China	Sweet wormwood, soaked in cold water and wrung out, in a handbook of the fourth century
The Andes	The bark of the cinchona tree
Europe before the bark	Bleeding and purging, without effect

What has been measured. Both remedies that work came from an old medicine.

The bark reached Europe from Peru in the seventeenth century. For three centuries it was the only real remedy, as chapter 17 told. Quinine was drawn from it in 1820.

Chapter 52 told how a Chinese researcher went back to the handbook of the fourth century and found there why her extracts had failed. The old text did not boil the plant. Her cold extract cleared the parasite from every infected mouse in 1971. Its compound is today the first treatment for the illness in most of the world (Tu 2011).

A tea of the plant has been tested as well. It holds too little of the compound, and the World Health Organization advises against it.

The book on the body. The primary form is the unread: the parasite multiplies in a body that has no earlier defence against it. The second form is the carrier, since the closed small vessels and the loss of blood cells are what kill. The illness is curable. The first treatment lies at the Mesh layer. The simple means is “a net over the sleeping place” (Konstapel 2026c).

Read with the Net. The theory has a line for the unread. An error in a ring stays until it is undone at its place. The bark and the wormwood both act at the place: on the parasite in the blood cell.

The case shows what each house can do. The old medicines found the two remedies by long trial on the sick. They kept them in a practice and in a book. They could not say why the remedies worked, nor find the dose, nor see the mosquito. The hospital did those three.

3. Consumption

The illness. Tuberculosis is an infection by a slow-growing bacterium, most often of the lungs. The patient coughs for months, loses weight, sweats at night and spits blood. A German physician showed the bacterium in 1882. More than a million people still die of the illness each year. The hospital cures it with four drugs taken for six months.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece	*Phthisis*, wasting	An ulcer of the lung, from a flux of phlegm or after the spitting of blood	38, 41
India	*Rajayakshma*, the king’s wasting	Overexertion, held-back urges, the wasting of the tissues, irregular food	59
China	Wasting of the lung	Weak yin of the lung. Old books add a taint that passes from the dead to the living of one house	
Europe	The king’s evil, in its form in the glands of the neck	Unknown; cured by the touch of a king	42

How it was recognised. By the picture that the hospital still teaches. The Hippocratic writers describe the cough, the evening fever, the sweats, the wasting and the bent nails. They count it among the most common and most deadly illnesses of their towns. The Indian books give eleven signs, among them a changed voice, pain in the sides and blood in the spittle.

What was done.

Tradition	Treatment
Greece and Rome	Milk, rest, a sea voyage, a stay in dry air
India	Building up: meat broths, milk, clarified butter, rest; nothing that depletes
China	Drugs that moisten the lung and feed the yin
Europe, 1850 to 1950	The sanatorium: months of rest in bed in mountain air and sun, with rich food

No old medicine cured the illness. All of them fed and rested the patient.

What has been measured. The first drug was tried in Britain in 1948, in the first modern trial by lot. After six months, four of the fifty-five patients on the drug had died, against fourteen of the fifty-two on rest in bed alone.

The old line of building up was tested in India in this century. Researchers gave a monthly basket of food to the households of patients, in villages where many were underfed. The members of those households fell ill with tuberculosis about two fifths less often than those of households without the basket (Bhargava 2023).

Vitamin D, which sunlight makes in the skin, has been added to the drugs in several trials. It has not shortened the illness.

The book on the body. The primary form is the unread. The book quotes its source: the bacterium is “neither kept nor removed; it simply remains”. The second form is the carrier, since underfeeding governs whether the infection becomes an illness. The illness is curable. The first treatment lies at the Mesh layer. Among the simple means the book names ventilation and sunlight: “airborne transmission falls with air exchange, which was the sanatorium rationale” (Konstapel 2026c).

Read with the Net. The two forms call for two acts. The hospital acts on the first: it kills the organism at its place. The Indian books act on the second: they restore what the patient lacks. The trial of the food basket shows that the second act prevents what the first must otherwise cure. The second rule of cure says the same in four words: restore, do not add.

4. The poxes

The illness. Smallpox was a virus that killed about three in ten of those whom it struck and scarred the rest. It was declared gone from the world in 1980, after a campaign of vaccination. Measles is still present. It kills underfed children, and it wipes out part of the defence that a child has already built up against other infections.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Unani	Smallpox and measles, first told apart by al-Razi	A boiling of the blood, as new wine ferments	
Yoruba	The illness of Shopona, king of the world	The orisha of the earth, who strikes those who offend him	24
North India	The visit of the Cool One, a goddess	Her presence in the body of the child	
Tibet	Counted among the fevers that spread	Treated in the chapters on fever	63
Siberia	A Russian woman who travels from camp to camp	An illness that came with the Russians	21
Mexico	The great rash	Brought by a Spanish soldier in 1520	18

What was done. The treatments were of two kinds: care, and protection.

The care was much the same everywhere. The patient was kept apart. He was kept cool or warm by the rule of the tradition, and the house was kept quiet. Where the illness was the visit of a deity, the family honoured the visitor and did nothing that might anger her.

The protection is the great discovery. In China a little powdered scab from a mild case was blown into the nostril of a healthy child. In India, in Africa and in the Ottoman lands, matter from a pock was scratched into the skin. The child had a mild smallpox and was safe for life. Chinese books describe the practice from the sixteenth century. The wife of the British ambassador saw it done by old women at Constantinople and had her own son treated in

1718. In Boston an enslaved African named Onesimus described it to a minister in the same years.

What has been measured. Boston had an epidemic in 1721. A physician scratched the matter into 242 people, and six of them died. Of 5,889 people who caught the illness in the ordinary way, 844 died. That is one in forty against one in seven.

In 1796 an English country physician replaced the matter of smallpox with that of cowpox, which is harmless to people. That was the first vaccine.

For measles, the hospital's first treatment is a vitamin. Two doses of vitamin A lower the deaths of children with measles in poor countries.

The book on the body. For measles the primary form is the unread, and the second the carrier, since a lack of vitamin A and underfeeding decide who dies. The book quotes its source on what the virus does. It "erases part of existing immune memory". The first treatment, vitamin A, lies at the Chain layer. As simple means the book names the foods that hold the vitamin: dark green leaves, orange vegetables, liver and palm oil (Konstapel 2026c).

Read with the Net. The scratch acts at the layer of reading. It changes what the body's own test knows, so that the test meets the real illness as a known form. This is the oldest act at that layer in any medicine. It came from village healers in Asia and Africa. It was passed on by a woman traveller and an enslaved man, against the judgment of most physicians of the day.

The Yoruba priests of Shopona were both the healers of smallpox and its feared masters, as chapter 24 told. The same chapter named the shadow. The British believed that some priests spread the illness on purpose, and outlawed the cult.

5. Epidemics

The illness. An epidemic is an illness of a people and not of a person. Plague, cholera, influenza and, in this century, a new coronavirus have each killed millions within months.

Names and causes in the old medicines.

Tradition	Cause as the tradition gives it	Chapter
Mesopotamia	The hand of the god of plague	33
Egypt	The lioness goddess Sekhmet, who sends plague and takes it away	35

Tradition	Cause as the tradition gives it	Chapter
Greece and medieval Europe	Corrupted air. In 1348 the faculty of Paris named a conjunction of three planets as the first cause	41
China	A particular harmful *qi* that enters by the nose and the mouth, as a physician wrote in 1642	44
Yoruba and its diaspora	The lord of the earth, honoured as the master of epidemics and of their cure	24, 30
The Amazon	A smoke that rises when the earth is opened for gold and metals, and that spreads over the forest	16
Siberia, Hawai‘i, Mexico	Illnesses that came with the strangers	14, 18, 68

What was done. People fled, or shut the sick out. The port of Ragusa on the Adriatic made ships wait outside for thirty days in 1377, and Venice made it forty. Rites were held for the whole community. The Babylonian exorcist answered an epidemic with public ceremony. Athens received the god Asklepios in 420 before our era, just after its great plague.

The peoples who met the illnesses of the Europeans for the first time had no answer. Chapters 13, 14, 17, 18, 68 and 70 told what followed. In Mexico, Peru and Hawai‘i most of the people died within a century.

What has been measured. Keeping apart works. American cities that closed schools and meeting places early in the influenza of 1918 had about half the peak death rate of those that waited.

The old observation of place and season can be exact. In 1993 young Navajo adults began to die of a sudden failure of the lungs. Navajo elders told the investigators that such deaths had come before, in years when heavy rain gave a large crop of pine nuts and the mice multiplied. The cause proved to be a virus carried by those mice.

Chinese herbal formulas were given widely in the epidemic of 2020. Open trials reported a faster recovery. Blind trials are few.

The book on the body. The entry on the coronavirus of 2019 names the form of the unread, with drift as the second form, since age is the chief risk. Most infections end by themselves. As simple means the book gives: “Opening windows. Ventilation is the principal non-pharmaceutical measure and requires nothing” (Konstapel 2026c).

Read with the Net. An epidemic is an illness of the surround. The old theory of bad air was wrong about the cause and nearly right about the act. To leave the place, to open the house and to keep apart are acts on what people share.

Chapter 72 found, as its second point, that the old medicines look for illness outside the body. For an epidemic that is plainly true. The rites for the whole community did not stop the organism. Chapter 22 gave what such rites do for those who must live through the dying.

6. The flux

The illness. Diarrhoea, dysentery and cholera are infections of the gut. The patient loses water and salts faster than he can drink them. More than a million people die of these illnesses each year, and many of them are small children. The hospital’s treatment is a drink: water with salt and sugar in a fixed proportion.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Unani	Flux; dysentery; cholera, a violent emptying of bile upward and downward	Bile, sharp humours, spoiled food, the heat of late summer	41
China	Loose stools; the dysentery of red and white	Cold and damp; damp and heat; spoiled food; a weak spleen	54
India	*Atisara*, running through. Six kinds, two of them from fear and from grief	The faults; raw matter in the gut	59
Māori	Illness of the bowel	Counted among the troubles for which plants suffice	70

How it was recognised. The books sort by what is passed. Watery stools, stools with mucus and stools with blood are three illnesses in every literate medicine. The Chinese physician adds the question of heat. A burning, foul stool with thirst is damp and heat. A thin, cold stool in a pale patient is cold or weakness.

What was done.

Tradition	Treatment
India	The flux is not stopped while raw matter is present. Light gruel. Then astringent barks and fruits: the bark of holarrhena, the unripe bael fruit
China	For damp and heat, bitter cold drugs such as coptis. For weakness, drugs that warm and build the spleen
Greece and Unani	Rest, astringent drinks, rice or barley water. Opium for the pain and the flux
Māori	The leaf tips of a shrubby speedwell, chewed
Many peoples	Rice water, thin gruel or coconut water, given to the sick child

What has been measured. The drink is the great result. Physiologists found in the 1960s that sugar carries salt and water through the wall of the gut even while cholera pours them out. In 1971 an Indian physician used the drink in camps of refugees from the war in Bengal, where cholera had broken out. Three or four in a hundred of his patients died, against thirty in a hundred in camps that had only fluids by vein.

Rice water was tested against the standard drink. In adults with cholera it lowered the loss of stool by about a third.

Zinc, given for ten days, shortens an attack in children of poor countries.

The bitter drug of the Chinese holds a yellow compound that has been tried alone. In Bengal it lowered the loss of fluid in one kind of watery diarrhoea. The Indian bark holds a compound that kills the amoeba of dysentery, as chapter 60 noted.

The book on the body. The primary form is the carrier. The book quotes its source: “The loss of water and salts, not the organism itself, is what stops the heart.” The unread organism is the second form. The first treatment, the drink, lies at the Chain layer. The book calls this the condition “where simple means do the most work”. For cholera it gives the means in one line: “Oral rehydration with salt, sugar and clean water, given continuously and in volume” (Konstapel 2026c).

Read with the Net. The form is a carrier that fails, and the cure restores the carrier. It is the plainest case of the second rule: restore, do not add.

The Indian rule not to stop a flux that is still raw has its match in the hospital. Drugs that still the gut are not given in dysentery, since they keep the organism in.

7. Leprosy

The illness. Leprosy is an infection by a very slow bacterium that settles in the skin and the nerves. Years pass before it shows. The patient loses feeling in hands and feet, injures them without knowing, and loses fingers and toes. About two hundred thousand new cases are found each year. Three drugs, given for six to twelve months, cure the infection. Nerves that are lost do not come back.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	The gravest of the eighteen kinds of *kushtha*, that which disfigures	All three faults, lodged in skin, blood, flesh and lymph; grave misdeeds	59
China	The great wind	A harmful wind that enters the flesh	
Tibet	An illness from the serpent spirits	The spirits of springs, lakes and trees, when they are offended	63
Aztec	One of the illnesses of the rain god	Sent by Tlaloc and his helpers	18
Medieval Europe	Leprosy	A corruption of the humours; a mark of sin	

How it was recognised. The Indian books describe patches without feeling, sores that do not heal, and the wasting of fingers and toes. In medieval Europe a panel examined the suspect. A person who was judged a leper lost his place among the living, sometimes by a rite at the church door.

What was done.

Tradition	Treatment
India	Repeated cleansing; bitter drugs; the oil of the seeds of a forest tree, by mouth and on the skin
China	The same oil, which came from the south
Tibet	Rites to the offended spirits, with drugs
Europe	Separation in a house outside the walls
Hawai‘i	From 1866, removal to a settlement on the island of Moloka‘i

What has been measured. The Indian oil was the only treatment that did anything until the 1940s, as chapter 59 told, and hospitals over the whole world used it. Its acids act on the bacterium in the laboratory. It was slow and made patients sick, and the new drugs replaced it at once.

The separation was not needed. Most people cannot catch the illness at all, and a patient under treatment does not pass it on.

The book on the body. The book names three forms. The slow organism is unread. The lost feeling is a carrier that fails. The damage to the nerves comes in part from the body’s own answer to the organism, which is the over-read. The infection is curable, and the damage is not. The simple means are “unusually large”, the book says, because it is the damage and not the infection that disables. It names the “daily self-examination of hands and feet for cuts, blisters, burns and pressure areas that were not felt” (Konstapel 2026c).

Read with the Net. The patient has lost a reading: his hands no longer tell him what they touch. The simple means puts another reader in its place, the eye, once a day.

The history shows a second illness beside the first. The old medicines of Europe, India and Hawai‘i cast the patient out. That act was aimed at the surround and it missed, since the illness hardly passes from one person to another. What it made was a second illness: the loss of family and place. The Hawaiians called leprosy the sickness that separates.

8. Worms

The illness. Roundworms, hookworms and whipworms live in the gut of about a billion and a half people. Their eggs pass with the stool and wait in the soil. A heavy load takes blood and food from a child and slows its growth. One tablet clears most of them.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	Worms of the belly, named by kind	Seen in the stool	
China	Worms; accumulation in children	Unclean food; damp and heat in the gut	54
India	*Krimi*, in twenty kinds, outer and inner	Sweet and spoiled food; too little movement	
The shaman's world	The worm as a figure of the intruding illness	Sent, or entered by itself	21

Worms are the one cause of illness that every people could see. Chapter 72 found that taking an illness out of the body is the most widespread act of healing in the world. The worm that the sucking healer shows in his hand is its figure.

What was done.

Tradition	Treatment
Egypt	The bark of the root of the pomegranate
China	Areca nut, pumpkin seed and the fruit of the Rangoon creeper
India	The berries of embelia; bitter and pungent drugs
The Amazon	The milky sap of a wild fig
Mesoamerica	Wormseed
Europe	Wormwood, the flower heads of a related plant from the East, and the root of the male fern

What has been measured. Most of these act. The pomegranate bark holds a compound that stuns the tapeworm. The flower heads from the East gave the drug that the hospital used against roundworm for a century. The fig sap holds an enzyme that digests the worm, and a study in the Amazon found fewer eggs in the stool of people who took it. A small Nigerian

trial gave children dried papaya seeds in honey. The stools of three in four were free of parasites a week later, against one in six of those who had honey alone.

Chapter 28 gave the observation that sick chimpanzees chew the bitter pith of a shrub and that their load of worms falls afterwards.

The book on the body. The primary form is the unread, and the second the carrier, since the worms take blood and food. The illness is curable. The first treatment lies at the Mesh layer. Prevention is where the simple means count: “Latrines, and using them.” The book adds footwear, since the young of the hookworm enter through the skin of the foot (Konstapel 2026c).

Read with the Net. Here the oldest act of healing is simply right. A foreign form is in the body, and it is taken out. The old medicines found drugs for it on every continent.

They did not find the circle. The egg goes from the stool to the soil and from the soil to the mouth or the foot. To break it is an act on the surround. Rules for that stand in the old law books and not in the pharmacies. The law of Moses orders the soldier to bury outside the camp what he has passed.

79. Breath, heart and vessels

What this chapter covers

The chapter takes six entries: the cough and the cold, wheezing, pain of the heart, dropsy, stroke, and high blood pressure. The last has no place in any old book, since it cannot be felt and has been measured at the bedside only since 1896. The other five are described by every literate medicine.

Three drugs for the breath and two for the heart came to the hospital from the old medicines. They are named in the entries.

9. The cough and the cold

The illness. A cold is an infection of the nose and the throat by one of some two hundred viruses. It lasts about a week. A cough may stay for three weeks. No drug shortens it, and drugs against bacteria do nothing.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Unani	Catarrh, a running down	Phlegm that runs from the head into the nose and the chest, after a chill	41
China	Wind and cold; wind and heat	Wind that enters at the surface when the defensive *qi* is weak or the pores stand open	48, 54
India	*Kasa*, cough, in five kinds	Wind, bile or phlegm; an injury of the chest; wasting	59
Hawai‘i and Aotearoa	An ordinary illness	No spirit is sought. Plants suffice	68, 70

How it was recognised. The Chinese physician asks first whether the cold is of the cold kind or of the hot kind. The answer decides the whole treatment.

	Wind and cold	Wind and heat
Chill and fever	More chill than fever	More fever than chill
Sweat	None	Some
Nose and throat	A clear running nose; an itching throat	A yellow, thick discharge; a red, sore throat
Thirst	None	Present
Tongue	A thin white coat	A thin yellow coat; a red tip
Pulse	Floating and tight	Floating and rapid

The Indian physician sorts a cough by what is brought up. A dry, hacking cough with a hoarse voice is of wind. A cough with yellow spittle, heat and thirst is of bile. A loose cough with thick white phlegm and heaviness is of phlegm.

What was done.

Tradition	Treatment
China, wind and cold	Ephedra Decoction or Cinnamon Twig Decoction, taken hot, to bring out a light sweat. Fresh ginger with the white of spring onion at home
China, wind and heat	Honeysuckle and Forsythia Powder; Mulberry Leaf and Chrysanthemum Drink
China, a person who catches every cold	Jade Windscreen Powder between colds, to strengthen the surface
India	For the dry cough, clarified butter and liquorice. For the cough with phlegm, the leaf of the Malabar nut, long pepper, ginger and honey
Unani	A packet of dried herbs, boiled and drunk hot
Greece	Honey in water; barley gruel; warmth and rest
Hawai‘i	The bark of the root of a native mallow, chewed for a sore throat

Tradition	Treatment
Aotearoa	The vapour of tea tree leaves
Thailand and India	The bitter herb andrographis

What has been measured. Honey has been tested in children with a night cough. A spoonful at bedtime did better than the usual cough syrup and better than nothing (Paul 2007).

The bitter herb of India and Thailand has been tried in thirty-three trials. Cough and sore throat ended sooner. The trials were of poor quality (Hu 2017).

Vitamin C, taken daily, does not prevent colds in ordinary people. It halves them in people under heavy bodily strain, such as soldiers in the cold (Hemilä 2013).

An extract of a South African geranium, a remedy of the Zulu, has eased acute bronchitis in several trials. Steam does nothing that can be measured.

Ephedra, the chief drug of the Chinese decoction, gave the hospital ephedrine in the 1920s. It opens the airways and dries the nose. Its descendants are in most cold remedies.

The book on the body. The form is the unread: a virus that the body has not yet removed. The illness ends by itself. The book gives the layer of the first treatment as none. It says: “This is the condition where simple means are not merely adequate but are the whole of correct care. Doing nothing, explained well, is the intervention, and it is a conversation.” For prevention it names washing the hands with soap (Konstapel 2026c).

Read with the Net. The body returns by itself. Chapter 4 gave the law: a closed form that is changed a little comes back.

The Chinese distinction of a cold and a hot kind has no match in the hospital, which sees one illness. It is a reading of the state of the patient, as the first rule of cure asks. Whether a treatment chosen by that reading does better than one chosen by lot has not been tested for the cold. Chapter 74 gave the design.

10. Wheezing

The illness. In asthma the small airways tighten and swell in attacks, most often in answer to a harmless dust or pollen. About one person in twenty has it. The hospital controls it with an inhaled drug that calms the over-ready defence, and opens the airway in an attack with a second one. A different illness, the worn lung of the smoker, gives a lasting shortness of breath that does not go back.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Unani	*Asthma*, panting	Thick phlegm that fills the pipes of the lung	41
China	Wheezing and panting	Phlegm that lies hidden in the lung and is roused by cold, by food or by feeling. In long illness a weak lung, and a kidney that does not grasp the *qi*	54
India	*Shvasa*, breath, in five kinds	Wind and phlegm that close the channels of the breath	59
Egypt	Not named; treated		

How it was recognised. The Indian books describe the common kind exactly. It comes in attacks. It is worse at night, in cloudy weather and in an east wind. The patient cannot lie down and finds ease only sitting up. The attack ends when the phlegm comes loose.

The Chinese physician sorts the attack by the phlegm.

	Cold phlegm	Hot phlegm
Spittle	Thin, white, frothy	Thick, yellow, sticky
The patient	Chilly, pale; worse in cold weather	Hot, red in the face, thirsty
Tongue	A white, slippery coat	A yellow, greasy coat
Pulse	Floating and tight	Slippery and rapid
Formula	Minor Blue-Green Dragon Decoction	Ephedra, Apricot Kernel, Gypsum and Liquorice Decoction

Between attacks he treats the root. A weak lung shows in a faint voice and easy sweating. A weak kidney shows in a breath that is short on the way in and worse on exertion.

What was done.

Tradition	Treatment
China	In the attack, ephedra with other drugs by the kind of phlegm. Between attacks, drugs that build the lung, the spleen and the kidney. In the hottest days of summer, plasters on points of the back against the attacks of winter
India	Sweating; warm oil on the chest; the leaf of the Malabar nut; a thorny nightshade; long pepper. The smoke of the thorn apple, breathed in
Egypt	The vapour of herbs laid on a heated brick, drawn in through a reed
Egypt and the Near East	The fruits of a plant of the carrot family, drunk as a tea
Maimonides, at Cairo	A book of regimen for an asthmatic prince: clean dry air, light food, sleep in measure, a calm mind

What has been measured. Three of the hospital's kinds of drug for the airways came from these lists.

Ephedra gave ephedrine, as chapter 45 told. The drugs that open the airway in an attack today are its descendants.

A British officer brought the smoking of thorn apple from Madras to England in 1802. Cigarettes of it were sold against asthma for a century and a half. The plant holds a compound that relaxes the airways, and an inhaled drug of that kind is in use today.

The fruits of the Near Eastern plant hold a compound from which a physician, himself asthmatic, developed in 1965 a drug that prevents attacks.

Of the practices, breathing by the method of section A8 lowered the use of the reliever. Yoga gave small gains in several trials. Needling has shown no clear effect.

The book on the body. For asthma the form is the over-read. A harmless outside form is taken for a misfit and attacked. The illness can be held in check and is not cured. The first treatment lies at the Reading layer. As simple means the book names the spacer, a hollow vessel between the inhaler and the mouth, "an effective device that can be made from waste material".

For the worn lung of the smoker the form is drift. The first treatment is to stop smoking, at the Surround layer. The book calls supervised exercise “the single highest-value non-drug intervention in respiratory medicine” (Konstapel 2026c).

Read with the Net. Chapter 4 said of the over-read that the rules of the theory hold no object for it. It also said that the old medicines describe such illnesses least clearly. Asthma bears this out. The old drugs open the pipe. None of them touches the over-reading itself.

The old physicians did see the time. The Indian attack at night and the Chinese plaster in summer are readings of phase. The hospital has measured that the airways are narrowest about four in the morning.

11. Pain of the heart

The illness. The arteries that feed the heart narrow with fatty, hardening deposits. On exertion the heart then gets too little blood, and the patient feels a pressing pain behind the breastbone. When a clot closes an artery, a part of the heart dies. This is the first cause of death in the world. The hospital opens the artery, thins the blood and lowers the fats.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	A pain in the breast and in one arm	An old papyrus adds that death threatens the patient	
China	Impediment of the chest; true heart pain	Weak yang of the chest, on which cold, phlegm or standing blood settle	54
India	*Hridroga*, illness of the heart, in five kinds	The faults in the heart. One kind has a stabbing pain	59
Greece and Unani	A trouble of the mouth of the stomach or of the heart	Not clearly told apart from pain of the stomach	41

European physicians did not describe the illness as one until 1768, when a London physician set down the pain that comes on walking and goes on standing still.

How it was recognised. A Chinese book of the third century describes it well. The chest is tight and painful, the pain goes through to the back, the breath is short, and the patient cannot lie flat. The *Inner Classic* adds the gravest form. In true heart pain the hands and feet turn blue to the joints. If it comes in the morning, the patient is dead by evening.

The physician then asks which kind of matter has settled.

Kind	Signs	Line of treatment
Cold that congeals	Sudden, gripping pain, worse in cold; cold limbs; a tight pulse	To warm and open
Phlegm	A stifled, heavy chest; a stout patient; a greasy tongue; a slippery pulse	To move the yang and clear the phlegm
Standing blood	A fixed, stabbing pain, worse at night; a dark tongue with spots; a choppy pulse	To move the blood
Knotted *qi*	Tightness that comes and goes with feeling; sighing	To move the *qi*
Weak yang	Pain on exertion, a pale face, shortness of breath, cold sweat	To build up and warm

What was done.

Tradition	Treatment
China, the old formula	Trichosanthes fruit and the bulb of Chinese chive, boiled in wine
China, later	Drive Out Standing Blood from the Mansion of Blood Decoction; red sage root; notoginseng root
China, needling	Points on the inner forearm
India	The bark of the arjuna tree, boiled in milk
Unani	Cordials for the heart, made with rose, sandalwood, pearl and amber

What has been measured. Chapter 51 gave a Chinese trial of 404 patients with this pain. Those who were needled on the vessels that belong to the heart had fewer attacks than those needled on another vessel, needled beside the points, or not needled (Zhao 2019). It is one of the few trials in which the place of the needle mattered.

The Indian bark has been tried in small groups with chest pain and with a weak heart, with favourable results, as chapter 60 noted. Large trials are lacking. The same holds for the red sage root, which is given to millions in China.

Chapter 61 gave the trial in which narrowed arteries widened again under a regimen of plant food, walking, stillness and group support (Ornish 1990).

The hospital's own first drug for this illness is old. Aspirin was made from the compound of willow bark.

The book on the body. The form is the seam. The book reads the hard deposit as a fixed matter lodged in a living one. The carrier is the second form, since the blood no longer arrives. The illness can be held in check. The first treatment, aspirin, lies at the Chain layer.

The simple means are large. To stop smoking after the diagnosis lowers heart attacks and deaths by 44 per cent, the book reports, and to smoke less without stopping gives nothing. For the pain on exertion it cites a trial of 101 patients. Daily exercise did better than the opening of the artery with a balloon: 88 against 70 per cent were free of events after a year (Konstapel 2026c).

Read with the Net. Chapter 1 gave the law of the seam. A uniform stretch never joins a mixed one. What is fixed and lodges in what lives leaves an open seam for as long as it lies there.

The Chinese physicians read the same picture. Their phlegm and their standing blood are both names for what has stopped moving and has settled. Their line of treatment is to move it. The hospital's is to cut it out, to push it aside or to keep the blood thin around it. Neither closes the seam. The trials of exercise and of regimen suggest that the body can do part of that itself when it is given rhythm.

12. Dropsy

The illness. Water gathers in the legs, the belly or the lungs. The hospital does not count this as an illness. It is a sign that the heart, the kidneys or the liver is failing. The treatment is that of the organ, with drugs that drive out salt and water.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The swelling that pits under the finger	Listed with its outlook	33
Greece and Unani	Dropsy, from the word for water. Of the belly, of the flesh, and with wind	A chilled liver that makes water in place of blood	41
China	Swelling with water. A yang kind and a yin kind	The lung, the spleen and the kidney fail to move the water	54
India	*Shotha*, swelling; *udara*, the belly, in eight kinds	The faults; a weak fire; a stopped channel	59
Aztec	One of the illnesses of water	Sent by the rain god	18

How it was recognised. The books ask where the swelling began and how fast it came.

The Chinese yang kind is sudden. It begins in the face and the eyelids and comes down, often after a sore throat. The skin is tight and shining. The yin kind is slow. It begins in the feet and climbs. The dent of the finger stays, the patient is tired and chilly, and the urine is scanty. The first is treated by opening the surface and driving out water. The second is treated by warming and building.

The Indian books tell the dropsy of the belly from a stout belly by tapping it. The water moves and gives a wave under the hand.

What was done.

Tradition	Treatment
Greece and Rome	Squill in vinegar; purging; hot sand and sweating; walking; the tapping of the belly with a tube
China, the yin kind	Five-Ingredient Powder with Poria; True Warrior Decoction, which holds prepared aconite

Tradition	Treatment
India	Drugs that increase the urine, among them the herb whose name means that which makes new; a diet without salt; a diet of milk alone; tapping
The Greek sanctuary	Chapter 37 gave the cure of a woman with dropsy, for whom her mother slept in the hall
England	Foxglove

What has been measured. The foxglove is the classic case. An English physician learned in 1775 of a family recipe for dropsy that an old woman in Shropshire kept. It held twenty herbs. He saw that one of them did the work. He tried it for ten years on 163 patients, found the dose, and published in 1785. The drug that was drawn from the plant strengthens and slows the failing heart. It is still in use. A large trial of 1997 found that it keeps patients out of hospital and does not lengthen life.

The squill of the Greek physicians holds compounds of the same kind, as chapter 39 noted.

The diet without salt of the Indian books is the advice that every patient with a weak heart receives. A trial of 2022 put it to the test in eight hundred patients. A stricter limit on salt did not lower deaths or admissions within a year.

Hawthorn, the heart remedy of European herbalism, was tried in 2,681 patients with a weak heart. It did not lower deaths or admissions.

The book on the body. For the weak heart the form is the carrier: the heart drives the blood too weakly, and the body gets too little. The seam of an old infarct and the drift of slow change are the second forms. The illness can be held in check. The first treatment lies at the Chain layer. As simple means the book names exercise. A trial of 2,331 patients found fewer deaths and admissions with training, a difference that held only after correction for other factors (Konstapel 2026c).

Read with the Net. The form is a carrier that does not arrive. The old treatments act on the load of the carrier. Less salt and more urine give the heart less to move. Foxglove and squill act on the beat itself.

The Chinese division into a sudden kind from above and a slow kind from below is a reading of direction and of phase. It matches two different illnesses of the hospital rather well: the inflamed kidney after an infection of the throat, and the failing heart.

13. Stroke and palsy

The illness. A vessel of the brain closes or bursts. Within minutes the patient loses the use of one side, his speech or his sight. Some twelve million people have a stroke each year, and it is the second cause of death. The hospital can remove the clot if the patient arrives within hours. After that, what is lost is won back in part by months of practice.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The one-sided attack; described with the seizures	The hand of a god or of a ghost	33
Greece and Unani	Apoplexy, a being struck down; palsy	Phlegm or black bile that closes the passages of the brain	41
China	Stroke by wind	First a wind from outside. Since the thirteenth century a wind stirred within, by a liver whose yang rises, by phlegm and by fire	54
India	The striking of one side; palsy of the face	Wind, the first of the eighty illnesses of wind	59
Aztec	Palsy and a twisted face in children	The spirits of women who died in childbirth, at the crossroads	18

How it was recognised. The Babylonian handbook lists the signs with the outlook. Greek physicians wrote the hardest verdict. A severe apoplexy cannot be cured, says a Hippocratic aphorism, and a mild one only with difficulty.

The Chinese textbooks ask two questions. The first is how deep the wind has struck.

Depth	Signs
The vessels	The patient is awake. The mouth is drawn to one side, the speech is slurred, and an arm and a leg are numb or weak
The organs, closed kind	The patient falls senseless. The jaw is clenched, the fists are tight, the face is red, and the breath is loud
The organs, deserting kind	The patient is senseless. The mouth is open, the hands are slack, the eyes are shut, he sweats and wets himself

The second question is asked before the stroke. A person whose thumb and forefinger go numb, or whose head swims, is warned that a stroke may follow within three years. The physician then treats what has not yet happened.

What was done.

Tradition	Treatment
China, the closed kind with heat	Calm the Palace Pill with Cattle Gallstone, dissolved and poured in
China, the deserting kind	Ginseng and prepared aconite in a strong decoction, to hold what is leaving
China, afterwards	Build Up the Yang to Restore Five Tenths Decoction: a large dose of astragalus with drugs that move the blood. Needling of the weak side and of the scalp. Kneading and exercises
India	Oil rubbed in daily; warmth and sweating; enemas of oil; oil dropped into the nose; rest
Greece	Bloodletting at once in the strong; warmth and rubbing of the limbs; walking as soon as the patient can

What has been measured. Needling after a stroke has been tried in many Chinese trials. Reviews find a gain in the use of the limbs, and they find that the trials are poor. Where a sham needle was used, the gain was small or absent.

A Chinese formula of nine herbs and five animal materials was tried blind in 1,100 patients in several Asian countries. It did not improve recovery at three months.

Practice does. The hospital has shown that the recovery of a limb depends on the number of times that a task is repeated. The Indian daily rubbing and the Chinese kneading and exercises put a helper beside the patient every day for months. No trial has compared them with the hospital's own exercises.

For prevention, one trial stands out. The trial took 20,995 people in six hundred Chinese villages, who had had a stroke or had high blood pressure. Half used a salt in which a quarter of the sodium was replaced by potassium. Over five years these had 14 per cent fewer strokes than the villagers who used ordinary salt.

The book on the body. The form is the carrier: the blood does not arrive. The seam of the hardened artery and the direction of a quivering heart feed it. Where the clot is removed in time, the book counts the stroke as curable. Where the damage stands, it offers relief only. For the state after a stroke, the first treatment lies at the Phase layer. The book names "task-specific practice and repetition", and adds that "family members can deliver supervised repetition" (Konstapel 2026c).

Read with the Net. Two different acts follow each other. In the first hours the carrier must be restored at its place, and only the hospital can do that. Afterwards the task is to restore use and a learned pattern, which is the layer of rhythm. Here the old medicines have their strength: daily touch, movement and a fixed order of the day, kept up for months by the family.

The Chinese warning sign, treated before the stroke, is a reading in time. The hospital knows the same sign as a passing attack and treats it at once.

14. High blood pressure

The illness. The pressure in the arteries stays too high. The person feels nothing for years. The heart, the brain and the kidneys are slowly damaged. More than a billion adults have it. In nine out of ten no cause is found. The hospital lowers the pressure with tablets that are taken for life.

Names and causes in the old medicines. There are none. An illness without complaints cannot be named by a medicine that starts from what the patient feels and the physician sees. The cuff that measures the pressure dates from 1896.

The old physicians did feel a hard pulse. The Chinese string-like pulse is straight, long and taut, like the string of a lute. Chapter 50 gave its meaning: the liver, pain or phlegm. A long and hard pulse stands for a rising yang of the liver. The *Inner Classic* also notes that much salt in the food stiffens the vessels.

How Chinese medicine treats it today. The modern Chinese physician reads the patient with high pressure by his complaints. These are a swimming head, a headache, ringing ears, a red face and a quick temper. He chooses among the patterns of dizziness.

Pattern	Signs	Formula
Rising yang of the liver	Dizziness, headache, a red face, anger, a string-like pulse	Gastrodia and Uncaria Drink
Phlegm	A heavy, clouded head, nausea, a stout body, a greasy tongue	Pinellia, white atractylodes and gastrodia
Weak yin of liver and kidney	Dizziness, dry eyes, a weak back, heat in the palms, a thin rapid pulse	Six-Ingredient Pill with Rehmannia, with additions
Too little *qi* and blood	Dizziness on standing, a pale face, tiredness	Restore the Spleen Decoction

The Indian root. Indian physicians have long given the root of the snakeroot for madness, for sleeplessness and for snakebite, as chapter 60 noted. In 1949 a physician of Bombay reported that it lowered the blood pressure of his patients. Swiss chemists drew its compound from the root in 1952. It was among the first drugs that lowered blood pressure well, and it calmed the mind as the old use had said. In high doses it also brought low spirits, and newer drugs took its place.

What has been measured. Less salt lowers the pressure, and the salt with potassium of the last entry lowers strokes and deaths.

Slow movement with the breath has been tried often. Reviews of the Chinese and Indian forms find a fall of some points in the pressure. The trials are small.

Needling was tested in a careful American trial of 192 patients, against sham needling. It did nothing.

Stillness of the mind lowers the pressure a little. An American body of heart specialists judged in 2013 that it may be considered beside the tablets.

The book on the body. The form is the wrong closure. The pressure “stays high” at rest, without complaint and in nine cases out of ten without a cause. That is a stable wrong state which the body reads as healthy. Drift is the second form, since the pressure rises with age. The illness can be held in check. The first treatment, a tablet that drives out salt, lies at the Chain layer. The book notes that its forms would lead one to expect a first treatment at the layer of rhythm. Of the simple means, less salt and the salt with potassium “carry the largest measured effect” (Konstapel 2026c).

Read with the Net. A wrong closure is held in place by the body itself. The body defends the high pressure as it defends a healthy one. This is why the tablet must be taken for life. It holds the pressure down against the body's own setting and does not change the setting. The book on the body has a line for this: "A treatment that must be continued for life does not cure."

The theory says that out of a wrong closure there is no way that does not pass through the open. No treatment yet does that for blood pressure. The old medicines offer rhythm: food, salt, movement, breath and sleep. Their measured effect is real and modest.

80. Digestion and the turning of food

What this chapter covers

Every old medicine puts digestion at the centre. The Indian physician asks first after the fire. The Chinese physician calls the spleen and stomach the root of all that a person acquires after birth. The Greek physician held that most illness begins with food that was badly cooked in the stomach.

The chapter takes eight entries: pain of the stomach, the restless bowel, yellow skin, sweet urine, stoutness, gout, stone and piles. In several of them the hospital's first treatment is an old remedy. In one, every medicine was wrong for two thousand years, the hospital included.

15. Pain of the stomach and bad digestion

The illness. The hospital knows three illnesses here. An ulcer is a wound in the wall of the stomach or of the gut below it. Reflux is acid that rises into the gullet. In the third and commonest kind, pain and fullness after meals last for months and nothing is found.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Unani	Pain at the mouth of the stomach; bad cooking of food	A stomach too cold or too hot; sharp humours; a wrong regimen	41
China	Pain in the upper belly; fullness below the heart	Cold; food that stays; a knotted liver that invades the stomach; heat; a weak spleen and stomach	54
India	The undigested; slow fire; sour bile	A fire that is too weak, too sharp or uneven for the food that is eaten	57, 59
Tibet	A cold stomach; the brown phlegm	Loss of the stomach's warmth, from cold, raw and stale food	

How it was recognised. The Indian physician names four states of the fire. An even fire digests what is eaten at the proper time. A sharp fire burns food too fast and gives heat and sour belching. A slow fire leaves even a small meal undigested, with heaviness. An uneven fire digests well one day and badly the next, with wind and griping.

The Chinese physician reads the pain itself.

Pattern	The pain	Other signs	Formula
Cold in the stomach	Sudden and gripping; better with warmth	A liking for hot drinks; a white coat	Warming drugs with fresh ginger
Food that stays	Fullness and a dislike of food	Foul belching; better after vomiting	Preserve Harmony Pill
The liver invades the stomach	Swelling pain that reaches the sides	Worse with anger; sighing; a string-like pulse	Bupleurum Powder to Spread the Liver
Heat, with sour water	Burning	A sour taste, thirst, a red tongue	Left Metal Pill
A cold, weak spleen and stomach	Dull; better with food and pressure	Tiredness, cold limbs, loose stools	Regulate the Middle Pill; Six Gentlemen Decoction
Weak yin of the stomach	A dull burning	Hunger without the wish to eat; a dry mouth; a peeled tongue	Drugs that moisten

The third pattern says that a troubled mind reaches the stomach by way of the liver. Chinese physicians hold it to be the commonest kind in people who live under strain.

What was done.

Tradition	Treatment
India	A fast until hunger returns. Hot water. Then dry ginger, long pepper and black pepper to kindle the fire. Asafoetida for wind. Liquorice and emblic fruit for sour bile

Tradition	Treatment
China	By the pattern. A book of 1249 is given wholly to the spleen and stomach as the centre from which other illness springs
Greece	The gum of the mastic tree; wine in measure; a light diet
Unani	A spiced confection after meals. The best known is named after Galen
Europe	Bitter herbs before a meal; peppermint, caraway and chamomile after it

What has been measured. The great finding went against every tradition. For a century the hospital held, with the old medicines, that an ulcer comes from acid, strain and a wrong diet. Two Australian physicians showed in 1982 that a bacterium lives in the stomach of nearly all patients with an ulcer. One of them drank a culture to prove it and fell ill. A course of drugs against the bacterium cures the ulcer for good. They received a Nobel prize in 2005.

Some old remedies stand up. A drug made from liquorice was the first that was shown to heal ulcers of the stomach, in 1962. Oils of peppermint and caraway ease the pain of the third kind in several trials. So does a German mixture of nine herbs. Ginger eases nausea in pregnancy.

A Chinese trial of 2020 needled 278 patients with fullness after meals, against a sham needle. Five in six of the needled were clearly better after four weeks, against half of the others.

The book on the body. For the ulcer the form is the unread: a foreign organism that has not been removed. The illness is curable, and the first treatment lies at the Mesh layer. As simple means the book names clean water and sewers. It adds a line on the painkillers of the aspirin kind: “Not taking NSAIDs that are not needed.”

For reflux the form is drift, with direction as the second form, since the acid goes against its course. As simple means the book names the loss of weight, and a bed whose head is raised by about twenty centimetres.

For the pain without a finding the form is the wrong closure. The hospital offers relief only (Konstapel 2026c).

Read with the Net. The ulcer is the best warning in this atlas. Every medicine read it as a state of the patient: too much heat, a knotted liver, sour bile, strain. Each reading was coherent, and each fitted what the patient felt. An unread organism sat beneath them all. Section A5 drew the lesson: a name can be coherent and wrong.

For the third kind the old readings are still the only ones on offer. The hospital has no name for the cause. The Chinese patterns and the Indian states of the fire are at least exact about what the patient feels and when.

16. The restless bowel and hard stools

The illness. In the restless bowel the patient has pain, wind and stools that are now loose and now hard, for years, and nothing is found. About one person in twenty has it. In plain constipation the stool is hard and seldom. Both are illnesses of how the gut moves. Neither shortens life.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	Hard stools; loose stools; pain of the belly	Heat that dries; knotted *qi*; weak *qi* that cannot push; too little blood to moisten; a knotted liver that presses on the spleen	54
India	Wind held in the lower gut; illness of the seat of the fire	Wind, roused by dry food, by fasting, by travel and by urges held back	57, 59
Greece and Unani	A dry belly; a slippery belly	A gut too dry or too moist; a wrong regimen	41
Europe, about 1900	Poisoning from the bowel	Stale matter in the gut	A1

How it was recognised. The Chinese physician tells five kinds of hard stools.

Kind	Signs	Treatment
Heat	Dry stools, a red face, thirst, foul breath	To clear heat and moisten: Hemp Seed Pill
Knotted *qi*	The urge without result; belching; a swollen belly	To move the *qi*

Kind	Signs	Treatment
Weak *qi*	The stool is not hard, but the patient lacks strength to pass it and sweats with the effort	To build the *qi*
Too little blood	Dry stools in a pale person, after childbirth or in old age	To feed the blood and moisten
Cold	Hard stools with cold limbs and much clear urine, in the old	To warm

The Indian books trace many illnesses to urges that are held back. They list thirteen that must never be suppressed, and the urge to pass stool is one of them.

What was done.

Tradition	Treatment
India	The three myrobalans at bedtime; castor oil; the husk of a plantain seed in water; warm oil on the belly; a fixed hour at dawn
China	By the kind. Rhubarb root only for heat, and not for long. Kneading of the belly in the direction of the gut
Greece and Unani	Figs, plums and honey. From the ninth century the pods of senna, which Arab physicians made known
Egypt	Castor oil. A Greek visitor wrote that the Egyptians purged themselves for three days in every month

What has been measured. The husk of the plantain seed is the hospital's first treatment today. It is the *isabgol* of Indian and Unani medicine. It also helps one patient in seven with the restless bowel, which coarse bran does not.

Senna works, and so does rhubarb. They hold compounds of one family.

Chapter 74 gave the Australian trial of Chinese herbs for the restless bowel. Both the fitted and the fixed formula beat the dummy. Fourteen weeks after stopping, only the fitted formula still helped (Bensoussan 1998).

Oil of peppermint eases the cramp. Section A7 gave the trials of hypnosis directed at the gut, which helps for a year or more. Needling did no better than sham needling.

The book on the body. For hard stools the form is direction. The book reads a lost cycle, and actions that run against each other. The first treatment, the plantain husk, lies at the Phase layer. “This condition is managed overwhelmingly by simple means.”

For the restless bowel the form is the wrong closure, with direction and the over-read as second forms. The hospital offers relief only. Its first treatment is a diet that leaves out certain sugars, at the Surround layer. Regular exercise helps (Konstapel 2026c).

Read with the Net. The gut is a rhythm. It has a daily hour, and the hospital has measured that it moves most on waking and after the first meal. The Indian rule fixes that hour at dawn. The Chinese clock gives the large gut the hours from five to seven in the morning. The old warning not to hold back the urge says the same from the other side: a rhythm that is refused falls out of step.

That hypnosis helps for a year, and that a fitted formula outlasts a fixed one, both point to a wrong state that can be left. No one has shown how.

17. Yellow skin and the hardened liver

The illness. The skin and the whites of the eyes turn yellow when the colouring matter of bile stays in the blood. The hospital knows many causes. A virus inflames the liver. A stone closes the bile duct. Red blood cells burst too fast. Or the liver has hardened into scar after years of infection or of drink. The treatment is that of the cause.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The yellowing	Listed with its outlook. The yellow of the eyes is noted	33
Greece and Unani	Jaundice	Yellow bile that spreads through the body, when its passage from the liver is closed or the liver is hot	41

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	Yellow skin. A yang kind and a yin kind	Damp and heat that steam the liver and gallbladder; or cold and damp in a weak spleen	54
India	*Kamala*, of the channels and of the trunk	Bile roused by hot, sour food and drink, and by anger. It often follows the pale illness	59
Tibet	A spreading of bile	Bile that leaves its seat and enters the skin and the eyes	63

How it was recognised. All looked at the eyes first, in daylight. The Chinese physician then reads the shade. A yellow as bright as an orange is the yang kind. It comes fast, with fever, thirst, dark urine and a greasy yellow tongue. A dull and smoky yellow is the yin kind. It comes slowly, in a tired and chilly patient with a pale tongue. The first is cleared. The second is warmed.

The Indian books add a test that the hospital also uses. In one kind the stool is the colour of sesame paste, pale and without bile. The bile cannot reach the gut, and the channel must be opened.

What was done.

Tradition	Treatment
China, the yang kind	Artemisia Capillaris Decoction: the herb with gardenia fruit and rhubarb root
India	A purge of bile; then bitter drugs: the root of picrorhiza, the phyllanthus herb, the king of bitters
Greece and Unani	Purges of bile; chicory and endive; whey
Europe	The seeds of the milk thistle. Yellow plants by the rule that like cures like

Tradition	Treatment
India	The newborn with yellow skin is laid in the morning sun

What has been measured. Section A3 gave the light that clears the yellow of the newborn. An English nurse noticed in 1956 that the infants whom she wheeled into the sun lost their colour. The lamp that followed has made the exchange of blood in the newborn rare.

The herbs for the liver have done less well. The phyllanthus herb was tried against one viral inflammation of the liver in many trials, and a review found no sound proof of effect. The compound of the milk thistle did nothing in a careful American trial against another. A compound of liquorice, given by vein in Japan, lowers the signs of inflammation in the blood.

The hospital now prevents one of the viruses with a vaccine and cures another with tablets in twelve weeks.

Chapter 75 gave the other side. The liver is the organ that plant remedies injure most often.

The book on the body. For the hardened liver the form is the seam: scar replaces working tissue, and the blood cannot pass. The unread virus and the failing carrier are the second forms. The first treatment is that of the cause, at the Mesh layer. Where drink is the cause, to stop is the largest single gain. For the viral inflammation the form is the unread (Konstapel 2026c).

Read with the Net. The yellow is a sign that every medicine saw and none could trace. The Chinese sorting by shade and speed is a true reading of state. It separates the hot, quick illness from the slow, cold one. It cannot tell a virus from a stone.

The sun on the newborn is a different case. The custom is old and was right. Light changes the colouring matter in the skin so that the body can pass it. Nobody knew that until 1958.

18. Sweet urine

The illness. In diabetes the sugar of the blood is too high. The common kind comes on in adults, most often in the stout. The cells no longer answer the hormone that lets sugar in, and in time the gland that makes it tires. A rarer kind strikes the young and lean, whose gland has been destroyed. More than half a billion people have the illness. The hospital holds it in check with a diet, tablets and the hormone itself.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	Too much urine	A remedy in an old papyrus drives it out	
Greece	*Diabetes*, a siphon	The flesh and the limbs melt down into urine, wrote a physician of the second century	
India	*Prameha*, in twenty kinds; the last is honey urine	Sweet, rich and new food; sleep by day; a life without exertion. In some, the seed of the parents	59
China	Wasting and thirst: upper, middle and lower	Sweet and fat food that turns to inner heat; strong feeling; a weak yin	54
Unani	*Ziabetes*	A hot kidney that draws water and cannot hold it	

How it was recognised. The Indian physicians tasted. The urine is sweet, and ants and flies gather where it falls. Chinese physicians wrote the same in the seventh century.

Both saw two kinds of patient. The Indian books describe the stout one, who has eaten well and sat still, and the lean one, who has the illness from birth and wastes away. They give opposite treatments. The Chinese books order the illness by its three thirsts. In the upper kind the patient drinks without end. In the middle kind he eats without end and grows thin. In the lower kind he passes urine without end, and it is cloudy and sweet.

Both knew what follows. The Indian books list boils among the signs of bad outlook. A Chinese physician of the seventh century warned that such patients must guard against sores of the skin, and forbade them wine, salt and grain foods.

What was done.

Tradition	Treatment
India, the stout patient	Barley in place of rice and wheat; bitter and astringent drugs; hard exercise. One book orders him to dig a well, or to walk a hundred leagues
India, the lean patient	Building up, and nothing that depletes
China	Drugs that feed the yin and clear heat. Six-Ingredient Pill with Rehmannia for the lower kind
Unani	Fenugreek and other seeds; cooling regimen
The Philippines, India, China	The bitter melon, as food and as medicine
Europe	The herb goat’s rue, for thirst and frequent urine

What has been measured. The hospital’s first tablet came from the last line of the table. Chemists found a compound in goat’s rue that lowers blood sugar. It was too harsh for use. A milder relative was tried in Paris in 1957, and it is the first treatment for the common kind in every country today.

The Indian line for the stout patient has been proved. Section A10 gave the American trial in which a little less weight and a daily walk lowered new diabetes by 58 per cent (Knowler 2002). In a British trial, a strict diet in general practice made the illness disappear within a year in nearly half of those who followed it.

Of the plants, the yellow compound of coptis lowers blood sugar in Chinese trials, most of them small. A Chinese formula of ten herbs was tried blind in 420 people whose sugar was raised. A third fewer went on to diabetes. The bitter melon has not shown a clear effect (Ooi 2012).

The book on the body. For the common kind the form is the carrier. The hormone is present and the cells do not read it. The seam is the second form: fat that has lodged in the liver and in the gland. The illness can be held in check. The first treatment lies at the Chain layer. For prevention the book has one line: weight loss, by any means. Each kilogram that was lost in the American trial went with a risk about one sixth lower (Konstapel 2026c).

Read with the Net. The form is a carrier that arrives and is not read. Section A10 found the same picture in the language of signs.

The two kinds of the Indian books are the two kinds of the hospital, seen two thousand years earlier. The book on the body gives them different forms as well. In the lean kind the body has destroyed its own gland, which is the over-read.

The cure of the stout patient by barley, bitters and the digging of a well is the second rule of cure in practice: restore, do not add. It restores a rhythm of eating and of exertion by the patient's own work. The trials show that it can undo the illness and not only hold it.

19. Stoutness

The illness. The hospital counts a person as obese above a fixed ratio of weight to height. About one adult in eight in the world is so. The fat itself shortens life by way of diabetes, the heart, the joints and several cancers. Diets work for a time, and most of the weight comes back within five years. New drugs that still the appetite hold the weight down while they are taken.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	*Sthaulya*, stoutness; one of the eight despised builds	Sweet, heavy, oily food; sleep by day; no exertion; a cheerful, careless mind; the seed of the parents	59
Greece	The fat constitution	Moist and cold. Those who are fat by nature die sooner than the lean, says an aphorism	38
China	The stout have much phlegm and a weak *qi*	Sweet and fat food that turns to damp and phlegm	48
Unani	Excessive fatness	A cold and moist temperament. The *Canon* has a chapter on its dangers and its cure	40

How it was recognised. The Indian books are the fullest. Fat grows and the other tissues starve, since the channels are shut by it. The belly, the buttocks and the breasts hang and shake. The patient is short of breath, sweats, smells, and is always hungry and thirsty. His desire is strong and his strength for it small. His life is short. The books add a judgment that the hospital has reached again: stoutness is harder to treat than leanness.

They also explain why. The fire of the stout person is sharp and not weak. He digests fast and is soon hungry again, and whatever he eats is turned to fat.

What was done.

Tradition	Treatment
India	Reducing. Barley, millet and pulses in place of rice and wheat; honey in water; the gum resin of a thorn tree; hard rubbing with dry powders; exertion; less sleep; worry is even named as a remedy
Greece	Exertion before meals; one meal a day; a hard bed; walking; no bath before eating
Unani	Bulky food of little nourishment; hard exercise; the bath before the meal
China	Drugs that dry damp and move phlegm; needles in the ear in modern practice
Hawai‘i today	A return to the food of the ancestors: taro, sweet potato, greens, fruit and a little fish, eaten to fullness

What has been measured. Chapter 68 gave the Hawaiian trial. Twenty stout Hawaiians ate the old food for three weeks, as much as they wished. They lost nearly eight kilograms on average, and their blood fats and blood sugar fell (Shintani 1991). The food fills the stomach and holds little fat.

For other plants the record is poor. Ephedra with caffeine lowers weight a little. It also caused strokes and deaths, and its sale for this purpose was forbidden in the United States in 2004. Green tea, bitter orange and the fruit of garcinia do nothing of use.

Needles and seeds on the ear have given a loss of one or two kilograms in small trials.

The book on the body. The form is the wrong closure. The book quotes its source: “Weight is physiologically defended.” When a person eats less, the body spends less and the hormones

of hunger rise. The state is stable, wrong, and restored by the body itself after every attempt. Frame is the second form, since the tendency is largely inherited. The illness can be held in check. The first treatment, a programme of food and conduct, lies at the Phase layer. This is one of the entries in which the layer that the book expected is the layer that the hospital uses (Konstapel 2026c).

Read with the Net. Chapter 4 gave the law. With a third or more of a form wrong, the return can end on another closed form. From then on the body's own healing works for the wrong state.

The Indian physicians saw exactly this. They wrote that stoutness is harder to treat than leanness, and they explained it by a fire that works too well. Their remedy is not a drug. It is a different life, kept up. The Hawaiian trial shows how fast the body follows when the whole pattern of food is changed at once. It lasted three weeks. Nobody knows what such a change does over ten years.

20. Gout

The illness. A waste product of the body, uric acid, forms crystals in a joint, most often at the base of the great toe. The joint becomes red, hot and so painful that the weight of a sheet cannot be borne. The attack passes in a week. Later attacks come closer together, and chalky lumps form under the skin. The hospital eases the attack and, with a daily tablet, lowers the acid so that the crystals dissolve.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece	*Podagra*, the trap of the foot	A humour that falls drop by drop into the joint. The word gout comes from the Latin for a drop	38, 41
India	*Vatarakta*, wind and blood	Blood spoiled by salt, sour and rich food, by wine and by riding, and driven by wind. It begins in the great toe and spreads like rat poison	59

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	The white tiger that runs through the joints; the hot kind of impediment	Damp and heat that pour downward	54
Aztec	One of the illnesses of water	Sent by the rain god	18

How it was recognised. The Hippocratic *Aphorisms* give three rules of who gets it. A eunuch does not. A woman does not, until her periods have stopped. A boy does not, before he is a man. The hospital has confirmed all three. The hormones of women help the kidney to clear the acid.

The Greeks and Romans also saw whom it struck most. It was the illness of those who ate meat and drank wine daily.

The Indian picture is exact as to place and course. The illness begins in the great toe or in the hands. It spreads from joint to joint. The skin over it is dark red, hot and too tender to touch.

What was done.

Tradition	Treatment
Byzantium	The bulb of the autumn crocus, from the sixth century
Greece and Rome	A sober regimen; purging; bleeding
India	Bloodletting near the joint; cooling pastes; purging; the stem of tinospora, the chief drug for this illness
China	Phellodendron bark with atractylodes rhizome, to dry damp and clear heat below

What has been measured. The autumn crocus is among the oldest remedies still in first use. A Byzantine physician prescribed it for gout in the sixth century. Its compound was isolated in 1820. It stops an attack within a day, and the hospital gives it today in the dose that modern trials have found.

The Greek observation on meat and wine has been counted. In a study of 47,000 American men, those who ate the most meat and seafood had gout half again as often. Beer raised the risk most. Milk lowered it.

Cherries, a remedy of American folk medicine, went with a third fewer attacks in a study of 633 patients.

The book on the body. The form is the seam. A crystal is a fixed matter lodged in a living joint, and the seam never closes while it lies there. The carrier is the second form, since in nine cases out of ten the kidney clears too little. The attack ends by itself. The illness can be held in check. The book calls the daily tablet that lowers the acid one of “the cheapest curative therapies in all of medicine” (Konstapel 2026c).

Read with the Net. Gout is a plain seam. The crocus quiets the body’s answer to the crystal and leaves the crystal where it is. Only what dissolves the crystal closes the seam. The old medicines did not have that. They had the regimen, which lowers the acid somewhat, and the Greek count of who is spared, which was right.

21. Stone

The illness. Salts of the urine form crystals, and the crystals grow to stones in the kidney. A stone that enters the narrow tube to the bladder gives the worst pain that most people ever know. About one person in ten has a stone in a lifetime. Most stones pass by themselves. In earlier ages the common stone was that of the bladder, above all in boys, and it did not pass.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Rome	The stone	Thick, muddy urine that is baked by the heat of the bladder, as clay is baked in a kiln	38, 39
India	*Ashmari*, stone, in four kinds	Phlegm that is dried in the bladder by wind and bile, as water leaves a crust in a new pot	59
China	Painful urination with stones, one of six kinds	Damp and heat that boil the urine down to sand	54

How it was recognised. The Indian books give the signs of the stone in the bladder. There is pain in the navel, the bladder and the seam between the legs. The stream stops suddenly and

starts again when the patient shifts. The urine is the colour of ox bile or holds blood. A boy with a stone pulls at his penis. The Greek books give the same signs.

What was done. Two roads were open, and the old physicians knew that the second might kill.

Tradition	Drugs	The knife
India	Plants that break stone; the fruit of the puncture vine; alkali made from plant ash; much fluid	Described step by step, with a warning. The surgeon first asks leave of the king, since the patient may die
Greece and Rome	Plants that drive the urine; baths	Left to craftsmen. The Hippocratic Oath forbids the physician to cut for stone. A Roman writer of the first century describes the operation in full
China	Eight Corrections Powder; plantain seed; a creeping herb named for its coin-shaped leaves	Not done
South America	A small herb whose Spanish name means stone breaker	

The sanctuaries also took the stone. Chapter 37 named it among the lasting ills for which the sick slept in the hall of Asklepios.

What has been measured. The cutting worked, and it killed. Even in the best hands of the eighteenth century, one patient in ten died of it. Crushing the stone through the natural passage replaced it in the nineteenth century, and sound waves from outside the body in the 1980s.

Of the drugs, fluid stands first. In an Italian trial, patients who had passed one stone were told to drink enough to pass two litres of urine a day. After five years 12 in a hundred had a new stone, against 27 in a hundred of those who drank as before.

The stone breaker of South America belongs to the same family as the phyllanthus herb of India. In small trials it helped the fragments to pass after a stone had been broken by sound waves.

For stones of the gallbladder, a home cure with olive oil and lemon juice is widely passed on. The green lumps that pass after it are soap made from the oil.

The book on the body. The form is the seam, in its plainest shape: a stone lodged in a living organ. Too little urine is the second form, a carrier that fails. Most stones pass by themselves. The book says: “Kidney stones are the clearest case in this book where water is the treatment.” For the stone of the gallbladder the form is the same, and the first treatment is to take the gallbladder out, at the Mesh layer (Konstapel 2026c).

Read with the Net. Chapter 1 named the stone as an example of the first law of seams. A uniform stretch never joins a mixed one. As long as the stone lies there, the seam is open. To take it out is the one act that closes it.

The old surgeons saw that and acted on it, at a price that the Indian book states openly. The old physicians tried to dissolve the stone and failed. They did find the rule that prevents the next one: drink.

22. Piles

The illness. The cushions of blood vessels at the outlet of the gut swell, bleed and slip down. Half of all people have them at some time. Fibre and fluid ease most. The hospital ties them off with a rubber band or cuts them away.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	*Arshas*, the enemy. A dry and a bleeding kind	A weak fire; straining; long sitting on hard seats; riding; urges held back	59
Greece	Haemorrhoids, a running of blood	Bile or phlegm that settles in the veins of the seat and heats the blood	38
China	Piles. Nine in ten have them, a saying goes	Damp and heat that pour downward; long sitting; rich food and wine	54

The Greek physicians held that the bleeding could be useful. It carries off black bile, they wrote, and a person who has always bled should not be stopped all at once. The Indian books say the same of bleeding in general: it is never stopped suddenly in a strong patient.

What was done. The Indian surgeon had four means, and he used them in order: drugs, caustic, cautery and the knife.

Tradition	Treatment
India	Buttermilk; the chebulic myrobalan; a sitz bath. Then a caustic paste of plant ash, painted on. Then the hot iron. Last, the knife
India, for a fistula beside the outlet	A thread coated with caustic, drawn through the channel and tightened week by week until it has cut its way out
Greece	The hot iron; tying with a thread; cutting. A Hippocratic treatise describes each
China	The flower of the pagoda tree to stop the bleeding; washes; tying with a thread

What has been measured. The Indian thread is one of the few old operations that have been tested against the modern one. Chapter 60 gave the trial. Indian surgeons at several hospitals treated a fistula either with the thread or with the knife. With the thread the wound took longer to heal. The fistula came back in 4 in a hundred, against 11 in a hundred after the knife, and the patients went on working during the treatment (ICMR 1991).

For piles themselves, fibre halves the bleeding.

The book on the body. The form is drift. The tissue that holds the cushions in place wears with age and with straining, and the return falls behind. A single episode is curable, and the tendency can be held in check. The first treatment, the husk of the plantain seed, lies at the Phase layer. “Fibre is the primary treatment,” the book says, and it needs nothing else than water beside it (Konstapel 2026c).

Read with the Net. The thread deserves a second look. It does slowly what the knife does at once. Each week it cuts a little, and the body closes the wound behind it before the next tightening. The cut and the healing keep step. That is the third rule of cure, to match the phase, and the fourth, to go slowly with what lives. The result in the trial was a channel that stayed closed.

81. Pain and movement

What this chapter covers

Pain is the complaint that brings most people to a healer of any kind. This chapter takes six entries: the headache, the back, the joints, the broken bone, the tooth, and pain that lasts without a wound.

It is the ground on which the old medicines have been tested most. For the back and the worn joint, the hospital's own first treatment is no longer a drug or an operation. It is movement. The book on the body calls these the illnesses in which simple means match or beat what industry offers.

23. The headache

The illness. The hospital knows two common kinds. In migraine the pain is one-sided and throbbing. It comes in attacks of hours or days, with nausea and a dread of light, and in some patients a flickering before the eyes announces it. One adult in seven has it. The other kind is a dull, pressing band round the head. The hospital stops an attack with a tablet and, for frequent attacks, gives a daily drug.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	Headache, with a series of incantations of its own	The hand of a ghost	32, 33
Egypt	The pain of half the head	Treated with a salve and a spell	
Greece and Unani	*Hemicrania*, half the skull, from which the word migraine comes	Vapours or bile that rise from the stomach to the head	41
China	Headache from outside and from within	Wind with cold, heat or damp; rising yang of the liver; phlegm; too little *qi* and blood; standing blood	54

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	Eleven illnesses of the head. Two stand out: the splitting of half the head, and the headache that turns with the sun	The three faults, most often wind	59
The Andes	The headache of great heights	Thin air	17

How it was recognised. The Indian books describe two rhythms. The splitting of half the head returns every ten days or every fortnight. The headache that turns with the sun begins at sunrise, grows until noon and fades toward evening.

A Greek text describes the sign that goes before. The patient sees a light, most often in the right eye. When it has gone, a fierce pain begins in the temple and spreads to the head and the neck.

The Chinese physician asks where the head aches, since each region belongs to a vessel.

Place of the pain	Vessel	A drug that leads there
The back of the head and the nape	Greater yang	Notopterygium root
The forehead and the brow	Yang brightness	Angelica dahurica root
The temples and the sides	Lesser yang	Bupleurum root
The crown	The vessel of the liver	Evodia fruit

He then asks what kind of pain it is. A swelling pain with a red face and anger is the rising yang of the liver. A heavy, clouded head with nausea is phlegm. A dull, empty ache that is worse after exertion is a lack of *qi* and blood. A fixed, stabbing pain that returns to one place for years is standing blood.

What was done.

Tradition	Treatment
Mesopotamia	Incantations; a band with plants bound round the temples

Tradition	Treatment
Aboriginal Australia	A cord or a vine tied tightly round the head
Greece	Rest in the dark; bleeding; a purge
China	Ligusticum rhizome in nearly every formula for the head. Needles at the temples, at the base of the skull, and between thumb and forefinger
India	Oil or medicated butter dropped into the nose; oil poured on the forehead; clarified butter by mouth; rest
The Andes	Coca leaf, chewed
Europe	Feverfew; willow bark; later the fungus of rye

What has been measured. Needling is the best tested. A review of twenty-two trials found that a course of needling lowers the number of attacks of migraine. It did slightly better than sham needling, and as well as the daily drug (Linde 2016).

The fungus of rye, which midwives used to hasten birth, gave the first drug that stops an attack, in 1925. The modern tablets act in the same way.

Feverfew has been tried in six trials. It lowered the attacks by about one in two months, which is little. An extract of the root of butterbur did more in one trial, and it can injure the liver.

Oil of peppermint, rubbed on the temples, eased the dull headache as well as a tablet of paracetamol in a German trial.

The book on the body. For migraine the primary form is the wrong closure: a stable wrong state of the brain's readiness to fire. Direction is a second form, since the attacks "recur in cycles" and are tied to the monthly period. Frame is a third, since the tendency is inherited. A single attack ends by itself. The illness can be held in check. The first treatment lies at the Chain layer.

Two simple means stand out. Regular hours of sleep and of meals lower the attacks. So does exercise, which did as well as the daily drug in at least one trial. The book adds a warning. Painkillers that are taken too often cause a headache of their own, and that one is curable: by stopping (Konstapel 2026c).

Read with the Net. The headache from too many tablets is the second rule of cure turned round. What is added, and added again, becomes the illness.

Both Indian kinds are named by their period. The hospital has since confirmed that migraine keeps time. It follows the month in many women and the week in many workers, and it comes with a change in the hours of sleep. An illness that keeps time is treated at the layer of rhythm, and the simple means of the book are of that kind.

24. Pain of the back

The illness. Low back pain is the first cause of years lived with disability in the world. In nine cases out of ten no injured part is found, and a picture of the spine does not predict the pain. Most attacks pass within weeks. In some people the pain stays. The hospital has given up bed rest, most operations and strong painkillers for it. It now advises to stay active and to exercise.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	A sprain in a vertebra of the spine	An injury; treated as such, without a spell	35
Greece	*Ischias*, pain of the hip that runs down the leg	A humour that settles in the joint	38
China	Pain of the lower back, the mansion of the kidney	Cold and damp that lodge; damp and heat; standing blood after a strain; a weak kidney	54
India	The seizing of the loins; the vulture’s gait, when the pain runs down the leg	Wind	59

How it was recognised. An Egyptian papyrus of about 1600 before our era gives a test. The physician tells the patient to stretch out both legs. If he draws them up again at once because of the pain in his spine, the vertebra is sprained. The hospital uses the same test for a pinched nerve root.

The Indian name for the pain that runs down the leg describes how the patient walks: stiffly, lifting the leg from the hip, like a vulture.

The Chinese physician tells four kinds.

Kind	Signs	Treatment
Cold and damp	A heavy, cold ache, worse in wet weather and after rest, better with warmth and movement	To warm and dry; burning of mugwort on the back
Damp and heat	A hot, sore back; dark urine	To clear
Standing blood	A fixed, stabbing pain after a strain or a fall; worse at night; the patient cannot turn	To move the blood; needling at the back of the knee
A weak kidney	A dull ache that comes and goes for years, worse with tiredness, with weak knees	To build up: eucommia bark; Angelica Pubescens and Mistletoe Decoction

What was done.

Tradition	Treatment
China	Needles; burning of mugwort; cups; kneading; exercises
India	Warm oil held on the back within a ring of dough; enemas of oil; castor oil; the hot iron at the foot for the pain of the leg
Greece	Cups; the hot iron over the hip; walking
Thailand, Hawai‘i, Samoa	Kneading with thumbs, elbows and feet, in a fixed order
Finland	The bone-setter, who works the whole body from the feet upward
Southern Africa	The root of devil’s claw

What has been measured. This is the best tested complaint in the whole of old medicine.

Chapter 8 gave the German trial of needling in 1,162 patients. After six months about 47 in a hundred of the needled were clearly better. So were 44 in a hundred of those who had been

needled beside the points. With the standard care of physicians and physiotherapists it was 27 in a hundred (Haake 2007).

Chapter 14 gave the Finnish trial of bone-setting, which did at least as well as physiotherapy over a year (Hemmilä 2002). Chapter 70 gave the trials of Thai kneading. Chapter 61 gave the British trial of yoga, in which the back worked better for a year (Tilbrook 2011). Section A4 gave the lessons in posture that lowered the days in pain (Little 2008).

Of the plants, the root of devil's claw probably eases the pain for some weeks (Oltean 2014). So does an extract of willow bark.

The hospital's own remedies have done worse in their trials. Paracetamol did no more than a dummy. Strong painkillers did no better over a year than simple ones. The stiffening of the spine by an operation did no better than a course of training.

The book on the body. The form is the wrong closure. No injured part is found, and worry and low spirits predict a lasting pain better than a picture does. The book reads a stable wrong state of pain. Drift, the wear of age, is the second form. An attack ends by itself. For lasting pain the hospital offers relief only. The first treatment, exercise, lies at the Phase layer, as the book's form had led it to expect. The book says: "Low back pain is the condition where simple means most clearly match or beat the industrial alternatives." Exercise is "the only consistently effective prevention" (Konstapel 2026c).

Read with the Net. In lasting back pain the body reads a sound back as an injured one. The reading has closed on the wrong form. A tablet does not change a reading. Touch, warmth, movement and the attention of a person can, since each offers the body another reading of the same back.

That would explain the result which troubles the trials: needling beside the points did almost as well as needling on them, and both did far better than standard care. Chapter 74 called this the reader's effect. What the two kinds of needling share is a practitioner who examines, touches and returns ten times.

25. Worn and inflamed joints

The illness. The hospital tells two illnesses apart. In the worn joint the cartilage thins with age and load, most often in the knee, the hip and the hand. More than five hundred million people have it. In the inflamed joint the body's own defence attacks the lining of many joints at once, on both sides of the body, with stiffness in the morning. It is far less common and far more destructive. The first is treated with exercise, loss of weight and, in the end, a new joint. The second is treated with drugs that calm the defence.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Unani	Arthritis; rheumatism, a streaming	A humour that streams into the joints and settles there	41
China	Impediment of the joints: wandering, painful, fixed and hot	Wind, cold and damp arrive together and lodge in the vessels. One of the three leads	54
India	*Amavata*, raw matter and wind; and wind in the joints	Raw matter from a weak fire, carried by wind into the joints; or wind alone, in age	59
Tibet	Illnesses of the yellow fluid	A spoiled fluid that gathers in the joints and under the skin	

How it was recognised. The Chinese physician asks which of the three guests leads.

Kind	Leading cause	Signs
Wandering	Wind	The pain moves from joint to joint
Painful	Cold	A severe, fixed pain; worse with cold, better with warmth
Fixed	Damp	Heaviness, swelling and numbness; worse in wet weather
Hot	Heat	Red, hot, swollen joints, with fever and thirst

In a long illness the joints deform, and the liver and kidney, which feed sinew and bone, are found weak.

The Indian books separate two illnesses much as the hospital does. In *amavata* many joints swell and hurt together. The pain is like the sting of a scorpion. There is fever, heaviness, loss of appetite and stiffness, and the illness comes after bad digestion. In wind of the joints, an

old person has a joint that grates and aches, swollen like a bag of air, and painful on bending and stretching.

They give the two illnesses opposite treatments. That is the key of the entry.

What was done.

Tradition	Treatment
India, raw matter and wind	First fasting and light food. Bitter, warming drugs. Castor oil. No oil is rubbed on while raw matter is present
India, wind in the joints	Warm oil, rubbed in daily; warmth; the gum resins of the thorn tree and of Indian frankincense
China	Angelica Pubescens and Mistletoe Decoction for the long illness. Needles and burning of mugwort. For the hot kind, the vine of the thunder god
Tibet	Baths in hot springs and in decoctions of five plants
Greece, Rome and Europe	Warm springs; bleeding; willow bark; stinging with nettles
Unani and Europe	Leeches on the joint
Mexico	Chilli, rubbed on

What has been measured. For the worn joint:

Chapter 61 gave the German trial of 151 patients with worn knees. Twelve weeks of Indian medicine as a whole did better than twelve weeks of standard care, and the gain held for a year. Chapter 53 gave the trial in which the slow Chinese exercise did as well as physiotherapy. Chapter 40 gave the trial of leeches. Section A8 gave the trial of three weeks at a spa.

The gum of Indian frankincense eased worn knees in several small trials. An extract of turmeric did as well as a standard painkiller in a Thai trial of 367 patients (Kuptniratsaikul 2014). The burning compound of chilli is sold by every pharmacy as a plaster.

Needling for worn knees has come out both ways. In several trials real and pretended needling did the same.

For the inflamed joint:

Chapter 61 gave the blind trial in which Indian medicine, fitted to each patient, did as well as the hospital's chief drug and harmed less (Furst 2011).

The Chinese vine has been tried against the same drug in 207 patients. It did as well, and the two together did best. The vine is poisonous. It can stop the monthly period and the making of seed, and it has killed.

Section A5 gave the Norwegian trial of fasting followed by a year of plant food, after which the joints stayed better (Kjeldsen-Kragh 1991). The Indian books begin the treatment of this illness with a fast.

The book on the body. The two illnesses have two forms. The worn joint is drift: the return falls behind its bound. The first treatment, exercise, lies at the Phase layer. Loss of weight is the largest effect that a patient has in his own hands. The book says that this is, with low back pain, “the clearest case where simple means are first-line therapy rather than adjuncts”.

The inflamed joint is the over-read. The body’s test reads its own tissue as a misfit and attacks it. The illness can be held in check, and the first treatment lies at the Reading layer. The one cause that a patient can remove is smoking (Konstapel 2026c).

Read with the Net. Chapter 72 counted, as its fifteenth point, that the old medicines know pairs of opposite illnesses with opposite cures. This is such a pair. The Indian physician oils the worn joint and forbids oil on the inflamed one. He feeds the old patient and fasts the other. The hospital reached the same division about 1900.

For the over-read the theory has no object, as chapter 4 said. The trial of the Indian treatment and that of the Chinese vine show that the old medicines did find means against it. How those means act is not known.

26. The broken bone

The illness. A bone breaks. The hospital sets the ends, holds them still with a cast, a nail or a plate, and waits. A broken arm joins in six weeks and a thigh in three months. In the old, a hip breaks after a simple fall, and one in five of them is dead within a year.

Names and causes in the old medicines. No old medicine sought a spirit behind an ordinary fracture, though it might ask why this man fell from this tree. The break was a matter for the hands.

Tradition	The specialist	Chapter
Egypt	The physician of the papyrus on wounds, who states the outlook before he treats	35
Greece	The Hippocratic authors of the books on fractures and joints	38

Tradition	The specialist	Chapter
India	The surgeon of the school of Sushruta, who counts twelve kinds of fracture and six of dislocation	56
China	The bone-setter, a craft beside inner medicine	53
Mongolia	Bone-setters of certain families	15
The Philippines, Samoa, Hawai‘i	The healer who kneads	68, 70
Aboriginal Australia	Limbs are splinted with bark	13
Europe	The bone-setter, outside the faculty	42

How it was recognised. By what the hospital still teaches: the shape, the swelling, the movement where none should be, and the grating of the ends under the hand. The Indian books add that a break joins quickly in the young, and slowly in the old and the wasted.

What was done. Every tradition has the same three steps: pull and set, bind, and wait.

Tradition	The binding	The rule
Egypt	Splints padded with linen	The hopeless case is not treated
Greece	Bandages with wax; splints from the seventh day, when the swelling has gone	Not too tight; look again every third day
India	Splints of bamboo and bark; a bed with pegs that holds a broken thigh still	Cool the fresh break; feed milk and clarified butter
China	Small splints of willow that leave the joints above and below free	Move the joints from the first day

The Chinese rule is the opposite of the plaster cast. A cast holds the joints still as well. Chinese surgeons argued in the 1960s that their small splints gave faster healing and less stiffness. The hospital has since moved the same way, with braces that let the limb work.

The Greek method of putting back a shoulder, with the heel in the armpit, is still taught.

What has been measured. Chapter 14 gave the Finnish trial of bone-setters for the back. For broken bones themselves the old craft has hardly been tested.

The harm has been counted. In West Africa most people with a broken limb go first to a traditional bone-setter. Surgeons there report limbs that were lost because a splint was bound too tight. Where bone-setters were given a short training in the danger signs, such losses fell.

Chapter 17 named the opened skulls of the Andes. Most of the skulls of the Inca period show healed edges: the patients lived.

A plant deserves a note. Comfrey was called knitbone in English. An ointment of it eases sprains in several trials. Taken by mouth it injures the liver, as chapter 75 told.

The book on the body. The book treats the fracture of old age. The form is drift: bone and balance weaken faster than they are restored. The break itself is curable, and the first treatment lies at the Mesh layer. The simple means are exercises of balance: standing on one leg, rising from a chair, walking heel to toe, and the slow Chinese exercise. The book calls this “the best-evidenced fall-prevention intervention in the world”, and it needs no tool (Konstapel 2026c).

Read with the Net. A broken bone is the plainest open form in medicine. The two ends are set in one line, which is the third rule: match direction. They are held, and the return is left to run. Chapter 5 ended its order of healing with that step. Silence follows.

The Chinese splint adds a point. It holds the break and lets the joints keep their rhythm. The bone is still, and the limb is not.

27. The aching tooth

The illness. Bacteria that live on the teeth turn sugar into acid, and the acid eats a hole. When the hole reaches the nerve, the tooth aches. The gums are attacked by other bacteria and let the teeth go in later life. Untreated decay of the teeth is the most common illness on earth: more than two billion people have it. The hospital’s dentist drills, fills and pulls. Prevention is a brush, a paste with fluoride, and less sugar.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The toothache	A worm. In the charm it asks the gods for a place between the teeth and the jaw, to suck the blood of the tooth and gnaw at its roots	32
Egypt	Troubles of the teeth, with a chief of dentists at court about 2650 before our era		35
China	Toothache; decay by worms	Fire of the stomach that rises along its vessel to the gums; wind and fire; a weak kidney, in the old; worms	
India	Illnesses of the teeth and the gums; the worm-eaten tooth	The faults; worms	
Europe	The tooth worm, until the eighteenth century	A worm in the hollow of the tooth	

The worm in the tooth is one of the most widespread ideas in medicine. It is found in Babylon, India, China, the Islamic world and Europe, and among the Aztecs. A French dentist who looked for the worm with a microscope in 1728 wrote that he had not found it.

How it was recognised. The Chinese physician reads the ache by the patient. A fierce pain with red, swollen gums, foul breath and thirst is fire of the stomach, and it is cleared. A dull ache in loose teeth, in an old person, with a weak back, is a weak kidney, and it is built up.

What was done.

Tradition	Treatment
Mesopotamia	The charm is spoken three times over a paste of beer, malt and oil, which is laid on the tooth
China	Clear the Stomach Powder. A needle between thumb and forefinger, the point that the old verse gives for the face and the mouth
India	A fresh twig of the neem tree, chewed to a brush, every morning. Oil held in the mouth. Oil of cloves on the aching tooth. The hot iron in the hollow
The Islamic world	The tooth stick, cut from the root of the arak tree, used before each prayer
Europe	The smoke of henbane seed, drawn into the mouth. Cloves. The barber’s pincers

The smoke of henbane was held to prove the worm. When the seeds burn, small white threads spring out of them and fall. The patient saw worms drop from his mouth, and the pain was dulled by the plant.

What has been measured. The oil of cloves holds a compound that numbs. Dentists use it to this day.

The tooth stick has been compared with the brush. In several small trials it removed plaque as well. The wood holds fluoride and compounds that hinder bacteria.

Oil held in the mouth lowered plaque in small Indian trials of poor quality.

The chief finding is about food. Peoples who live by hunting and gathering have few holes in their teeth. The holes come with sugar and flour. Chapter 68 told what the new foods did to the Hawaiians.

The book on the body. The primary form is the unread: organisms on the tooth that are not removed. The second forms are the carrier, when the saliva fails, and drift, when the enamel is lost faster than it is restored. A beginning spot of decay can still heal. A hole cannot. The first treatment, fluoride, lies at the Chain layer. The book calls this the clearest case in its chapter of “simple means doing nearly all the work”. Brushing twice a day with a fluoride paste lowers decay by about a quarter (Konstapel 2026c).

Read with the Net. The tooth worm was a wrong picture of a right idea. The old physicians held that a small living being eats the tooth. They were nearer the truth than the learned

theory of humours, which blamed a sharp fluid from the head. The being exists. It is too small to see, and it needs sugar.

The morning twig of India and the tooth stick of Islam act on that being every day, at a fixed hour, by a rule of conduct. This is how the old medicines came closest to prevention: they made it a habit and gave it a time.

28. Pain without a wound

The illness. Some people have pain in the muscles of the whole body for years, with tiredness and a sleep that does not refresh. Nothing is found in muscle or joint. The hospital calls it fibromyalgia and holds that the nervous system has come to amplify pain. About one person in fifty has it, most of them women. Drugs help little.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	Impediment of the flesh; pain of the whole body	Too little *qi* and blood to feed the flesh; a knotted liver; damp	
India	Wind in the flesh and the sinews	Wind, roused by grief, by lack of sleep, by fasting and by overexertion	
The shaman’s world	A person who is not wholly there	Chapter 21 gave the signs of soul loss: tired, in pain, without appetite, sleeping badly	21
Europe, about 1880	Weakness of the nerves	Exhaustion by modern life	

No old medicine names this illness as the hospital does. Several describe the patient: a person in pain everywhere, worn out and sleepless, after a long strain or a shock.

What was done. The treatments are those of rhythm and of touch: warm oil rubbed in daily, kneading, baths, rest at fixed hours, a regular day, slow exercise. Where the trouble was read as a soul that had left, the soul was called back. Chapter 21 described the rites.

What has been measured. The slow Chinese exercise has been tested twice for this illness in Boston. In the first trial it did better than stretching and lessons. In the second it did as well as brisk exercise, or better, and more patients kept it up.

Baths in warm mineral water eased the pain for some months in several trials. Needling has come out both ways. Kneading helps while the course lasts.

The hospital’s own best treatment is graded exercise.

The book on the body. The form is the wrong closure. The book reads “altered pain processing” with “no joint or muscle damage” as a stable wrong state. Direction is the second form, since the sleep does not refresh and the loss of sleep itself brings on the pain. The hospital offers relief only. The first treatment, exercise, lies at the Phase layer. The book says: “This condition is managed almost entirely by simple means, and they outperform the drugs” (Konstapel 2026c).

Read with the Net. This entry and the entry on the back have one form and one answer. The body reads pain where no wound is. No drug changes that reading. Rhythm does, slowly: movement, sleep, warmth and the hand of another person.

The old picture of a person who is not wholly there is of interest beside it. Chapter 76 listed the nature of soul loss among the open questions. The signs of the two states overlap, and so do the treatments that help.

82. Skin, eye and ear

What this chapter covers

The skin, the eye and the ear lie open to view, and the old physicians could follow what their remedies did. The chapter takes five entries: the itching and scaling skin, the white patches, the clouded lens, the sore eye with blindness at night, and the failing ear.

Two treatments of the modern hospital were taken straight from these pages of the old books. One is the seed that is used with light. The other is liver against blindness at night.

29. The itching and scaling skin

The illness. The hospital knows two long illnesses here. In eczema the skin is dry, red and itching, in the folds of elbows and knees and on the face. It begins in infancy, runs in families with asthma, and often fades with the years. In psoriasis thick red plaques with silver scales stand on the elbows, the knees and the scalp, for life. In both, the body’s defence is turned on its own skin. Neither is cured. Ointments, light and newer drugs hold them down.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	Named diseases of the skin, in tablets of their own	The hand of a god; uncleanness	33
Greece	*Psora*, the itch; *lepra*, the scaly	Salt phlegm and black bile driven outward	
China	The wind of the four bends, in the folds of the limbs; the white crust	Wind, damp and heat in the skin. In long illness the blood is dry and no longer feeds the skin	47
India	Among the eighteen kinds of *kushtha*: an itching, oozing kind and a dry, scaling one	The three faults in skin, blood, flesh and lymph; wrong pairs of food, such as fish with milk	59

How it was recognised. The Chinese name for eczema describes its place: the bends of the elbows and the knees. The physician then reads the skin itself.

What the skin shows	Reading	Line of treatment
Red, hot, swelling, itching that moves about	Wind and heat	To clear and disperse
Weeping, crusting, worse in the lower body	Damp and heat	To dry and clear
Dry, thick, cracked, pale; itching worse at night	Dry blood	To feed the blood and moisten
Dark, fixed plaques of many years	Standing blood	To move the blood

He also looks beyond the skin. Chapter 47 gave the rule. The skin belongs to the lung, and a child with eczema is examined for asthma. The hospital knows the same pair.

What was done.

Tradition	Treatment
China	Decoctions by the pattern; washes; an ointment of the blue dye of the indigo plant for the scaling kind
India	Repeated cleansing; bitter drugs by mouth, among them neem and turmeric; medicated oils and butters on the skin; buttermilk poured on the head and body
Greece and Rome	Baths in the sea and in sulphur springs; tar of pine and juniper
The Dead Sea	Weeks of bathing and of sun
Aboriginal Australia	The crushed leaves of the tea tree

What has been measured. Sun and tar hold up. The hospital used tar with lamp light for psoriasis from 1925. Section A8 gave the Dead Sea, where most patients are clear after four weeks.

The Chinese blue ointment was tried in Taiwan against the plain base, on two plaques of each of 42 patients. The plaques under the dye improved by four fifths, against one quarter.

A Chinese decoction of ten herbs was tried blind in London in 1992, in children and adults with severe eczema. It did clearly better than a dummy tea. A later trial in Hong Kong did not find the effect. Cases of injury to the liver were reported.

The harm of this field is of a special kind. Chapter 75 gave the English count: twenty of twenty-four herbal creams sold for children's eczema held strong hormone preparations that were not named on the jar (Ramsay 2003).

The book on the body. Both illnesses have the form of the over-read. In eczema the skin lets harmless outside forms in, and the body's test attacks them. In psoriasis the test attacks the skin itself. Both can be held in check. For eczema the first treatment is plain grease, laid on thickly and often. The book names petroleum jelly as the simple means. For psoriasis the simple means are "better than might be expected, because sunlight and tar are genuinely effective" (Konstapel 2026c).

Read with the Net. Chapter 4 said that the theory holds no object for the over-read, and that the old medicines describe such illnesses least clearly. The skin bears that out. Eighteen Indian kinds and a dozen Chinese names do not map on the two illnesses of the hospital.

What the old physicians did find are the outer means that still work: grease, sun, tar and sea. They found them by looking, since the skin shows at once what helps.

30. The white patches

The illness. In vitiligo the cells that colour the skin are destroyed in patches. The patches are milk white and sharply edged, and they spread over the years. The body's own defence does it. The person is otherwise well. About one person in a hundred has it. In peoples with dark skin the patches show strongly and are often taken for leprosy.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	*Shvitra*, the white; a hymn of the oldest collection asks a dark plant to give the skin its colour back	The faults in the skin; misdeeds	56, 59
Unani	White patches	Phlegm in the skin	40
Egypt	White patches	Not known; treated by village healers	40

The Indian books separate the illness sharply from leprosy. It does not ooze, and the skin keeps its feeling. They add that it is hard to cure when the hairs in the patch have turned white and when the patches have joined.

What was done. India and Egypt found the same cure, with two different plants.

Tradition	Treatment
India	The seeds of a plant of the pea family, ground and rubbed on the patch, or taken by mouth. The patient then sits in the morning sun
Unani	The same seeds, by mouth and on the skin, with exposure to the sun
Egypt	The powdered fruits of a weed of the Nile valley, of the carrot family, followed by sun

What has been measured. An Egyptian physician took up the village remedy in the 1940s. He had the active compounds drawn from the weed and gave them to patients, who then sat in the sun. The colour came back in many.

American physicians combined the compound with a lamp of long-wave light in 1974 and used it for psoriasis. For some decades this was a chief treatment of the hospital for both illnesses. Chapter 75 listed it among the debts of the hospital to the old medicines.

The seed does nothing without light. Lamps have since been found that do as well without the seed, and they have largely taken its place.

The book on the body. The form is the over-read: the body’s test reads its own colouring cells as a misfit and destroys them. The illness can be held in check. The first treatment lies at the Reading layer. As simple means the book names sunlight, and the covering of the white patches against burning, since they have no colour to protect them (Konstapel 2026c).

Read with the Net. The old cure has two parts that must arrive together: a compound in the skin and light upon it. Chapter 5 gave the rule for such an act. Offer the whole window at once.

No theory led the Indian or the Egyptian healers to it. A patient who had rubbed on the seed went into the sun. How the pair acts was worked out only later.

31. The clouded lens

The illness. The lens of the eye turns cloudy with age. The world grows dim and yellow, and in the end the patient tells only light from dark. Cataract is the first cause of blindness in the

world. The hospital takes the lens out through a small cut and puts a clear one of plastic in its place. The operation takes ten minutes.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Rome	A running down: a humour that has run down before the pupil and set there	Thick humour from the brain	39
India	An illness of the lens, in six kinds	Phlegm that hardens before the pupil	56
China	The inner screen; the round shade	A weak liver and kidney, whose essence no longer reaches the eye	66
Tibet	Named among the illnesses of the eye that need the instrument		64

The Latin word for this running down gave the illness its name. The Greek physicians thought that the cloud lay before the lens. It is the lens itself.

What was done. The operation is the same from Rome to China, and the Indian description is the fullest.

The patient sits facing the surgeon on a bright morning and looks at his own nose. A helper holds his head. The surgeon holds the lids apart and enters the white of the eye from the side with a fine pointed rod, at a spot that the book marks exactly. A drop of fluid and a small sound tell him that he is in. He moves the tip to the cloud and presses it down and away from the pupil. He then shows the patient his fingers and asks how many there are. The eye is bathed in clarified butter and bound, and the patient lies on his back for seven days. He must not cough, sneeze or bend.

The Indian book adds which cases the surgeon must refuse. A lens that is not yet ripe is left alone. So are several kinds that the book describes by their shape and colour.

Tradition	Record of the operation	Chapter
India	The collection of Sushruta	56
Rome	A medical writer of the first century	39
The Islamic world	An oculist of about the year 1000 drew the cloud out through a hollow needle	
China	Brought by Indian monks; called the golden needle	66
Tibet	Done with one of the small instruments	64

What has been measured. The old operation gives sight at once, and it often takes it again. The lens lies loose in the eye, and the eye inflames or its pressure rises. Travelling healers still do it in West Africa. In a survey of couched eyes in Mali, most were blind or nearly so.

The removal of the lens was first done at Paris in 1747. The modern operation seldom fails. An Indian hospital that does it in great numbers, at a small part of the usual cost, has become a model for the world.

The book on the body. The form is the seam. The proteins of the lens have clumped, and the clump is a fixed matter in a living organ. Drift builds it with age. The illness is curable. The first treatment lies at the Mesh layer, as the form had led the book to expect. The book calls the cheap operation in great numbers “the standout case” of a small act that removes a very large burden (Konstapel 2026c).

Read with the Net. Chapter 43 named this operation as an act at the place. The old surgeon reasoned rightly. What clouds the pupil must be moved out of the way. His act was the right one at the wrong depth: he pushed the seam aside and left it in the eye.

32. The sore eye and blindness at night

The illness. Two illnesses of poverty are treated here. Trachoma is an infection of the lids that returns again and again in children. After years the scarred lid turns inward, and the lashes scratch the clear front of the eye until it is blind. In the other, a child or a pregnant woman who lacks vitamin A cannot see in the dusk. If nothing is done, the front of the eye dries and melts.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	Many named illnesses of the eye; blindness in the dusk		36
Greece	*Trachoma*, the roughness of the lid; night blindness	A sharp humour	
China	The red eye; the eye of the sparrow, which cannot see at dusk	Wind and heat; fire of the liver. For the dusk, a liver that does not feed the eye	47
India	Seventy-six illnesses of the eye; night blindness among them	The faults in the layers of the eye	56
England, about 950	A lump on the eyelid		42

What was done.

Tradition	For the sore eye	For blindness at night
Egypt	Salves of honey, of copper green and of black eye paint	The liver of an ox, roasted, pressed and given
Greece	The rough lid is scraped; salves of copper	Raw liver of an ox, dipped in honey
China	Chrysanthemum flower and mulberry leaf; drugs that clear the liver	The liver of a pig or a sheep
India	Washes of the three myrobalans; honey; clarified butter pooled on the eye	Liver of a goat, cooked with long pepper

Tradition	For the sore eye	For blindness at night
England	A salve of garlic, leek, wine and ox gall, kept nine nights in a brass bowl	

What has been measured. Liver is the richest food source of vitamin A. Four medicines found it, and at least three of them without contact. The vitamin was found in 1913. The capsule that the hospital now gives twice a year to children in poor countries prevents this blindness, and it lowers their deaths from measles and diarrhoea as well.

Chapter 42 gave the English salve. Made exactly by the recipe, it killed a hospital bacterium that resists most drugs. Its parts alone did not.

The copper stick was used on the rough lid in hospitals until the twentieth century. Trachoma has since been driven back by clean water, washed faces and one dose of a drug.

The harm is large. In East Africa a quarter of the ulcers of the clear front of the eye have followed an old eye remedy. Black eye paint that holds lead has poisoned children.

The book on the body. For blindness from the missing vitamin the form is the carrier. The first treatment, the vitamin, lies at the Chain layer. The book calls it “arguably the single highest-return simple intervention in the book”: a capsule that costs a few cents, given twice a year. For trachoma the form is the unread, and the scar of the lid is the later seam (Konstapel 2026c).

Read with the Net. Liver against the dusk is the second rule of cure in its purest form. A carrier is missing, and it is restored.

The Chinese reason deserves a note. Their books hold that the liver opens into the eyes, and they gave liver for weak eyes on that ground. The reason belongs to a scheme of correspondences that chapter 46 described. The remedy was right. A true remedy can hang on a reason that no one can test.

33. The failing ear

The illness. The hair cells of the inner ear die with age and with noise, and they do not grow back. More than four hundred million people hear so badly that it disables them. Many of them also hear a ringing or hissing that has no outer source. The hospital offers a hearing aid, and for the ringing a training in living with it. Children have another illness of the ear: a painful infection behind the drum, which mostly ends by itself.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	Ringing ears	The hand of a ghost	33
China	Ringing and deafness. A full kind and an empty kind	Fire of the liver or phlegm that rises; or a weak kidney, since the kidney opens into the ears	47
India	The sounding ear; the deaf ear	Wind in the channels of sound	59
Navajo	Deafness	One of the troubles that the masked gods send	19

How it was recognised. The Chinese physician asks how the ringing began and how it sounds.

	The full kind	The empty kind
Onset	Sudden	Slow, over years
Sound	Loud, like thunder or the tide	Low, like the cicada
Pressure on the ear	Makes no difference	Eases it
The patient	Red face, anger, headache, a string-like pulse	Old or worn, with a weak back and dizziness
Treatment	To clear and bring down: Gentian Decoction to Clear the Liver	To build the kidney: Six-Ingredient Pill with Rehmannia, with additions

What was done. Indian medicine fills the ear with warm oil, as a treatment and as part of the daily regimen of the old. Chinese medicine needles round the ear and on the vessel of the kidney. Folk medicine in many countries drops warm oil with garlic into an aching ear.

What has been measured. For the ringing, nothing that is taken by mouth has helped. The leaf of the ginkgo tree, the best-selling plant for it, did no better than a dummy in the trials. Needling has not been shown to help.

For the aching ear of a child, drops of plant oils with garlic eased the pain as well as numbing drops in an Israeli trial of 103 children. Most such ears heal without any drug.

Warm oil softens wax, and wax is a common and curable cause of a dull ear.

The book on the body. For the ringing the form is the wrong closure. The book reads a sound “that has no outside source” as a stable false state that is taken for real. Loss of hearing lies beneath it. The hospital offers relief only. The first treatment, a training of attention, lies at the Phase layer. For deafness of age the form is drift, and the first treatment is an aid, at the Mesh layer. For the infection of the child the form is the unread. The simple means are a painkiller and waiting (Konstapel 2026c).

Read with the Net. Chapter 5 took perceiving as a seam that closes. The ringing ear closes on a tone that no one offers. It is the plainest wrong closure in the senses.

The Chinese division fits what the hospital finds. The sudden, loud kind goes with noise and with illness of the ear. The slow, low kind goes with age. Their kidney, which holds what a person was given at birth and uses up in life, is their name for drift.

83. Mind and spirit

What this chapter covers

The chapter takes nine entries: madness, melancholy, fear and the lost soul, possession, sleeplessness, the falling sickness, craving, grief, and the fading mind of old age.

This is the ground on which the old medicines and the hospital differ most. The hospital seeks the illness in the brain and treats it first with a drug. The old medicines seek it also between people, and between the two halves of the world that chapter 6 described. In the atlas of the book on the body, nearly all of these illnesses have one form: the wrong closure. For most of them the book expected a first treatment at the layer of rhythm, and found a tablet.

34. Madness

The illness. The hospital's name is psychosis. The patient hears voices that no one else hears and holds beliefs that nothing can shake. His speech and his conduct fall apart. In its lasting form, schizophrenia, it begins in youth and strikes about one person in three hundred. Drugs that were found in the 1950s quiet the voices in most patients. They do not cure, and many patients stop them.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	States of the mind, listed with the seizures	The hand of a god or a ghost	33
Greece	Mania; melancholy with fixed belief; frenzy with fever	Yellow or black bile that has reached the brain	41
China	Withdrawal and mania	Phlegm with knotted *qi*; phlegm with fire. Strong feeling begins it	54

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	*Unmada*, the wandering of the mind, in five kinds	Each fault, all three, or a seizer from outside. It strikes a weak mind after grief, fright or a great wrong	59
Yoruba	The raving madness and several quieter kinds	Sorcery, a broken taboo, an offended orisha, the person's own head, or inheritance	29
Tibet	Madness from seizure by spirits; from wind in the channel of life		63
The shaman's world	The illness of one who is called and refuses; the theft or loss of the soul; an intruder		9, 10, 21

How it was recognised. The old descriptions agree with each other and with the hospital. The Indian books sort by the fault. In the kind of wind, the patient laughs, sings and dances out of place, talks without end and wastes away. In the kind of bile he is angry, threatens, runs about and seeks the cold. In the kind of phlegm he is silent, eats little, sleeps much and wants to be alone.

The Chinese books make two kinds of the same range.

	Withdrawal	Mania
Conduct	Silent, dull, muttering to himself; weeps and laughs without cause	Shouts, curses, climbs, strips, strikes; does not sleep or eat for days
Reading	Phlegm and knotted *qi* cloud the heart	Phlegm and fire harass the heart

	Withdrawal	Mania
Treatment	To move the *qi* and clear the phlegm	To purge with rhubarb; to bring the fire down

Two peoples of this book say plainly that not every such state is an illness. Chapter 10 told how a Zulu diviner is expected to tell madness from the call of the ancestors. Chapter 9 gave the comparison of the shaman with the patient. The shaman goes and returns at will, and he serves his people. The patient cannot return.

What was done.

Tradition	Treatment
Greece	A purge of hellebore. A later school asked for a quiet, light room, soft speech, music, travel and work
The Islamic world	A ward of the hospital, with baths, music and running water
China	Purging for mania; needles at thirteen points that an old book reserves for this illness; in one school, a feeling roused to master another feeling
India	Cleansing; clarified butter kept for ten years; the root of the snakeroot; counsel and the rousing of the opposite feeling; offerings. The books also order fright, bonds and a dark room
Yoruba	The patient lives for months in the healer’s compound. A decoction of a root brings deep sleep, again and again. Sacrifice, and a rite of discharge at the river
South India	A stay at a temple or a shrine

What has been measured. Chapter 28 gave the root. Yoruba healers and Indian physicians used two plants of one genus for madness. The Indian plant gave psychiatry its first effective drug in 1952.

Chapter 29 gave three counts. A psychiatrist who watched the Yoruba healers in the 1950s judged that they did well with sudden, florid states and poorly with slow, lasting ones (Prince 1964). The World Health Organization followed patients in nine countries from 1968 and found a better course in the poorer ones. And in 2020 a trial in Nigeria and Ghana joined

health workers to the healers. The patients of the joined care had fewer signs of illness after six months, at low cost (Gureje 2020).

Chapter 60 gave the Indian temple at which patients simply live for six weeks. Their scores fell by a fifth (Raguram 2002).

Two newer findings bear on the old view. American, Ghanaian and Indian patients were asked about their voices. The Americans heard strangers who threatened and commanded. Many of the Ghanaians and Indians heard kin or a god, who scolded or advised, and they did not always suffer from them (Luhrmann 2015). In London, patients spoke with a moving image of their voice on a screen, and learned to answer it. After twelve weeks the voices were fewer and weaker than after supportive talk.

The harm is plain. Chapter 70 and section A9 gave the chains: at shrines, in prayer camps and in the homes of families who know no other way.

The book on the body. The form is the wrong closure. The book reads the voices and the fixed beliefs as a closed wrong reading that is held as true. Frame is a close second, since the illness is largely inherited. It can be held in check. The first treatment lies at the Chain layer, where the book's form had led it to expect the layer of rhythm. As simple means the book names the family: less blame and less hovering in the household lower the relapses (Konstapel 2026c).

Read with the Net. Chapter 4 named this form with the old words: a spell, a soul that has settled elsewhere. A reading has closed, and the body defends it as true.

The old medicines ask a question that the hospital does not ask: who speaks? Chapter 7 gave the reason for taking the question seriously without answering it. People in every age have met what is not themselves, in four figures, and have come back changed. The same chapter named the shadow: control, within the same forms. The old healers place madness there. It is a meeting without return.

The count of voices in three countries, and the trial of the image on the screen, suggest that the bond with what is heard matters to the outcome. That is as far as the evidence goes.

35. Melancholy

The illness. The hospital's name is depression. For weeks or months the patient is low, takes pleasure in nothing, sleeps and eats badly, blames himself and may wish to die. About one person in twenty has it in any year. Tablets and talking treatments each help about half of the patients. It often returns.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Unani	Melancholy: fear and sadness without a cause	Black bile that has risen to the brain. A second kind rises from the organs under the ribs	41
Unani	Passionate love, an illness of the head	A fixed image of the beloved	41
China	Constraint	Knotted *qi* of the liver, from wishes that are not met. Later fire, phlegm, and a heart that is not fed	54
India	Dejection, which the books call the first of all that makes illness worse	Loss, wrong done or suffered, and a mind in which darkness rules	
Tibet	Wind in the heart	Grief, brooding and want	
Korea	The knot of grief and resentment that has had no outlet	Wrongs swallowed for years	15
The shaman’s world	A person whose soul has gone	Fright, grief, homesickness	21

How it was recognised. A Hippocratic aphorism gives the rule in one line. If fear and sadness last a long time, it is melancholy. Greek physicians of the second century added that the same patient may at another time be wild with joy.

The Chinese physician reads the knot by where it shows.

Pattern	Signs	Formula
Knotted *qi* of the liver	Low spirits, sighing, a tight chest, pain under the ribs, irregular periods	Free and Easy Wanderer Powder; Escape Restraint Pill
Phlegm and *qi* in the throat	The feeling of a plum stone in the throat that cannot be swallowed or brought up	Pinellia and Magnolia Bark Decoction
A heart that is not fed	Weeping without cause, a mind that drifts, yawning and stretching	Liquorice, Wheat and Jujube Decoction
Heart and spleen both weak	Brooding, a poor memory, a pale face, no appetite, broken sleep	Restore the Spleen Decoction

The Unani physician had a test for the illness of love. He laid his fingers on the pulse while names were spoken, and watched for the name at which it leapt. Chapter 43 told the story.

What was done.

Tradition	Treatment
Greece	Regimen: baths, light food, wine in measure, music, travel, and talk that neither flatters nor scolds
India	Counsel; the company of friends; good news; oil poured on the forehead; the root of withania
Tibet	Warm, rich food; a warm and dim room; nutmeg; fire on the points of wind; the company and pleasant talk of friends
China	By the pattern. Needles on the vessel of the liver
Persia	Saffron, which the books call a gladdener of the heart
Europe	St John’s wort. An English book of 1621 on the whole subject ends with six words: be not solitary, be not idle

Tradition	Treatment
Zimbabwe today	A talk with a trained grandmother on a bench outside the clinic

What has been measured. Section A6 gave St John’s wort. In twenty-nine trials it did as well as the tablets for mild and middling cases, with fewer unwanted effects (Linde 2008). Saffron has done the same in small Persian trials.

Section A8 gave exercise, which does as well as tablets or talk (Noetel 2024), and bright light in the morning. Section A7 gave the trial of the mushroom compound.

A British trial gave 755 patients twelve sessions of needling, or of counselling, beside their usual care. Both groups were less depressed after three months than those with usual care alone.

In Zimbabwe, grandmothers were trained to talk through the troubles of a patient in six sessions on a wooden bench. After six months, one in seven of their patients was still depressed, against half of those with usual care (Chibanda 2016).

The book on the body. The form is the wrong closure: a fixed mood. The book notes that no cause in the chemistry of the brain has been established. The illness can be held in check. The first treatment lies at the Chain layer, and the book’s form had led it to expect the layer of rhythm. Of exercise the book says: “This is the clearest case in the chapter of a simple means with trial evidence comparable to medication.” It adds that treating sleeplessness lowers new depression (Konstapel 2026c).

Read with the Net. Chapter 4 gave the form its plain name: a mood that will not lift. The body’s own return now works for the low state.

What helps, across the traditions and in the trials, is of one kind. Movement, light, sleep at the right hour, company, music, and a person who listens are all rhythm and surround. The English author of 1621 and the grandmothers of Harare give the same two rules.

36. Fear, fright and the lost soul

The illness. The hospital knows several illnesses of fear. In one the patient worries about everything, all day, for years. In another, sudden attacks of terror come with a racing heart. In a third, a person who has lived through violence or disaster keeps living it again, in the day and in dreams, and is always on guard. Together they strike about one person in twenty-five in any year. The hospital’s first treatment is a talking treatment in which the patient goes back, step by step, to what he fears.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
The Andes and Mexico	Fright	The soul has jumped out at a shock: a fall, a dog, thunder, a death in the house	17, 18
Hmong, Thai, Lao, Khmer	The soul that has left	A fright, an illness, a journey	15, 70
Aboriginal Australia	The spirit that has shifted from its seat	Fright, grief, homesickness	13
Tibet	The life principle frightened out or stolen	A shock; a spirit	62, 64
China	Fright; fear	Fright throws the *qi* into disorder. Fear makes it sink. The heart and the gallbladder are timid	48
Greece	Fear without a cause, a part of melancholy	Black bile	41

Chapter 21 treated soul loss as one of the great illnesses of the old world. It is named from the Andes to Laos, and the signs are everywhere the same.

How it was recognised. The person is present and not present. He startles, sleeps badly and wakes from dreams. He eats little, has no strength and takes no part. A child cries at night and does not grow.

The Andean healer feels the pulse. A racing or jumping pulse without fever points to fright. The Chinese physician finds the same in a child, with a bluish shade between the brows.

The healer then asks when and where it happened. That question is the centre of the diagnosis.

What was done.

Tradition	Treatment
The Andes	The healer goes at night to the place of the fright with the patient's clothes. He calls the soul by name, and walks back without turning round, ringing a bell and trailing the clothes
Mexico	The patient is swept with herbs and with an egg. The soul is called, with a pinch of earth from the place
Hmong	The shaman rides out after the soul and bargains for it. At the door a soul-caller calls it home
Thai, Lao, Khmer	An elder chants an invitation to the soul. Cotton threads are tied round the wrists to hold it in
Tibet	A rite that calls the life principle back
China	For a child, the mother calls its name at the door at dusk. For an adult, Warm the Gallbladder Decoction; minerals that settle the spirit; a needle at the wrist
The Plains and the Navajo	The returning warrior is cleansed before he comes home: by the sweat lodge, or by a chant against the ghosts of the enemy dead
The Pacific	Kava

What has been measured. The illness is real by the hospital's own measures. Chapter 18 gave the study of three Mexican communities. People with fright had more bodily disease than their neighbours. Seven years later a number of them were dead, and none of the comparison group (Rubel 1984).

Of the remedies, kava is the best tested. In the first trials it calmed fear better than a dummy. A later and larger trial did not find this, and rare injury to the liver has been reported, as chapter 70 told. An oil of lavender in a capsule calmed fear better than a dummy in German trials (Kasper 2010).

The rites of return for soldiers have had one small trial. Chapter 22 gave it. A handful of veterans with lasting effects of war were treated by native healing, and their scores fell (Wahbeh 2017).

The hospital's own best treatment for the illness after terror is a return to the event in memory, in the company of a helper. Section A7 gave the trials.

The book on the body. For lasting worry the form is the wrong closure. The first treatment lies at the Phase layer, as the form had led the book to expect. For the illness after terror the book adds a second form: the unread. The event "stays unread", and the patient lives it "in the present". With treatment that goes back to the event, the book counts the illness as curable. As simple means it names other people: "Social connection and restored social role are among the most consistent modifiable predictors of recovery" (Konstapel 2026c).

Read with the Net. The law of the unread says that an error stays until it is undone at its place. The book on the body puts it more sharply: only a change at the place of the error closes the ring.

The old healers act on that law to the letter. They ask where it happened. They go there, at the hour when it happened if they can. They call the person back from that place and bring home a pinch of its earth. The hospital's treatment does the same in memory.

Chapter 6 read the lost soul in another way as well: as a slipping of the two halves of a person against each other. Its remedy, the chapter said, is a calling back and a bringing into step. Chapter 76 left open which reading holds. The rites serve both.

37. Possession

The illness. A person's conduct, voice and will are taken over for a time by another, as he and his people see it. The hospital has a name for the state when it is unwanted and causes suffering. It does not count the state as an illness when it comes within a rite and by intention. An American survey of 488 societies found trance within a rite in nine out of ten.

Names and causes in the old medicines.

Tradition	Who takes hold	Chapter
Mesopotamia	A ghost of the dead who has no one to feed it; a demon	34
India	The seizers: gods, ancestors, wandering dead and others, each known by the conduct that it brings. Nine seize children	59
Tibet	Elemental spirits, each with its signs	63

Tradition	Who takes hold	Chapter
Ethiopia, Sudan, Egypt	A spirit of the *zar* kind, which takes women above all	21
From Congo to the Cape	An ancestor or a foreign spirit that wants to be served	30
Korea	The gods who descend on the woman they have chosen	10, 15
Haiti, Cuba, Brazil	The spirits and the orisha, who mount their servants	30
The Islamic world	The jinn	42
Christian Europe	A demon	A9

How it was recognised. The Indian books give a list for each seizer. One who is seized by a god is clean, calm, sleeps little and speaks well. One who is seized by a wandering dead man is restless, eats without measure, and goes about unclothed. The healer reads the conduct, and from it the kind of being and what it wants.

In Africa and Korea the first sign is an illness that no treatment helps. The diviner then finds that a spirit is asking for the person.

What was done. There are two answers, and they are opposite.

The answer	Where	What is done
To drive out	Mesopotamia; Christian and Islamic lands; much of India	The being is named, commanded, threatened or bought off, and sent away. The Babylonian ghost is given food and drink for the road

The answer	Where	What is done
To make peace	The *zar* lands; southern and central Africa; Korea; the Caribbean and Brazil	The being is asked its name and its wish. It is given a day, a dress, a song and a dance. The patient joins the society of those whom it has taken, and in time becomes a healer

Chapter 21 gave the saying for the second road. The society of healers is the society of the healed.

What has been measured. No trials exist. The studies are those of anthropologists. Chapter 21 gave the *zar* societies of the Sudan, in which women who had no voice at home found one (Boddy 1989). Brazilian mediums who enter trance every week have been examined by psychiatrists. They were found to be in good health of mind.

The harm lies on the first road. Section A9 and chapter 75 gave the deaths under exorcism.

The book on the body. The book has no entry. Chapter 4 placed possession under the wrong closure, and chapter 23 read it so: a state that is closed and stable, and is not the person's own.

Read with the Net and VALIS. Chapter 7 set out five steps of a meeting: loosening, examination, exchange, showing and return. Possession, as an illness, is a meeting without the fifth step. The other is there and does not leave, and the person does not come back.

The two roads then differ in how they reach a return. The first compels it. The second gives the meeting a form: a fixed day, a fixed place, a beginning and an end. In the language of the Net, the second road gives rhythm to what was a wrong closure. What had hold of the person all the time now comes when it is called and goes when the rite ends.

Chapter 7 named the shadow of every meeting: control, within the same forms. Chapter 72 found that the healer of the oldest medicines is formed by a passage of his own. Here the two meet. The same seizure is the ruin of one person and the making of another. The old medicines hold that the difference lies in whether the meeting is given a form.

38. Sleeplessness

The illness. The patient cannot fall asleep, or wakes in the night and lies awake, on most nights and for months, and is worn by day. About one adult in ten has it. Sleeping tablets work for some weeks. They then lose their effect, the body comes to need them, and the old fall and break their hips. The hospital's first treatment today is a training in conduct.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece	Wakefulness. Sleep and sleeplessness beyond measure are both bad, says an aphorism	Dryness and heat of the brain; care	38
China	Not sleeping	The yang does not enter the yin at night. Heart and spleen are both weak; heart and kidney do not meet; fire of the liver; hot phlegm; a timid heart and gallbladder	46, 54
India	Loss of sleep	Wind and bile, roused by worry, grief, anger, fasting, overwork and an uneasy bed	
Unani	Wakefulness	A dry temperament of the brain	40
Mexico	The sleeplessness of long worry	Too much thought	18

How it was recognised. The Chinese physician asks what kind of bad night it is.

Pattern	The night	Other signs	Formula
Heart and spleen both weak	Hard to fall asleep; many dreams; easy waking	Brooding, a poor memory, a pale face, tiredness	Restore the Spleen Decoction

Pattern	The night	Other signs	Formula
Heart and kidney do not meet	Restless and hot at night; little sleep	Palpitations, a dry mouth, a weak back, heat in the palms	Coptis and Ass-Hide Glue Decoction; Heavenly Emperor’s Pill for the Heart
Fire of the liver	Cannot sleep after anger; wild dreams	A red face, a bitter taste, headache	Gentian Decoction to Clear the Liver
Hot phlegm	Heavy, broken sleep	A full chest, a heavy head, a greasy yellow tongue	Warm the Gallbladder Decoction
A timid heart and gallbladder	Wakes with a start; fearful dreams	Easily frightened, shy	Drugs that settle and calm
Weak blood of the liver	Wakes in the small hours and lies thinking	Dry eyes, irritable weakness	Sour Jujube Seed Decoction

The second pattern says what the hospital calls a body that is too wakeful at night. The fire of the heart, which should sink, stays above. The water of the kidney, which should rise to cool it, stays below.

What was done.

Tradition	Treatment
India	Warm oil rubbed on the head and the soles of the feet at bedtime. Warm milk. A soft bed, pleasant scents and sounds, a mind at ease. The root of withania, whose Latin name means bringer of sleep
China	By the pattern. Needles at the wrist and below the inner ankle. In one famous case, a physician cured a woman who had not slept for two years by making her angry

Tradition	Treatment
Unani	A warm liquid poured in a steady stream on the forehead. Lettuce seed. The poppy, with care
Greece and Rome	The poppy; lettuce; a warm bath; rocking; the sound of water
Europe	Valerian root; hops
The Pacific	Kava in the evening

What has been measured. The plants have done little in trials. Valerian has come out both ways. The seed of the sour jujube improved sleep in Chinese trials of poor quality.

Warmth does something. A warm bath or a warm foot bath one to two hours before bed shortens the time to sleep by about ten minutes, in a review of many small studies.

The slow Chinese exercise was tested in California in women who slept badly after cancer. It did as well as the hospital's training, and the gain held for a year.

Section A8 gave light in the morning, which sets the clock.

The book on the body. The form is the wrong closure, with direction as the second form. The book reads a learned state: the bed has become tied to waking. Treated by the training, it counts the illness as curable. Treated by tablets, it is only held in check. The first treatment lies at the Phase layer. The book gives its two working parts as plain instructions. Stay in bed only as long as you sleep, and lengthen the time slowly. Leave the bed when you do not sleep (Konstapel 2026c).

Read with the Net. Sleep is the body's place in the day. The book on the body holds that the day is laid on the body from outside and that the body must put its sleep in it.

The Chinese image says the same in its own terms. The yang must enter the yin at night. What is active must go in. The Indian rule prepares the night with oil, warmth and a quiet mind. It acts on the hour before sleep, which is where the hospital's review found the bath to work.

The hospital's training and the tablet stand to each other as the second rule of cure says. The training restores. The tablet adds, and the body answers by needing more.

39. The falling sickness

The illness. In epilepsy the cells of the brain fire together in one great rhythm. The patient cries out, falls, stiffens and jerks, and wakes confused. Smaller attacks show as a stare or a twitch. Fifty million people have it. Daily drugs keep seven in ten free of attacks. Three quarters of the patients in poor countries get no drug at all.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The falling sickness, with a tablet of its own	The hand of a god, a ghost or a demon	33
Greece	The sacred disease. One Hippocratic author denies that it is sacred	Phlegm that closes the passages of the brain; inherited	38
China	The falling illness; the bleat of the sheep	Wind and phlegm that cloud the heart. In a child, a fright of the mother while she carried it	54
India	*Apasmara*, the going away of memory, in four kinds	The faults that close the channels of the heart and mind, in a person troubled by worry and grief	59
Tibet	Seizure sent by the spirits of the planets		63
Yoruba	The falling sickness	Sorcery; in the common belief, the foam of another sufferer	29
Hmong	The spirit catches you and you fall down	A soul that has fled; also a sign that the person may become a shaman	15

How it was recognised. The Babylonian tablet is the oldest full description of this illness. Chapter 33 gave it. The eyes turn to one side, the hands clench, foam comes to the mouth,

and the patient does not know where he is. The tablet tells attacks by day from attacks in sleep, and notes the feeling that announces an attack.

The Indian books sort by the foam and the visions. In the kind of wind the patient trembles and grinds his teeth, and sees dark shapes before he falls. In the kind of bile the foam is yellow and he sees fire. In the kind of phlegm the foam is white, the attack is long, and he sees white shapes.

The Greek author who denied the gods wrote the sentence for which the treatise is known. This disease is no more sacred than any other, he says. It has a natural cause, and men call it divine because they do not understand it.

What was done.

Tradition	Treatment
Mesopotamia	Rites, amulets and salves, by the being whose hand it is
Greece	Regimen by the season. The author scorns the purifiers who forbid baths and black clothes
Rome and Europe	The root of the peony, hung round the neck. Mistletoe. Appeals to a saint. Fasting and prayer
China	Drugs that still wind and clear phlegm: gastrodia tuber, uncaria stem, acorus rhizome; scorpion and centipede
India	Cleansing; old clarified butter cooked with bacopa and sweet flag. The patient is kept from fire, water and heights
Tibet	The golden needle, heated on the crown of the head
India, in the nineteenth century	Hemp, which a British physician at Calcutta took from Indian practice for fits

What has been measured. Fasting is the old remedy that lasted. The gospel has it, and so have the Greek books. American physicians starved children with the illness in the 1920s and saw the attacks stop. They then devised a diet of fat with almost no starch or sugar, which puts the body in the same state without hunger. A British trial took 145 children whom drugs

had not helped. On the diet the attacks were halved in 38 in a hundred, against 6 in a hundred of the others.

Section A6 gave the compound of hemp that lowers the fits in two grave epilepsies of childhood (Devinsky 2017).

The Chinese and Indian plants have not been tested in good trials. Needling does nothing.

The harm is of a special kind. Where the foam is held to pass the illness on, nobody dares to pull a fallen child from the cooking fire. Burns are the mark of the illness in much of Africa.

The book on the body. The form is the wrong closure. The book reads “abnormal excessive synchronous” firing as a stable wrong state into which the brain falls. A scar in the brain, which is a seam, and inherited faults are second forms. On drugs the illness is held in check in seven of ten. An operation cures more than half of one common kind. The first treatment, a drug, lies at the Chain layer, where the form had led the book to expect the layer of rhythm. For prevention the book names good care at birth and the control of the pork tapeworm. The cysts of that worm in the brain are the largest single cause in the world that can be prevented (Konstapel 2026c).

Read with the Net. Chapter 5 described locking as the way in which living rhythms meet. Section A10 added that health shows in variation. A seizure is locking without limit. The whole brain falls into one step, and nothing is read while it lasts.

The fast and the diet do not act on the attack. They change the state of the body in which attacks arise. That is the first of the six rules of chapter 5: the answer of a living medium depends on its state.

The old name deserves respect beside the Greek denial. Chapter 10 found that fainting and falling are among the first signs of a call in several peoples. The Hmong hold both views at once. The fallen child is ill, and may also be chosen.

40. Craving

The illness. A person cannot stop taking what harms him: drink, tobacco, the poppy and its descendants, and others. He needs more for the same effect, and he falls ill when he stops. Tobacco and alcohol together kill about ten million people a year. The hospital helps with drugs that take the place of the first, and with groups and talk.

Names and causes in the old medicines. Most old medicines knew the plants and not the illness. The leaf of the coca bush was chewed in the Andes for eight thousand years without the ruin that its purified compound brought. Tobacco was the oldest sacred plant of the Americas and was taken in rites. Kava, betel and peyote were held in the same way, by rule and in company. The illness came with distilled spirit, with purified drugs, with the needle and with the cigarette.

Tradition	Name or kind	What the tradition says	Chapter
India	The illness of wine	Wine has the qualities of poison in a milder degree. Taken by rule it is like nectar. Taken without rule it destroys	
Greece	Drunkenness and its harms	A matter of regimen	
China	The opium of the nineteenth century	A foreign poison, forced on the country	
The Andes, the Amazon, the Plains	The sacred plants	Teachers, to be met with a diet and in a rite	16, 17, 19

What was done.

Tradition	Treatment
India	The illness of wine is treated with wine, in falling measure, with milk and with cooling foods. The books explain: what was caused by wrong use is undone by right use
The native nations of North America	The sweat lodge and the peyote meeting, used today in centres for the addicted. A Seneca prophet founded a movement of abstinence in 1799
The fellowships, from 1935	Meetings of people who have the illness themselves. A helper who has been through it. A turning to a power greater than oneself
Gabon	The root bark of iboga, taken once, in a night watched by others
The Amazon	The vine brew, within a stay of months at a centre

Tradition	Treatment
Thailand	A vow made once for life at a monastery, with a herbal drink that brings vomiting, and steam
Eastern Europe	The leaves of the golden rain tree, smoked in place of tobacco

What has been measured. The fellowships have been tested most. A review of twenty-seven studies found that they keep more people from drink after a year than the usual talking treatments do, and at no cost.

The tree of Eastern Europe gave a drug. Soldiers smoked its leaves when tobacco ran out. A Bulgarian firm sold the compound of its seeds as a tablet from 1964. In a trial of 2011, three and a half times as many smokers were still free of tobacco after a year with the tablet as with a dummy. The hospital's best-known drug against smoking was modelled on it.

Chapter 30 gave the African root. A young American who used heroin took it in 1962 and found that his craving had gone. In a follow-up of patients in New Zealand, the use of drugs was lower a year after one treatment (Noller 2018). The root can stop the heart, and people have died of it.

Section A7 gave the trial of the mushroom compound for heavy drinking. The days of heavy drinking were less than half as many as with the dummy (Bogenschutz 2022).

Needles in the ear did no better than sham needles for cocaine (Margolin 2002).

The book on the body. The form is the wrong closure. The book reads dependence as the body's own return, closed on a wrong form. The illness can be held in check. The first treatment lies at the Chain layer, and the form had led the book to expect the layer of rhythm. As simple means it names an empty house and a changed day: "removing alcohol from the home and changing routine". It adds the fellowships, which are "free at point of use" and have been shown to work (Konstapel 2026c).

Read with the Net. Out of a wrong closure there is no way that does not pass through the open. For the addict the open stretch has a name: withdrawal. Every cure must lead through it.

The Indian rule of wine in falling measure is the fourth rule of cure: taper slowly. The hospital does the same when it gives a milder relative of the poppy by mouth.

The fellowship is the oldest figure of this book in modern dress. Chapter 72 counted, as its sixth point, a healer who is formed by a passage of his own. And its turning to a greater power, like the night with the root and the meeting with the cactus, is an appeal to the other half. In the trials of the plants, the patients who reported the fullest meeting did best. That is a finding of the hospital's own researchers.

41. Grief

The illness. Grief is not an illness. The hospital has a name only for grief that does not ease after half a year or more and keeps a person from living. About one mourner in ten is in that state. Grief also harms the body. In the first months after the death of a husband or a wife, the one who is left dies more often than others of the same age.

Names and causes in the old medicines.

Tradition	What is said	Chapter
China	Grief dissolves the *qi* and injures the lung	48
India	Grief is a cause of illness in its own right. It can bring a flux, a fever and madness	59
Korea	The dead who were not mourned, or who died with a grudge, make the living ill	15
Aboriginal Australia	Grief makes the spirit shrink. The name of the dead is not spoken	13
The Andes	A mother’s grief spoils her milk	17
The shaman’s world	The dead draw the living after them	16, 21

Two matters are joined in these sayings. The mourner is in danger. And the dead one is not yet where he belongs. Most old medicines treat both at once.

What was done. Every people of this book has a mourning with fixed steps and a fixed end. Chapter 72 counted this as its thirteenth point: a term and a close.

People	The term
Jewish	Seven days at home; thirty days; a year. Then the stone is set
Hindu	Thirteen days, closed by a meal; then a rite each year

People	The term
Chinese	Rites every seventh day until the forty-ninth; then the yearly sweeping of the grave
Malagasy	Years later the bones are taken out, wrapped anew and danced with
Mexican	Each year the dead are fed at home for two nights and sent back
Babylonian	Food and water for the dead of the family each month

The mourner is not left alone during the term. He is fed by others, and he is told what to wear, what to say and when to stop.

What has been measured. Help for every mourner does nothing that can be measured. Most people come through by themselves and with their own. Help for those who are stuck does work. In an American trial, a treatment made for lasting grief helped half of the patients, against a quarter of those who had ordinary talks.

One finding bears on the second matter. A Welsh physician asked every widow and widower in his district what they had met since the death. Nearly half had seen, heard or felt the presence of the dead husband or wife, some for years. Most had told nobody. Most found it a help (Rees 1971).

The book on the body. The book has no entry.

Read with the Net and VALIS. Chapter 1 called the closure of two a meeting. A marriage of forty years is such a closure. When one half is gone, the other stands open, and chapter 1 said what an open window does: it passes on as tension.

The old mournings give the open stretch a length. They do not hurry it and do not let it run on. The rule of silence after the act, which chapter 5 gave, is here stretched over a year. Chapter 74 listed the test that would show whether a marked close helps. It has not been run.

The Welsh count belongs with chapter 7. The dead are met, by ordinary people, without a rite. The old medicines assume it. They feed the dead and send them on, and they treat a mourner whose dead will not leave.

42. The fading mind

The illness. In dementia a person loses memory, then judgment, then speech and the knowledge of his own kin. More than fifty-five million people have it. Age is the chief cause. The hospital’s drugs slow the loss a little for a time. About two cases in five could be delayed

by what is done earlier in life: schooling, a treated blood pressure, hearing, movement and company.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Rome	The second childhood	The cold and the dryness of old age	41
China	Dullness	The essence of the kidney is used up, and the sea of marrow is no longer filled. Phlegm clouds the openings of the heart	
India	The loss of memory and understanding in the decade of wind	Wind, which rules the last part of life	57

Few old books treat it as an illness. It is the last stage of a life, and the old kept a place and a task.

What was done.

Tradition	Treatment
India	Drugs that feed the understanding: bacopa, a creeping bindweed, the stem of tinospora, liquorice, clarified butter. They are taken for years, from middle age, as part of the rule for a long life
China	Acorus rhizome with polygala root, to open the heart; ginseng
Rome	An old man must use his mind daily, a Roman author wrote. His speaker learned Greek in old age
Europe and East Asia	The leaf of the ginkgo tree

What has been measured. Two of the hospital’s four drugs for this illness came from plants of old use. One was drawn from the snowdrop, after a report of its use by villagers in the

Balkans. The other was modelled on the compound of the ordeal bean of Old Calabar, which chapter 30 described. A Chinese club moss, a folk remedy for bruises, was found in the 1980s to hold a compound of the same action.

The ginkgo leaf was tested in 3,069 old Americans for six years. It did not prevent the illness (DeKosky 2008). Bacopa quickens attention in healthy adults, as chapter 60 noted, and has not been shown to hold off dementia.

A Finnish trial of 1,260 old people at risk gave half of them two years of guidance on food, exercise, training of the mind and care of the heart. Their thinking kept up a quarter better than that of the others.

Among forest farmers of the Bolivian Amazon, who walk all day and live among their kin to the end, about one old person in a hundred has dementia. In the rich countries it is one in ten.

The book on the body. The form is drift. Age is the chief factor, and the return falls behind. Deposits in the brain, which are seams, and failing vessels are second forms. The hospital offers relief only, except where a curable cause is found, such as a slow thyroid or a lack of one vitamin. For prevention the book names the control of blood pressure, and movement (Konstapel 2026c).

Read with the Net. Chapter 4 gave the law of drift. The return must come within a bound that is set by the size of the form. In old age it comes too late.

Nothing reverses that. Rhythm and surround slow it: the daily walk, the daily task, and people who expect an answer. The Roman author and the Bolivian count agree.

84. Women and children

What this chapter covers

In every old medicine the care of women in childbearing and of small children is a field of its own, with its own specialists. Most of them were women, and most of what they knew was never written down. The books that we have were written by men who had asked them.

The chapter takes six entries: the monthly course, barrenness, birth, the weeks after birth, the change of life, and the child that does not thrive. Three of the six are not illnesses. They are passages, and the old medicines treat them as such: with a preparation, a companion, a term and a close.

43. The monthly course

The illness. The hospital groups four troubles here. The period is painful. It is too heavy. It stays away. Or the days before it bring low spirits, anger and swelling. Most young women have pain with it, and for some it stops work or school. The hospital gives a painkiller, or a hormone that stills the cycle.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt and Greece	Illness from a womb that moves about, or that holds its blood back	The womb is dry and seeks moisture; the passage is closed	36
China	Painful periods; flooding and trickling; the stopped course	Knotted *qi* with standing blood; cold that congeals in the womb; heat in the blood; too little blood	54
India	Twenty illnesses of the womb	Wind above all, since wind moves the monthly blood downward	59

How it was recognised. The Chinese physician asks after five features of the period: its time, its amount, its colour, its thickness and its clots. He asks when the pain comes.

The pain	Other signs	Reading	Line of treatment
Before or at the start; swelling; eased when clots pass	Dark blood with clots; sore breasts; a short temper	Knotted *qi* and standing blood	To move the *qi* and the blood
Cold and gripping; eased by warmth	Scanty dark blood; cold limbs	Cold that congeals in the womb	To warm the womb: mugwort leaf, cinnamon
Dull, at the end or after	Pale, thin blood; tiredness; a pale face	Too little *qi* and blood	To build up: Four Ingredients Decoction; Eight Treasures Decoction
Burning, with a yellow discharge	Thick, dark red blood	Damp and heat	To clear

A period that comes early, heavy and bright red is read as heat. One that comes late, scanty and pale is read as cold or as lack.

What was done.

Tradition	Treatment
China	Four Ingredients Decoction as the base of nearly every formula for women. Motherwort, whose Chinese name means the herb that helps mothers. Chinese angelica root. Burning of mugwort on the lower belly. A point above the inner ankle where three vessels cross
India	The bark of the ashoka tree for heavy bleeding. The root of a wild asparagus. Warm oil on the belly. Rest and plain food on the days of bleeding
Greece	Fumigation of the womb with sweet and foul scents; warm baths; pessaries; marriage, as the cure for the stopped course of a girl

Tradition	Treatment
Europe	The fruit of the chaste tree; yarrow; lady’s mantle; fennel; a warm stone or bottle on the belly
Japan	Two Chinese formulas of the third century, which most Japanese women’s physicians prescribe today

Many peoples set the bleeding woman apart for some days. In the Indian books the days are a rest. Elsewhere they became a banishment. In the hills of western Nepal women were sent to sleep in a shed, and some died there of cold, of smoke or of snakebite. The custom was made a crime in 2017.

What has been measured. Warmth is the plainest result. A heated pad on the belly eased the pain as well as the standard painkiller in an American trial.

Ginger did as well as the painkiller in several small trials. The fruit of the chaste tree eased the troubles of the days before the period in a German trial. Half of the women were clearly better, against a quarter on the dummy.

A German trial of needling took 649 women with painful periods. After three months their pain was clearly lower than that of women who waited. No sham was used.

Chinese herbal formulas have been tried in many small Chinese trials. A review found them promising and the trials too weak to judge.

The book on the body. The form is direction. The book reads lost and irregular cycles as rhythms that have fallen out of their course. The carrier is the second form. Most of the troubles can be held in check, and some can be cured where a cause is found. Heat on the belly is among the simple means (Konstapel 2026c).

Read with the Net. The monthly course is the longest clear rhythm of the body. An illness of it is an illness of direction and phase.

The Chinese physician treats it so. He does not give one formula through the month. He moves the blood before and during the bleeding, builds up after it, and warms in the second half. That is the third rule of cure: match direction and phase. No trial has compared treatment by phase with the same drugs given without regard to it.

44. Barrenness

The illness. A couple who try for a year without a child are called infertile. One couple in six is. The cause lies with the woman, with the man, or with both in about equal parts. In many cases none is found. The hospital can restore the release of eggs with a tablet, open a tube, or bring egg and seed together outside the body.

Names and causes in the old medicines.

Tradition	Cause as the tradition gives it	Chapter
India	Four must be sound, as for a sprout: the season, the field, the water and the seed	
China	The periods are out of order; the womb is cold; the essence of the kidney is weak. In stout women, phlegm closes the womb	
Greece	The mouth of the womb is closed, turned or too moist; the seed is too cold	
Yoruba	A matter of the head that one chose before birth; of an offended orisha; of the companions of a child that is born and dies again	24, 29
Mesopotamia	A god, a ghost, or the demoness who hates mothers	33

Nearly every people laid the cause with the woman. The Indian and the Chinese books name the seed of the man as well.

How it was recognised. Egyptian and Greek physicians had tests. In an Egyptian papyrus the woman wets bags of barley and emmer with her urine each day. If the grain sprouts, she is with child. In a Greek test a clove of garlic is placed in the womb at night. If her breath smells of it in the morning, the way is open.

The Chinese physician reads the periods first. A saying of the women’s physicians runs: to plant the seed, first set the course in order.

What was done.

Tradition	Treatment
The Greek sanctuary	Women slept in the hall of the god and dreamed. Chapter 37 gave the stones on which their children are recorded
Yoruba	A consultation of Ifá, a sacrifice, and a visit to the orisha of the river, who gives children
India	Cleansing of both; clarified butter cooked with herbs for the woman; milk, clarified butter and the root of withania for the man; a rite at conception
China	First the periods are set in order. Then the womb is warmed with mugwort and cyperus, or the kidney is built up. For the man, a pill of five seeds
Mesopotamia	Stones worn at the waist; rites; salves

What has been measured. The Egyptian test was tried in 1963. The urine of women who were with child made the grain sprout in seven cases out of ten. The urine of men and of other women did not.

A Chinese physician of the fourteenth century wrote that stout women do not conceive because fat and phlegm close the womb, and that they must be made thinner. The hospital knows the same illness by another name. Women who have it conceive more often after they lose weight.

Needling has been tested in the hospital’s own setting. A trial in Australia and New Zealand gave 848 women real or sham needling round the placing of an egg in the womb. A child was born to 18 in a hundred of each group. A Chinese trial of 1,000 women with the illness of the stout found that needling did not raise the number of births.

Chinese herbs have been tried in many small trials, with claims of doubled rates of pregnancy. The trials are weak.

One finding of the hospital deserves a place here. Of couples in whom nothing is found, a good share conceive in the following year or two without any treatment.

The book on the body. The entry is mixed. The primary form is frame and copy, since most of the lasting cases come from errors in the egg or the seed. A scarred tube is a seam. A release of eggs that fails is a matter of direction. Many causes are curable. Where nothing is found, the book notes that waiting often ends the matter (Konstapel 2026c).

Read with the Net. The Indian sentence is the best diagnosis in this atlas. Season, field, water and seed are four different kinds of failure, and the book on the body has a form for each. The season is direction: the right day of the cycle. The field is the womb and its tubes, where a scar is a seam. The water is what feeds, which is the carrier. The seed is the frame and its copy.

The physicians of Sushruta's school did not know the egg. They reasoned from the farmer's field, and the four heads that they found are those of the hospital's own work-up.

45. Birth

The matter. Birth is not an illness. It can kill. Nearly three hundred thousand women die of it each year, almost all of them in poor countries. They die of bleeding after the birth, of fits with high blood pressure, of a child that cannot pass, and of fever. The hospital has an answer to each: a drug that closes the womb, a salt that stops the fits, the knife, and clean hands.

What the old medicines say.

Tradition	The danger and its source	Chapter
Mesopotamia	A demoness who hates mothers and snatches infants. A tablet of the handbook is given to difficult birth	33
Egypt	The mother is guarded by a dwarf god and a hippopotamus goddess, and gives birth on two bricks	
Greece	A Greek physician at Rome wrote the best ancient book on the subject, in the second century. He begins with the qualities of a good midwife	

Tradition	The danger and its source	Chapter
India	A hut is built for the birth in the ninth month. Women who have borne children attend. The books describe the wrong positions of the child and how to turn it	
China	A book of 1715 gives the whole art in six words: sleep, bear the pain, be slow to take the birth position	
Aztec	Midwives were a respected profession with a goddess of their own. A woman who died in childbirth was honoured as a fallen warrior	18
Hawai‘i	The mother squatted and was held from behind. The expert knelt before her and pressed the belly downward with oiled hands	68
Malay world	The village midwife cares for the woman from the seventh month until forty-four days after the birth	70

What was done. The common ground is large.

A companion. No people of this book let a woman give birth alone. A woman who has borne children stays with her from the first pain to the end.

Upright. The mother squats, kneels, stands holding a rope or a post, or sits on a stool or on bricks. The bed came from the French court of the seventeenth century.

The hands. The midwife rubs the belly and the back with oil through the last months and during labour. Mexican and Indian midwives turn a child that lies wrong, from outside, weeks before the birth.

Patience. The Chinese rule of six words forbids the mother to push early. The Greek book forbids the midwife to hurry.

Plants. European midwives gave a fungus of rye to strengthen the pains. Chinese midwives burned mugwort at the little toe to turn a child that lay with its seat down. After the birth they gave Generation and Transformation Decoction.

What has been measured. The companion is the best proved. In a review of twenty-six trials, women who had a companion throughout labour gave birth by themselves more often. They were cut less often, their labour was shorter, and they were more content.

Upright positions shorten the last stage and lower the use of instruments. They go with somewhat more loss of blood.

Burning mugwort at the little toe was tested in an Italian and Chinese trial of 260 women whose child lay seat down. At birth the head lay down in 75 in a hundred, against 62 in a hundred of the others. Later trials came out both ways, and a review judges that it probably helps.

The fungus of rye gave the hospital its first drug against bleeding after birth, in 1935.

The training of village midwives has been tested in Pakistan. In districts where they were taught clean delivery and when to send a woman on, the deaths of infants about the time of birth fell by three tenths.

The harm is the delay. A child that cannot pass will not pass by waiting, by rites or by pressure on the belly. And a cord that is cut with an unclean blade, or dressed with dung or ash as some customs ask, gives the newborn a deadly cramp.

The book on the body. For bleeding after birth the form is the carrier. The womb does not receive or does not read the signal to close. The illness is curable, and the first treatment lies at the Chain layer. The book calls the condition “unusually rich” in simple means and names the rubbing of the womb through the belly first. For the fits it names a cuff and a strip of paper that shows protein in the urine: “the detection technology for the entire condition” (Konstapel 2026c).

Read with the Net. Birth has the shape of the passages that chapter 7 described: a loosening from the day, a stretch that must be gone through, and a return. The old rule for it is the third and fourth rule of cure together. Match the phase of the body, and go at the pace of what lives.

The companion is the reader who meets. She does nothing to the body. The trials show that her presence alone changes the course.

The limit is as plain. Four dangers kill at birth, and three of them need what no village has. The old medicines are right about the ordinary birth and helpless before the other.

46. The weeks after birth

The matter. The womb closes, the milk comes, and the mother recovers. In the first six weeks she may bleed, take fever, or sink into a low state that the hospital calls depression after birth. One mother in eight has the last.

What the old medicines say. Almost every people sets the mother apart for a fixed time and cares for her.

People	The term	What is done
China	A month, sometimes forty days	The mother stays indoors and is kept warm. She does not wash in cold water or go into the wind. She eats chicken, ginger and sesame oil. Her mother or her husband’s mother does the work of the house
India	Forty-five days	Daily rubbing with warm oil; warm baths; the belly is bound; light, warming food
Malay world	Forty-four days	The midwife kneads the mother daily, binds her belly and lays a heated stone on it
Thailand, Cambodia, Laos	From a week to a month	The mother lies on a bed above or beside a low fire
Mexico	Forty days	Rest, the steam bath, the binding of the belly, warm foods only
Greece	About forty days	The books give thirty days of cleansing after a son and forty-two after a daughter
Jewish and Christian custom	Forty days, in Jewish law after a son	The mother returns to the house of worship when the term has ended

The number forty returns across peoples who had no contact. It stands on neither ladder of chapter 2. Chapter 73 met it once, in the forty tablets of the Babylonian handbook.

The reasons that are given differ. The Chinese say that birth empties the mother of *qi* and blood and leaves her open to cold. The Indians say that wind fills the space that the child has left. The Mexican midwife says that the bones have opened and must close. All say that an illness taken in these weeks lasts for life.

The fever. The Babylonians laid the fever that kills a mother in the days after birth to the demoness of chapter 33. In the hospitals of Europe it killed one mother in ten in the worst wards. A physician in Vienna showed in 1847 that the physicians carried it on their hands from the dead to the living. In the ward of the midwives, who did not open the dead, a third as many died. He was not believed.

What has been measured. For the low state after birth, support works. In a Pakistani trial, village health workers were trained to talk with mothers in sixteen visits. After six months a quarter of the mothers were depressed, against half of those with the usual visits.

The custom of the month has been studied in itself. The findings are mixed. Where the mother is truly rested and cared for, she is better off. Where the rules are a prison and the helper is felt as a guard, she is not.

The warmth has cost lives. Mothers who were wrapped in quilts in a closed room in the heat of summer have died of heatstroke. The fire under the bed has burned mothers and infants.

Section A8 gave the carrying of the infant on the skin, which lowers its death. Section A4 gave the stroking of infants born too early, who grew faster.

The book on the body. For the low state after birth the form is the wrong closure. The carrier is the second form, since the hormones of pregnancy fall away at once. The episode is curable. The first treatment, talk, lies at the Phase layer. The book says that the condition is “unusually well served” by simple means, and names talking treatment by trained lay people (Konstapel 2026c).

Read with the Net. The forty days are a term and a close, which chapter 72 counted as its thirteenth point. The body has gone through the widest opening of its life, and the return is given a length.

The old rule of chapter 5 applies as it stands. After the act comes rest, and the rest is part of the act. What the hospital sends home after two days, the old medicines keep for six weeks. The trials on depression after birth suggest that the old term was nearer the truth, and the studies of the month show the condition: the rest must be a rest.

47. The change of life

The matter. About the age of fifty the ovaries stop, and the periods end. In the years round it many women have sudden waves of heat, sweats at night, broken sleep and a changeable

mood. These pass in time. The bones grow thinner afterwards. The hospital gives the missing hormone for some years to women who suffer much.

What the old medicines say.

Tradition	What is said	Chapter
China	A woman’s life runs in sevens. At twice seven the monthly blood comes. At seven times seven it ends, and she can no longer bear	45
Greece	The courses end between forty and fifty. Gout and other ills of men may come after	38
India	The courses end at about fifty, when the time of wind begins	57

No old book describes the waves of heat as an illness. The end of the courses is a stage of life.

Later Chinese physicians did treat the complaints. They read them as the yin of the kidney running low, so that heat rises unchecked: flushes, sweats at night, a dry mouth, heat in the palms, restlessness. The formula is the Six-Ingredient Pill with Rehmannia with two cooling drugs added. A formula of Shanghai from the 1950s builds the yin and the yang of the kidney together.

The complaint is not the same everywhere. A Canadian anthropologist asked Japanese women of this age in the 1980s what they felt. One in eight had known a wave of heat, against one in three in North America, and Japanese had no everyday word for it. Their chief complaints were stiff shoulders and tiredness. Maya women in Yucatán, asked in the same years, reported no waves of heat at all, and looked forward to the freedom of the years that followed.

What has been measured. The root of an American plant, which native women used, is sold everywhere for this purpose. It did no better than a dummy in a review of sixteen trials. The compounds of the soya bean lower the number of flushes by about a fifth.

Chapter 51 gave needling. It did no better than pretended needling in an Australian trial of 327 women. Both groups improved by two fifths.

A training in deep relaxation by suggestion lowered the flushes by three quarters in an American trial, against one sixth with attention alone.

The book on the body. The form is the carrier: a hormone that no longer arrives. Drift and direction are the second forms. The flushes can be held in check and in the end pass by themselves. The first treatment lies at the Chain layer. The simple means are plain: clothing in layers, a cooler room, a fan and cool drinks (Konstapel 2026c).

Read with the Net. The carrier fails here by the body's own plan. The Chinese count of sevens says as much: the end is as fixed as the beginning.

That women of different peoples feel the same change so differently is a fact for chapter 5. What is perceived depends on the state of the one who perceives, and on what her people have taught her to expect. The suggestion trial and the sham needles point the same way.

48. The child that does not thrive

The illness. A small child stops growing, grows thin, loses its liveliness and falls ill again and again. The hospital finds too little food, repeated infection of the gut, or both. Underfeeding plays a part in nearly half of all deaths of children under five. The treatment is a paste of peanut, milk and oil, and the cure of the infections.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Mesopotamia	The grip of the demoness	She snatches and sickens infants	33
India	The nine seizers of children	Beings that seize a child whose mother or nurse has been careless or unclean	59
China	Accumulation in children	Food that stays; a weak spleen; worms. A physician of 1119 wrote that the organs of a child are tender and that its illnesses change quickly	44, 54

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Yoruba	The child that is born to die	A child that belongs to companions in the other world and has promised to return to them	24
Aztec	Fits, palsy and wasting	The spirits of women who died in childbirth	18
Mexico	The fallen fontanelle	A fall or a sudden pulling away from the breast	18
The Mediterranean, the Islamic world, India	The evil eye	Envy and praise	42
Ghana	The sickness of the child that is put aside when the next one is born	Too early weaning	

The last name was taken over by the hospital. A British physician on the Gold Coast heard it from the mothers in the 1930s and published the illness under the Ga word. It is the swollen, pale form of underfeeding, and it comes when a child is taken from the breast and put on thin gruel.

How it was recognised. The Chinese physician looks at the veins of the forefinger and at the belly, which is swollen while the limbs are thin. The hair is dry and stands up, and the child is fretful and eats earth.

The Mexican healer looks at the soft spot on the top of the head. If it is sunken, the fontanelle has fallen. The hospital reads the same sign as loss of water, most often from diarrhoea.

What was done.

Tradition	Treatment
China	Kneading of the child’s hands, belly and spine in fixed patterns. A prick at the creases of the four fingers. Drugs that move food and build the spleen

Tradition	Treatment
India	Fumigation, baths and offerings against the seizer; drugs; daily rubbing of every infant with oil
Mexico	The healer pushes up the palate, or holds the child by the feet and taps the soles
The Mediterranean and India	Amulets; a black mark on the face; no praise without a blessing
Yoruba	A consultation of Ifá; a sacrifice to the companions; marks and names that hold the child here
Nigeria	For fits, a mixture of tobacco and cow’s urine

What has been measured. The daily rubbing of infants is the best proved. Section A4 gave the American trial in which infants born too early grew half again as fast when they were stroked (Field 1986). In Bangladesh, infants born too early were rubbed with sunflower oil three times a day. They had two fifths fewer infections of the blood than the others. The mustard oil that is usual in the region harms the skin of the newborn.

The harm is of two kinds. The fallen fontanelle is a sign of danger, and the hours that are spent on the palate are lost for the drink that would save the child. And the Nigerian mixture has killed children, as chapter 28 told.

The child that is born to die has been studied by Nigerian physicians. Many such children had the inherited illness of the blood that section A10 described.

The book on the body. For underfeeding the form is the carrier: food that does not arrive. The unread infection is the second form. The third is frame, since growth that is lost in the first two years is not made up. Wasting is curable. The first treatment lies at the Chain layer. For prevention the book names what prevents the infections: vaccines, bed nets, and the drink with salt and sugar (Konstapel 2026c).

Read with the Net. The Chinese sentence of 1119 is a statement about depth. A small form is quickly changed and quickly restored. The same law that makes the child fall ill in a day lets it recover in a week.

The Ghanaian name is a diagnosis of another kind. It does not name a part of the body. It names a place in a household: the child that was put aside. Chapter 30 said of the African diviner that his diagnosis is a picture of a household. Here the picture was right, and the hospital kept the word.

The evil eye belongs with it. The danger that it names is the envy of others toward a thriving child. No measurement bears on it. As a rule of conduct it tells a people to watch its small children and not to boast of them.

85. Growths, poisons and injuries

What this chapter covers

The chapter takes five entries: tumours, the swollen neck, the bite of a snake, burns, and wounds. In four of them the cause can be seen or is known at once. The old medicines are at their most practical here, and several of their means are in the hospital's cupboard today.

Tumours are the exception. Here the oldest books are also the most honest. They say that there is no treatment.

49. Tumours

The illness. Cells of the body multiply without limit, press into the tissue around them and seed themselves elsewhere. About twenty million people learn each year that they have cancer, and about ten million die of it. The hospital cuts the growth out, burns it with rays and poisons it with drugs. In rich countries about half of the patients are cured.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	Bulging swellings of the breast, cool and hard to the hand	Not given. The verdict is: an ailment not to be treated	35
Greece	*Karkinos*, the crab, for the swollen veins that reach out from the growth like legs	Black bile that gathers and hardens	38, 41
India	The knot and the great swelling	The faults lodged in flesh, blood and fat	
China	The rock, above all the rock of the breast; accumulations in the belly	Feeling that has been held in for years, so that the *qi* of the liver and the spleen is knotted; phlegm and standing blood that harden	

How it was recognised. A Chinese surgeon of 1617 describes the rock of the breast as the hospital would. A lump the size of a bean grows for years without pain. It becomes hard as stone and uneven, with a surface like heaped chestnuts. The skin over it darkens. Then it breaks open, the sore is deep as a cave with raised edges, it bleeds and stinks, and the patient dies. He adds whom it strikes: women who have lived long in grief or without a husband.

The Indian books say which growths are beyond help. Those that are fixed, that lie on a vital point, or that have broken open and run are left alone.

A Hippocratic aphorism gives the same counsel. It is better not to treat a hidden cancer. Those who are treated die soon, and those who are left alone live a long time.

What was done.

Tradition	Treatment
Egypt	Nothing, for the grave kind. For others the fire drill
Greece and Rome	The knife and the hot iron, early and only where the whole growth can be reached. A Roman writer warns that cutting later makes it worse
India	Cutting out to the root, followed by the hot iron or caustic, so that nothing is left
China	Early, drugs that move the knotted *qi* and soften what is hard. Late, drugs that support the patient, and nothing that attacks
Northern China, as a folk remedy	White arsenic

What has been measured. The drugs of the hospital against cancer owe much to old remedies, though seldom for this illness.

Chapter 52 gave the arsenic. Physicians at Harbin found a folk healer who treated cancers with it in the 1970s. They tried it by vein in one leukaemia. With a second drug it now cures nine patients in ten.

Chapters 30 and 70 gave the rosy periwinkle of Madagascar. Healers in several countries used it as a tea for diabetes. Chemists who tested that use found two compounds that stop cells from dividing. They helped to make the leukaemia of children curable.

Chapter 20 named the root of the mayapple, a remedy of the nations of eastern North America. A drug against several cancers was made from it. The bark of the Pacific yew and the wood of a Chinese tree gave three more.

A decoction of four plants from a Chinese book of about the year 200 is being tested at an American university. It was written for diarrhoea. In animals and in first trials it eases the diarrhoea that one cancer drug brings.

The other side has been counted too. Chapter 75 gave the American study of patients with curable cancers who chose other treatments alone. They died two and a half times as often within five years (Johnson 2018). Section A3 gave mistletoe, for which the evidence is weak, and section A5 the diets and the compound of apricot kernels, which failed.

The Chinese belief that long grief brings the rock of the breast has been tested in large studies. No clear tie between a person's feelings and the coming of cancer has been found. Section A7 gave the trials of support groups, which make life better and not longer.

The book on the body. For most cancers the form is the unread: a changed cell that the body's test has not removed. Frame is the second form where the fault is inherited, and the first form in the cancers of children. Early cancers are curable. The first treatment lies at the Mesh layer (Konstapel 2026c).

Read with the Net. The law of the unread says that an error stays until it is read at its place. Surgery does not read. It takes the place away. The newest drugs of the hospital act at the layer of reading: they let the body's own test see the changed cell. Section A9 told how a surgeon of the 1890s came upon this by rousing fever.

The old medicines had no means at that layer. The best of them knew it, and wrote down which growths to leave alone. The Egyptian verdict, the Greek aphorism and the Indian list are the first rule of cure, applied to the healer himself. Read before you act, and do not act where the reading says that it will harm.

50. The swollen neck

The illness. The gland at the front of the neck swells when the body lacks iodine, which it needs for the hormone that the gland makes. The swelling can grow to the size of a head. A mother who lacks iodine bears a child whose brain and growth are stunted for life. Before salt was iodised, a third of mankind lived on soil that holds too little of it, most of them far from the sea and in the mountains.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	The swelling of the neck, in several kinds	The water and soil of mountain country; pent-up feeling	44

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Rome	The swollen throat of the people of the Alps	Bad water, from melted snow	
India	The swelling of the throat that hangs like a bag	Phlegm and fat	

Chinese and Roman writers both saw that the illness belongs to places. A Chinese book of 610 says that those who live long in mountains by dark springs get it.

What was done.

Tradition	Treatment
China	Seaweeds, steeped in wine. The neck glands of sheep and deer, dried and eaten
Europe, from the twelfth century	The ash of burnt sponge from the sea

What has been measured. A chemist found iodine in the ash of seaweed in 1811. A physician of Geneva reasoned that this was what the burnt sponge held, gave iodine to his patients with goitre in 1820, and saw the necks shrink. Switzerland put iodine in its salt in 1922. Goitre and the stunting of children then vanished from valleys where both had been common for centuries.

The Chinese remedy of the neck glands of animals is of interest for another reason. It gives what is missing by way of the same organ of another creature. The hospital did the same from 1891, with the gland of the sheep, for patients whose own gland had failed.

The book on the body. The form is the carrier: too little iodine arrives to make the hormone. Frame is the second form, since the brain of the unborn child is damaged for good. The lack is curable. The damage is not. The first treatment, iodised salt, lies at the Chain layer. The book calls it “the population treatment and prevention in one” (Konstapel 2026c).

Read with the Net. The entry is the second rule of cure in a pure case. A carrier is missing, and the cure restores it.

The old physicians found the remedy without knowing the carrier. They saw that the illness lives in the mountains and that its cure comes from the sea. That is a reading of the surround, and it was right many centuries before the element was found.

51. The bite of a snake

The illness. A venomous snake bites a farmer in the field or a sleeper on the floor. The venom destroys the flesh round the bite, stops the blood from clotting, or stills the muscles of breathing. About a hundred thousand people die of it each year, most of them in South Asia and in Africa, and far more lose a limb. The hospital has one true remedy: a serum from the blood of a horse that has been given the venom in rising doses.

What the old medicines say.

Tradition	What is said	Chapter
India	One of the eight limbs of medicine deals with poison. The books sort the snakes into hooded, banded and striped, and give the signs and the stages of the poisoning for each	59
Egypt	A papyrus lists the snakes by name and look, says for each whether the bitten man will live, and gives a treatment	
Greece and Rome	Poems and books on venomous beasts. A king of Pontus took small doses of poisons daily to become proof against them	41
Many African peoples	The bite of a snake is seldom chance. A healer asks who sent it	21

How it was recognised. The Indian books describe seven stages of the poisoning, one for each tissue that the venom reaches. They note which bites are without venom. A snake that is frightened, sick, very young or very old gives little, they say. The hospital agrees. Up to half of the bites of venomous snakes inject little or nothing, which is why every remedy has its cured patients.

What was done.

Tradition	Treatment
India	A band tied above the bite. The wound is cut, and sucked through a piece of cloth, or burned. Drugs by mouth and nose; the root of the snakeroot. Formulas are recited while the band is tied
Egypt	The wound is cut out. Onion, salt and beer. Spells
Greece and Rome	The same band and cut. A compound antidote of many drugs, with the flesh of vipers
Africa	Cuts over the bite, with powdered herbs rubbed in. A black stone, made of charred bone, laid on the wound to draw the venom
The Americas	Plants named for the purpose; tobacco; sucking
Protection	Men who handle snakes take small doses of venom, by the mouth or through cuts in the skin, to harden themselves

What has been measured. The first aid of the old books does harm. The band cuts off the limb’s blood and worsens the loss of flesh. Cutting and sucking remove almost no venom and add a wound. The black stone does nothing.

Many plants that healers use against snakebite do bind venom in a glass. None has been shown to save people. One finding is curious. The seed of the velvet bean, which hunters in Nigeria swallow as a protection, raised in mice a defence that also binds the venom of a local viper.

The chief harm is the delay. In a study in Nepal, the bitten who went first to a healer died far more often than those who were carried straight to a centre with serum. In villages where volunteers with motorcycles took the bitten to such a centre at once, the deaths fell to a small part of what they had been.

The serum was made at Paris in 1895. Its maker reasoned as the king of Pontus had. An animal that is given small doses becomes proof, and its blood can lend that defence to another.

The book on the body. The form is the unread. The venom stays active, the book says, until the serum reads it. The carrier is the second form, when the muscles of breathing are stilled. The poisoning is curable, and flesh that is already destroyed is not. The first treatment lies at the Reading layer. For first aid the book has six words: “Reassure, immobilise, and transport. The whole of correct first aid” (Konstapel 2026c).

Read with the Net. The serum is a borrowed reader. The body of the bitten has no time to learn the venom, and it is lent the test of an animal that had the time.

The old idea of hardening by small doses was right as a principle. Section A10 gave the law of load from the book on the body. What the old medicines lacked was a way to carry the defence from one body to another.

Their question of who sent the snake belongs to chapter 21. It does not treat the bite. It treats the fear and the quarrel that the bite has laid open in a village. The harm comes when the second treatment is given before the first.

52. Burns

The illness. Fire, hot water or hot oil destroys the skin. A shallow burn heals in two weeks without a mark. A deep one heals only by scar, which pulls the limb crooked, or does not heal at all. About a hundred and eighty thousand people die of burns each year. Most are women and small children at open cooking fires.

What the old medicines say.

Tradition	What is said	Chapter
Egypt	Remedies for a burn by the day: one for the first day, another for the second, and so on. A spell tells how a goddess cooled her burnt son	
India	Four degrees of burn, from the singed to the overburnt, each with its signs and treatment	
China	A matter of the outer medicine. Fire poison must be led out, so that it does not turn inward	
Iceland	A burnt hand is held at once in cold water	

What was done.

Tradition	Treatment
Egypt	Honey, fat and resin on linen
India	For the slight burn, warmth and not cold. For the deeper, clarified butter and cooling pastes. For the gravest, the dead tissue is removed and the wound is dressed as an ulcer
China	Powdered rhubarb root and other cooling drugs in sesame oil. A modern ointment of sesame oil and beeswax with herbs, which keeps the wound moist and uncovered
The Pacific	The gum of the flax plant and of the tea tree
South and Southeast Asia	The leaf of the banana, as a dressing. The pulp of aloe
West Africa	The mashed fruit of the papaya, to clean a dirty burn

What has been measured. The first aid of the hospital is a folk practice. An Icelandic physician noticed in the 1950s that country people held a burn in cold water and that such burns healed well. He tested it on animals. Cool running water for twenty minutes, begun at once, is now the rule everywhere. It lessens the depth of the burn.

Honey has been compared with the usual dressings in many small trials. Shallow burns healed four to five days sooner under honey (Jull 2015).

The pulp of aloe shortened the healing of shallow burns by about nine days in a review of four trials. The Chinese moist ointment did as well as the standard silver cream in a trial in Singapore.

The banana leaf was tested in India as a dressing. It was as good as the usual gauze with paraffin, caused less pain when it was changed, and cost almost nothing.

Butter, oil, egg and toothpaste, which many households put on a fresh burn, hold the heat in and soil the wound.

The book on the body. The form is the seam. What stays after a deep burn is scar: a fixed tissue in living skin. Shallow burns are curable. For the scars of deep ones the hospital offers relief only. The first treatment is the cool water. For prevention the book names a raised place for cooking, a closed stove and pots that stand firm (Konstapel 2026c).

Read with the Net. A burn goes on after the fire is out. The heat that is left in the skin deepens the wound for minutes. The cold water acts in that short stretch of time, and nothing later makes up for it. The old Indian rule to warm a slight burn was wrong on this point, and the Icelandic habit was right.

After the first hour the task is the one that chapter 5 described. A living tissue must be given the conditions to close by itself: moist, clean and left in peace. Honey, the leaf and the moist ointment all do that. The scar is what closes when those conditions fail.

53. Wounds and sores

The illness. The skin is cut, torn or pierced. A clean wound in a healthy person closes in a week or two. A dirty one festers, and the poison may spread to the blood. In the old and the ill, a wound of the leg or the foot may stay open for years. The hospital cleans, closes, covers and waits. Since the 1940s it has had drugs against the organisms that make a wound fester.

What the old medicines say. A wound is the one illness whose cause nobody had to seek. The oldest medical text that is known already has the three steps of its care.

Tradition	What is said	Chapter
Sumer	A tablet of about 2100 before our era shows three steps: wash, make a plaster, bind	32, 34
Egypt	A papyrus on wounds goes down the body from the skull. Each case has an examination, a verdict and a treatment	35
Greece	The Hippocratic surgeon keeps a wound dry and lets it rest. Later schools held that pus is a good sign and must be brought on	38, 41
India	The school of Sushruta lists sixty measures for a wound, from cleansing to the making of a good scar	56

Tradition	What is said	Chapter
China	The outer medicine has three steps for a sore: to disperse it early, to support the patient while it ripens, and to build up when it has opened	54
Aztec	Wounds of war were washed, dressed with the sap of the maguey and salt, and bound	18

What was done.

Tradition	Washing	Dressing	Closing
Sumer	Beer and hot water	A plaster of plants, oil and river mud	A bandage
Egypt		Fresh meat on the first day. Then honey, fat and lint, every day	Strips of linen with gum; stitches
Greece	Wine	Dry lint; wool soaked in wine	Stitches; bandages
India	Decoctions of astringent barks	Honey with clarified butter; pastes of turmeric and neem	Stitches of thread and hair. For the gut, the jaws of large ants
China	Decoctions	Powders that stop bleeding, such as notoginseng root	Bandages
Aboriginal Australia		The crushed leaves of the tea tree; clay	
Māori		The gum and the bark of the tea tree of New Zealand	
Many peoples		Maggots, left in a foul wound to clean it	

What has been measured. Honey is the best tested. It kills many organisms by its sugar and its acid, and some honeys hold a further compound that does so. A review of twenty-six trials found that honey heals shallow burns and infected wounds after operations sooner than the usual dressings. For old ulcers of the leg the gain was not clear (Jull 2015). A honey that bees make from the tea tree of New Zealand is sold to hospitals.

The Aztec dressing was tried in a laboratory. Maguey sap with salt killed the common organisms of wounds, and neither did so well alone.

The oil of the Australian tea tree cleared a hospital organism that resists most drugs from the skin of carriers as well as the standard ointment did.

Maggots were taken up by an American army surgeon. He had seen in 1917 that wounded men who lay for days in the field, with maggots in their wounds, did well. Hospitals use bred maggots today. In a British trial of 267 patients with leg ulcers they cleaned the wound faster than a gel. The ulcers did not close sooner.

The dressing of grease and honey kept the wound moist. The hospital held for a century that a wound must be kept dry. It returned to moist dressings after an experiment of 1962.

The great error. Physicians of the Roman age saw that a wound which makes thick, creamy pus often heals, while a wound that makes thin, foul matter kills. They concluded that pus is part of healing. For fifteen centuries surgeons put irritants into clean wounds to bring it on. Two Italian surgeons and a Frenchman wrote in the thirteenth century that wounds heal best clean, dry and closed. They were not followed. A French army surgeon found the same by chance in 1537. His boiling oil ran out, and he dressed the rest of the wounded with egg yolk, oil of roses and turpentine. Those men slept and healed. The others lay in fever.

The book on the body. For a wound that will not heal the form is the carrier. Blood does not arrive, pressure is not taken off, or food is lacking. The unread organisms in the wound and the dead tissue, which is a seam, are second forms. Where the cause can be set right, the wound is curable. The first treatment is to set it right. Of the simple means the book says that they are “very strong” and that the evidence favours the cheap ones. It names clean water for washing first (Konstapel 2026c).

Read with the Net. A wound is an open seam in living tissue, and living tissue closes by itself. Chapter 5 gave the order of an act of healing, and the Sumerian tablet has it in three verbs. Take away what does not belong. Protect. Leave the return to run.

The error of the pus is a lesson for every medicine. A true sign was taken for a part of the cure. The physicians had seen rightly which wounds heal. They then tried to bring about the sign.

The Chinese rule of three steps is of another kind. It does not treat the sore. It treats the sore in time: one act while it gathers, another while it ripens, a third when it has opened. That is the third rule of cure, in the oldest surgery that states it.

86. Old age and dying

What this chapter covers

The last chapter of entries takes three matters that are not illnesses in the usual sense: the weakness of old age, the failing of desire, and dying. Every old medicine has a branch for the first two. Indian medicine counts each as one of its eight limbs. For the third, the old medicines have what the hospital lacked until the 1960s: an account of dying, and a task for the healer when cure has ended.

54. The weakness of old age

The matter. With age the muscles shrink, the step slows, the grip weakens and the reserve of every organ falls. A small illness or a fall then brings a long decline. The hospital calls the state frailty and counts about one person in ten over sixty-five as frail. Its treatment is exercise.

What the old medicines say.

Tradition	What is said	Chapter
Greece and Rome	A child is warm and moist, and an old person is cold and dry. The old need warmth and moisture: warm baths, rubbing with oil, wine in measure, gentle walks, food in small meals	39
India	One of the eight limbs of medicine is given to old age. Its aim is to renew the tissues of a person who is well, old or recovering	56, 60
China	A woman’s life moves in steps of seven years, and a man’s in steps of eight. The essence that a person receives at birth is used up along the way. The nourishing of life slows the loss	45, 53

Tradition	What is said	Chapter
Unani	A regimen for the old: warmth, sleep, light food, laxatives in measure, pleasant company	
Hawai‘i and Aboriginal Australia	The old are the keepers of knowledge, and they keep a task	

How it was recognised. The Chinese classic gives the stages. At five times eight a man’s hair begins to fall and his teeth to loosen. At seven times eight his sinews stiffen. At eight times eight teeth and hair are gone. A later Indian book lists what each decade of life takes away: first childhood, then growth, then colour, then the quickness of the mind, and so on to the tenth.

What was done.

Tradition	Treatment
India	The jam of Chyavana: emblic fruit with some forty herbs, taken daily. For the stronger cure, a retreat of weeks or months in a hut of three chambers, sheltered from wind and sun. For everyone, a regimen of conduct: truthfulness, calm, clean living, respect for teachers and elders. The books call this conduct itself a medicine for long life
China	Ginseng, astragalus, rehmannia and the fruit of lycium. The slow exercises. Moderation in food, in wine and in the bedchamber. Rising and resting with the sun
China, at court	Elixirs of mercury and other minerals, in search of a life without end
Greece and Rome	The regimen of the first row of the table above

What has been measured. Exercise is beyond doubt. American physicians gave strength training to a hundred residents of a nursing home whose average age was eighty-seven. In ten

weeks their muscles were twice as strong, and they walked faster and climbed stairs with more power.

Chapter 53 gave the slow Chinese exercise, which lowers the rate of falls by about a fifth (Sherrington 2019).

Company counts as much. Chapter 22 gave the pooled finding that people with strong ties to others live longer (Holt-Lunstad 2010). In a Japanese study of more than forty thousand adults, those who said that their life had a purpose died less often in the following seven years.

The tonics have done little in trials. Ginseng may ease tiredness slightly. Vitamin D, given to tens of thousands of older people, did not prevent broken bones.

The elixirs killed. Several emperors of the Tang died of them. Chapter 52 listed the prepared fleeceflower root, a Chinese tonic for the old. It can injure the liver.

The book on the body. The form is drift, in its plainest case. The book quotes its source, which speaks of “windings that no longer return in phase”. The state can be held in check. The first treatment, exercise, lies at the Phase layer. “Everything that matters here is simple means,” the book says. For the old person with many illnesses at once it adds one more. It is a written list of every drug that he takes, checked against every illness that he has (Konstapel 2026c).

Read with the Net. Drift is the form of time. The return comes later and later, until it no longer comes within its bound.

The old medicines answer with a daily order: when to rise, what to eat, how to move, when to rest. The Indian books go one step further and count conduct among the medicines. A person who keeps his word, his temper and his ties is said to age more slowly. The pooled studies of ties and of purpose are the nearest that measurement has come to that claim.

55. The failing of desire

The matter. A man can no longer do what he wishes in bed. The hospital finds the cause most often in the small arteries, which are narrowed by the same illness that narrows those of the heart. It is often the first sign of that illness. A tablet that widens the vessels has been sold since 1998.

What the old medicines say.

Tradition	What is said	Chapter
India	One of the eight limbs of medicine is given to potency and the begetting of children	56

Tradition	What is said	Chapter
China	The yang of the kidney is weak; or fear and worry have injured the heart and the kidney; or damp and heat have poured downward	
Greece and Unani	A cold temperament of the parts	

What was done.

Tradition	Treatment
India	Milk, clarified butter, sugar, honey and black gram. The root of withania; the seed of the velvet bean; a wild asparagus. A calm mind and a loved companion, which the books name first
China	Epimedium leaf, cistanche stem, the velvet of deer antler. Restore the Right Pill
West Africa	The bark of the yohimbe tree
The Andes	The root of maca
Many countries	The horn of the rhinoceros and the bones of the tiger

What has been measured. The bark of the West African tree did better than a dummy in a review of seven trials. It raises the blood pressure and the pulse.

Korean ginseng has been tried in nine trials. A review found its effect too small to matter. The leaf of epimedium holds a compound that acts as the hospital's tablet does, and far more weakly.

The Indian rule of food and conduct has a modern proof. Italian physicians took 110 stout men with this complaint and no other illness. Half were coached for two years to eat less and to walk. Nearly a third of those recovered their power, against one in twenty of the others.

The harm is of two kinds. Powders that are sold as herbal have been found, again and again, to hold the hospital's own drug in unknown doses. And the trade in horn and bone has helped to bring the rhinoceros and the tiger near their end, for remedies that do nothing.

The book on the body. The form is the carrier: blood and hormone do not arrive. The seam of the narrowed artery is the second form. Where a single cause can be removed, the state is curable. The first treatment lies at the Chain layer (Konstapel 2026c).

Read with the Net. The complaint is a carrier that fails, and it is a warning. The same seam that closes the small artery will close a large one some years later. The Indian books, which put food, exertion and peace of mind before any drug, treat the cause that the hospital's tablet leaves alone.

56. Dying

The matter. Every patient dies in the end. The hospital of the twentieth century had little to say about it. It fought the illness until the last day, and the dying person was often alone among instruments. An English nurse and physician opened a house in London in 1967 in which the dying were freed of pain, told the truth, and kept company. Care of that kind is now a field of medicine. Most people in poor countries still die without the one drug that stills severe pain.

What the old medicines say.

Tradition	What is said	Chapter
Mesopotamia	The handbook gives the outcome in fixed phrases: he will live; he will die. A case marked "he will die" was not treated	33
Egypt	About a third of the cases in the papyrus on wounds carry the verdict that the ailment is not to be treated. Even then the physician is often told to make the patient comfortable	35
Greece	The physician looks first at the face. That of the dying has a sharp nose, hollow eyes, sunken temples and cold ears. He leaves alone those who are "overmastered by their diseases"	5, 38

Tradition	What is said	Chapter
India	Twelve chapters of Caraka’s book deal with the signs of approaching death, in the body, in the shadow and in dreams	58
Tibet	The physician learns the stages of dying from within. The elements of the body withdraw one after another. The care goes on for forty-nine days after the last breath	64, 66
The shaman’s world	A dead person must reach the place of the dead. One who lingers makes the living ill. The shaman escorts the soul	9
Hawai‘i	Care did not end at death. Some went as far as the meeting with their ancestors and were sent back	68, 71

Two attitudes stand side by side in these lines. The physicians of the books read the signs and did not treat against them. That spared the patient useless treatment and the physician the blame. The priests, the shamans and the Tibetan physicians stayed, because for them the work was not over.

How it was recognised. The Greek list of the face is still taught under the name of its author. The Indian chapters add signs that the hospital does not use. The smell of the dying person changes, and so does his shadow. His face no longer answers. His senses fail one by one. He dreams of riding south on a camel or an ass, of sinking in mud, of being bound, of a tree that grows from his chest. The physician is to know these signs. He is told not to announce a death unasked.

The Tibetan books describe the dying from the other side. Chapter 64 gave the order. The limbs grow heavy. The mouth dries. Warmth draws in from the hands and feet toward the heart. The breath stops. What the dying person meets at each stage is described as an appearance: of mist, of smoke, of sparks, of a steady flame. Then comes a clear light, like a sky at dawn.

What was done.

Tradition	Care of the dying
Tibet	A lama or a friend reads to the dying and the dead person from a book of guidance, for up to forty-nine days. The book tells him where he is and what he is seeing, and that he should not flee it
India	He is laid on the ground. Water of the holy river and a leaf of holy basil are put in his mouth. The name of God is said in his ear
Jewish and Islamic custom	He makes his confession and is not left alone. The words of faith are the last that he says or hears
Christian Europe	A small book of the fifteenth century, widely printed, taught the art of dying well: the five temptations of the deathbed and the answer to each
Hawai‘i	The family gathers. Quarrels are set right, so that the soul can leave without a tie that holds it
The shaman’s world	The shaman escorts the soul to the place of the dead. The Nanai of the Amur held a great rite for this, sometimes years after the death

What has been measured. An American trial of 2010 took 151 patients with a cancer of the lung that had spread. Half were seen from the start by a team for the care of the dying, beside their ordinary treatment. Their quality of life was better, and fewer of them were depressed. They chose less harsh treatment at the end. And they lived nearly three months longer.

Chapter 18 gave a trial in people with cancer who were anxious and depressed. A single high dose of the mushroom compound brought lasting relief to about four in five, measured six months later (Griffiths 2016).

Section A9 gave the Dutch count of those who came back. Sixty-two of 344 patients whose hearts had been restarted told of an experience of nearness to death. Eight years later they feared death less than the others (van Lommel 2001).

Physicians at an American hospice asked fifty-nine dying patients each day what they had dreamed or seen. Nearly nine in ten reported at least one dream or vision. The most common was of dead relatives and friends, who waited or came to fetch. Such visions grew more frequent as death came near, and most gave comfort.

The book on the body. The book gives the care of the dying no form. It is one of fourteen entries in the book to which none of the eight applies. The first treatment is that care itself, begun early. As simple means the book names the drug of the poppy by mouth, which costs little and needs no cold store (Konstapel 2026c).

Read with the Net and VALIS. The eight forms are forms of failure. Dying is not one of them. The book on the body is right to leave the place empty.

Chapter 7 set out the course of a meeting in five steps: loosening, examination, exchange, showing and return. Chapter 67 found that the Tibetan account of dying has them in that order and at full scale. The elements of the body withdraw. The acts of the life are seen. A few sentences are read into the ear. The peaceful and the terrible forms appear. A new birth follows.

Section A9 found the same five in the accounts of those who came back. They are the loosening from the body, the review of the life, the short exchange at the border, the showing, and the return. The Dutch patients had read no Tibetan book.

Chapter 6 read the other half as the same strand, read in the other direction. The theory says nothing of what a person is after death. Part I has one sentence that bears on the matter, and it is an axiom: the net carries its history as its shape.

The old medicines add a practical point, and the trial of 2010 confirms it. The healer has a task when cure has ended. The patient who is accompanied suffers less and, it appears, lives longer. Chapter 64 gave the Tibetan summary: the medicine does not end at death.

87. Illnesses of want

What this chapter covers

Chapters 78 to 86 took the illnesses that fill the old books. Chapters 87 to 92 add a second series. It takes illnesses that the first series passed over, and some that the hospital does not name at all.

This chapter has five illnesses with one cause: a food, or the light of the sun, does not arrive. They are scurvy, the swollen legs of the rice eaters, the illness of maize, soft bones and pale blood. In the words of the book on the body they are failures of the carrier. They are of interest for a second reason. In each the remedy was known to somebody long before the hospital found the cause. In several it was lost or refused, because the medicine of the day had no place for it.

57. Scurvy

The illness. After two or three months without fresh food the gums swell and bleed, the teeth loosen, old scars open, and the legs are covered with dark spots. The patient is weak and low in spirits. Then he dies, often suddenly. The cause is the lack of one vitamin, which most animals make for themselves and people must eat. Between 1500 and 1800 scurvy is thought to have killed some two million sailors (Carpenter 1986).

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
European physicians, 1500 to 1800	Scurvy	The damp and foul air of a ship; salt meat; idleness and low spirits; a thickened black bile	
Iroquoian peoples of the St Lawrence	An illness of the winter	Not recorded. The remedy was known	20
Arctic peoples	Not known among them	They ate fresh meat and the skin of the whale, raw	

How it was recognised. The sailors knew it better than the physicians. The chronicler of a crusade in Egypt in 1250 described the dead flesh of the gums, which the barbers cut away so that the men could eat. The Portuguese who sailed to India in 1497 lost more than half their

men. Their record says that the sick recovered on the East African coast when traders brought them oranges.

What was done.

Tradition	Treatment
Iroquoian	A drink boiled from the bark and needles of an evergreen tree, as chapter 20 told
Chinese seafarers	A traveller of the fourteenth century saw greens and ginger grown in wooden tubs on the great junks
European herbals	Scurvy grass, cress and brooklime, eaten fresh
Ships' surgeons	An English captain praised oranges and lemons in 1593. The surgeon general of the East India Company prescribed lemon juice in 1617
The Dutch company	Gardens on board, and from 1652 a station at the Cape that grew greens for passing ships
European physicians	Vinegar, a dilute acid, fresh air, exercise
North America	Beer brewed from the tips of the spruce

What has been measured. A Scottish naval surgeon took twelve sailors with scurvy in 1747 and divided them into six pairs. Each pair had a different remedy beside the same food. The pair that had two oranges and a lemon a day recovered within a week. The others did not. It is often called the first controlled trial.

The navy took forty-eight years to act on it. It issued lemon juice to every ship from 1795, and scurvy left the fleet.

The remedy was then lost again. The surgeon himself had boiled the juice down to a syrup that would keep, and the syrup did not work. In the 1860s the navy changed from lemons to the limes of its own islands, which hold far less of the vitamin. Scurvy came back on the polar expeditions. Physicians then blamed tainted tinned meat. Two Norwegians produced scurvy in guinea pigs in 1907. The vitamin was isolated between 1928 and 1932.

The book on the body. The book has no entry for scurvy. Its entries on missing vitamins and minerals all name the form of the carrier (Konstapel 2026c).

Read with the Net. Scurvy is the carrier in its plainest shape. One compound does not arrive, and every tissue that needs it comes apart. The second rule of cure, restore and do not add, is the whole of the treatment.

The history shows how a remedy is lost. The Iroquoians had it, the sailors had it, and a trial had proved it. Each time it slipped away, because the accepted picture of the illness spoke of air, salt and idleness. A fact that has no place in the picture is not kept. Chapter 74 drew one lesson from bloodletting: a coherent medicine can be wrong. Scurvy adds the other half. A true remedy can be dropped for want of an account.

58. The swollen legs of the rice eaters

The illness. The legs grow weak and numb. In one kind the patient wastes. In another he swells, and the heart fails. Infants at the breast die within hours. The hospital calls it beriberi. The cause is the lack of a vitamin that lies in the bran of the grain. It strikes where polished white rice is nearly the whole of the food.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	*Jiaoqi*, the *qi* of the legs. A dry kind that wastes and a wet kind that swells	A damp poison that rises from the low ground of the south and enters by the feet	
Japan	*Kakke*, the same word. Also the affliction of Edo	An illness of the city. Those who left for the country recovered	
Malay world and Ceylon	Beriberi		

How it was recognised. Chinese physicians of the fourth century described it in the rice lands south of the great river. Sun Simiao, whom chapter 44 named, wrote of it in the seventh century. The ancients seldom had it, he says. It struck the gentry who moved south, and it had lately reached the north. The books name the grave sign, the rushing of the poison to the heart, with a racing pulse and breathlessness. The patient may then die within a day.

The Japanese saw who fell ill. It was the townspeople and the court, who ate white rice. The country people ate barley and brown rice and were spared. At least two shoguns of the nineteenth century are said to have died of it.

What was done.

Tradition	Treatment
China	Sun Simiao gave a porridge cooked with the bran of the grain to prevent it. Other formulas use areca nut, evodia and the Chinese quince
Japan, the old school	Barley and red beans in place of white rice; a move to the country
South India	Rice that is steamed in the husk before it is milled. The custom is old, and it carries the vitamin into the grain

What has been measured. A surgeon of the Japanese navy counted. On a training voyage of 1883, 169 of 376 men fell ill and 25 died. In 1884 he sent a second ship on the same route with barley, meat and milk in the ration. Fourteen men fell ill and none died. The navy changed its food, and the illness left the fleet. The army refused. In the war with Russia twenty years later more than two hundred thousand of its soldiers had beriberi, and some twenty-seven thousand died (Bay 2012).

A Dutch physician at Batavia saw in the 1890s that hens fed on polished rice became lame and that the bran cured them. An inspector then counted nearly three hundred thousand prisoners on Java. Where the rice was polished, one prisoner in 39 had beriberi. Where it was not, one in ten thousand (Carpenter 2000).

The harm today lies in a custom. In parts of Laos and Cambodia a mother eats little but polished rice in the weeks after the birth, under rules of the kind that chapter 84 described. Her milk then lacks the vitamin, and infants die of it.

The book on the body. The book has no entry. Its entries on a missing vitamin name the form of the carrier.

Read with the Net. The illness was made by the mill. Rice pounded by hand keeps part of its bran. The steam mills of the nineteenth century took it all, and the illness spread with them through Asia.

The naval surgeon was right for a wrong reason. He believed that his men lacked protein. The Chinese theory of a damp poison was wrong as well, and Sun Simiao’s porridge was right. In both cases the act was sound and the account was not. The old kitchens that steamed rice in the husk had no account at all, and they were protected.

59. The illness of maize

The illness. The skin grows red and rough where the sun strikes it, in a collar round the neck and on the backs of the hands. The bowel runs. The mind clouds, and the patient dies. The

hospital calls it pellagra, an Italian word for rough skin. The cause is the lack of a vitamin. It strikes the poor who live on maize.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Asturias, 1735	The illness of the rose	A physician linked it to the diet of the poor
Northern Italy, from 1771	*Pellagra*	The sun; later, spoiled maize, which was held to carry a poison
The southern United States, 1906 to 1940	Pellagra	An infection, carried by a fly or by filth
Mexico and Central America	Not known	

What was done. The old remedy is a kitchen practice. The peoples of Mexico and Central America have boiled their maize with lime or with wood ash for some three thousand years. The Hopi and the Navajo use the ash of certain bushes and of juniper. The soaked grain is ground wet into a dough. The practice loosens the hull and improves the dough, and those are the reasons that the cooks give. It also frees the vitamin, which lies bound in the dry grain. The same peoples eat beans with their maize.

Maize crossed the ocean after 1500. The lime pot stayed behind. From the eighteenth century on the illness appeared in Spain, in northern Italy, in the Balkans, in Egypt and in southern Africa. It came wherever the poor lived on maize porridge.

What has been measured. A study of 1974 compared fifty-one societies of the Americas. Every society that both grew and ate much maize treated it with lime or ash. Those that did not treat it ate little of it (Katz 1974).

About three million people in the southern United States had the illness between 1906 and 1940, and about a hundred thousand died (Roe 1973). A physician of the health service showed in 1915 that it came from the diet of maize meal, fat pork and molasses. He cured the children of two orphanages with milk, meat and beans. He produced the illness in healthy prisoners who volunteered to eat the poor diet. He and his helpers then swallowed and injected matter from the sick, and stayed well. Many physicians of the South went on calling it an infection. The vitamin was found in 1937, and it has been added to flour since the 1940s.

The book on the body. The book has no entry. Its entries on a missing vitamin name the form of the carrier.

Read with the Net. A food is more than a plant. Maize with its lime and its beans is one food, and maize alone is another. The knowledge lay in a practice of the hearth that women handed on, and in no physician’s book. When the grain travelled without the practice, the carrier failed.

Chapter 5 gave a rule that the old medicines keep: the whole window at once. A remedy is taken with its preparation, its hour and its company. The history of maize is that rule seen from the side of loss.

60. Soft bones

The illness. The bones of a growing child do not harden. The legs bow, the wrists thicken, the ribs are beaded and the skull stays soft. The teeth come late. Some children have fits. The hospital calls it rickets. The cause is most often the lack of a vitamin that the skin makes in sunlight, and sometimes the lack of calcium.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Rome, second century	Bent legs of the city’s children	Children who are made to sit and walk too early	
China	The five slownesses and the five softnesses: late standing, walking, hair, teeth and speech	A weak inheritance from the parents; a weak kidney, which governs bone	
India	The child that cannot walk at one year	Bad milk; an illness of the mother or the nurse	
England, 1650	The rickets. Abroad it was called the English disease	Cold and moist distemper of the body	

How it was recognised. An English physician described the illness in full in 1650. It had become common in the dark lanes and the coal smoke of the growing towns. In the first years of the twentieth century a physician at Dresden examined the bones of small children who had died. He found the signs in nine of ten.

What was done.

Tradition	Treatment
India	Every infant is rubbed with oil daily and laid in the morning sun
China	The Six-Ingredient Pill with Rehmannia. Its author made it in 1119 for children whose skull does not close. Fossil bone and oyster shell
The coasts of Scotland, Norway and the Baltic	The oil of cod liver, a remedy of fishing villages for aching joints and weak children
European physicians	Tonics, splints and rubbing. A French physician prescribed cod liver oil and sun from the 1860s

What has been measured. An English missionary physician compared the reports of colleagues from many countries in 1890. Rickets was rare wherever children had sun, even among the very poor. He proposed sun baths. Nobody acted on it.

Section A8 gave what followed. A physician in Berlin cured rickets with a lamp in 1919. Researchers in Vienna showed that sunlight and cod liver oil each do the same. The vitamin was named in 1922. Milk has been enriched with it in North America since the 1930s, and the common form of the illness disappeared there.

It has come back among dark-skinned children in northern cities, and among infants on strict diets, as section A5 told. In Nigeria the cause is another. Children there have sun enough and too little calcium. In a trial of 1999 they healed better on calcium than on the vitamin (Thacher 1999).

The book on the body. The form is the carrier. The common kind is curable. A bone that has set in its bend is not, and for that the hospital offers relief only. The first treatment, the vitamin with calcium, lies at the Chain layer. The book counts this among three entries in which “the simple means is the cure”, and it names the means in one word: sunlight (Konstapel 2026c).

Read with the Net. The carrier here does not come by the mouth. It comes from the sky, and the skin completes it. The illness is an illness of the surround. Narrow lanes, smoke and indoor work stood between the child and the sun.

The Indian custom of oil and morning sun protected without an account. The Chinese account was mistaken about the cause and right about the organ, since the hospital also finds the last

step of the vitamin's making in the kidney. That agreement may be chance. It is noted here and not built on.

61. Pale blood

The illness. The blood holds too little of its red pigment. The patient is pale, tired and short of breath. Some crave earth, clay or ice. The hospital calls it anaemia. About a quarter of mankind has it. The commonest cause is a lack of iron, from poor food, from the monthly loss, from pregnancy or from worms that suck blood. Other causes are a lack of two vitamins, malaria, and inherited faults of the pigment.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	*Pandu*, the pale illness, in five kinds. One comes from eating earth	The faults spoil the blood, and the body loses its colour	59
China	Too little blood: a pale face, pale lips and nails, dizziness, a thin pulse. A yellow swelling of farmers	A weak spleen makes too little blood; blood has been lost	48
Europe, from 1554	The illness of maidens; later the green sickness	Held-back monthly blood; unfulfilled love	
Yoruba and Igbo	The child that is born to die and comes again	A child that belongs to companions in the other world	24

How it was recognised. The old physicians read the paleness where the hospital still reads it: in the lips, the nail beds and the inner lid of the eye. The Indian books add the craving for earth and name it both a sign and a cause.

Peoples of West Africa knew a painful illness that runs in families and kills in childhood. In Ghana it had names in several languages before the hospital described it in 1910. The Yoruba account of the child that comes and goes fits the same illness, as chapter 24 noted (Onwubalili 1983). It is an inherited fault of the red pigment.

What was done.

Tradition	Treatment
Greece	A legend tells of a seer who cured a childless prince with the rust of a knife, drunk in wine
India	Burnt iron, and iron rust prepared with the three fruits. Clarified butter; emblic fruit
China	Formulas that build up the blood, among them the Four Ingredients Decoction and the Angelica Decoction. Ass-hide glue. For the yellow swelling, pills of green vitriol, which is a salt of iron
Europe	Marriage, as the first describer advised. From 1681, iron filings steeped in wine. Springs with iron in the water. From 1832, a pill of an iron salt
China and many households	Liver and red dates for the pale
Nigeria	A healer’s mixture of four plants for the inherited illness

What has been measured. Iron cures the common kind. An Italian showed in 1747 that the ash of blood holds iron. By then three medicines had been giving it for paleness for many centuries.

Liver, eaten daily, gave the hospital its cure for a deadly anaemia in 1926. The vitamin that liver holds was isolated in 1948.

The Nigerian mixture was tested in a blind trial of eighty-two patients. The painful attacks were fewer on the mixture than on a dummy (Wambebe 2001). The trial was small, and reviewers ask for a larger one.

Eating earth has been studied in Africa, where many pregnant women do it. It goes with paleness. Clay binds iron in the gut, and soil carries the eggs of worms.

The Indian and Chinese drugs for paleness have been little tested.

The book on the body. The form is the carrier. The illness is curable. The first treatment, iron by mouth, lies at the Chain layer. For prevention the book names iron and one vitamin in pregnancy, and the control of malaria. As simple means it names “an iron cooking pot, or an

iron ingot in the pot”. Trials of both show gains in deficient peoples, of modest size (Konstapel 2026c).

Read with the Net. The carrier fails, and the second rule of cure applies without remainder. What is missing is restored.

Three medicines reached iron before anyone knew what blood is made of. The reasoning was by likeness: iron is strong, and the weak need strength. That reasoning is of a kind that fails more often than it holds. Here it held. The old medicines cannot tell the two cases apart from within, and chapter 74 said why.

The craving for earth is a sign that misleads. The body asks for what it lacks, and what it reaches for makes the lack worse. Chapter 4 described a wrong closure as a state that restores itself. This is a small one.

88. Further infections

What this chapter covers

Chapter 78 took the fevers and the great infections of the old books. This chapter adds eight that it passed over. They are the plague, the great pox, the bite of the mad dog, the strangling throat, lockjaw, the itch, warts and the girdle of fire.

In all eight the book on the body names the form of the unread. An organism is present and the body has not removed it. The old medicines could not see the organism. Several of them saw more than their own books allowed, and that is the thread of the chapter.

62. The plague

The illness. A bacterium lives in the fleas of rats and of other gnawing animals. When the rats die, the fleas bite people. The glands of the groin and the armpit swell into hard, painful lumps, with high fever and dark spots. In a second form the lungs are struck, and the illness passes from breath to breath and kills in days. The great wave of 1347 to 1351 killed a third or more of the people of Europe. A drug has cured it since 1947. It still occurs in Madagascar, in the Congo and in a few other places.

Names and causes in the old medicines. Chapter 78 gave the causes that were named for epidemics in general. The table adds what was said of this one.

Tradition	What was said	Chapter
The faculty of Paris, 1348	A conjunction of three planets drew up vapours that corrupted the air	41
Ibn al-Khatib of Granada	The plague passes from person to person, with a garment or a vessel. Experience shows it	41
China, 1642	A particular harmful *qi*, which enters by the nose and the mouth	44
Yunnan, eighteenth century	The rat epidemic. A poet of 1792 described the rats that die first and the people who follow within days	

Tradition	What was said	Chapter
India	A sacred text is cited as telling people to leave their houses when rats fall from the roof and die	

How it was recognised. The lump was the sign. Every language of Europe had a word for it. The Chinese name of the illness, the rat epidemic, shows that the people of Yunnan had seen the order of events (Benedict 1996). The hospital found the bacterium in 1894 and the flea in 1898.

What was done.

Tradition	Treatment
European physicians	Bleeding; the compound antidote called theriac; cutting or burning the lumps; fires and sweet smoke against the bad air. In the seventeenth century, a mask with a beak full of herbs
The common advice	Flee early, go far, come back late
The port cities	A wait of thirty and then forty days for ships. From 1423 a house for the sick on an island at Venice. Later, lines of soldiers round a stricken district
An English village, 1665	The people of Eyam closed their own village when the plague entered it, so that it would not reach their neighbours. A large part of them died
The Islamic world	A saying of the Prophet: do not enter a land where the plague is, and do not flee from one
Guangdong, 1891	A physician published a book on the rat epidemic, with a formula that moves the blood and resolves poison, in very large doses

What has been measured. No remedy of any old medicine has been shown to cure the plague. In Hong Kong in 1894 more than nine in ten of the Chinese patients died. Neither medicine had a cure. The claims of the formula of 1891 were never counted.

Keeping apart is another matter. The plague left western Europe after 1722. Historians still argue over the reasons, and the waiting houses and the lines of soldiers are among them.

One act of the hospital belongs here. In the winter of 1910 a plague of the lungs killed some sixty thousand people in Manchuria. A physician born in Malaya, trained at Cambridge, was sent to end it. He made the helpers wear a mask of gauze and cotton, shut the sick away, and had the frozen dead burned. The epidemic ended within four months (Summers 2012). The mask of cloth that the world wore in 2020 descends from that winter.

The book on the body. The book has no entry for the plague. Its entries on infections that are carried by an animal name the form of the unread (Konstapel 2026c).

Read with the Net. The plague is an illness of the surround in the full sense. Its home is the rat, the flea, the granary and the ship. The old physicians looked up, to the planets and the air. The people of Yunnan looked down, at the rats, and were nearer.

Ibn al-Khatib set what the senses show above what the books and the tradition said. Chapter 41 called this practice running ahead of theory. The number of the waiting days was not reasoned. Forty was a number of the old count, as chapter 73 noted, and it proved long enough.

63. The great pox

The illness. The infection passes in the sexual act and from a mother to her unborn child. A sore heals by itself. A rash follows and fades. Years later, in some patients, the heart, the bones and the brain are destroyed. The hospital calls it syphilis. It appeared in Europe in 1495, in an army at Naples, and it was fiercer then than now. A single injection has cured the early illness since the 1940s.

Names and causes in the old medicines. Every people named it after a neighbour.

Where	Name	Chapter
Italy	The French disease	
France	The disease of Naples	
India, sixteenth century	The disease of the Franks	56
China, from about 1505	The sores of Canton; the sores like the red bayberry	
Japan	The Chinese sores	

The physicians of the time took it for a new illness, and most held that it came by the act of love. Some blamed the stars of 1484 (Arrizabalaga 1997).

What was done.

Tradition	Treatment
Europe	Mercury, which Arab physicians had long used in ointments for the skin. It was rubbed in, or breathed as smoke in a heated box, until the patient poured out spittle. The teeth loosened, as chapter 43 told
Europe, from the 1510s	The wood of the guaiac tree, shipped from the Caribbean. The reasoning was that the remedy grows where the illness comes from. A banking house held the trade
China	Mercury and arsenic. The root of a smilax, which the books also give against the poisoning by mercury. A monograph on the illness appeared in 1632
Europe, from 1535	The same Chinese root, called the China root, and its American cousin the sarsaparilla
India	Mercury, in the book that first names the illness

What has been measured. Nobody counted the mercury while it was used. A Norwegian physician came nearest to a count. He held that mercury did more harm than good, and from 1891 to 1910 he gave some two thousand patients no drug at all. A later count followed them through life. About two in three never had the late damage. Much of what four centuries had credited to mercury was the course of the illness itself.

The guaiac wood and the roots did nothing that has been shown.

Fever did. Physicians had noticed that the madness of the late illness sometimes lifted after a high fever. A Viennese psychiatrist gave such patients malaria in 1917 and stopped it afterwards with quinine. About a third recovered enough to return to their lives. Some died of the malaria. He received the Nobel prize of 1927.

A German chemist made an arsenic compound in 1909 that killed the organism. It was the first drug designed for one target. Arsenic against this illness was by then nearly three centuries old in China.

The hospital’s own record has a stain here. An American health service watched some four hundred poor black men with the illness from 1932 to 1972 and kept treatment from them, also after the cure was found.

The book on the body. The form is the unread. The organism stays for years, in a stage that the source calls latent. The infection is curable. The late damage is not, and the hospital then offers relief only. The first treatment lies at the Mesh layer. The measure of highest value is to test and treat every pregnant woman (Konstapel 2026c).

Read with the Net. This is the unread with the longest window in the atlas. The organism is neither removed nor felt, for ten or twenty years.

The names show a habit that chapter 72 counted as its second point. The illness is laid outside: with the neighbour, the stranger, the other people. Here the habit was of use, since the illness did come from outside and did pass from person to person.

The reasoning by place failed. That a remedy grows where an illness arose is a thought with a long life, and the guaiac wood shows what it is worth without a count. The fever cure is of another kind. Entry 1 gave the old rule that a fever is the body’s own road and is not to be cut short. In this illness a borrowed fever did what no drug of the time could do.

64. The mad dog

The illness. A virus lives in the spittle of a rabid animal. After a bite it travels along the nerves to the brain, for weeks or months. Then come fear of water, spasms of the throat, frenzy and death. Once the signs appear almost no one survives. A vaccine given after the bite prevents the illness. About fifty-nine thousand people still die of it each year, most of them in Asia and Africa, and many of them children. Dogs give nearly all the bites.

Names and causes in the old medicines.

Tradition	What is said	Chapter
Mesopotamia	A law code of the early second millennium before our era fines the owner of a mad dog that bites a man who then dies	

Tradition	What is said	Chapter
India	The books describe the mad dog, with its hanging jaw and tail and its running spittle. The bitten person who comes to fear water cannot be saved	59
Greece and Rome	The illness is named after the fear of water	
China	A physician of the fourth century writes of the bite of the mad dog and of the illness that breaks out later	

What was done.

Tradition	Treatment
India	The wound is bled and burned with hot clarified butter. Antidotes are laid on. Old butter is drunk
Rome	The wound is sucked out with a cup and burned with iron or caustic. A patient who already fears water is thrown into a pond without warning
Rome, a folk custom	The burnt hair of the dog that bit is laid in the wound
China, fourth century	Kill the dog, take out its brain and lay it on the wound. Mugwort is burned on the bite
The Ardennes	A pilgrimage to the shrine of a saint. A hot iron in the shape of a key. A thread of the saint’s stole, laid in a cut in the forehead
North America	A stone from the stomach of a deer, laid on the bite to draw the poison

What has been measured. The burning and the washing had sense in them. The virus stays for a time where it entered. Experiments on animals show that washing the wound at once,

long and with soap, prevents a large part of the infections. The hospital asks for fifteen minutes.

The Chinese remedy has not been tested. It is of the same kind as the vaccine that a French chemist made in 1885 from the dried spinal marrow of rabid rabbits. The Chinese physician reasoned that the cure lies in the animal that carries the poison. The chemist had a method to weaken it and a way to count.

The stone, the key and the hair do nothing. They had their cured patients for a reason that entry 51 gave for snakebite. Most bites of a rabid dog do not pass the illness on.

The harm is the delay. In India, where a third of the deaths occur, many of the bitten put chilli, lime or oil on the wound and go first to a healer.

The book on the body. The form is the unread. The book describes the weeks in which the virus travels as a window in which the body does not act. Before the signs the illness is curable. After them the hospital offers relief only. The first treatment, the vaccine, lies at the Reading layer. The simple means is one: “Washing the wound with soap and water for at least 15 minutes, immediately.” Vaccinating the dogs is the only measure that ends the illness at its source (Konstapel 2026c).

Read with the Net. The illness is a race along a nerve. The organism is on its way and unread. The vaccine teaches the body to read it before it arrives. No other illness in the atlas shows so plainly that a reading takes time and that the time can be used.

The old acts were acts at the place: burn, wash, draw out. They were aimed rightly and done without knowledge of what was to be removed.

65. The strangling throat

The illness. Most sore throats are mild and end by themselves. Three kinds are grave. An abscess can form beside the tonsil. One bacterium of the throat is followed, weeks later, by damage to the heart. And in diphtheria a grey skin grows across the throat, and a poison from it reaches the heart and the nerves. Children choked on it. A serum has been given since the 1890s and a vaccine since the 1920s.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Greece	The dog’s choking; the Egyptian or Syrian sores of the tonsils, with a white or grey crust, which kill children	A sharp humour that runs down from the head

Tradition	Name or kind	Cause as the tradition gives it
India	Illnesses of the throat. One is a growth that closes the passage and kills within days	The three faults and the blood
China	Throat wind; the throat moth, for swollen tonsils; from 1838 the white throat	Wind and heat; a dry heat of the season that burns the yin of the lung
Spain, 1613	The year of the garrotte	

How it was recognised. A Greek physician of the second century described the crust on the tonsils and the foul breath. He noted the fluid that comes back through the nose, and the death by choking. A Chinese physician gave the illness its present Chinese name, the white throat, in a book printed in 1838. A French physician named it for the hospital in 1826. All three looked into the throat and saw the same skin.

What was done.

Tradition	Treatment
Greece and Rome	Bleeding under the tongue; gargles; cups on the neck. In the last need a reed is pushed into the throat, or the windpipe is cut open
India	Gargles held long in the mouth; drops in the nose; bleeding; scraping
China	Powders of borax and borneol, blown into the throat through a tube. The point at the corner of the thumbnail, pricked to bleed. For the white throat, the Nourish the Yin and Clear the Lung Decoction of 1838
Europe	Gargles of sage, honey and vinegar. A blessing of throats with two crossed candles, on the day of a saint in February
The Plains of North America	The root of the purple coneflower, chewed

Tradition	Treatment
Southern Africa	The root of a geranium, for coughs and the chest, as chapter 30 listed

What has been measured. The serum was tested in Copenhagen in 1898. Patients who came in on one day had it, and those of the next day did not. Eight of 239 died with the serum and thirty of 245 without (Fibiger 1898). It is among the first trials with a fair comparison.

The Chinese decoction was never tried against the serum. Chinese hospitals reported good results with it in the 1950s. The reports had no comparison.

For the common sore throat a few old remedies have small trials behind them. A spray of sage and coneflower did as well as a spray of the pharmacy. The extract of the African geranium shortened the illness in children. Gargling with plain water three times a day lowered the number of colds in a Japanese trial of 387 adults.

The cutting of the windpipe worked. The French physician who named the illness saved a child with it in 1825.

The book on the body. For diphtheria the form is the unread. The grey skin that closes the airway adds the seam and the carrier. Treated early, the illness is curable. Once the poison is bound, the hospital offers relief only. The first treatment is the serum, from the blood of a horse, at the Reading layer. As simple means the book names recognition: a sore throat with a grey skin that bleeds when it is scraped, and a swollen neck. “Recognition needs only a light and a look” (Konstapel 2026c).

Read with the Net. The grey skin is a seam in a living passage, and the breath is a carrier. The old surgeons could not remove the seam. They opened a way for the carrier below it. That is a sound act, and it needed no knowledge of the cause.

The serum is a borrowed reading, as entry 51 said of the serum against snakebite. The horse has read the poison, and its reading is lent to the child.

Three physicians, in Greece, in France and in China, named the illness by what they saw in the throat. Where an illness has a sign that anyone can see, the medicines agree.

66. Lockjaw

The illness. The spores of a bacterium lie in soil and dung. In a deep or dirty wound they wake and make a poison. The jaw locks first. Then the back arches like a bow, and every noise or touch brings a spasm of the whole body. Without intensive care a large part of the patients die. The newborn takes the illness through the cut cord, falls ill about the seventh day and almost always dies. A vaccine prevents it, and a mother who is vaccinated protects her child. In 1988 some 790,000 newborns died of it. The number is now about one thirtieth of that.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Egypt	A head wound with a locked jaw and a stiff neck. The verdict: not to be treated		35
Greece	*Tetanos*, the stretching. The saying is that a spasm after a wound is deadly		
India	The stiffness of the bow	Wind that has seized the channels	
China	The wind of the broken wound. In the newborn, the wind of the navel	Wind enters by the wound, or by the cut cord	
Many peoples	The illness of the seventh day, or of the eighth	A spirit that takes newborns; the evil eye	

How it was recognised. A Greek case book tells of a shipmaster whose finger was crushed by an anchor. On the seventh day his jaw locked, and he died within the week. The Egyptian papyrus on wounds has the same picture more than a thousand years earlier.

Chinese physicians of the twelfth century saw where the newborn’s illness enters. They named it after the navel, and wrote that it is the same illness as the lockjaw of the wounded. They told the midwife to sear the cord with heat.

What was done.

Tradition	Treatment
Greece and Rome	Warmth, oil rubbed in, wine, the poppy; a quiet and dark room
India	Oil, sweating and drugs against wind

Tradition	Treatment
China	Powders that drive out wind, made of arisaema, gastrodia, scorpion and silkworm. For the newborn, searing of the cord at birth
The Guianas and the Amazon	No treatment for this illness. Their arrow poison, which stills the muscles, was tried against lockjaw in London in the nineteenth century
Many peoples, on the cord	Dung, ash, earth, clarified butter or spider’s web, as a dressing

What has been measured. No old remedy cured the illness. The quiet, dark room is still part of the care.

The dressing of the cord is the cause in the newborn. Chapter 36 noted that dung in a wound can carry lockjaw. Among the Maasai of Kenya and Tanzania the cord was dressed with cow dung, and many newborns died of the illness. A programme of the 1980s asked the birth attendants to use boiled water and milk instead. The deaths fell steeply in the districts that took part (Meegan 2001).

Clean cutting is the whole of prevention besides the vaccine. A wash that kills organisms, put on the cord in the first days, lowered the deaths of newborns by about a quarter in trials in Nepal, Bangladesh and Pakistan.

The arrow poison could not be dosed safely in the nineteenth century. Its descendants are the drugs that still the muscles in every operating room, and they are given in lockjaw while a ventilator breathes for the patient.

The book on the body. The form is the unread, with the wrong closure as the second form, since the poison locks the muscles in spasm. Those who survive the spasms recover. The first treatment, the vaccine, lies at the Reading layer. The book says: “Prevention is largely achievable. Treatment is not.” For the newborn it names the means in one line: “A sterile razor blade or a boiled instrument for cutting the cord” (Konstapel 2026c).

Read with the Net. The poison takes away the signal that lets a muscle go. The muscle closes and cannot open. It is the plainest picture of a wrong closure in the atlas, and it lasts until the poison is spent.

In the newborn an act of care carried the illness. The dressing of the cord is a rite of welcome among many peoples, and it was done with the best that the household had. The Chinese physicians looked at the same cord and reasoned from the place of entry to an act. They had the wrong cause, wind, and the right door.

67. The itch

The illness. A mite too small to see burrows into the skin and lays its eggs there. The itch is fierce and worst at night. It passes by touch within a household. About two hundred million people have it at any time. Scratching opens the skin to bacteria, which can go on to harm the kidneys and the heart. The hospital calls it scabies. A cream or a tablet cures it, if the whole household is treated at once.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Greece and Rome	*Psora*; *scabies*, from the word for scratching	A sharp or salty humour that the body pushes to the skin
India	Several kinds of itching eruption among the skin illnesses	The faults, above all phlegm and bile
China	*Jie*, the itching sores	Damp and heat. A book of 610 adds that small worms live in the sores, and that people pick them out with a needle
Seville, twelfth century		A physician describes a tiny creature that comes out of the skin when it is scratched open
Europe, to 1834	The itch	A humour. A German physician built a whole doctrine of long illness on the itch driven inward

How it was recognised. The learned and the unlearned saw different matters. Chao Yuanfang wrote of the worms in 610. Poor women of the Mediterranean coasts took the mites out with a pin. Two Italians watched them do it at Livorno in 1687, drew the mite, and wrote that it is the cause of the illness. The physicians did not accept it. A student from Corsica showed the mite to the doctors of Paris in 1834. He had learned the handling from the women of his island.

What was done.

Tradition	Treatment
Rome	Sulphur mixed with pitch
India	Sulphur; a paste of neem leaves and turmeric; oil
China	Sulphur in pig fat
Mediterranean women	The mite, lifted out with a pin
Persia and the Caucasus	The dried flowers of a daisy, as a powder against lice and fleas
Aboriginal Australia	The oil of the tea tree
Every people	The fine comb against lice. It is found in Egyptian tombs

What has been measured. Sulphur works. An ointment of it is still used for infants and in pregnancy.

The Persian powder gave the hospital its cream. Chemists copied the compound of the flowers and made it stable. The cream against scabies and lice is one of those copies.

Indian physicians gave the paste of neem and turmeric to 814 people with scabies. They reported that nearly all were cured within fifteen days. There was no comparison group.

The treatment of whole villages has been tried in Fiji. In one group of island communities every person was given the tablet at once. A year later scabies had fallen by 94 in a hundred, against 49 in a hundred where only the sick and their contacts were treated (Romani 2015).

The book on the body. The form is the unread, and the over-read is the second form, since the itch is the body's own answer to the mite. The illness is curable. The first treatment lies at the Mesh layer. The book asks for the treatment of the whole household at once. Of the simple means it says that they are "substantial, and nearly sufficient" (Konstapel 2026c).

Read with the Net. The patient here is the household. A person who is cured alone takes the mite back from his own bed. Chapter 72 noted that the shaman, the Navajo singer and the Hawaiian leader work before the gathered kin. For this illness the hospital has reached a rule of the same kind by counting. Treat the household, or nobody is cured.

The history repeats that of scurvy. A Chinese physician and the women of the coasts had seen the cause. The learned medicine had a full account in terms of humours, and the mite had no place in it. It waited twelve centuries for one.

68. Warts

The illness. A virus makes the skin grow into small, rough knobs. They do no harm. In children about two in three are gone within two years without treatment. The hospital paints them with an acid of the willow or freezes them. Neither does much better than waiting.

What the old medicines did.

Tradition	Treatment
Europe	The yellow milk of the greater celandine; the white milk of spurge or of the fig tree
Europe, charms	The wart is rubbed with a cut potato, a bean or a piece of meat, which is then buried. As it rots, the wart goes. Or the warts are counted, and a knot is tied for each in a string that is thrown away. Or they are sold to a charmer for a coin
China and Japan	The seed of coix, taken by mouth for weeks. A caustic seed crushed on the wart
India	Caustic made of plant ash; the hot iron
North America	The resin of the mayapple root

What has been measured. The resin of the mayapple gave the hospital its paint for warts of the sexual organs.

The charms have been tested in their modern dress, which is suggestion. Two British physicians took fourteen patients with warts on both sides of the body in 1959. Under hypnosis they told each that the warts on one side would go. Ten patients reached a deep state. In nine of them the warts of the named side went, and those of the other side stayed. Later trials compared suggestion with no treatment and with a dummy paint. Suggestion did best in some and not in others.

The book on the body. The book has no entry for warts.

Read with the Net. A wart goes when the body's test finds the virus, and often all the warts of a person go together. Any remedy that is used for some weeks can therefore claim a cure. That explains the potato.

It does not explain the trial of 1959. There the word named a side of the body, and the body followed the word. Chapter 22 gave what is known of such effects, which is little. The theory has no account of how a spoken sentence reaches the reading of the skin. The result is recorded here as a fact that waits for one.

69. The girdle of fire

The illness. The virus of chickenpox stays for life in the roots of the nerves. Decades later, most often in old age, it wakes in one root. A band of blisters appears on one side of the trunk or the face, with a burning pain. In some patients the pain lasts for months or years after the skin has healed. About one person in three has the illness once in a lifetime. The hospital calls it shingles.

Names in the old medicines.

Language	Name
Greek and Latin	The girdle
German	The rose of the girdle
Norwegian and Danish	The fire of hell
Italian	The fire of Saint Anthony
Spanish, in the Americas	The little snake
Chinese	The sores of the snake’s string; the red fire that winds round the waist
Arabic	The belt of fire

The picture is the same in every language: a band, a snake or a fire that goes half round the body. Many peoples add a warning. If the two ends meet, the patient dies.

What was done.

Tradition	Treatment
China	The Gentian Decoction to Clear the Liver. Needles set in a ring round the band. Cups on pricked skin. A burning wick touched to the head and the tail of the snake
Latin America	A healer writes holy names in ink round the band and prays, to stop the snake from closing
Italy	Healers who sign the fire with a gesture and a formula that are handed on within a family

What has been measured. The burning compound of chilli, which entry 25 met, is the hospital’s own plaster for the pain that stays. A patch with a high dose, laid on once, eased the pain for three months in trials.

Needling was compared with the usual painkillers in an Italian trial of 102 patients with fresh shingles. The two did the same. Chinese trials of cups on pricked skin report less pain, and reviewers judge them weak.

The slow Chinese exercise of chapter 53 has a result here. Older adults who practised it for sixteen weeks raised their defence against the virus as much as the vaccine does.

The book on the body. The form is the unread. Drift is the second form, since the virus wakes when the defence weakens with age. The pain that stays is a wrong closure. For shingles and for that pain the hospital offers relief only. The first treatment lies at the Mesh layer. The book judges the simple means “modest” (Konstapel 2026c).

Read with the Net. The virus is neither removed nor read for fifty years. It is the unread kept under watch, and drift lets it out.

The warning about the closing ring has a plain ground. The band follows the nerve of one side, and such a nerve ends at the midline. The band cannot close. The peoples who feared the closing had seen truly that it never happens, and drew the wrong conclusion from it.

89. The passages

What this chapter covers

A body is a set of passages. Air, food, urine, bile and blood each have their way, and many common illnesses are a passage that is irritated, narrowed or closed. This chapter takes seven. They are sneezing in spring, burning urine, the old man’s water and the rupture. Then come the abscess of the gut, stones of the gall, and swollen veins with the sore that will not close.

The old surgeons had one answer that recurs in this chapter. Where a passage is closed, they opened a way with a tube or held the wall with a band. Several of those acts are still the treatment.

70. Sneezing in spring

The illness. When the grasses or the trees give off their pollen, the nose runs and itches, the eyes redden, and the patient sneezes in fits. Others have the same from dust or from animals all year. The body attacks a harmless outside form. The hospital calls it allergic rhinitis, and the seasonal kind hay fever. About four hundred million people have it. A spray or a tablet holds it in check.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Persia, tenth century	A physician writes a treatise on a scholar who gets a cold in the head every spring when the roses bloom	The scent of the rose
China	The running, sneezing nose. Known since the *Inner Classic*	A weak guard at the surface, so that wind and cold enter the nose
India	Catarrh of the nose, in several kinds	The faults, lodged in the head
England, 1819	Summer catarrh. A physician describes his own case	He blamed the heat of summer

How it was recognised. The illness is nearly absent from the old books. The English physician of 1819 searched for other cases and found twenty-eight in the whole country. It became common in the nineteenth century, first among the well-to-do in towns. Farmers, who lived in the pollen, seldom had it.

What was done.

Tradition	Treatment
China	Jade Windscreen Powder to strengthen the guard. Minor Blue-Green Dragon Decoction for the running nose. A powder of xanthium fruit and magnolia buds. Needles at the points beside the nose
India	Oil dropped into the nose. The washing of the nose with salt water, which is one of the six cleansings of yoga
Europe	The leaf of the butterbur; nettle; honey of the neighbourhood

What has been measured. The washing of the nose with salt water eases the complaints in children and adults. A review of the trials found the effect real and the evidence modest.

A German trial of needling took 422 patients with hay fever. Those who had real needles used fewer tablets and felt somewhat better than those with pretended needles. The difference was small.

The Chinese decoction was tested blind in Japan in 220 patients with the year-round kind. It helped more than twice as many as the dummy did.

An extract of butterbur did as well as the usual tablet in a Swiss trial of 125 patients. The raw plant holds compounds that injure the liver, and the extract is made without them.

The honey of the neighbourhood has come out both ways.

One finding explains the history. Children who grow up on a farm with animals have far less asthma, as section A10 told, and less hay fever. The body learns in the first years what is harmless.

The hospital's one lasting treatment is of an old kind. The patient is given the pollen itself, in rising doses over three years, until the body no longer answers. It is the method of the king of Pontus, whom entry 51 met.

The book on the body. The form is the over-read: harmless outside forms are attacked. The illness can be held in check. The first treatment, the spray, lies at the Reading layer, as the form had led the book to expect. The book notes that the means are cheap and are on the list of essential drugs (Konstapel 2026c).

Read with the Net. Chapter 4 said that the rules hold no object for the over-read, and that the old medicines describe it least clearly. This entry shows a reason. Much of the illness is new. It grew as children were raised apart from soil and animals.

The axiom says that the net carries its history as its shape. A reader that has met little reads the harmless as a threat. The treatment by rising doses gives it the missing history, late and slowly.

71. Burning urine

The illness. Bacteria from the bowel reach the bladder. The patient passes urine often, in small amounts and with a burning pain. The urine is cloudy and sometimes red. It is an illness of women above all, and about half of them have it at least once. A short course of a drug cures it. A quarter to a half of plain cases clear by themselves within a week.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece	Strangury, the urine that comes drop by drop	Sharp humours in the bladder	
India	Painful urination, in eight kinds	The faults; a stone; an injury	
China	*Lin*, the dribbling illness, in six kinds: of heat, of stone, of knotted *qi*, of blood, of cloudy urine and of exhaustion	Damp and heat that have poured down into the bladder	54

What was done.

Tradition	Treatment
Every tradition	Much drink: barley water, thin gruels, teas
China	Eight Corrections Powder, which chapter 52 listed. Plantain seed and talc
India	The fruit of the puncture vine; sandalwood; water in which coriander has stood
Europe	The leaf of the bearberry, known in Wales since the thirteenth century. Juniper berries; parsley root

Tradition	Treatment
North America	The cranberry, a food of the eastern nations that the settlers took up
Māori	A decoction of the leaves of the tea tree, as chapter 70 listed

What has been measured. The drink is proved. Women who often had the illness were asked to drink a litre and a half more water each day. Their attacks fell from about three a year to under two.

The cranberry has fifty trials behind it. A review of 2023 found that it lowers the number of new attacks by about a quarter in women who have them often. It does not cure an attack that has begun.

The bearberry leaf failed in a British trial. In a German trial women took it in place of the drug. They used fewer drugs in the end, and they had more days of pain and more infections of the kidney.

A German mixture of three herbs was compared with a drug in 659 women. Five in six needed no further treatment, and that was not clearly worse than with the drug.

The Chinese formulas have seven small trials, which favour them and are weak.

The book on the body. The form is the unread. A treated attack is curable, and many end by themselves. The first treatment lies at the Mesh layer. Of the simple means the book names water first, and counts it “among the best-evidenced simple interventions in this book” (Konstapel 2026c).

Read with the Net. The organism is unread and sits in a passage that is rinsed many times a day. To rinse it more often is the plainest act there is. Every old medicine did it. They explained it differently, as cooling, as opening the waterways, as leading out heat, and gave the same cup.

72. The old man’s water

The illness. A gland lies round the outlet of a man’s bladder. It grows with age and narrows the passage. The stream weakens, the man rises several times a night, and in the end the bladder may not empty at all. That last state is an emergency. More than half of men over sixty have the growth. The hospital gives a tablet that relaxes the outlet, or pares the gland away from within.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	Held-back urine, in a dozen kinds. One is a hard, round swelling between the bladder and the gut, like a stone	Wind	
China	Dribbling and closing	The yang of the kidney is too weak to move the water; or damp and heat lie below	
Greece and Rome	Stoppage of urine	A growth of flesh at the neck of the bladder; thick humours	
Southern and central Africa	The trouble of old men		30

What was done. The first need is to let the urine out. The old surgeons had a tube for it.

Tradition	The tube	Drugs
India	Tubes of gold, silver, iron or wood, smeared with clarified butter	The bark of the three-leaved caper; the fruit of the puncture vine; the black pitch of the mountains
Greece and Rome	A curved tube of bronze, in sizes for men and for women	Warm baths; oil
China	Sun Simiao used the hollow leaf of an onion and blew through it	The Kidney *Qi* Pill from the Golden Casket
The Islamic world	A fine tube of silver	
Africa		A tea of the bark of the African plum tree

Tradition	The tube	Drugs
North America		The berries of the saw palmetto, a food of the peoples of Florida
Central Europe		Pumpkin seeds; the root of the nettle

What has been measured. The tube works, and the hospital's tube is its direct descendant.

The plants have a sobering record. The saw palmetto did well in early small trials. Two large blind trials in America then found it no better than a dummy, even at three times the usual dose.

The bark of the African plum eased the complaints in a review of eighteen short trials. The demand has stripped the trees. The species is now protected, and its trade is restricted.

Pumpkin seed was tried in 1,431 German men for a year. The seed gave a small gain over a dummy, and its extract gave none.

The book on the body. The book's two readers did not agree. One read the unread: tissue of the body's own that is in excess and is not removed. The other read drift, since age governs it. The judge wrote that both can be defended and that neither fits: "no form names benign age-bound overgrowth". Tablets hold the illness in check, and the operation cures the narrowing. The first treatment lies at the Chain layer. The simple means is the timing of drink: less in the evening, and less coffee and alcohol (Konstapel 2026c).

Read with the Net. The entry marks a limit of the eight forms, and the book on the body says so itself. A growth that is not a tumour, in a gland that every old man has, is neither a failure of reading nor plain wear.

The old act holds. A closed passage is opened with a tube. Sun Simiao's onion leaf and the surgeon's bronze are the same thought, and so is the reed in the windpipe of entry 65.

The plants show what chapter 74 warned of. Small early trials flatter a remedy. The large blind trial is the one that counts, and two of three remedies did not pass it.

73. The rupture

The illness. A loop of gut pushes through a weak place in the wall of the belly, most often at the groin. A lump appears on standing or coughing and slips back on lying down. The danger comes when it is caught and cannot go back. About one man in four has a rupture of the groin in his lifetime. The hospital sews a net of thread over the weak place.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Greece and Rome	*Hernia*; the gut that has come down into the scrotum	A tear or a stretching of the inner lining, from lifting or straining
India	The swelling of the scrotum by the gut, one of seven kinds of swelling there	Wind, roused by lifting loads and by straining
China	*Shan*, the mounting *qi*	Cold that lodges in the vessel of the liver, which circles the sexual organs

What was done.

Tradition	Treatment
Greece and Rome	The lump is pushed back with the patient's head low. A band with a pad holds it. A Roman writer describes the cutting
India	The hot iron at set places; a band
China	Drugs that warm the liver's vessel and move the *qi*, among them lindera root and the seed of the tangerine. Mugwort burned at the first point of the liver, on the great toe
Medieval Europe	Travelling cutters, who often took the testicle with the sac. A truss of iron and leather
England, a folk rite	A young ash is split. The ruptured child is passed through the cleft at dawn. The tree is bound up, and as it grows together the child heals

What has been measured. A rupture of the groin does not heal. No drug, band or rite closes it. The band holds it, and that is all it does.

The rupture at the navel of an infant is another matter. Most close by themselves before the child is five. That is the ground on which the ash tree stood.

Waiting is safe for a man whom the rupture does not trouble. In an American trial of 720 such men, a caught gut was rare among those who were only watched.

The net of thread costs more than many patients can pay. Surgeons in India and Africa cut the net from the cloth of mosquito nets and sterilise it. In a trial of 302 men in Uganda it did as well as the commercial net.

The book on the body. The form is drift: tissue pushes through a place that has weakened with age. Frame is the second form, where a passage of the unborn child has stayed open. The rupture of the groin is curable. The first treatment lies at the Mesh layer. As simple means the book names the mosquito-net cloth, which removes the chief cost of the operation in poor countries (Konstapel 2026c).

Read with the Net. The wall has drifted, and a patch is laid over it. Nothing in the old medicines closes the gap. They did learn to tell the lump that goes back from the lump that is caught, and to hold the first and fear the second.

The ash tree is the potato of entry 68 once more. A rite with a term of a year or two, used for a trouble that ends by itself within that term, will be seen to work.

74. The abscess of the gut

The illness. A blind end of the gut, as long as a finger, hangs at the lower right of the belly. When its opening is closed, most often by a small hard lump of stool, it swells and festers. The pain begins round the navel and moves to the lower right. If the wall gives way, the whole belly is infected, and before surgery most such patients died. One person in twelve has the illness in a lifetime. The hospital has removed the blind end since the 1880s and calls the illness appendicitis.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China, about 200	The abscess of the gut	Heat and standing blood that knot in the gut and ripen into pus	45
Greece and Rome	Not told apart from other pains and abscesses of the belly		
Europe, to 1886	An inflammation round the blind gut		

How it was recognised. The *Golden Casket* of Zhang Zhongjing, which chapter 45 described, gives the signs. The lower belly is swollen and hard. It hurts when pressed, with a pain like that of the dribbling illness, yet the urine is normal. There is fever with sweating and chill.

The book then asks one question: has pus formed? A slow, tight pulse says that it has not, and the patient may be purged. A flooding, rapid pulse says that it has, and purging is forbidden.

Chinese needlers of the twentieth century added a sign. A place on the shin, about two thumb widths below the point called Leg Three Miles, becomes tender in this illness. They named it the point of the blind gut.

What was done.

Tradition	Treatment
China, before pus	The Rhubarb and Moutan Decoction of the *Golden Casket*: rhubarb, moutan bark, peach kernel, the seed of the wax gourd and a purging salt
China, after pus	A powder of coix seed, patrinia and a little aconite
China, from the 1950s	The old decoction with needles at the point of the blind gut, in hospitals that operated only when this failed
Europe before the operation	Opium, rest, poultices and waiting
Many households	A purge for any pain of the belly

What has been measured. The household purge killed. Surgeons learned about 1900 that castor oil can burst an inflamed appendix, and they taught for a century that no purge is given for a pain of the belly.

The Chinese formula is a purge as well. Its own rule limits it to the first stage. Chinese hospitals reported from the 1950s that eight or nine in ten patients recovered on it without the knife. Those reports had no comparison, and a part of the patients fell ill again.

The thought behind them has since been tested with the hospital's own drugs. Finnish surgeons took 530 adults with a plain appendicitis, shown on a scan. Half were operated on. Half had drugs against the bacteria. Of the second group, 73 in a hundred needed no operation within a year, and 61 in a hundred needed none within five years (Salminen 2015). An American trial of 1,552 patients found much the same.

The book on the body. The form is the seam: a fixed lump lodged in a living passage. The unread infection behind it is the second form. The illness is curable. The first treatment, the operation, lies at the Mesh layer, as the form had led the book to expect. Of simple means the

book says that there are “essentially none for treatment”. It calls this one of the clearest cases in which access to a surgeon decides who lives (Konstapel 2026c).

Read with the Net. This entry belongs to the hospital. The seam is taken out, and the patient is well in a week.

What the old Chinese book adds is the staging. Entry 53 gave the rule of the outer medicine: one act while the sore gathers, another when it has ripened. Zhang Zhongjing applied it to a sore that nobody can see, and read the stage from the pulse. The Finnish trial shows that the first stage is real. Many of these abscesses do go back.

75. Stones of the gall

The illness. Stones form in the small bag that stores the bile. Between one adult in ten and one in five has them, and four of five never notice. In the others a stone is caught in the outlet after a fat meal. A hard pain rises under the right ribs and goes through to the shoulder blade. A stone that lodges further on brings fever and a yellow skin. The hospital removes the bag with its stones.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
China	Pain under the ribs; the yellow illness with pain	Damp and heat in the liver and the gallbladder; knotted *qi* of the liver
Greece and Rome	Colic; an illness of the liver. A physician of the sixth century mentions stones in the passages of the bile	Thick, burnt bile
India	Not told apart from other pains of the belly	

What was done.

Tradition	Treatment
China	The Major Bupleurum Decoction. The herb named for its coin-shaped leaves, with turmeric tuber and the lining of a chicken’s gizzard. The bile of the bear, in the drug books since 659

Tradition	Treatment
Europe	The juice of black radish; artichoke leaf; dandelion; oil of peppermint
Many households today	A day of fasting, then olive oil with lemon juice, as entry 21 told

What has been measured. The bear's bile is the remedy that entered the hospital. A Japanese chemist crystallised its chief acid in 1927 and named it after the bear. It is now made without the animal. Taken for a year or two, it dissolves small stones of one kind in a part of the patients, and the stones often come back. It is the first treatment for an illness in which the body attacks its own bile ducts.

The Chinese decoctions that are said to drive stones out have no good trial.

A mixture of plant oils, with peppermint, dissolved some stones in small trials.

The harm falls on the bear. Many thousands of bears have been kept in cages in East Asia with a tube in the gallbladder, although the acid can be made in a factory.

The book on the body. The form is the seam: a fixed stone in a living organ. The unread is the second form, since most stones stay silent. The illness is curable. The first treatment lies at the Mesh layer. As simple means the book names the slow loss of weight, since a fast one makes stones, and movement (Konstapel 2026c).

Read with the Net. The entry repeats that of the stone in the kidney. A seam is taken out by the knife, and no drug of an old medicine dissolved it.

The silent stones carry the first rule of cure. Four of five are best left where they are. A scan finds them, and the finding is no reason to act.

76. Swollen veins and the sore that will not close

The illness. The veins of the leg have small valves that keep the blood from sinking back. When they fail, the blood stands. The veins bulge in knots, and the legs are heavy and swollen by evening. After years the skin above the inner ankle darkens and hardens, and a sore opens there that may last for decades. About one adult in a hundred has such a sore in a lifetime. The hospital binds the leg.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Egypt	Windings like a serpent in the leg. The papyrus forbids the knife	

Tradition	Name or kind	Cause as the tradition gives it
Greece	*Kirsos*, the swollen vein. The sores of the shin go with it	Black bile and thick blood that sink into the legs
India	The knot of veins	Wind, in those who walk far and then stand in cold water
China	The knot of sinews; the sore of the shin, which the people call the old rotten leg	Standing blood and damp that sink

How it was recognised. A Greek dedicated a marble relief of a leg at a shrine in Athens about 2,400 years ago. A long swollen vein runs down its inner side. A Hippocratic book on sores links the two troubles and adds a rule: a person with a sore on the leg should not stand.

What was done.

Tradition	Treatment
Greece	Small pricks in the vein; a firm bandage; rest with the leg raised
Rome	The vein is tied, burned or drawn out. A Roman general bore the cutting of one leg without bonds and refused the other. He said that the cure was not worth the pain
India	Leeches; bleeding of the vein
China	Plasters on the sore, under a tight binding of cloth
Europe	A laced stocking of dog leather, from 1676. A boot of gauze and zinc paste, from 1885. The seed of the horse chestnut

What has been measured. Binding is proved. Sores heal sooner under a firm bandage than under any dressing without one, and a stocking worn afterwards lowers their return.

The horse chestnut has seventeen trials. An extract of the seed lessens the swelling and the pain of the legs. In a German trial of 240 patients it took down the swelling as well as a stocking did.

Honey under the bandage was tried in 368 patients in New Zealand. It did not speed the healing. Entry 53 gave the maggots, which clean such a sore and do not close it.

The book on the body. For the veins the form is drift: the valves wear out with age, with pregnancies and with standing. For the sore the form is the carrier, since the blood does not return. The sore is curable. The first treatment is the bandage, at the Mesh layer. The book says of the veins that this is the illness in its chapter “where simple means do the most work”. Of the sore it says: “the active ingredient is a bandage” (Konstapel 2026c).

Read with the Net. The carrier here is the blood on its way back. The valves no longer hold it, and a cloth wound round the leg does from outside what they did from within. Walking helps for the same reason, since the muscles of the calf press the veins at every step.

The Hippocratic bandage and the bandage of the hospital are one act, 2,400 years apart. The act was right from the start. What the old physicians said of it, that it kept black bile from sinking, was not.

90. Nerves, senses and seasons

What this chapter covers

The chapter takes five illnesses that touch the nerves and the senses. They are the shaking palsy, dizziness, the crooked face, the stroke of the sun with the sickness of great heights, and short sight.

They have little in common at first sight. Two of them are illnesses of the surround in the plainest sense: the place is wrong, and the body is sound. In one the hospital found a cause that no old medicine had seen, and cures it with a pair of hands. In one an Indian seed holds the hospital's drug.

77. The shaking palsy

The illness. The hands tremble at rest. The limbs stiffen, every movement slows, the steps grow short and the face loses its play. Cells in the brain that make one messenger compound die off. The hospital names the illness after the London physician who described it in 1817. A drug that restores the compound gives relief for years. Nothing halts the loss.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
India	The trembling wind: trembling of the hands and head, slowness and stiffness	Wind	59
China	The trembling illness	Wind that stirs within, when the yin of liver and kidney is too weak to hold the yang	
Greece and Rome	A trembling of the limbs at rest, told apart from the trembling of a limb in use	Weakness of the nerves	

What was done.

Tradition	Treatment
India	The seed of the velvet bean, with other drugs against wind. Oil rubbed in daily
China	Decoctions that settle the liver and still the wind, with gastrodia and uncaria. The slow exercises
The Mediterranean	No treatment is recorded. The broad bean, a daily food there, holds the same compound as the Indian seed
Europe, from 1867	The alkaloids of henbane and deadly nightshade, two old poison plants
Bulgaria, 1920s	A village healer’s wine of nightshade root. A queen of Italy had it tried in hospitals

What has been measured. Chapter 59 told the history of the Indian seed. Chemists found the compound in it in 1937, and the compound became the standard drug thirty years later. In a small English trial a powder of the seeds worked faster and longer than the standard preparation (Katzenschlager 2004). A later trial in Bolivia compared the roasted powder with the drug in fourteen patients over sixteen weeks. Those who could take the powder did as well on it. Half of them stopped, most because of the stomach.

The nightshade drugs were the only treatment for a century, and their successors are still given for the tremor.

Chapter 53 gave the trial of the slow Chinese exercise in 195 patients. It gave the best balance and the fewest falls (Li 2012).

Rhythm from outside helps. Many patients who can hardly start a step walk freely to a beat, to music or over lines on the floor. Dance has done well in small trials.

The book on the body. The form is the carrier: the compound does not arrive. A seam and drift are second forms. The hospital offers relief only. The first treatment, the drug, lies at the Chain layer. As simple means the book names exercise, and adds that one trial suggests a slowing of the illness “that no drug has achieved” (Konstapel 2026c).

Read with the Net. The second rule of cure is to restore and not to add. The Indian seed and the hospital’s tablet both do exactly that. They carry in what is missing. Neither brings back the cells that made it.

The walking to a beat shows the other layer. The patient has lost the inner rhythm that starts a movement. A rhythm that comes from outside takes its place for as long as it sounds. Chapter 5 called this a matching of phase.

78. Dizziness

The illness. The room turns, and the patient is sick. The commonest kind comes in turning over in bed or in looking up, and lasts less than a minute. Small crystals of the inner ear have come loose and fallen into one of the canals of balance. The hospital rolls them out with a set of movements of the head. A second kind comes in attacks of hours, with ringing and loss of hearing. Dizziness can also be a sign of a stroke.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Greece	The dark dizziness	Vapours and humours that rise to the head
India	The whirling	Wind and bile
China	Dizziness of the head and the eyes. Three schools give three causes	All wind with shaking and dizziness belongs to the liver. Without phlegm there is no dizziness. Without emptiness there is no dizziness

How it was recognised. The Chinese physician sorts by pattern, as the table of entry 14 showed for high blood pressure. Rising yang of the liver gives dizziness with a red face and anger. Phlegm gives a heavy, clouded head with nausea. Too little *qi* and blood gives dizziness on standing up, with a pale face.

No old medicine told apart the kind that comes from the crystals.

What was done.

Tradition	Treatment
Greece and Rome	Bleeding, purging and powders that bring on sneezing
China	Gastrodia and Uncaria Drink for rising yang. Pinellia, white atractylodes and gastrodia for phlegm. Decoctions that build up for emptiness
China, India and the sailors of many nations	Ginger against the sickness

What has been measured. Ginger lessened vomiting and cold sweat in a Danish trial of eighty naval cadets at sea.

The Chinese formulas have no good trial for dizziness.

The hospital's treatment was found in 1980. A physician reasoned from the shape of the canals to a sequence of positions of the head, each held for about half a minute. One session ends the illness in about four of five patients.

The book on the body. For the commonest kind the form is the seam: a fixed crystal lodged in a living canal. The illness is curable. The first treatment lies at the Phase layer. The book calls this "the purest simple-means entry in the book". The test and the cure "are both performed with a pair of hands and a flat surface" (Konstapel 2026c).

Read with the Net. The old medicines had three accounts and no cure. The hospital described this kind in 1921 and had no cure for sixty years. The cure came when someone asked where the seam lies and how it can be moved.

The treatment itself is of the kind that the old medicines favour. It needs no drug and no instrument. It is a reading by a provoked sign, followed by a fixed sequence of positions. Chapter 5 gave that order: read the state first, then act.

79. The crooked face

The illness. A person wakes with half the face hanging. The eye of that side does not close, and the mouth is drawn to the other. The nerve of the face has swollen in its narrow canal of bone, probably from a virus. About seven in ten recover fully without treatment, most within three months. A drug that reduces swelling, given in the first days, raises that number. About one person in sixty has the illness once.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
China	The mouth and the eye awry	Wind strikes the net vessels of the face. The books tell it apart from wind that strikes the organs, which is the stroke of entry 13
Persia and the Arabic books	*Laqwa*	Cold and moisture in the nerves of the face
Europe, among the people	Struck by a draught	Sleeping by an open window; a cold wind on one cheek

Tradition	Name or kind	Cause as the tradition gives it
The north coast of Peru	Potters modelled the crooked face in clay some fifteen hundred years ago	

What was done.

Tradition	Treatment
China	A needle from the corner of the mouth toward the angle of the jaw. A point on the opposite hand. A powder of typhonium, silkworm and scorpion, named for bringing the face straight
Persia	Warmth; rubbing of the face
Europe	Warm cloths; later, weak electric shocks

What has been measured. An illness that ends well in seven of ten gives every remedy its cures.

Needling has many Chinese trials, most of them weak. One trial of 338 patients compared needles that were worked until the patient felt them with needles that were set and left. More patients of the first group recovered fully. There was no group without needles.

Exercises of the face before a mirror help those in whom the palsy has stayed.

The one act that matters in the first weeks is plain. The eye that does not close must be kept moist and covered at night, or its surface is harmed.

The book on the body. The book has no entry.

Read with the Net. China and the villages of Europe name the same cause, a wind on the face. The hospital’s studies of cold and draught are few and do not settle it.

The Chinese distinction holds. Wind in the net vessels harms the face alone. Wind in the organs takes the limbs and the speech as well. The hospital draws the same line between a palsy of the nerve and a palsy from the brain, and it is the first question at the bedside.

80. The stroke of the sun and the sickness of great heights

The illness. In great heat the body can no longer shed its warmth. First come weakness, cramps and faintness. Then the sweating stops, the mind clouds, and the patient collapses with a burning skin. Unless he is cooled within the hour, he dies or is left damaged.

Above some 2,500 metres many newcomers have headache, nausea and poor sleep. In a few the brain or the lungs swell, and they die unless they are brought down.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	The stroke of summer heat	One of the six excesses, which enters and consumes the *qi* and the fluids	48
Greece	The illness of the Dog Star	The heat of the days when that star rises with the sun	
North India	The stroke of the hot wind	The wind of May and June	
China, about 30 before our era	An official names the Great Headache Mountain and the Little Headache Mountain on the road to the west	The ground makes men feverish, pale and sick	
The Andes	The illness of the pass	Thin air, in the judgement of a Jesuit who crossed in the 1570s	
Tibet	The poison of the pass	A vapour of the ground or of plants	

What was done.

Tradition	Against heat	Against height
China	Shade and rest. A powder of six parts of talc and one of liquorice. Generate the Pulse Powder for the exhausted. Soup of mung beans; watermelon	A root of the high meadows, taken before a journey
India	A drink of raw mango with salt and sugar; buttermilk; an onion carried in the pocket	
The Arab lands and the Mediterranean	The head cloth; rest at midday	
The Andes		Coca leaf, chewed or as a tea. A slow ascent

What has been measured. For the stroke of heat one act counts: cold water over the whole body, at once. Among soldiers and runners who were put in a bath of cold water within half an hour, nearly all lived. Some old books warn against cold water for an overheated person. That warning costs lives.

The drinks of salt, sugar and sour fruit are sound. They are the drink of entry 6 in another form.

The Tibetan and Chinese root was tested in 102 volunteers who were taken quickly to a great height. It did not prevent the sickness. Ginkgo failed in a trial of 614 trekkers in Nepal. Coca has no good trial. A slow ascent prevents the sickness, and going down cures it.

Chapter 57 gave a finding of another kind. The Indian types of constitution differ in a gene that governs the body’s answer to thin air (Aggarwal 2010). The peoples of Tibet carry forms of such genes that lowlanders lack.

The book on the body. The book gives heat illness none of its eight forms. The harm is “imposed from outside”, and it can be undone if the temperature is corrected in time. The first treatment lies at the Surround layer (Konstapel 2026c).

Read with the Net. Both are illnesses of place. The body is sound and stands where it cannot keep its balance. The cure is to change the place: into shade and water, or down the mountain.

Chapter 72 counted as its second point that the old medicines look for illness outside the body. Here that is the literal truth. The Jesuit on the pass in Peru reasoned from his own sickness to the thinness of the air, long before the weight of the air was measured. The

Chinese official blamed the ground and the Tibetans a poison. All three placed the cause where it lies, outside the traveller.

81. Short sight

The illness. The eye grows too long, and distant objects blur. It begins in the school years. In the cities of East Asia eight or nine of ten school leavers are now short-sighted, and the number rises everywhere. Glasses correct it. They do not stop the growth, and a very long eye is at risk of blindness in later life.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	Able to see near and timid to see far	Too little yang to carry the sight outward. The classic adds: long looking injures the blood	48
India	The first stage of the dimming of sight	The faults in the first layer of the eye	

What was done.

Tradition	Treatment
China	The Settle the Will Pill, of ginseng, poria, polygala and acorus. Lycium fruit and chrysanthemum
China, from 1963	Twice a day every schoolchild presses and rubs the points round the eyes, to music, for five minutes
India	Gazing at a flame without blinking, one of the six cleansings of yoga. Washing of the eyes with the three fruits
Italy, from the fifteenth century	Hollow lenses

What has been measured. The Chinese exercise has been done by hundreds of millions of children for sixty years. Short sight rose steeply in the same years. Studies of the exercise find at most a small and passing effect.

What protects is daylight. A trial in Guangzhou added forty minutes of outdoor play to the school day of six-year-olds in six schools. After three years 30 in a hundred had become short-sighted, against 40 in a hundred in six other schools. Taiwan sent all schoolchildren outdoors for two hours a day from 2010, and the long rise turned. A trial in its schools confirmed the effect (Wu 2018).

A drop made from the alkaloid of nightshade, in a very weak dose, slows the growth of the eye. That plant has been put into eyes since the Renaissance, to widen the pupil.

Needling has two small trials, which settle nothing.

The book on the body. The form is the wrong closure. The eye "grows too long" and the body accepts that length. Frame is the second form. The illness can be held in check. The first treatment, glasses, lies at the Mesh layer. The book notes that time outdoors lowers the number of new cases, and that ready-made glasses cost a few dollars (Konstapel 2026c).

Read with the Net. A growing eye sets its length by what it meets. A child who looks at near objects in dim rooms gets an eye that is made for near objects. The axiom says that the net carries its history as its shape. Here the shape can be measured in millimetres.

The Chinese classic named the cause two thousand years ago: long looking. The remedy that the schools chose acted on points of the face. The remedy that works was outside the door. Entry 60 told the same of soft bones. Both illnesses grew with indoor life, and for both the simple means is the sky.

91. Illnesses that the hospital does not name

What this chapter covers

Every entry so far began from a complaint that the hospital also knows. This chapter turns the atlas round. It takes seven illnesses that the old medicines name and the hospital does not. Three are laid to others: illness sent by another person, illness from a broken rule, and illness from the dead. Four lie in the person: the wind that rises with too much thinking, the imbalance of hot and cold, the illness of longing, and the call.

Chapter 21 described most of them for the peoples of Part II. The entries here add what Parts III to VI found, so that each kind can be seen across the whole book. They have no hospital name, no trial of a drug and no entry in the book on the body. The head on that book is therefore left out, and the last head is longer.

82. Illness sent by another

The illness. A person wastes, or is struck by one misfortune after another, and no ordinary remedy helps. The old medicines say that someone has sent it. The motive is nearly always envy.

Names and causes in the old medicines.

Tradition	Name or kind	How it is done	Chapter
The shaman’s world	Sorcery, the dart, the pointed bone	A dart shot from afar; a spell over a hair or a footprint	21
Mesopotamia	The hand of mankind	A figure of the victim is made, bound and buried, or given to a dead man to hold	33, 34
Yoruba	The work of the mothers of the night	They attack out of envy, above all within the family and the compound	29
England, about 1000	The shot of elves and witches	A small spear that causes a sudden stitch	42

Tradition	Name or kind	How it is done	Chapter
Hawai‘i	Praying to death	The sorcerer prays at night over a bait: a hair, spittle or a shred of clothing	68
The Fore of New Guinea	Sorcery	A scrap of the victim’s food or hair is bound in a bundle and left to rot in a swamp	70
From Scotland to India and Latin America	The eye	A look of admiration with envy in it. It needs no ill will	21

How it was recognised. The Babylonian handbook gives the picture: a person who wastes away, has lost his desire and his sleep, and against whom everyone seems to have turned. The Yoruba diviner lists a barren womb, a child that wastes, a business that dries up and a mind that fails. In both medicines the diagnosis is made by a reading, with lots or with signs, and not from the body.

What was done.

Tradition	Treatment
Mesopotamia	The rite of the Burning, through one whole night. Figures of the unknown witch are burned. The patient is washed at dawn and declares himself clean
Yoruba	An offering at night for the mothers, with what the verse of Ifá names
Hawai‘i	A second expert finds the sender and returns his work. A victim who sees the sorcerer’s gesture and makes it himself sends the harm back
The shaman’s world	The object is taken out and sent back. The patient is closed and guarded

Tradition	Treatment
Everywhere, against the eye	A touch, a blessing, light spitting; a blue bead, a red thread, a charm in the shape of a hand

What has been measured. Chapter 21 gave four lines of work. A shock can stun a heart. The newly bereaved die more often. Americans of Chinese descent die more often of the heart on the day of the month whose number sounds like death. And patients who expect harm from a tablet feel it from a dummy. None of these studies concerns sorcery. Together they show that each link of the old claim is possible.

The harm of this diagnosis is the gravest in the book. Where illness is sent, someone is blamed. Chapter 21 gave the count of India, with more than two thousand five hundred killings between 2000 and 2016. Chapter 70 gave the Fore, who killed men for an illness that came from their own rite of mourning.

Read with the Net and VALIS. The hospital asks how a person fell ill. This diagnosis asks why this person, and why now. Chapter 21 called it the second spear. The theory has no answer to that question, and it does not need one to read the practice.

Three traditions state a limit. In Hawai‘i a prayer sent against an innocent person returns on the sender. In the Philippines sorcery takes hold only of one who has done wrong. The Javanese say that what is empty can be entered. Chapter 71 put the three together under the words: no hold. It laid a rule of the theory beside them. A form that is closed offers no open place at which another could join. Chapter 71 called that reading loose, and it stays loose here. The healers of Hawai‘i drew the practical conclusion. They began by setting the family in order.

The act of the Burning deserves a second look. The patient does not know who harmed him and does not find out. He hands the case to the gods of the night, and the figures that burn have no name. The rite frees him without accusing anyone. That is the form of this cure that costs no lives.

83. Illness from a broken rule

The illness. An illness lingers or keeps coming back. The reading finds that the patient, or someone close to him, has broken a rule and has hidden it.

Names and causes in the old medicines.

Tradition	The rule that was broken	Chapter
The shaman’s world	A rule of the hunt, of the animals or of the kin. The wrong does harm for as long as it is hidden	21
Mesopotamia	An oath. A broken oath clings as a curse, even when a forebear broke it. The hand of the sun god lies on the one who swore falsely	32, 33
Yoruba	A false oath on iron; a prohibition of the family, of the orisha or of the person’s own sign of Ifá	29
Europe, twelfth century	Illness and sin are both a drying out, in the teaching of Hildegard	42
Hawai‘i and Polynesia	What is set apart was mixed with what is common, without the rite	68, 70, 71
Manus	A hidden offence or an unpaid debt, which the ghost of the house sees	70
Greece	None. The wrong that was done and not confessed has no place in a Hippocratic case	38

What was done. The cure has the same three steps in every tradition that knows the illness. The wrong is found, by the lots, by a medium or by questioning. It is spoken aloud before others. What was owed is then given back. The Hawaiian family meeting of chapter 69 has the fullest form. It has a leader who is no party, a confession and a restitution. It ends with a forgiveness on both sides that is spoken and closed.

What has been measured. Chapter 21 gave the experiments on writing down what was never told. Those who wrote went to the doctor less often in the months that followed (Pennebaker 1988). Chapter 69 gave the studies of forgiveness. To nurse a grudge in thought raises the heart rate and the pressure of the blood (Witvliet 2001). People who are taught to

pardon are less depressed and less anxious afterwards, in a pooled analysis of fifty-four studies (Wade 2014). No trial has tested the old form, in which the whole household hears.

Read with the Net and VALIS. Chapter 72 counted confession and the setting right as its sixteenth point and found it in seven traditions. The second axiom says that what does not close passes on as tension. A hidden wrong is the plainest case of a matter that has not closed. It stays between two people, and it passes on, in the Babylonian case from a father to his son.

The Greek physicians dropped the illness, and the hospital followed them. Chapter 38 named the price. What was done and not confessed has no place in the case history, and so nobody asks.

84. Illness from the dead

The illness. The patient dreams of a dead person, weakens and follows the dead in thought. Or a household meets one misfortune after another. The reading finds that one of the dead is holding on.

Names and causes in the old medicines.

Tradition	Which dead	What they want	Chapter
The San, the Sámi, Siberia	A dead mother or kinsman who longs for the living	The company of the one who is ill	21
Mesopotamia	The dead who were not buried, or whose family no longer brings food and water	Food, water and their name spoken. The signs are in the head: headache, ringing ears, a stiff neck	32, 34
China	An ancestor who is displeased; the hungry dead who have no descendants	A grave well placed; offerings; a tablet for a dead child	54
India	The ancestor who seizes. The patient is quiet and subdued and offers water with the left shoulder bared	Meat, sesame and sweet rice	58

Tradition	Which dead	What they want	Chapter
Korea, the Navajo, the Buryats	Those who died young, by violence, far from home or unmourned	To be mourned and sent on	15, 19, 21
Hawai‘i	The ancestors who have become guardians of the family. They warn, help and punish	Most illness without a plain cause is first laid to them	68
Samoa	A dead relative who speaks through a young woman of the family	That a neglect, a quarrel or a broken promise be put right	70
Manus	The last head of the house, whose skull is kept above the door	That nothing be hidden	70

What was done. The dead person is given what he lacks: food, a name, a burial, a mourning. He is then told, kindly and firmly, to go. The Babylonian healer made a figure of the ghost, provided it for a journey, and buried it. Many peoples hold a second funeral. In China food is set out in every street in the seventh month for the dead who have no one.

What has been measured. Entry 41 gave the count of Welsh widows and widowers, of whom nearly half had met their dead (Rees 1971). Chapter 21 gave the name that psychiatry adopted in 2019 for grief that does not ease. Its signs are those of the old illness: a lasting yearning, and the sense that part of oneself has died.

Read with the Net and VALIS. Chapter 72 found that the traditions do not agree on the standing of the dead. For the San and the Navajo they are a danger and are sent away. For the Yoruba, the Chinese and the Hawaiians they are guardians who are fed and kept. The illness is the same in both: a tie that has not been brought to its close.

Chapter 6 read the other half as the same strand, read in the other direction. The third axiom says that the net carries its history as its shape. The theory can say that much: what a household has been is part of what it is. It cannot say what a dead person is. The old medicines do not wait for that answer. They complete the leave-taking, and the patient mends.

85. Too much thinking and the wind that rises

The illness. A person cannot stop turning the same thoughts. The head aches, the neck is stiff, the chest is tight, sleep is poor and the food has no taste. Peoples with no contact between them call it by one name: thinking too much.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Navajo	Too much thinking, named by the hand-trembler beside a ghost and a wrong marriage		19
Shona of Zimbabwe	Thinking too much	Troubles that have no way out	
China	Worry and brooding knot the *qi*	The spleen and the lung are struck: no appetite, a full belly, a tight chest	48
Tibet	The wind of life, roused. The person is anxious and sad without cause, sighs, sleeps badly, and feels his heart beat	Grief, worry, too much thinking, too little food and sleep, strain in meditation	63
Cambodia	The wind that rises	Under strain the wind turns and surges upward. It presses on the heart and roars in the ears	70
Java	Wind has entered	The patient is chilled, aching, bloated and sick	70

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Malay	The sickness of the winds	Inborn winds that life does not let out: the illness of artists without a stage	70

What was done.

Tradition	Treatment
Navajo	A chant of nine nights
Zimbabwe	A talk with an older woman who listens and helps to sort one trouble from the next
China	Drugs that free the knotted *qi*. In one school, a feeling is roused on purpose to break the brooding
Tibet	Warmth, rich food, the company of friends, kind speech, and rest in a quiet and dimly lit place
Cambodia, Java, Vietnam, China	The oiled skin is rubbed with the edge of a coin until red stripes rise. The wind is given a way out
Malay	A performance that lasts a night. The healers sing the story of the figure whose wind the patient has. The patient rises and dances it before the village

What has been measured. Entry 35 gave the trial of the bench in Zimbabwe. It took the Shona name of the illness as its starting point. After six months one in seven of those who had talked with a grandmother was still depressed, against half of those with usual care (Chibanda 2016).

Chapter 70 gave the study of the rising wind among Cambodians who survived the terror of the 1970s (Hinton 2010). The attacks are the form that fear and memory take in a Khmer body. The same chapter gave a German trial of the coin on painful necks, with less pain after a week.

Read with the Net and VALIS. The hospital would file these patients under several names: depression, anxiety, the illness after terror, pain without a wound. The old medicines give one picture. A movement that should go out and down has turned, and it goes round or upward.

That is the form of direction, in the words of the book on the body, and the cures match it. The coin, the talk, the dance and the chant all give the movement a way out. Chapter 72 found that the East and the Americas speak of direction where the humoral West speaks of amount. This illness is the clearest case. No amount is wrong in these patients. A direction is.

86. Too hot, too cold

The illness. The patient is not ill with a named illness. He is too hot or too cold. A hot body has a red face, thirst, dark urine, a quick pulse and a quick temper. A cold one is pale and chilly, with pale urine, loose stools and a slow pulse.

The doctrine in the old medicines.

Tradition	What is said	Chapter
Greece and Unani	Every person, organ, food and drug is hot or cold, and dry or wet, in one of four degrees. A person with a hot illness is fed cooling food, and the reverse	39, 40
Mesoamerica and the Andes	Each person, food, plant and illness has a place between hot and cold. The native doctrine met the Spanish one and kept its own ground	17, 18
China	Hot or cold is one of the four broad questions of every examination. Foods and drugs are warm, hot, cool or cold	49, 53
Tibet	All illnesses come down to two kinds. The first question in every case is whether it is hot or cold	62

Tradition	What is said	Chapter
The Malay world and the Philippines	Every villager sorts foods and illnesses into hot and cold. A body that is hot from work must not meet cold water	70

How it was recognised. The signs are nearly the same from Mexico to Tibet: colour, thirst, urine, stool, pulse, and what the patient craves or shuns. The hospital records every one of these signs. It does not add them up.

What was done. The treatment is by opposites. A hot state is cooled and a cold one is warmed, with food first, then with drugs, baths and the season. The woman who has given birth is the standing case. Entry 46 gave the rule of many peoples that she is cold and must be warmed for some forty days.

What has been measured. Chapter 53 gave the work on foods. Those called warm tend to be rich in fat and protein and in the sharp compounds that excite the nerve endings for heat. Those called cold tend to be watery and to hold compounds that excite the endings for cold (Zhou 2021). The match is partial.

Whether patients who are treated by their hot or cold state do better has hardly been tested. It is a design that could be run, of the kind that chapter 74 listed.

Read with the Net and VALIS. Chapter 72 counted two opposite illnesses with two opposite cures as its fifteenth point and found it in every part of the book. Hot and cold is the commonest form of that point.

The doctrine is not about temperature. A patient with a fever can be cold in this sense, and the Chinese books say so. It sorts states of the whole person into two that call for opposite acts. The theory has a pair of the same kind among its first terms: with and against. Whether the two pairs answer to each other is not known, and this book does not claim it.

87. The illness of longing

The illness. A person wastes for want of someone or of some place. He does not eat or sleep, sighs, and cares for nothing else. The old books have two kinds: longing for a beloved, and longing for home.

Names and causes in the old medicines.

Tradition	Name or kind	What is said	Chapter
Greece and Rome	The grief that is not confessed	Galen finds it with his fingers on the wrist. The pulse turns uneven when one name is spoken	39
The Arabic books	*Ishq*, passionate love, among the illnesses of the head	Hollow, dry eyes; laughing and weeping by turns; sighs; a pulse that changes at the name	40, 41
Europe, to the seventeenth century	The same illness, under a Latin name		41
China	The illness of thinking of each other	Brooding knots the *qi*	48
Switzerland, 1688	Nostalgia, the pain of the return. A physician coined the word for students, servants and soldiers far from their valleys		
Aboriginal Australia	The spirit is moved from its seat by homesickness. Elders say that they cannot get well off their country		13, 21

What was done. For love, the Arabic physicians prescribe union where the law allows it. Where it does not, they prescribe work, hunting, lawsuits, and the talk of old women who speak ill of the beloved. For home, the army physicians of the eighteenth century knew one cure: leave to go home, or the firm promise of it.

What has been measured. The pulse at the name is real. Chapter 41 noted that any reader can repeat the observation.

Chapter 21 gave the stunned heart after a shock and the doubled rate of heart attack in the first month after a partner’s death.

Homesickness was a diagnosis of army physicians until the nineteenth century. The records of the northern armies in the American civil war list some five thousand cases and several dozen deaths under that name. The diagnosis was then dropped, and the deaths were filed under other heads.

Chapter 13 gave the evidence that Aboriginal people who live on their own country are healthier than those who were moved from it. Chapter 21 gave the new word for those whose country was changed round them.

Read with the Net and VALIS. Both kinds are a tie that is stretched and not closed. The second axiom says that what does not close passes on as tension. The old physicians read that tension where it shows, at the wrist.

The cures are of two sorts. One closes the tie: the marriage, the journey home. The other loosens it, by work, by company, by a new direction. The hospital has kept the second sort under other names and has lost the first. Few physicians today prescribe a return.

88. The call

The illness. A young person turns silent and withdraws. He sleeps long or not at all, dreams of the dead, hears voices, falls into fits, or lies for days without food. No remedy helps. The old medicines say that he is wanted as a healer.

Names in the old medicines.

Tradition	What is said	Chapter
Siberia	The shaman’s illness. It comes between twelve and twenty. Among the Evenki it is the illness of the whole clan, gathered in one person	10
Korea	The spirit sickness, by which the gods call the shaman north of the Han River	15
The Mapuche, the peoples of Mexico	The call comes through illness and dreams	17, 18

Tradition	What is said	Chapter
Southern Africa	The illness that makes a diviner	21
Yoruba	An orisha wants the person as a priest. The illness will not end until the person is initiated	29

How it was recognised. An old healer is sent for. He says whether this is the call or an ordinary illness. The tradition makes the distinction itself. Chapter 10 noted that the peoples of southern Africa have one word for the call, another for madness and a third for illness sent by sorcery. The traditions agree on one rule, in almost the same words. The one who is called and refuses stays ill, goes mad or dies.

What was done. The cure is to accept. The healer names the spirits that are at work and begins to teach. As the novice learns to call them and to send them away, the illness lifts. In Africa the sufferer joins the company of those who were struck by the same spirit, and passes from patient to novice to healer.

What has been measured. Little. A study among Bhutanese refugees in Nepal examined forty-two shamans and some eight hundred of their neighbours. The shamans had no more mental illness than the others (van Ommeren 2004). That speaks against the old view that the shaman is a patient who was never cured. It does not show what the call is.

Entry 34 gave the finding that bears on it. Voices are borne better where they are heard as kin or as a god and are answered.

Read with the Net and VALIS. Chapter 23 gave two readings of a state that is closed, stable and not the person's own. In the one the visitor is driven out. In the other the person comes to terms with it, and that is the call. Chapter 72 counted the result as its sixth point: a healer who is formed by a passage of his own.

Chapter 7 set out the course of a meeting in five steps. The call has all five, spread over months. There is the loosening from the life of the others, the examination, and the exchange with what comes. There is the showing, and the return to the clan as its healer. The old medicines add a condition that the hospital does not have. The return is to a task. The illness ends when the person has a place in which what he has met is of use to others.

The hospital meets the same young people. It has one reading for them where the old medicines have two, and it has no elder who is sent for to tell the difference.

92. Women and children, second series

What this chapter covers

Chapter 84 took the monthly course, barrenness, birth, the weeks after birth, the change of life and the child that does not thrive. This chapter adds five matters of the same households. They are the sickness of the first months, the child that is lost, too little milk, the yellow newborn, and the crying child with its teeth and its wet bed.

Most of these end by themselves. That gives the chapter its question. Where time is the healer, what is left for a medicine to do, and what harm can it do while it waits?

89. The sickness of the first months

The illness. Seven of ten pregnant women are sick in the first three months, and many vomit. It eases by the fourth or fifth month. One or two in a hundred cannot keep food or drink down at all, lose weight and dry out. Before fluids could be given into a vein, some of them died. The hospital found the cause in 2023. A hormone of the afterbirth reaches the mother’s brain, and women whose bodies knew little of it before the pregnancy are sickest.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
Greece and Rome	The craving, from the second month: nausea, a dislike of food and a longing for strange foods, even for earth and coals	The stomach is upset by the new burden
China	The loathing that hinders	The *qi* of the vessel that feeds the womb rushes upward, and the stomach’s *qi* can no longer go down
India	The vomiting of the woman with child	The child presses upward; the mother’s longings are not met

What was done.

Tradition	Treatment
Greece and Rome	A day’s fast, then a little plain food; walks; a plaster on the stomach

Tradition	Treatment
China	A pill of dried ginger, ginseng and pinellia, from the *Golden Casket*. Fresh ginger; perilla stem; amomum. Pressure on the point called Inner Pass, above the wrist
India	Water in which puffed rice has stood, with honey and sugar. Pomegranate; cardamom. The books order that the longings of a woman with child be granted
Europe	Ginger; mint; dry bread before rising
Africa and the southern United States	White clay, eaten in small pieces

What has been measured. Ginger has a dozen trials with some 1,300 women. It lessens the nausea, and no harm to the child has been seen.

Pressure on the point above the wrist, by a finger or a band, has come out both ways.

The clay settles the stomach as the pharmacy’s own white clay does. Entry 61 gave its price: it binds iron.

One old belief is confirmed. Many peoples say that a sick pregnancy is a strong one. In an American study of 797 women, those who were sick lost the child half as often or less.

The hospital’s own remedy of 1957 is the reason for caution. A tablet against this sickness left some ten thousand children with shortened limbs.

The book on the body. The form is the over-read: a harmless signal of the afterbirth is answered as if it were a poison. The vomiting ends by itself. The lack of a vitamin that it can bring about is curable. The first treatment is the giving back of water and salts, at the Chain layer. As simple means the book names the drink of sugar, salt and water, sipped in small amounts (Konstapel 2026c).

Read with the Net. Two bodies are learning to live as one, and the signal of the one is new to the other. The finding of 2023 says that a woman who has met the signal before bears it. Entry 70 said the same of pollen. The axiom holds for both: the net carries its history as its shape.

The vitamin that these women lose is that of entry 58. A sickness of the reader can end as a failure of the carrier.

90. The child that is lost

The illness. About one recognised pregnancy in seven ends before the fifth month. In most cases the child had too many or too few chromosomes from the first day and could not have lived. One woman in a hundred loses three or more in a row. The hospital can prevent little. It waits, and it treats bleeding or infection if they follow.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
Greece and Rome	The untimely birth	Fright, grief, sudden joy, a fall, a blow, lifting, leaping, coughing, purging, bleeding	
China	The restless child; the leaking; the slippery child, for the loss that repeats	A kidney too weak to hold; too little *qi* and blood; heat in the blood; a fall	
India	The falling of the fruit	Blows, journeys in a jolting cart, strong feelings, wrong food	
Mexico		An eclipse seen by the mother. She carries a piece of metal or a red thread against it	

What was done.

Tradition	To hold the child	After a loss
Greece, Rome and Europe	Rest in bed. A stone that rattles, called the eagle stone, bound to the arm	

Tradition	To hold the child	After a loss
China	Scutellaria and white atractylodes, which chapter 52 listed as calming the child. A pill of dodder seed, mistletoe, teasel root and ass-hide glue. A rule of conduct for each month. The mother is to see and hear only what is beautiful	The small month: rest and warm food, as after a birth
India	A diet for each month of pregnancy, with milk and butter. Cold cloths and rest when blood shows	
Japan		A rite at a temple for the water child, with a small stone figure that is dressed and visited

What has been measured. Rest in bed has not been shown to prevent a loss. The trials are few and small, and they found no gain.

Chinese herbs for a threatened loss have forty-four trials with some five thousand women. Reviewers found them too weak to judge.

Two studies of another kind stand out. Norwegian physicians took women who had lost three or more children without a known cause. Those who were seen every week, examined, listened to and advised carried the next child to term in 86 of a hundred cases. Among those who had only the usual care it was 33 of a hundred. A London clinic found the same direction. Neither study assigned the women by lot.

Studies that follow pregnant women find more losses among those under great strain. The old lists of fright and grief may hold a part of the truth.

The book on the body. The form is frame and copy: an error in the number of chromosomes, present from conception. The loss ends by itself. Its complications are curable. The first treatment is to wait, and the book gives it no layer. The simple means is the same: “Doing nothing, competently, with instructions on when to return” (Konstapel 2026c).

Read with the Net. In most cases the loss is a reading that succeeded. A copy that could not live was not carried further.

The old medicines laid the cause in the mother’s conduct: a fall, a fright, a look at the darkened sun. The count takes that blame away, and it is one of the kinder results of counting.

The old medicines also have what the hospital long lacked. They give the lost child a name and a rite, and the mother a term of rest. Chapter 72 counted a term and a close as its thirteenth point. The Japanese stone figure is such a close.

91. Too little milk and the inflamed breast

The illness. The milk does not come, or there seems to be too little. Few women are in truth unable to make it. Far more often the child is put to the breast too seldom or does not take hold well, and the breast, which makes milk on demand, makes less. In a second trouble the milk stands in a part of the breast. That part turns red, hard and painful, with fever, and an abscess may form.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it	Chapter
China	The milk that does not move, in two kinds. The abscess of the breast	Milk is made from blood. Either the mother has too little *qi* and blood, and the breasts are soft. Or the *qi* of the liver is knotted by anger or grief, and the breasts are full and sore	
India	Too little milk; spoiled milk, which makes the child ill	Grief, anger, fasting, hard work, a new pregnancy. Good milk mixes evenly when a drop falls in water	
Greece and Rome		The nurse’s food, drink and conduct govern her milk	

What was done.

Tradition	For more milk	For the inflamed breast
China	Soup of pig’s trotters with the pith of the rice-paper plant. The seed of vaccaria. A point at the corner of the nail of the little finger	Dandelion, inside and as a paste. The breast is combed toward the nipple with a wooden comb, and the milk is drawn off
India	The root of a wild asparagus; fenugreek; cumin; garlic; milk	Warmth; emptying of the breast
Greece, Rome and Europe	Fennel, anise and dill. Barley drinks and dark beer. The herb goat’s rue, which was also fed to cows for their milk	A cabbage leaf laid on the breast; poultices of linseed
Korea	Soup of seaweed, daily for weeks after the birth	
Mexico	Maize gruel; the fermented sap of the maguey	

What has been measured. Fenugreek raised the amount of milk in several small trials. The Indian root has two small trials, one for and one against.

Cabbage leaves ease a swollen breast about as well as a cold pack.

What is proved is of another kind. Mothers who are helped in the first weeks by a woman who knows how, a nurse or an experienced mother, nurse longer. A review of many trials found this in every kind of country. The old medicines built that help into the forty days of entry 46.

The Chinese pharmacy had one more remedy for milk, the scales of the pangolin. The trade has brought the animal near its end, and China struck the drug from its pharmacopoeia in 2020.

The book on the body. The book has no entry.

Read with the Net. Milk is a carrier between two bodies, and the child’s suckling calls it. The rhythm of the calling sets the amount.

The Chinese physician asks first which kind he has before him: an empty source or a closed way. The hospital asks the same, in other words, and treats the two as differently as he does. A woman of the first kind is fed and rested. A woman of the second kind is helped to empty the breast.

The goat’s rue returns here from entry 18. European farmers gave it to cows for milk, and chemists later found in it the forerunner of the first tablet for sweet urine. Nobody knows whether the two uses are linked.

92. The yellow newborn

The illness. Six of ten newborns turn yellow on the second or third day. A pigment from worn-out blood cells gathers in the skin, because the young liver cannot yet clear it. In most children it fades within two weeks. In a few it rises so high that it stains the brain. The child is then left deaf or palsied, or dies. More than a hundred thousand newborns a year die of it, nearly all in poor countries. The hospital lays the child under a blue light.

Names and causes in the old medicines.

Tradition	Name or kind	Cause as the tradition gives it
China	The yellow of the womb. A bright kind, like a tangerine, and a dull, smoky kind	Damp and heat that passed from the mother to the child
India	The yellow illness of the newborn	Spoiled milk; the faults of the mother
Turkey and the Near East		Not named. The child is covered with a yellow cloth, and a gold coin is laid on it

What was done.

Tradition	Treatment
India	Every infant is rubbed with oil and laid in the morning sun, as entry 60 told
China	The Artemisia Capillaris Decoction in small doses. Today, a liquid of artemisia and gardenia with scutellaria and honeysuckle, widely given in Chinese nurseries
China and Southeast Asia, a custom	Coptis root, very bitter and cold, is given to the newborn in its first days to clear the poison of the womb
Many peoples	The child is laid by the window

What has been measured. The light was found by a nurse. Section A3 told of the sister of a ward for newborns in an English hospital in the 1950s. She saw that the yellow faded where sunlight had touched the skin. The physicians of the hospital tested lamps, and the treatment was published in 1958.

The sun itself has since been tried. In Nigeria 447 yellow newborns were laid either under the usual lamps or outdoors under a film that holds back the burning and the heat of the sun. The sun did as well as the lamps (Slusher 2015).

The Chinese liquid shortens the yellow somewhat when it is added to the light, in trials that reviewers judge weak. It loosens the bowel.

The coptis does harm. Its chief compound pushes the pigment off the protein that carries it in the blood. In children who lack a certain enzyme of the red cell, it also breaks up the blood. Singapore forbade the root in 1978. Mothballs in the cupboard of the child's clothes do the same harm to the same children. About four hundred million people lack that enzyme.

The book on the body. The form is the carrier: the pigment is not cleared and not carried. Before the brain is stained the illness is curable. Afterwards the hospital offers relief only. The first treatment, the light, lies at the Chain layer. The book says that this is the entry in which the question of simple means "has the most interesting answer in the book". The answer is filtered sunlight (Konstapel 2026c).

Read with the Net. The light does the liver's work from outside. It changes the shape of the pigment in the skin, and in its new shape the pigment dissolves and leaves the body. A carrier fails, and a second road is opened.

The Indian grandmother and the English nurse did the same act. One had a custom and no account. The other had a ward, a question and physicians who would test it.

The bitter root shows the opposite. It treats a poison of the womb that the reading had not found, in a child that was not ill. The first rule of cure is to read before acting. A newborn is the patient in whom that rule matters most.

93. The crying child, the teeth and the wet bed

The matter. Three troubles of healthy children fill the old books and the modern waiting room. An infant of a few weeks cries for hours every evening and cannot be comforted. A child of six months to two years cuts its teeth, and is restless and feverish. A child of five or older still wets the bed. All three end by themselves. One infant in five cries in this way, and it stops by the fourth month. One child in seven still wets the bed at five, and about one in seven of those stops in each year that follows.

Names and causes in the old medicines.

Tradition	The crying	The teeth	The wet bed
Egypt	A remedy against the crying of a child stands in the great papyrus		A remedy for a child that wets, of juniper and beer
Greece and Rome	The nurse’s milk; wind in the belly	Teething brings fever, loose bowels and fits, says a Hippocratic list	
China	Crying at night, in three kinds: from cold in the belly, from heat in the heart, and from fright		The *qi* of the kidney is not yet firm
Europe, to 1900	Wind; the gripes	Teething was written on death certificates. In England in 1839 it was given as the cause of five thousand deaths	Laziness; a weak bladder
East Africa		The buds of the eye teeth are false teeth, or worms, that cause fever and loose bowels	

What was done.

Tradition	The crying	The teeth	The wet bed
Egypt	Poppy pods		
Greece and Rome	Rocking, swaddling, a change of nurse	The gums are rubbed with butter, honey or the brain of a hare	

Tradition	The crying	The teeth	The wet bed
Europe	Teas of fennel, dill and chamomile. A water of dill and soda, from 1851. Syrups of opium, sold in every shop until about 1900	The gums are cut open with a lancet. Powders of a mercury salt. Necklaces of coral and of amber	A roasted mouse, eaten. Shaming and beating
India	Warm oil rubbed on the belly; a paste of asafoetida on the navel		
China	Cicada skin and the pith of rush as a tea. Kneading of the belly and the back. For fright, the calling of the soul		A powder of the egg case of the mantis. A pill of alpinia, lindera and yam. Mugwort burned below the navel
East Africa		The tooth buds are dug out with a nail or a bicycle spoke	
The San and many others	The infant is carried on the body all day and fed whenever it stirs		

What has been measured. The carrying is the best studied. Infants of the San of the Kalahari begin to cry as often as Dutch or American infants. Each bout is short, and their crying in a day lasts half as long. In a Canadian trial, mothers who carried their healthy infants three hours more each day had infants who cried two fifths less at six weeks. A second trial, in infants who already cried for hours, found no gain.

Fennel has two small trials. A drink of its seed oil ended the crying fits in 65 of a hundred infants, against 24 of a hundred on a dummy.

The opium syrups killed infants in great numbers. The mercury powders caused an illness of red, peeling hands and feet from which children died. Its cause was found in 1948, and the powders were withdrawn.

Teething does almost nothing. Studies that followed infants day by day found a little restlessness and a slight warmth on the day a tooth comes through. They found no high fever, no loose bowels and no fits. The children who died “of teething” died of infections that nobody treated.

The digging out of tooth buds is still done in parts of Uganda, Tanzania, Kenya and Sudan. Children die of the bleeding and the infection, and the adult tooth is destroyed.

Amber necklaces have strangled infants. They do nothing against pain.

For the wet bed, an alarm that wakes the child at the first drops cures about two in three. Needling has small trials in its favour, which reviewers judge weak. The Chinese drugs have not been tested well.

The book on the body. The book has no entry for any of the three.

Read with the Net. These are not failures. They are closures that have not yet been made. The rhythm of day and night takes three or four months to form in an infant. The hold on the bladder in sleep takes years. The old Chinese phrase is exact: the *qi* is not yet firm.

Every remedy for such a trouble succeeds, since the child grows out of it. That is why the list is long, and why it holds opium, mercury and the lancet beside fennel and a warm hand. Both medicines did their worst harm to children here. They acted where the reading showed nothing to act on.

The San mother shows what can be done while time does its work. She does not treat the crying. She gives the infant a rhythm from outside, her walk and her breath, until its own has formed. Chapter 5 called that the matching of phase, and entry 77 met it at the other end of life.

93. What the atlas shows

The entries by form

The atlas has ninety-three entries in two series. Each was laid beside the atlas of the book on the body. The table counts them by the primary form that the book names. Where an entry joins two illnesses, the more common one decides.

Form	First series	Second series	Together	Examples
Unread	12	7	19	The fevers, consumption, the poxes, worms, the ulcer, tumours, snakebite; the great pox, the mad dog, lockjaw, the itch
Carrier	11	4	15	The flux, dropsy, stroke, sweet urine, blindness at night, the swollen neck; soft bones, pale blood, the shaking palsy, the yellow newborn
Wrong closure	13	1	14	High blood pressure, stoutness, the headache, the back, madness, melancholy, fear, sleeplessness, craving; short sight

Form	First series	Second series	Together	Examples
Seam	6	3	9	Pain of the heart, gout, stone, the clouded lens; the abscess of the gut, stones of the gall, dizziness
Drift	5	2	7	Piles, the worn joint, the fading mind, the weakness of age; the rupture, swollen veins
Over-read	3	2	5	Wheezing, the scaling skin, the white patches; sneezing in spring, the sickness of the first months
Direction	2	0	2	Hard stools, the monthly course
Frame and copy	1	1	2	Barrenness; the child that is lost
The book names none of the eight	1	1	2	Dying; the stroke of the sun
The book’s readers did not agree	0	1	1	The old man’s water

Form	First series	Second series	Together	Examples
No entry in the book	2	15	17	Possession, grief; scurvy, the plague, warts, the crooked face, the seven illnesses of chapter 91

The first series was made from what the old books treat most. In it the wrong closure leads. After the fevers, the old books are filled with the lasting states that the body itself holds in place.

The second series took the infections and the illnesses of want that the first had passed over, and the unread and the carrier lead. It also took seventeen matters for which the book on the body has no entry. Seven of them are illnesses that the hospital does not name.

What each house did with each form

The unread. An organism or a changed cell sits in the body, and the body has not removed it. Here the hospital won. It saw the organism and made the drug. The old medicines never saw it. They did find, by long trial on the sick, the bark and the wormwood against the fever that returns. They found the scratch that protects against smallpox. With the hospital, they held a wrong picture of the ulcer until 1982.

The second series adds a finding. Several times someone did see the cause, and the learned medicine did not take it up. The people of Yunnan saw the rats die before the plague. A Chinese physician of 610 and the women of the Mediterranean coasts saw the mite of the itch. Chinese physicians of the twelfth century saw that lockjaw enters the newborn by the cord.

The carrier. What should arrive does not arrive. Here the old medicines did well, since a missing carrier can be found by what restores it. Liver against blindness at night and seaweed against the swollen neck were in use many centuries before either carrier was known. So were iron against pale blood, the drink of evergreen needles against scurvy, and the bran of grain against the swollen legs of the rice eaters. The hospital’s own great gain in this group is the drink of salt and sugar. It dates from the 1960s.

The seam. A fixed matter is lodged in a living one. To take it out is the act that closes the seam, and the old surgeons knew it. They cut for the stone and pushed the clouded lens aside, at a price in lives and eyes that their books state. They tried to dissolve the stone with drugs and failed. One drug of theirs, the autumn crocus, still stops the attack of gout. It leaves the crystal where it is.

The wrong closure. The body holds a wrong state as its own. The book on the body expects a first treatment at the layer of rhythm for this form. In seven of the thirteen entries of the first series the hospital now begins there: with exercise, with a training, or with talk. In the other six it begins with a tablet, and the book scores that as a miss.

The old medicines offer rhythm, touch, company and, for the mind, a meeting that is given a form. Some of this has stood up in trials. Needling and bone-setting did at least as well as standard care for the back. Exercise did as well as the tablets for melancholy. The slow Chinese exercise did as well as the hospital's own training for sleeplessness. For madness, the healers did well with sudden states and poorly with lasting ones. For the falling sickness one old remedy lasted. It is the fast, which became a diet for children whom the drugs do not help.

Drift. The return falls behind. Nothing reverses it. Both houses now give the same advice: a daily order of movement, food and rest, kept up for life. The old medicines gave it first and made it a matter of conduct. Where a wall or a valve has given way, both houses hold it from outside, with a band, a net or a bandage.

The over-read. The body attacks what is harmless or its own. Chapter 4 said that the rules hold no object for this form. It added that the old medicines describe these illnesses least clearly. The atlas bears that out. It also holds two results that deserve a closer look than they have had. A fitted Indian treatment did as well as the hospital's chief drug for inflamed joints. A Chinese vine did the same.

Two entries of the second series point to a reason for the form. Sneezing in spring grew as children were raised apart from soil and animals. The sickness of the first months is worst in women whose bodies had not met the signal before. In both, a reader that has met little reads the harmless as a threat.

What the hospital took from the old medicines

The entries name the remedies that passed from an old medicine into the hospital's own practice. The first table is that of the first series.

Remedy of the hospital	Source	Entry
Quinine	The bark of the Andes	2
The wormwood compound against malaria	A Chinese handbook of the fourth century	2
Protection against smallpox	The scratch of India, Africa and the Ottoman lands	4
Aspirin	Willow bark	1, 11

Remedy of the hospital	Source	Entry
Ephedrine and its descendants	The Chinese drug for wheezing	9, 10
The inhaled drug that relaxes the airways	Thorn apple, smoked in India	10
The drug that prevents attacks of asthma	A plant of Egypt and the Near East	10
The foxglove drug	A recipe of an old woman in Shropshire	12
An early drug for high blood pressure, and the first for madness	The snakeroot of India	14, 34
The first tablet for sweet urine	Goat’s rue	18
The drug against the attack of gout	The autumn crocus	20
The husk for hard stools and for piles	Indian medicine	16, 22
The first drug against the attack of migraine	The fungus of rye, a drug of midwives	23
The seed compound used with light	India and Egypt	30
The vitamin against blindness at night	Liver, in four old medicines	32
The tablet against smoking	A tree of Eastern Europe	40
Two drugs for the fading mind	The snowdrop; the ordeal bean of Old Calabar	42
The first drug against bleeding after birth	The fungus of rye	45
Arsenic for one leukaemia	A folk remedy of northern China	49
Two drugs for the leukaemia of children	The rosy periwinkle	49

Remedy of the hospital	Source	Entry
Iodine	Seaweed and burnt sponge	50
Cold water on a burn	A habit of Icelandic farms	52
Honey and moist dressings	Egypt and many others	52, 53

The second series adds these.

Remedy of the hospital	Source	Entry
Lemon juice against scurvy	The practice of sailors; the drink of the Iroquoians	57
The oil of cod liver, and sunlight, against soft bones	The fishing villages of the north; the Indian custom of sunning the infant	60
Iron against pale blood	Greece, India and China	61
The cutting of the windpipe	Greek and Roman surgeons	65
The drugs that still the muscles in an operation	The arrow poison of the Guianas and the Amazon	66
The cream against the itch and against lice	The insect powder of Persia	67
Sulphur ointment	Rome, India and China	67
The paint for warts of the sexual organs	The mayapple of North America	68
The plaster of chilli for pain that stays	Mexico	25, 69
The tube that empties the bladder	India, Greece, China and the Islamic world	72
The acid that dissolves some gallstones	The bile of the bear, in the Chinese drug books since 659	75
The bandage for the sore of the leg	The Hippocratic surgeons	76

Remedy of the hospital	Source	Entry
The nightshade drugs for tremor, and the drop that slows short sight	Henbane and deadly nightshade	77, 81

In almost every case the old medicine had the remedy. The hospital found the compound, the dose and the limits.

The errors of the old medicines

The atlas also holds the errors, and they have a pattern.

A coherent picture was held against the facts. Bleeding was ordered for fever, for stroke, for gout and for the headache, from the Greek physicians to the nineteenth century. Pus was brought on in clean wounds for fifteen centuries. Every medicine read the ulcer as a state of the patient. Mercury was rubbed in for four centuries against the great pox, and most of its cures were the course of the illness.

A true remedy was dropped for want of an account. The cure of scurvy was found and lost at least three times. The mite of the itch waited twelve centuries for a place in the books. A fact that does not fit the accepted picture is not kept.

An act on the surround was aimed at the wrong target. The leper was cast out, though the illness hardly passes from one person to another. In some places the woman in her bleeding days was sent to a shed.

First aid was wrong where minutes count. The band above a snakebite does harm. So does warmth on a fresh burn, and the warning against cold water for a person struck by the sun. Pressure on the belly does not free a child that cannot pass.

The second treatment came before the first. One healer asks who sent the snake. Another works on the palate of a child that is drying out. Both use up the hours in which the patient could be saved.

An act of care carried the illness. The cord of the newborn was dressed with dung or ash, as a welcome, and lockjaw entered by it. The mother ate only white rice in her weeks of rest, and her milk lacked a vitamin.

A treatment was given where the reading showed nothing. The healthy newborn was dosed with a bitter root. The crying infant was given opium, and the teething child mercury and the lancet. Both medicines did their worst harm to children here.

None of these errors comes from a lack of care or of observation. Chapter 74 drew the lesson from bloodletting. A medicine can be coherent, learned and wrong, and only the counting of like cases shows it.

The potato and the ash tree

One pattern needs a head of its own. Many troubles end by themselves within a term: warts, the rupture at an infant’s navel, the crooked face, the crying of the first months, the wet bed. So do most bites of a snake or a mad dog, since most carry no poison.

Any remedy that is used for such a trouble will be seen to work. Entry 68 called it the potato, after the charm against warts. Entry 73 met it as the ash tree. The pattern explains much of the confidence of every old medicine, and of the hospital before it counted. It does not explain the trial of 1959, in which a spoken sentence removed the warts of one side of the body. That result stands by itself.

The rules that held

Nine rules of the old medicines stood up in the entries.

Rule	Where it held	Entry
The raw must ripen	A fever that is not cooled at once; a flux that is not stopped; a sore that is treated by its stage; the abscess of the gut, purged only before pus has formed	1, 6, 53, 74
Two opposite illnesses need two opposite cures	The worn joint and the inflamed joint; the stout and the lean patient with sweet urine; the empty source and the closed way of the milk	18, 25, 91
Read first, and do not treat against the reading	The verdict before treatment; the growths, the lenses and the silent stones that are left alone	31, 49, 56, 75
Treat by the time	The headache that follows the sun; the attack at night; the formula that changes through the month	10, 23, 43

Rule	Where it held	Entry
Go back to the place	The fright that is undone where it happened; the wound that is burned and washed where the mad dog bit	36, 64
Give the passage a term and a close	Forty days after birth; the year of mourning; the rite for the child that was lost	41, 46, 90
Take the remedy whole	Maize with its lime and its beans	59
Treat the household	The itch; the family meeting for a hidden wrong	67, 83
Open a way, or hold the wall	The reed in the windpipe; the tube in the bladder; the band on the rupture; the bandage on the leg	65, 72, 73, 76

None of the nine names a drug. Each is a rule of time, of place, of fit or of company.

Illnesses of place and of a way of life

Chapter 72 found that the old medicines look for illness outside the body as well as within. The second series holds a group of entries in which that is the plain truth.

Illness	What in the surround brings it	Entry
The swollen legs of the rice eaters	The steam mill that takes all the bran	58
The illness of maize	A grain that travelled without its preparation	59
Soft bones	Smoke, narrow lanes and indoor work	60
The plague	The rat, the flea, the granary and the ship	62
Sneezing in spring	A childhood apart from soil and animals	70

Illness	What in the surround brings it	Entry
The stroke of the sun; the sickness of heights	The place itself	80
Short sight	Near work in dim rooms	81

In four of the seven the remedy is no drug. It is a way of milling, a way of cooking, an hour outdoors, a descent. The old medicines had the right habit of looking. They did not always look at the right part of the surround.

The seven that the hospital does not name

Chapter 91 took seven illnesses of the old medicines for which the hospital has no name. Three are laid to others: the illness that is sent, the broken rule, and the dead who hold on. Four lie in the person: too much thinking, hot and cold, longing, and the call.

The hospital meets every one of these patients. It files them under other heads, or under none. The old medicines give each a name, a reading that finds it and an act that closes it.

The theory can say something of five of the seven. A hidden wrong, a leave-taking that was not completed and a longing are ties that have not closed. The second axiom says that what does not close passes on as tension. The wind that rises is a matter of direction. The call follows the five steps of a meeting. Of sorcery the theory can say only that a closed form offers no hold, and chapter 71 called that reading loose. Of hot and cold it says nothing that this book would claim.

The harm of this group is known and grave. Where illness is sent by a person, a person is blamed. The Babylonian rite of the Burning shows that the cure does not need a culprit.

Where the meeting enters

In the first series the old medicines bring in, at seven places, what chapters 6 and 7 described: the other half, and the meeting with what is not oneself. They are madness, fright and the lost soul, possession, the falling sickness, craving, grief and dying. The second series adds the dead who hold on, and the call.

The hospital’s own counts touch the matter at five points. Voices are borne better where they are heard as kin (Luhrmann 2015). In the trials of the plants, the addicted who reported the fullest meeting did best. Nearly half of the widowed meet their dead (Rees 1971). Nearly nine in ten of the dying have dreams or visions, most often of those who went before. Shamans who were examined beside their neighbours were no more ill than they (van Ommeren 2004).

None of these counts says what is met. Together they say that the meeting is common and that it comes at the edges of a life. They also suggest that how it is received changes what follows.

That is the ground on which the old medicines work. They do not ask first whether the meeting is real. They give it a form: a time, a place, a guide and a return.

What has not been tested

The atlas ends where chapter 74 ended. Almost every trial in it took one remedy for one named illness. The old physician does not work that way. He reads a person, sorts the illness by kind, and fits the treatment to the kind and to the hour.

Two trials tested a fitted treatment under blind conditions, and in both it held its own (Bensoussan 1998; Furst 2011). The tables of kinds in this atlas show what remains to be tried. There are the cold and the hot kind of a common cold. There are the five kinds of hard stools and the four kinds of an aching back. There is the treatment of the monthly course by its phase. There is the question whether patients do better when a hot state is cooled and a cold one warmed. Each is a claim that can be put to a trial by lot. Until that is done, the old diagnosis stands where it has stood for two thousand years, neither confirmed nor refuted.

Part IX — Reference: Points, Drugs, Books, People and Comparisons

94. The three hundred and sixty-one points

What this chapter is

Part IX is a book of reference. Parts II to VIII described the old medicines and their illnesses. This part lists their means. It has the points of the needle, the drugs and formulas of China, and the drugs of India, Tibet and the Unani physicians. It has the herbs of Europe, the Americas and Africa. It gives the classical books, the people, and the old measures and preparations. It turns the atlas so that it can be read by tradition. It ends with five chapters that set the traditions side by side.

The lists describe traditions. They are not advice for use. Many of the drugs are poisonous in the wrong dose or the wrong preparation, and several points lie over the lung, the great vessels or the eye. Chapter 75 gave the harms.

This chapter lists the points of the fourteen vessels in the order of the modern standard. Chapter 47 gave the vessels and forty-one points in common use, and chapter 51 the classical prescriptions. Here are all 361.

How to read the tables

The code is the international one. The letters name the vessel, and the number counts along it.

The name is given in Chinese and in English. The English follows the usual translations (Deadman 1998). Many names are small maps, as chapter 47 said. A pool, a marsh or a sea lies at a bend of a limb. A gate or a door opens on an organ. A point named for a transport lies on the back beside the organ that it reaches.

The place is given in plain words. An inch is the body inch of chapter 47, which is the breadth of the patient's own thumb. A rib space is counted from the collarbone down. A vertebra of the chest is counted from the neck down, and one of the loin from the chest down.

The use is that of the classical books and the modern textbooks. It also names the group to which a point belongs, in the words of chapter 47. The five transport points are the well, the spring, the stream, the river and the sea. Then come the source, net and cleft points, the transport points of the back and the gathering points of the front. Last are the meeting points and the confluence points.

Points that the old books forbid to needle or to burn are marked. So are the points that are avoided in pregnancy.

The lung vessel, greater yin of the hand

Code	Name	Meaning	Place	Chiefly used for
LU 1	*Zhongfu*	Central Treasury	On the chest, in the first rib space, six inches beside the midline	Cough, wheezing, fullness of the chest. Front gathering point of the lung
LU 2	*Yunmen*	Cloud Gate	In the hollow below the outer end of the collarbone	Cough; pain of the shoulder
LU 3	*Tianfu*	Palace of Heaven	On the outer edge of the upper arm muscle, three inches below the front fold of the armpit	Wheezing; nosebleed; sadness and forgetfulness
LU 4	*Xiabai*	Clasping the White	One inch below LU 3	Cough; pain of the inner arm
LU 5	*Chize*	Cubit Marsh	In the crease of the elbow, on the thumb side of the tendon	Cough with heat, coughing of blood, sore throat; a cramped elbow. Sea point
LU 6	*Kongzui*	Greatest Opening	On the forearm, seven inches above the wrist crease	Sudden cough and wheezing; coughing of blood. Cleft point
LU 7	*Lieque*	Broken Sequence	Above the wrist, on the thumb side, an inch and a half above the crease	Cough, stiff neck, headache. Net point; opens the controlling vessel
LU 8	*Jingqu*	Channel Gutter	One inch above the wrist crease, in the hollow of the pulse	Cough, wheezing, sore throat. River point
LU 9	*Taiyuan*	Great Abyss	At the wrist crease, where the pulse is felt	A weak lung; a pulse that is hard to feel. Stream and source point; meeting point of the vessels
LU 10	*Yuji*	Fish Border	On the ball of the thumb, at the edge of the red and the white skin	Sore throat, loss of voice, heat in the lung. Spring point

Code	Name	Meaning	Place	Chiefly used for
LU 11	*Shaoshang*	Lesser Shang	At the outer corner of the thumbnail	Pricked to bleed for a swollen, painful throat; fainting. Well point

The large intestine vessel, yang brightness of the hand

Code	Name	Meaning	Place	Chiefly used for
LI 1	*Shangyang*	Shang Yang	At the thumb-side corner of the nail of the index finger	Sore throat, toothache, fever; fainting. Well point
LI 2	*Erjian*	Second Space	On the thumb side of the index finger, in front of the knuckle	Toothache, nosebleed, a dry mouth. Spring point
LI 3	*Sanjian*	Third Space	On the thumb side of the index finger, behind the knuckle	Toothache, sore throat, a swollen hand. Stream point
LI 4	*Hegu*	Joining Valley	On the back of the hand, between thumb and index finger	Pain of the head and face; to bring out a sweat; to speed labour. Source point. Avoided in pregnancy
LI 5	*Yangxi*	Yang Stream	On the thumb side of the wrist, in the hollow between two tendons	Headache, red eyes, pain of the wrist. River point
LI 6	*Pianli*	Veering Passage	Three inches above LI 5	Nosebleed, ringing ears, swelling. Net point
LI 7	*Wenliu*	Warm Dwelling	Five inches above LI 5	Sudden pain of the face and throat; sores of the mouth. Cleft point
LI 8	*Xialian*	Lower Ridge	Four inches below LI 11	Pain of the elbow and arm; pain of the belly
LI 9	*Shanglian*	Upper Ridge	Three inches below LI 11	Aching and numbness of the arm
LI 10	*Shousanli*	Arm Three Miles	Two inches below LI 11	Pain and weakness of the arm; the upper counterpart of Leg Three Miles
LI 11	*Quchi*	Pool at the Bend	At the outer end of the elbow crease	Fever; rashes; pain of the arm; high blood pressure. Sea point

Code	Name	Meaning	Place	Chiefly used for
LI 12	*Zhouliao*	Elbow Crevice	One inch above and outside LI 11, on the edge of the bone	Pain and stiffness of the elbow
LI 13	*Shouwuli*	Arm Five Miles	Three inches above LI 11	Pain of the upper arm; lumps of the neck. The old books forbid the needle here
LI 14	*Binao*	Upper Arm	Seven inches above LI 11, at the lower end of the shoulder muscle	Pain of the shoulder and arm; illnesses of the eye
LI 15	*Jianyu*	Shoulder Bone	In the front hollow of the shoulder tip when the arm is raised	The painful shoulder; a palsied arm
LI 16	*Jugu*	Great Bone	In the hollow between the outer end of the collarbone and the ridge of the shoulder blade	Pain of the shoulder; a shoulder that cannot be raised
LI 17	*Tianding*	Heaven's Tripod	On the side of the neck, one inch below LI 18	Sudden loss of voice; sore throat
LI 18	*Futu*	Support the Prominence	On the side of the neck, level with the tip of the Adam's apple, between the two heads of the neck muscle	Cough, wheezing, loss of voice; goitre
LI 19	*Kouheliao*	Mouth Grain Crevice	Below the outer edge of the nostril, half an inch beside GV 26	A stuffed nose, nosebleed; a crooked mouth
LI 20	*Yingxiang*	Welcome Fragrance	Beside the wing of the nose	A stuffed nose; loss of smell; the crooked face

The stomach vessel, yang brightness of the foot

Code	Name	Meaning	Place	Chiefly used for
ST 1	*Chengqi*	Tear Container	Below the pupil, between the eyeball and the rim of the socket	Red, painful and tearing eyes; twitching of the lid. Needled with great care
ST 2	*Sibai*	Four Whites	In the small hollow of the cheekbone below ST 1	Illnesses of the eye; the crooked face; pain of the face
ST 3	*Juliao*	Great Crevice	Below the pupil, level with the lower edge of the nostril	The crooked face; toothache; nosebleed
ST 4	*Dicang*	Earth Granary	Beside the corner of the mouth	The crooked mouth; drooling
ST 5	*Daying*	Great Welcome	In front of the angle of the jaw, where the pulse beats	A locked jaw; toothache; a swollen cheek
ST 6	*Jiache*	Jaw Bone	On the bulge of the chewing muscle, a finger's breadth in front of and above the angle of the jaw	Toothache; a locked jaw; the crooked face
ST 7	*Xiaguan*	Below the Joint	In front of the ear, in the hollow below the arch of the cheekbone	Deafness, ringing ears; pain of the jaw joint; toothache
ST 8	*Touwei*	Head's Binding	At the corner of the forehead, half an inch within the hairline	Headache at the forehead and temple; dizziness; tearing eyes
ST 9	*Renying*	Man's Welcome	Beside the Adam's apple, where the pulse of the neck beats	Sore throat, wheezing; high blood pressure. The old books forbid deep needling
ST 10	*Shuitu*	Water Prominence	On the neck, midway between ST 9 and ST 11	Sore throat; cough and wheezing
ST 11	*Qishe*	Abode of *Qi*	Above the inner end of the collarbone	Sore throat; goitre; hiccup

Code	Name	Meaning	Place	Chiefly used for
ST 12	*Quepen*	Empty Basin	In the hollow above the middle of the collarbone	Cough, wheezing; pain above the collarbone. Avoided in pregnancy; never needled deeply
ST 13	*Qihu*	*Qi* Door	Below the middle of the collarbone, four inches beside the midline	Cough, wheezing, fullness of the chest
ST 14	*Kufang*	Storehouse	In the first rib space, four inches beside the midline	Cough; fullness and pain of the chest
ST 15	*Wuyi*	Room Screen	In the second rib space, four inches beside the midline	Cough; pain of the chest and the breast
ST 16	*Yingchuang*	Breast Window	In the third rib space, four inches beside the midline	Cough; abscess of the breast
ST 17	*Ruzhong*	Middle of the Breast	The nipple	A landmark only. Neither needled nor burned
ST 18	*Rugen*	Root of the Breast	Below the nipple, in the fifth rib space	Too little milk; abscess of the breast; cough
ST 19	*Burong*	Not Contained	Six inches above the navel, two inches beside the midline	Fullness of the belly; vomiting; pain of the stomach
ST 20	*Chengman*	Supporting Fullness	Five inches above the navel, two inches beside the midline	Pain of the stomach; vomiting; no appetite
ST 21	*Liangmen*	Beam Gate	Four inches above the navel, two inches beside the midline	Pain of the stomach; vomiting; loose stools
ST 22	*Guanmen*	Pass Gate	Three inches above the navel, two inches beside the midline	Fullness and rumbling of the belly; swelling

Code	Name	Meaning	Place	Chiefly used for
ST 23	*Taiyi*	Supreme Unity	Two inches above the navel, two inches beside the midline	Pain of the stomach; restlessness of the mind
ST 24	*Huaroumen*	Slippery Flesh Gate	One inch above the navel, two inches beside the midline	Vomiting; madness
ST 25	*Tianshu*	Heaven's Pivot	Two inches beside the navel	Any disorder of the bowel. Front gathering point of the large intestine
ST 26	*Wailing*	Outer Mound	One inch below the navel, two inches beside the midline	Pain of the belly; painful periods
ST 27	*Daju*	The Great	Two inches below the navel, two inches beside the midline	Fullness of the lower belly; difficult urination
ST 28	*Shuidao*	Water Passage	Three inches below the navel, two inches beside the midline	Held-back urine; swelling; painful periods
ST 29	*Guilai*	Return	Four inches below the navel, two inches beside the midline	Missing periods; a fallen womb; the rupture
ST 30	*Qichong*	Rushing *Qi*	At the upper edge of the pubic bone, two inches beside the midline	The rupture; irregular periods; barrenness
ST 31	*Biguan*	Thigh Gate	On the front of the thigh, below the front spine of the hip, level with the fold of the buttock	Weakness and numbness of the leg
ST 32	*Futu*	Crouching Rabbit	On the front of the thigh, six inches above the kneecap	Pain of the loin and knee; a cold, weak leg
ST 33	*Yinshi*	Yin Market	Three inches above the outer upper corner of the kneecap	A cold, numb knee and leg

Code	Name	Meaning	Place	Chiefly used for
ST 34	*Liangqiu*	Ridge Mound	Two inches above the outer upper corner of the kneecap	Sudden pain of the stomach; a swollen knee. Cleft point
ST 35	*Dubi*	Calf's Nose	In the hollow below the kneecap, outside the tendon	Pain and swelling of the knee
ST 36	*Zusanli*	Leg Three Miles	Three inches below ST 35, a finger's breadth outside the shinbone	Weak digestion; tiredness; to strengthen the whole body. Sea point. The most used point of all
ST 37	*Shangjuxu*	Upper Great Void	Six inches below ST 35	Loose stools, dysentery, the abscess of the gut. Lower sea point of the large intestine
ST 38	*Tiaokou*	Lines Opening	Eight inches below ST 35	The painful shoulder, needled while the arm is moved
ST 39	*Xiajuxu*	Lower Great Void	Nine inches below ST 35	Pain of the lower belly; loose stools. Lower sea point of the small intestine
ST 40	*Fenglong*	Abundant Bulge	Halfway down the outside of the shin, a finger's breadth outside ST 38	Phlegm of every kind. Net point
ST 41	*Jiexi*	Stream Divide	On the front of the ankle, between two tendons	Headache, dizziness; a dropped foot. River point
ST 42	*Chongyang*	Rushing Yang	On the highest part of the instep, where the pulse beats	Toothache; weakness of the foot. Source point
ST 43	*Xiangu*	Sunken Valley	Between the second and third bones of the foot, behind their joints	A swollen face; swelling and pain of the foot. Stream point

Code	Name	Meaning	Place	Chiefly used for
ST 44	*Neiting*	Inner Courtyard	In the web between the second and third toes	Toothache, sore throat, nosebleed; heat of the stomach. Spring point
ST 45	*Lidui*	Severe Mouth	At the outer corner of the nail of the second toe	Many dreams; madness; a swollen face. Well point

The spleen vessel, greater yin of the foot

Code	Name	Meaning	Place	Chiefly used for
SP 1	*Yinbai*	Hidden White	At the inner corner of the nail of the great toe	Heavy monthly bleeding, burned here with mugwort; troubled dreams. Well point
SP 2	*Dadu*	Great Metropolis	On the inner side of the great toe, in front of its joint	Fullness of the belly; pain of the stomach; fever without sweat. Spring point
SP 3	*Taibai*	Supreme White	On the inner edge of the foot, behind the ball of the great toe	Weak digestion, heaviness, loose stools. Stream and source point
SP 4	*Gongsun*	Grandfather and Grandson	On the inner edge of the foot, in front of the base of the first foot bone	Pain of the stomach and heart; vomiting. Net point; opens the thoroughfare vessel
SP 5	*Shangqiu*	Shang Mound	In the hollow in front of and below the inner ankle	Loose stools or hard stools; a sprained ankle. River point
SP 6	*Sanyinjiao*	Meeting of Three Yin	Three inches above the inner ankle, behind the shinbone	The monthly cycle; labour; sleep. The three yin vessels of the leg meet here. Avoided in pregnancy
SP 7	*Lougu*	Dripping Valley	Six inches above the inner ankle	Fullness of the belly; a cold, numb leg
SP 8	*Diji*	Earth Pivot	Three inches below SP 9	Painful and irregular periods; pain of the belly. Cleft point
SP 9	*Yinlingquan*	Yin Mound Spring	In the hollow below the inner knob of the shinbone, at the knee	Damp; swelling; difficult urination. Sea point
SP 10	*Xuehai*	Sea of Blood	Two inches above the inner upper corner of the kneecap	Disorders of the blood; irregular periods; itching rashes

Code	Name	Meaning	Place	Chiefly used for
SP 11	*Jimen*	Winnowing Gate	Six inches above SP 10, on the inner thigh	Held-back urine; pain of the groin
SP 12	*Chongmen*	Rushing Gate	In the groin, outside the pulse, three and a half inches beside the midline	Pain of the belly; the rupture; difficult urination
SP 13	*Fushe*	Abode of the Hollow Organs	A little above SP 12, four inches beside the midline	Pain of the lower belly; the rupture
SP 14	*Fujie*	Knot of the Belly	A little more than one inch below SP 15	Pain round the navel; loose stools
SP 15	*Daheng*	Great Horizontal	Four inches beside the navel	Hard stools; loose stools; pain of the belly
SP 16	*Fuai*	Sorrow of the Belly	Three inches above SP 15	Pain of the belly; undigested food in the stools
SP 17	*Shidou*	Food Cavity	In the fifth rib space, six inches beside the midline	Fullness and pain of the chest and ribs
SP 18	*Tianxi*	Heavenly Stream	In the fourth rib space, six inches beside the midline	Pain of the chest; cough; too little milk
SP 19	*Xiongxiang*	Chest Village	In the third rib space, six inches beside the midline	Fullness and pain of the chest
SP 20	*Zhourong*	Encircling Glory	In the second rib space, six inches beside the midline	Cough; fullness of the chest
SP 21	*Dabao*	Great Wrapping	On the side of the chest, in the sixth rib space, below the armpit	Pain of the whole body; weakness of all the limbs. The great net point of the spleen

The heart vessel, lesser yin of the hand

Code	Name	Meaning	Place	Chiefly used for
HT 1	*Jiquan*	Summit Spring	In the centre of the armpit	Pain of the heart and ribs; a cold, numb arm
HT 2	*Qingling*	Green Spirit	Three inches above the inner end of the elbow crease	Pain of the shoulder and arm; yellow eyes
HT 3	*Shaohai*	Lesser Sea	At the inner end of the elbow crease	Pain of the heart; a trembling hand; a cramped elbow. Sea point
HT 4	*Lingdao*	Spirit Path	On the little-finger side of the forearm, an inch and a half above the wrist crease	Pain of the heart; sudden loss of voice. River point
HT 5	*Tongli*	Reaching the Interior	One inch above the wrist crease	Palpitations; sudden loss of voice; a stiff tongue. Net point
HT 6	*Yinxi*	Yin Cleft	Half an inch above the wrist crease	Sweating at night; pain of the heart; fright. Cleft point
HT 7	*Shenmen*	Spirit Gate	At the wrist crease, on the side of the little finger	Sleeplessness; palpitations; fright; a troubled mind. Stream and source point
HT 8	*Shaofu*	Lesser Palace	In the palm, where the tip of the little finger rests in a closed fist	Palpitations; pain of the chest; itching of the sexual parts. Spring point
HT 9	*Shaochong*	Lesser Rushing	At the thumb-side corner of the nail of the little finger	Fainting; palpitations; fever. Well point

The small intestine vessel, greater yang of the hand

Code	Name	Meaning	Place	Chiefly used for
SI 1	*Shaoze*	Lesser Marsh	At the outer corner of the nail of the little finger	Too little milk; abscess of the breast; fainting. Well point
SI 2	*Qiangu*	Front Valley	On the edge of the hand, in front of the knuckle of the little finger	Numb fingers; fever; ringing ears. Spring point
SI 3	*Houxi*	Back Stream	On the edge of the hand, behind the knuckle of the little finger	Stiff neck and back. Stream point; opens the governing vessel
SI 4	*Wangu*	Wrist Bone	On the edge of the hand, in the hollow in front of the wrist	Pain of the wrist; yellow skin; headache. Source point
SI 5	*Yanggu*	Yang Valley	On the edge of the wrist, in the hollow beyond the end of the forearm bone	A swollen neck and jaw; pain of the wrist. River point
SI 6	*Yanglao*	Support the Aged	In the cleft beside the knob at the back of the wrist	Dim sight; pain of the shoulder, back and loin. Cleft point
SI 7	*Zhizheng*	Branch of the Upright	On the back of the forearm, five inches above the wrist	A stiff neck; pain of the elbow; warts. Net point
SI 8	*Xiaohai*	Small Sea	Between the tip of the elbow and its inner knob	Pain of the elbow, neck and cheek. Sea point
SI 9	*Jianzhen*	True Shoulder	One inch above the back fold of the armpit	Pain of the shoulder blade; an arm that cannot be raised
SI 10	*Naoshu*	Upper Arm Transport	Above SI 9, in the hollow below the ridge of the shoulder blade	A swollen, painful and weak shoulder
SI 11	*Tianzong*	Heavenly Gathering	In the centre of the hollow of the shoulder blade	Pain of the shoulder blade; abscess of the breast

Code	Name	Meaning	Place	Chiefly used for
SI 12	*Bingfeng*	Grasping the Wind	In the centre of the hollow above the ridge of the shoulder blade	Pain of the shoulder; a numb, aching arm
SI 13	*Quyuan*	Crooked Wall	At the inner end of the hollow above the ridge of the shoulder blade	Pain and stiffness of the shoulder blade
SI 14	*Jianwaishu*	Outer Shoulder Transport	Three inches beside the first vertebra of the chest	Aching of the shoulder and back; a stiff neck
SI 15	*Jianzhongshu*	Middle Shoulder Transport	Two inches beside the seventh vertebra of the neck	Cough; pain of the shoulder and back
SI 16	*Tianchuang*	Heavenly Window	On the side of the neck, behind the neck muscle, level with the Adam's apple	Sudden deafness; sudden loss of voice; a stiff neck
SI 17	*Tianrong*	Heavenly Appearance	Behind the angle of the jaw, in front of the neck muscle	Sore throat; swelling of the neck; deafness
SI 18	*Quanliao*	Cheekbone Crevice	Below the outer corner of the eye, under the cheekbone	The crooked face; twitching of the lid; pain of the face
SI 19	*Tinggong*	Palace of Hearing	In front of the small flap of the ear, in the hollow that forms when the mouth opens	Deafness; ringing ears; pain of the ear

The bladder vessel, greater yang of the foot

The bladder vessel is the longest. It runs down the back in two lines on each side. The inner line lies an inch and a half beside the spine and bears the transport points of the organs. The outer line lies three inches beside the spine. Five of its points are named for the five spirits that the solid organs house, and each lies level with the transport point of its organ.

Code	Name	Meaning	Place	Chiefly used for
BL 1	*Jingming*	Bright Eyes	Just above the inner corner of the eye	Every illness of the eye. Needled with great care; never burned
BL 2	*Zanzhu*	Gathered Bamboo	At the inner end of the eyebrow	Headache at the brow; red, painful eyes; twitching of the lid
BL 3	*Meichong*	Eyebrows' Pouring	Above BL 2, half an inch within the hairline	Headache; dizziness; a stuffed nose
BL 4	*Qucha*	Crooked Curve	Half an inch within the front hairline, an inch and a half beside the midline	Headache; a stuffed nose; nosebleed
BL 5	*Wuchu*	Fifth Place	One inch within the front hairline, an inch and a half beside the midline	Headache; dizziness; the falling sickness
BL 6	*Chenggu ang*	Receiving Light	Two and a half inches within the front hairline, an inch and a half beside the midline	Headache; dim sight; a stuffed nose
BL 7	*Tongtian*	Heavenly Connection	Four inches within the front hairline, an inch and a half beside the midline	A stuffed and running nose; headache at the crown
BL 8	*Luoque*	Declining Connection	Five and a half inches within the front hairline, an inch and a half beside the midline	Dizziness; ringing ears; dim sight
BL 9	*Yuzhen*	Jade Pillow	On the back of the head, beside the upper edge of the knob of the skull	Headache at the back of the head; pain of the eyes

Code	Name	Meaning	Place	Chiefly used for
BL 10	*Tianzhu*	Pillar of Heaven	On the nape, within the hairline, on the outer edge of the great muscle of the neck	Headache at the nape; a stiff neck; dizziness
BL 11	*Dazhu*	Great Shuttle	Beside the first vertebra of the chest	Cough; fever; pain of the nape and the bones. Meeting point of the bones
BL 12	*Fengmen*	Wind Gate	Beside the second vertebra of the chest	Colds with chill and fever; cough; a stiff neck
BL 13	*Feishu*	Lung Transport	Beside the third vertebra of the chest	Cough and wheezing; sweating at night
BL 14	*Jueyinshu*	Reverting Yin Transport	Beside the fourth vertebra of the chest	Pain of the heart; palpitations; cough. Transport point of the wrapping of the heart
BL 15	*Xinshu*	Heart Transport	Beside the fifth vertebra of the chest	The heart; the spirit; sleeplessness; loss of memory
BL 16	*Dushu*	Governor Transport	Beside the sixth vertebra of the chest	Pain of the heart; pain of the belly
BL 17	*Geshu*	Diaphragm Transport	Beside the seventh vertebra of the chest	Hiccup; vomiting; disorders of the blood. Meeting point of the blood
BL 18	*Ganshu*	Liver Transport	Beside the ninth vertebra of the chest	The liver; the eyes; pain under the ribs
BL 19	*Danshu*	Gallbladder Transport	Beside the tenth vertebra of the chest	Yellow skin; a bitter taste; pain under the ribs
BL 20	*Pishu*	Spleen Transport	Beside the eleventh vertebra of the chest	Digestion; swelling; loose stools; bleeding
BL 21	*Weishu*	Stomach Transport	Beside the twelfth vertebra of the chest	Pain of the stomach; vomiting; no appetite

Code	Name	Meaning	Place	Chiefly used for
BL 22	*Sanjiaoshu*	Triple Burner Transport	Beside the first vertebra of the loin	Swelling; difficult urination; rumbling of the belly
BL 23	*Shenshu*	Kidney Transport	Beside the second vertebra of the loin	The lower back; the kidney; the ears; loss of seed; the monthly cycle
BL 24	*Qihaishu*	Sea of *Qi* Transport	Beside the third vertebra of the loin	Pain of the lower back; piles; painful periods
BL 25	*Dachangshu*	Large Intestine Transport	Beside the fourth vertebra of the loin	Pain of the lower back; hard stools; loose stools
BL 26	*Guanyuanshu*	Gate of the Origin Transport	Beside the fifth vertebra of the loin	Pain of the lower back; loose stools; difficult urination
BL 27	*Xiaochangshu*	Small Intestine Transport	Beside the first opening of the sacrum	Pain of the lower belly; loss of seed; blood in the urine
BL 28	*Pangguangshu*	Bladder Transport	Beside the second opening of the sacrum	Held-back urine; wetting the bed; a stiff lower back
BL 29	*Zhonglushu*	Mid-Spine Transport	Beside the third opening of the sacrum	Dysentery; the rupture; a stiff lower back
BL 30	*Baihuanshu*	White Ring Transport	Beside the fourth opening of the sacrum	Loss of seed; a white discharge; pain of the loin and hip
BL 31	*Shangliao*	Upper Crevice	In the first opening of the sacrum	Pain of the lower back; irregular periods; difficult urination
BL 32	*Ciliao*	Second Crevice	In the second opening of the sacrum	Painful periods; pain of the lower back; labour. The most used of the four

Code	Name	Meaning	Place	Chiefly used for
BL 33	*Zhonglia o*	Middle Crevice	In the third opening of the sacrum	Irregular periods; hard stools; difficult urination
BL 34	*Xialiao*	Lower Crevice	In the fourth opening of the sacrum	Pain of the lower belly; hard stools
BL 35	*Huiyang*	Meeting of Yang	Half an inch beside the tip of the tailbone	Piles; loose stools; loss of power in men
BL 36	*Chengfu*	Hold and Support	In the middle of the fold below the buttock	Pain of the loin and buttock; piles
BL 37	*Yinmen*	Gate of Abundance	On the back of the thigh, six inches below BL 36	Pain of the loin and the back of the thigh
BL 38	*Fuxi*	Floating Cleft	One inch above BL 39	Numbness of the buttock and thigh; cramp behind the knee
BL 39	*Weiyang*	Outside the Crook	At the outer end of the crease behind the knee	Held-back urine; swelling. Lower sea point of the triple burner
BL 40	*Weizhong*	Middle of the Crook	In the centre of the crease behind the knee	Pain of the lower back; pricked to bleed for sudden pain and for the stroke of summer heat. Sea point
BL 41	*Fufen*	Attached Branch	Three inches beside the second vertebra of the chest	A stiff neck and shoulder; a numb arm
BL 42	*Pohu*	Door of the Bodily Soul	Three inches beside the third vertebra of the chest, level with the lung	Cough; wheezing; wasting of the lung
BL 43	*Gaohuan gshu*	Vital Region Transport	Three inches beside the fourth vertebra of the chest	Every long, wasting illness. Burned with mugwort to build up the weak

Code	Name	Meaning	Place	Chiefly used for
BL 44	*Shentang*	Hall of the Spirit	Three inches beside the fifth vertebra of the chest, level with the heart	Pain of the heart; a troubled mind; cough
BL 45	*Yixi*	The Sigh	Three inches beside the sixth vertebra of the chest	Cough; wheezing; pain of the shoulder and back
BL 46	*Geguan*	Diaphragm Gate	Three inches beside the seventh vertebra of the chest	Difficult swallowing; hiccup; belching
BL 47	*Hunmen*	Gate of the Cloud Soul	Three inches beside the ninth vertebra of the chest, level with the liver	Pain under the ribs; vomiting
BL 48	*Yanggang*	Key Link of Yang	Three inches beside the tenth vertebra of the chest	Yellow skin; pain of the belly; loose stools
BL 49	*Yishe*	Abode of Thought	Three inches beside the eleventh vertebra of the chest, level with the spleen	Fullness of the belly; vomiting; loose stools
BL 50	*Weicang*	Stomach Granary	Three inches beside the twelfth vertebra of the chest	Pain of the stomach; fullness of the belly
BL 51	*Huangmen*	Vitals Gate	Three inches beside the first vertebra of the loin	Pain of the upper belly; lumps; illnesses of the breast
BL 52	*Zhishi*	Residence of the Will	Three inches beside the second vertebra of the loin, level with the kidney	Loss of seed; loss of power; pain of the lower back
BL 53	*Baohuang*	Vitals of the Bladder	Three inches beside the midline, level with the second opening of the sacrum	Held-back urine; pain of the loin

Code	Name	Meaning	Place	Chiefly used for
BL 54	*Zhibian*	Order's Limit	Three inches beside the midline, level with the fourth opening of the sacrum	Pain of the loin and leg; piles; difficult urination
BL 55	*Heyang*	Confluence of Yang	On the calf, two inches below BL 40	Pain of the loin and leg; bleeding of the womb
BL 56	*Chengjin*	Support the Sinews	In the belly of the calf muscle, five inches below BL 40	Cramp of the calf; piles
BL 57	*Chengshan*	Support the Mountain	Where the calf muscle divides, eight inches below BL 40	Cramp of the calf; piles; hard stools
BL 58	*Feiyang*	Soaring Upward	Seven inches above BL 60, on the outer side of the calf	Headache; pain of the loin and leg; piles. Net point
BL 59	*Fuyang*	Yang of the Instep	Three inches above BL 60	A heavy head; pain of the loin and ankle. Cleft point of the yang heel vessel
BL 60	*Kunlun*	Kunlun Mountains	Between the outer ankle and the heel tendon	Headache; pain along the whole back; a difficult labour. River point. Avoided in pregnancy
BL 61	*Pucan*	Servant's Respect	Below BL 60, on the side of the heel bone	Pain of the heel; weakness of the leg
BL 62	*Shenmai*	Extending Vessel	In the hollow below the outer ankle	The falling sickness by day; sleeplessness; headache. Opens the yang heel vessel
BL 63	*Jinmen*	Golden Gate	In front of and below BL 62, on the outer edge of the foot	Fits of children; pain of the outer ankle. Cleft point

Code	Name	Meaning	Place	Chiefly used for
BL 64	*Jinggu*	Capital Bone	On the outer edge of the foot, below the knob of the fifth foot bone	Headache; a stiff neck; pain of the loin. Source point
BL 65	*Shugu*	Restraining Bone	On the outer edge of the foot, behind the ball of the little toe	Headache; a stiff neck; madness. Stream point
BL 66	*Zutonggu*	Foot Connecting Valley	On the outer edge of the foot, in front of the joint of the little toe	Headache; a stiff neck; nosebleed. Spring point
BL 67	*Zhiyin*	Reaching Yin	At the outer corner of the nail of the little toe	Burned with mugwort to turn a child that lies wrongly in the womb; a difficult labour. Well point

The kidney vessel, lesser yin of the foot

Code	Name	Meaning	Place	Chiefly used for
KI 1	*Yongquan*	Bubbling Spring	On the sole, in the hollow behind the ball of the foot	Fainting; headache at the crown; to draw downward what has risen. Well point
KI 2	*Rangu*	Blazing Valley	On the inner edge of the foot, below the knob of the boat-shaped bone	Heat from weak yin; itching of the sexual parts; irregular periods. Spring point
KI 3	*Taixi*	Great Stream	Between the inner ankle and the heel tendon	To build up the kidney; the lower back; ringing ears; toothache. Stream and source point
KI 4	*Dazhong*	Great Bell	Behind and below KI 3, in front of the heel tendon	Coughing of blood; fear; a wish to stay indoors; pain of the heel. Net point
KI 5	*Shuiquan*	Water Spring	One inch below KI 3	Missing or painful periods; difficult urination. Cleft point
KI 6	*Zhaohai*	Shining Sea	In the hollow below the inner ankle	A dry throat; sleeplessness; the falling sickness by night. Opens the yin heel vessel
KI 7	*Fuliu*	Returning Stream	Two inches above KI 3, in front of the heel tendon	Swelling; sweating at night, or no sweat in a fever. River point
KI 8	*Jiaoxin*	Exchange of Trust	Two inches above KI 3, behind the edge of the shinbone	Irregular periods; bleeding of the womb. Cleft point of the yin heel vessel
KI 9	*Zhubin*	Guest House	Five inches above KI 3, on the inner calf	Madness; pain of the inner leg. Cleft point of the yin linking vessel

Code	Name	Meaning	Place	Chiefly used for
KI 10	*Yingu*	Yin Valley	At the inner end of the crease behind the knee, between two tendons	Loss of power; difficult urination; pain of the knee. Sea point
KI 11	*Henggu*	Pubic Bone	At the upper edge of the pubic bone, half an inch beside the midline	Pain of the sexual parts; held-back urine; loss of seed
KI 12	*Dahe*	Great Brightness	Four inches below the navel, half an inch beside the midline	Loss of seed; loss of power; a white discharge
KI 13	*Qixue*	*Qi* Cave	Three inches below the navel, half an inch beside the midline	Irregular periods; barrenness; loose stools
KI 14	*Siman*	Four Fullnesses	Two inches below the navel, half an inch beside the midline	Pain of the lower belly; irregular periods; swelling
KI 15	*Zhongzhu*	Middle Pouring	One inch below the navel, half an inch beside the midline	Irregular periods; hard stools; pain of the belly
KI 16	*Huangshu*	Vitals Transport	Half an inch beside the navel	Pain of the belly; hard stools; vomiting
KI 17	*Shangqu*	Shang Bend	Two inches above the navel, half an inch beside the midline	Pain of the belly; loose or hard stools
KI 18	*Shiguan*	Stone Pass	Three inches above the navel, half an inch beside the midline	Vomiting; pain of the belly; barrenness
KI 19	*Yindu*	Yin Metropolis	Four inches above the navel, half an inch beside the midline	Rumbling and pain of the belly; vomiting
KI 20	*Futonggu*	Connecting Valley of the Belly	Five inches above the navel, half an inch beside the midline	Pain of the belly; vomiting; palpitations

Code	Name	Meaning	Place	Chiefly used for
KI 21	*Youmen*	Hidden Gate	Six inches above the navel, half an inch beside the midline	Pain of the belly; vomiting; loose stools
KI 22	*Bulang*	Walking Corridor	In the fifth rib space, two inches beside the midline	Cough; wheezing; fullness of the chest
KI 23	*Shenfeng*	Spirit Seal	In the fourth rib space, two inches beside the midline	Cough; wheezing; abscess of the breast
KI 24	*Lingxu*	Spirit Ruin	In the third rib space, two inches beside the midline	Cough; wheezing; pain of the chest
KI 25	*Shencang*	Spirit Storehouse	In the second rib space, two inches beside the midline	Cough; wheezing; pain of the chest
KI 26	*Yuzhong*	Comfortable Chest	In the first rib space, two inches beside the midline	Cough; wheezing; phlegm
KI 27	*Shufu*	Transport Mansion	Below the collarbone, two inches beside the midline	Cough; wheezing; pain of the chest

The vessel of the wrapping of the heart, reverting yin of the hand

Code	Name	Meaning	Place	Chiefly used for
PC 1	*Tianchi*	Heavenly Pool	One inch outside the nipple, in the fourth rib space	Fullness of the chest; pain under the arm; lumps of the neck
PC 2	*Tianquan*	Heavenly Spring	On the front of the upper arm, two inches below the front fold of the armpit	Pain of the heart; cough; pain of the inner arm
PC 3	*Quze*	Marsh at the Bend	In the crease of the elbow, on the little-finger side of the tendon	Pain of the heart; fever with restlessness; vomiting. Sea point
PC 4	*Ximen*	Cleft Gate	Five inches above the wrist crease, between the two sinews	Sudden pain of the heart; palpitations; nosebleed. Cleft point
PC 5	*Jianshi*	The Go-Between	Three inches above the wrist crease, between the two sinews	Pain of the heart; fever by turns with chill; madness. River point
PC 6	*Neiguan*	Inner Pass	Two inches above the wrist crease, between the two sinews	Nausea and vomiting; pain of the chest; a restless mind. Net point; opens the yin linking vessel
PC 7	*Daling*	Great Mound	In the middle of the wrist crease	Pain of the heart; fright; laughing without cause; pain of the wrist. Stream and source point
PC 8	*Laogong*	Palace of Toil	In the centre of the palm, where the tip of the middle finger rests in a closed fist	Sores of the mouth; foul breath; fainting. Spring point
PC 9	*Zhongchong*	Central Rushing	At the tip of the middle finger	Fainting; the stroke of heat; a stiff, swollen tongue. Well point

The triple burner vessel, lesser yang of the hand

Code	Name	Meaning	Place	Chiefly used for
TB 1	*Guanchong*	Rushing Pass	At the outer corner of the nail of the ring finger	Sore throat; headache; fever. Well point
TB 2	*Yemen*	Fluid Gate	In the web between the ring finger and the little finger	Deafness; sore throat; red eyes. Spring point
TB 3	*Zhongzhu*	Central Islet	On the back of the hand, behind the knuckles of the ring and little fingers	Deafness; ringing ears; headache at the temple. Stream point
TB 4	*Yangchi*	Yang Pool	On the back of the wrist, in the hollow at the crease	Pain of the wrist; thirst. Source point
TB 5	*Waiguan*	Outer Pass	Two inches above the back of the wrist, between the two bones	Colds with fever; pain of the ear and the side of the head. Net point; opens the yang linking vessel
TB 6	*Zhigou*	Branch Ditch	Three inches above the back of the wrist, between the two bones	Hard stools; pain of the ribs; sudden loss of voice. River point
TB 7	*Huizong*	Meeting of the Clan	Beside TB 6, toward the little finger	Deafness; the falling sickness. Cleft point
TB 8	*Sanyangluo*	Net of the Three Yang	Four inches above the back of the wrist	Sudden deafness; sudden loss of voice; toothache
TB 9	*Sidu*	Four Rivers	On the back of the forearm, five inches below the tip of the elbow	Deafness; toothache; pain of the forearm
TB 10	*Tianjing*	Heavenly Well	In the hollow one inch above the tip of the elbow	Lumps of the neck; pain of the elbow; the falling sickness. Sea point
TB 11	*Qinglengyuan*	Clear Cold Abyss	One inch above TB 10	Pain of the shoulder and arm; headache

Code	Name	Meaning	Place	Chiefly used for
TB 12	*Xiaoluo*	Dispersing Luo River	On the back of the upper arm, midway between TB 11 and TB 13	A stiff neck; headache; pain of the arm
TB 13	*Naohui*	Upper Arm Meeting	Three inches below TB 14, at the back edge of the shoulder muscle	Goitre; lumps of the neck; pain of the shoulder
TB 14	*Jianliao*	Shoulder Crevice	In the back hollow of the shoulder tip when the arm is raised	The painful shoulder that cannot be raised
TB 15	*Tianliao*	Heavenly Crevice	At the upper corner of the shoulder blade	Pain of the shoulder and nape
TB 16	*Tianyou*	Window of Heaven	On the side of the neck, behind the neck muscle, level with the angle of the jaw	Sudden deafness; a swollen face; a stiff neck
TB 17	*Yifeng*	Wind Screen	Behind the lobe of the ear, between the jaw and the bone behind the ear	Deafness; ringing ears; the crooked face; a locked jaw
TB 18	*Qimai*	Spasm Vessel	Behind the ear, at the lower third of its curve	Fits of children; ringing ears; headache
TB 19	*Luxi*	Skull's Rest	Behind the ear, at the upper third of its curve	Headache; ringing ears; fits of children
TB 20	*Jiaosun*	Minute Angle	Above the tip of the ear, within the hairline	Toothache; swollen gums; a clouded eye
TB 21	*Ermen*	Ear Gate	In front of the ear, at the notch above its small flap	Deafness; ringing ears; discharge of the ear
TB 22	*Erheliao*	Ear Harmony Crevice	In front of the root of the ear, at the hairline of the temple	Headache; ringing ears; a locked jaw

Code	Name	Meaning	Place	Chiefly used for
TB 23	*Sizhukong*	Silk Bamboo Hollow	In the hollow at the outer end of the eyebrow	Headache at the temple; red, painful eyes; twitching of the lid

The gallbladder vessel, lesser yang of the foot

Code	Name	Meaning	Place	Chiefly used for
GB 1	*Tongziliao*	Pupil Crevice	Half an inch outside the outer corner of the eye	Headache; red, painful eyes; failing sight
GB 2	*Tinghui*	Meeting of Hearing	In front of the ear, at the notch below its small flap	Deafness; ringing ears; toothache
GB 3	*Shangguan*	Above the Joint	In front of the ear, above the arch of the cheekbone	Deafness; headache at the temple; toothache
GB 4	*Hanyan*	Jaw Serenity	In the hairline of the temple, a quarter of the way from ST 8 to GB 7	Headache on one side; dizziness; ringing ears
GB 5	*Xuanlu*	Suspended Skull	In the hairline of the temple, halfway from ST 8 to GB 7	Headache on one side; pain at the outer corner of the eye
GB 6	*Xuanli*	Suspended Hair	In the hairline of the temple, three quarters of the way from ST 8 to GB 7	Headache on one side; pain at the outer corner of the eye
GB 7	*Qubin*	Crook of the Temple	In the hairline in front of the tip of the ear	Headache; a swollen cheek; a locked jaw
GB 8	*Shuaigu*	Leading Valley	An inch and a half above the tip of the ear	Headache on one side; dizziness; vomiting after wine
GB 9	*Tianchong*	Heavenly Rushing	Behind and above the ear, half an inch behind GB 8	Headache; swollen gums; the falling sickness
GB 10	*Fubai*	Floating White	Behind the ear, at the upper third of the curve from GB 9 to GB 12	Headache; ringing ears; deafness
GB 11	*Touqiaoyin*	Yin Portals of the Head	Behind the ear, at the lower third of the same curve	Headache; pain of the ear; ringing ears

Code	Name	Meaning	Place	Chiefly used for
GB 12	*Wangu*	Bone Behind the Ear	In the hollow behind and below the bone behind the ear	Headache; sleeplessness; a stiff neck; the crooked face
GB 13	*Benshen*	Root of the Spirit	Half an inch within the front hairline, three inches beside the midline	The falling sickness; headache; dizziness
GB 14	*Yangbai*	Yang White	On the forehead, one inch above the middle of the eyebrow	Headache at the forehead; a drooping lid; the crooked face
GB 15	*Toulinqi*	Head Governor of Tears	Above the pupil, half an inch within the front hairline	Headache; tearing; a stuffed nose
GB 16	*Muchuang*	Window of the Eye	One inch behind GB 15	Headache; red eyes; dim sight
GB 17	*Zhengying*	Upright Nourishment	One inch behind GB 16	Headache on one side; dizziness
GB 18	*Chengling*	Support of the Spirit	An inch and a half behind GB 17	Headache; a stuffed nose; nosebleed
GB 19	*Naokong*	Brain Hollow	On the back of the head, beside the knob of the skull, above GB 20	Headache; a stiff neck; dizziness
GB 20	*Fengchi*	Wind Pool	Below the skull, in the hollow at the side of the nape	Headache; dizziness; colds; the eyes; the stroke
GB 21	*Jianjing*	Shoulder Well	On the top of the shoulder, midway between the spine and the shoulder tip	Stiff shoulders; a difficult labour; too little milk. Avoided in pregnancy
GB 22	*Yuanye*	Armpit Abyss	On the side of the chest, three inches below the armpit	Fullness of the chest; pain under the ribs

Code	Name	Meaning	Place	Chiefly used for
GB 23	*Zhejin*	Flank Sinews	One inch in front of GB 22	Fullness of the chest; wheezing; sour belching
GB 24	*Riyue*	Sun and Moon	Below the nipple, in the seventh rib space	Pain under the ribs; vomiting; yellow skin. Front gathering point of the gallbladder
GB 25	*Jingmen*	Capital Gate	At the free end of the twelfth rib	Pain of the loin; difficult urination; swelling. Front gathering point of the kidney
GB 26	*Daimai*	Girdle Vessel	Below the free end of the eleventh rib, level with the navel	A white discharge; irregular periods; pain of the loin
GB 27	*Wushu*	Five Pivots	In front of the front spine of the hip, three inches below the level of the navel	A white discharge; the rupture; pain of the lower belly
GB 28	*Weidao*	Linking Path	Half an inch in front of and below GB 27	A fallen womb; pain of the lower belly
GB 29	*Juliao*	Squatting Crevice	Midway between the front spine of the hip and the top of the thighbone	Pain of the hip and loin; a palsied leg
GB 30	*Huantiao*	Jumping Circle	In the buttock, behind the hip joint	Pain that runs down the leg; a palsied leg
GB 31	*Fengshi*	Wind Market	On the outer thigh, where the tip of the middle finger rests when the arm hangs	A palsied leg; itching of the whole body
GB 32	*Zhongdu*	Middle Ditch	Two inches below GB 31	Pain and numbness of the outer thigh
GB 33	*Xiyangguan*	Yang Gate of the Knee	On the outer side of the knee, three inches above GB 34	A swollen, painful knee; a numb lower leg

Code	Name	Meaning	Place	Chiefly used for
GB 34	*Yanglingquan*	Yang Mound Spring	In the hollow below the head of the outer bone of the lower leg	The sinews of the whole body; pain under the ribs; a bitter taste. Sea point; meeting point of the sinews
GB 35	*Yangjiao*	Yang Intersection	Seven inches above the outer ankle, behind the outer bone	Fullness of the chest; a weak lower leg. Cleft point of the yang linking vessel
GB 36	*Waiqiu*	Outer Hill	Seven inches above the outer ankle, in front of the outer bone	Pain of the neck and chest; the bite of the mad dog, in the old books. Cleft point
GB 37	*Guangming*	Bright Light	Five inches above the outer ankle	Illnesses of the eye; a swollen breast. Net point
GB 38	*Yangfu*	Yang Support	Four inches above the outer ankle	Headache on one side; pain of the outer corner of the eye and of the ribs. River point
GB 39	*Xuanzhong*	Suspended Bell	Three inches above the outer ankle	A stiff neck; a palsied limb; weakness of the bones. Meeting point of the marrow
GB 40	*Qiuxu*	Mound of Ruins	In the hollow in front of and below the outer ankle	Pain of the ribs and the ankle; a sprained ankle. Source point
GB 41	*Zulinqi*	Foot Governor of Tears	On the top of the foot, between the fourth and fifth foot bones, just in front of where they meet	Headache; pain of the breast; irregular periods. Stream point; opens the girdle vessel
GB 42	*Diwuhui*	Five Meetings of Earth	Between the fourth and fifth foot bones, behind the joints of the toes	Red eyes; ringing ears; a swollen breast. The old books forbid the mugwort here

Code	Name	Meaning	Place	Chiefly used for
GB 43	*Xiaxi*	Clamped Stream	In the web between the fourth and fifth toes	Headache; dizziness; deafness; pain of the ribs. Spring point
GB 44	*Zuqiaoyin*	Yin Portals of the Foot	At the outer corner of the nail of the fourth toe	Headache on one side; troubled dreams; red eyes. Well point

The liver vessel, reverting yin of the foot

Code	Name	Meaning	Place	Chiefly used for
LR 1	*Dadun*	Great Pile	At the outer corner of the nail of the great toe	The rupture, burned here with mugwort; heavy bleeding of the womb. Well point
LR 2	*Xingjian*	Moving Between	In the web between the great toe and the second toe	Fire of the liver: red eyes, headache, anger, sleeplessness. Spring point
LR 3	*Taichong*	Great Rushing	On the top of the foot, between the first and second foot bones	Knotted *qi* of the liver; headache; anger; cramps. Stream and source point
LR 4	*Zhongfeng*	Middle Seal	In front of the inner ankle, inside the tendon	The rupture; loss of seed; difficult urination. River point
LR 5	*Ligou*	Woodworm Canal	Five inches above the inner ankle, on the inner face of the shinbone	Itching and swelling of the sexual parts; irregular periods. Net point
LR 6	*Zhongdu*	Central Capital	Seven inches above the inner ankle, on the inner face of the shinbone	Pain of the lower belly; the rupture; bleeding of the womb. Cleft point
LR 7	*Xiguan*	Knee Joint	Behind and below the inner knob of the shinbone, one inch behind SP 9	Pain and swelling of the knee
LR 8	*Ququan*	Spring at the Bend	At the inner end of the crease of the knee	A fallen womb; itching of the sexual parts; pain of the knee. Sea point
LR 9	*Yinbao*	Yin Wrapping	Four inches above the inner knob of the thighbone	Irregular periods; difficult urination
LR 10	*Zuwuli*	Leg Five Miles	On the inner thigh, three inches below ST 30	Fullness of the lower belly; held-back urine

Code	Name	Meaning	Place	Chiefly used for
LR 11	*Yinlian*	Yin Corner	On the inner thigh, two inches below ST 30	Irregular periods; barrenness
LR 12	*Jimai*	Urgent Pulse	In the groin, beside the pubic bone, where the pulse beats	Pain of the sexual parts; the rupture
LR 13	*Zhangmen*	Completion Gate	At the free end of the eleventh rib	Fullness of the belly; lumps under the ribs. Front gathering point of the spleen; meeting point of the solid organs
LR 14	*Qimen*	Gate of the Cycle	Below the nipple, in the sixth rib space	Fullness under the ribs; sour belching; abscess of the breast. Front gathering point of the liver

The governing vessel

Code	Name	Meaning	Place	Chiefly used for
GV 1	*Changqiang*	Long Strong	Between the tip of the tailbone and the anus	Piles; a fallen gut; the falling sickness; pain of the lower spine. Net point
GV 2	*Yaoshu*	Transport of the Loin	At the opening at the lower end of the sacrum	Pain of the lower back; irregular periods; piles
GV 3	*Yaoyangguan*	Yang Gate of the Loin	Below the fourth vertebra of the loin	Pain of the lower back; weak legs; loss of seed
GV 4	*Mingmen*	Gate of Life	Below the second vertebra of the loin	To warm the yang of the kidney; a cold, weak lower back; loss of power
GV 5	*Xuanshu*	Suspended Pivot	Below the first vertebra of the loin	A stiff lower back; loose stools with undigested food
GV 6	*Jizhong*	Centre of the Spine	Below the eleventh vertebra of the chest	Loose stools; yellow skin; the falling sickness. The old books forbid the mugwort here
GV 7	*Zhongshu*	Central Pivot	Below the tenth vertebra of the chest	Pain of the stomach; a stiff back
GV 8	*Jinsuo*	Sinew Contraction	Below the ninth vertebra of the chest	Cramps; the falling sickness; a stiff spine
GV 9	*Zhiyang*	Reaching Yang	Below the seventh vertebra of the chest	Yellow skin; fullness of the chest; a stiff back
GV 10	*Lingtai*	Spirit Tower	Below the sixth vertebra of the chest	Cough; wheezing; boils
GV 11	*Shendao*	Spirit Path	Below the fifth vertebra of the chest	Palpitations; loss of memory; fright; pain of the heart

Code	Name	Meaning	Place	Chiefly used for
GV 12	*Shenzhu*	Body Pillar	Below the third vertebra of the chest	Cough; wheezing; fits of children; a stiff back
GV 13	*Taodao*	Way of Happiness	Below the first vertebra of the chest	Fever by turns with chill; a stiff spine
GV 14	*Dazhui*	Great Hammer	Below the seventh vertebra of the neck	Fever; colds; all the yang vessels meet here
GV 15	*Yamen*	Gate of Muteness	On the nape, half an inch within the hairline	Loss of speech; a stiff tongue; a stiff neck. Needled with great care; never deeply
GV 16	*Fengfu*	Palace of Wind	On the nape, one inch within the hairline, below the knob of the skull	Headache; a stiff neck; the stroke; madness. Needled with great care; never deeply
GV 17	*Naohu*	Door of the Brain	Above the knob at the back of the skull	A heavy head; a stiff neck; dizziness
GV 18	*Qiangjian*	Unyielding Space	An inch and a half above GV 17	Headache; a stiff neck; madness
GV 19	*Houding*	Behind the Crown	An inch and a half behind GV 20	Headache at the crown; dizziness; sleeplessness
GV 20	*Baihui*	Hundred Meetings	On the crown of the head	To raise what has sunk; to calm the spirit; headache; the stroke
GV 21	*Qianding*	In Front of the Crown	An inch and a half in front of GV 20	Headache at the crown; dizziness; fits of children
GV 22	*Xinhui*	Meeting of the Soft Spot	Two inches within the front hairline, at the soft spot of the infant’s skull	Headache; a stuffed nose. Not needled in infants

Code	Name	Meaning	Place	Chiefly used for
GV 23	*Shangxing*	Upper Star	One inch within the front hairline	A stuffed and bleeding nose; headache at the forehead; pain of the eyes
GV 24	*Shenting*	Courtyard of the Spirit	Half an inch within the front hairline	Sleeplessness; fright; madness; a running nose
GV 25	*Suliao*	White Crevice	At the tip of the nose	A stuffed nose; fainting; collapse
GV 26	*Renzhong*	Middle of Man	In the groove below the nose	To wake a person who has fainted; the falling sickness; sudden pain of the lower back
GV 27	*Duiduan*	Extremity of the Mouth	At the middle of the edge of the upper lip	Swollen gums; a stiff lip; madness
GV 28	*Yinjiao*	Gum Crossing	Inside the upper lip, where it joins the gum	Swollen, bleeding gums; madness

The controlling vessel

Code	Name	Meaning	Place	Chiefly used for
CV 1	*Huiyin*	Meeting of Yin	At the perineum	Held-back urine; piles; to revive the drowned
CV 2	*Qugu*	Curved Bone	At the upper edge of the pubic bone	Difficult urination; loss of seed; a white discharge
CV 3	*Zhongji*	Middle Pole	Four inches below the navel	Held-back urine; wetting the bed; irregular periods. Front gathering point of the bladder
CV 4	*Guanyuan*	Gate of the Origin	Three inches below the navel	To build up the original *qi*; loss of seed; barrenness. Front gathering point of the small intestine
CV 5	*Shimen*	Stone Gate	Two inches below the navel	Swelling; pain of the belly. Front gathering point of the triple burner. The old books say that needling here makes a woman barren
CV 6	*Qihai*	Sea of *Qi*	One and a half inches below the navel	Tiredness; weakness of the lower belly; to build up the *qi*
CV 7	*Yinjiao*	Yin Intersection	One inch below the navel	Pain round the navel; irregular periods; swelling
CV 8	*Shenque*	Gateway of the Spirit	The navel	Never needled. Burned with mugwort on a layer of salt for collapse and for lasting loose stools
CV 9	*Shuifen*	Water Separation	One inch above the navel	Swelling of every kind. The old books prefer the mugwort here

Code	Name	Meaning	Place	Chiefly used for
CV 10	*Xiawan*	Lower Stomach Duct	Two inches above the navel	Pain of the stomach; food that stays undigested
CV 11	*Jianli*	Strengthen the Interior	Three inches above the navel	Pain of the stomach; vomiting; swelling
CV 12	*Zhongwan*	Middle of the Stomach Duct	Four inches above the navel	Every disorder of the stomach. Front gathering point of the stomach; meeting point of the hollow organs
CV 13	*Shangwan*	Upper Stomach Duct	Five inches above the navel	Vomiting; pain of the stomach; the falling sickness
CV 14	*Juque*	Great Gateway	Six inches above the navel	Pain of the heart; palpitations; madness. Front gathering point of the heart
CV 15	*Jiuwei*	Turtledove Tail	Below the tip of the breastbone	Pain of the chest; the falling sickness; madness. Net point
CV 16	*Zhongting*	Central Courtyard	On the breastbone, where its tip is joined	Fullness of the chest; vomiting; difficult swallowing
CV 17	*Shanzhong*	Middle of the Chest	On the breastbone, level with the nipples	Tightness of the chest; wheezing; too little milk. Front gathering point of the wrapping of the heart; meeting point of the *qi*
CV 18	*Yutang*	Jade Hall	On the breastbone, level with the third rib space	Pain of the chest; cough
CV 19	*Zigong*	Purple Palace	On the breastbone, level with the second rib space	Pain of the chest; cough; wheezing

Code	Name	Meaning	Place	Chiefly used for
CV 20	*Huagai*	Splendid Canopy	On the breastbone, level with the first rib space	Cough; wheezing; pain of the chest
CV 21	*Xuanji*	Jade Pivot	On the upper breastbone, one inch below CV 22	Cough; sore throat; food that stays in the stomach
CV 22	*Tiantu*	Heaven's Chimney	In the hollow above the breastbone	Cough; wheezing; sudden loss of voice; difficult swallowing
CV 23	*Lianquan*	Corner Spring	Above the Adam's apple, in the hollow below the chin	A stiff tongue; loss of speech after a stroke; difficult swallowing
CV 24	*Chengjiang*	Container of Fluids	In the groove of the chin	The crooked face; swollen gums; drooling

Points off the lines

The standard list has some four dozen points that lie on no vessel. The table gives those in commonest use. The national standard of China counts the first of them as a point of the governing vessel, which brings its total to 362.

Name	Meaning	Place	Chiefly used for
Yintang	Hall of the Seal	Between the eyebrows	To calm the spirit; headache at the forehead; a stuffed nose
Sishencong	Four Alert Spirits	Four points, one inch in front of, behind and beside GV 20	Headache; dizziness; sleeplessness; poor memory
Taiyang	Supreme Yang	In the hollow of the temple	Headache at the temple; red, painful eyes
Yuyao	Fish Waist	In the middle of the eyebrow	Twitching of the lid; pain above the eye
Erjian	Tip of the Ear	At the top of the ear when it is folded forward	Pricked to bleed for red eyes, fever and a sore throat

Name	Meaning	Place	Chiefly used for
Jinjin and *Yuye*	Golden Fluid and Jade Fluid	The two veins under the tongue	Pricked to bleed for a stiff tongue and for loss of speech
Anmian	Peaceful Sleep	Behind the ear, midway between TB 17 and GB 20	Sleeplessness; dizziness
Dingchuan	Calm the Wheezing	Half an inch beside the seventh vertebra of the neck	Wheezing; cough
Huatuo jiaji	Hua Tuo's points beside the spine	Seventeen pairs, half an inch beside each vertebra of the chest and the loin	The organ at each level; pain of the back
Yaoyan	Eyes of the Loin	In the two hollows beside the fourth vertebra of the loin	Pain of the lower back
Shiqizhui	The Seventeenth Vertebra	Below the fifth vertebra of the loin	Painful periods; pain of the lower back
Zigong	Palace of the Child	Three inches beside CV 3	A fallen womb; barrenness; irregular periods
Yaotongdian	Points for the Painful Loin	Two points on the back of the hand, between the hand bones	Sudden pain of the lower back, needled while the patient moves
Luozhen	Stiff Neck	On the back of the hand, behind the knuckles of the index and middle fingers	A stiff neck on waking
Baxie	Eight Evils	In the webs between the fingers of both hands	Swollen, numb fingers
Sifeng	Four Seams	On the palm side of the four fingers, at the middle crease	Pricked in children with poor digestion and with whooping cough

Name	Meaning	Place	Chiefly used for
Shixuan	Ten Declarations	At the tips of the ten fingers	Pricked to bleed for fainting, the stroke of heat and fits
Heding	Crane's Summit	In the middle of the upper edge of the kneecap	Pain and weakness of the knee
Xiyan	Eyes of the Knee	In the two hollows below the kneecap	Pain of the knee
Dannangxue	Gallbladder Point	One or two inches below GB 34, where it is tender	Pain from stones of the gall
Lanweixue	Point of the Blind Gut	About two inches below ST 36, where it is tender	The abscess of the gut, as entry 74 told
Bafeng	Eight Winds	In the webs between the toes of both feet	Swollen, painful feet

The points in their groups

Chapter 47 named the groups. The three tables give their members.

The five transport points. On a yin vessel the well belongs to wood, the spring to fire, the stream to earth, the river to metal and the sea to water. On a yang vessel the well belongs to metal, the spring to water, the stream to wood, the river to fire and the sea to earth.

Vessel	Well	Spring	Stream	River	Sea
Lung	LU 11	LU 10	LU 9	LU 8	LU 5
Large intestine	LI 1	LI 2	LI 3	LI 5	LI 11
Stomach	ST 45	ST 44	ST 43	ST 41	ST 36
Spleen	SP 1	SP 2	SP 3	SP 5	SP 9
Heart	HT 9	HT 8	HT 7	HT 4	HT 3
Small intestine	SI 1	SI 2	SI 3	SI 5	SI 8
Bladder	BL 67	BL 66	BL 65	BL 60	BL 40
Kidney	KI 1	KI 2	KI 3	KI 7	KI 10

Vessel	Well	Spring	Stream	River	Sea
Wrapping of the heart	PC 9	PC 8	PC 7	PC 5	PC 3
Triple burner	TB 1	TB 2	TB 3	TB 6	TB 10
Gallbladder	GB 44	GB 43	GB 41	GB 38	GB 34
Liver	LR 1	LR 2	LR 3	LR 4	LR 8

Source, net, cleft, back and front.

Vessel	Source	Net	Cleft	Transport point of the back	Gathering point of the front
Lung	LU 9	LU 7	LU 6	BL 13	LU 1
Large intestine	LI 4	LI 6	LI 7	BL 25	ST 25
Stomach	ST 42	ST 40	ST 34	BL 21	CV 12
Spleen	SP 3	SP 4	SP 8	BL 20	LR 13
Heart	HT 7	HT 5	HT 6	BL 15	CV 14
Small intestine	SI 4	SI 7	SI 6	BL 27	CV 4
Bladder	BL 64	BL 58	BL 63	BL 28	CV 3
Kidney	KI 3	KI 4	KI 5	BL 23	GB 25
Wrapping of the heart	PC 7	PC 6	PC 4	BL 14	CV 17
Triple burner	TB 4	TB 5	TB 7	BL 22	CV 5
Gallbladder	GB 40	GB 37	GB 36	BL 19	GB 24
Liver	LR 3	LR 5	LR 6	BL 18	LR 14

The meeting points and the confluence points.

Meets or opens	Point	With	Region that the pair treats
The solid organs	LR 13		
The hollow organs	CV 12		

Meets or opens	Point	With	Region that the pair treats
The *qi*	CV 17		
The blood	BL 17		
The sinews	GB 34		
The vessels	LU 9		
The bones	BL 11		
The marrow	GB 39		
The thoroughfare vessel	SP 4	PC 6, which opens the yin linking vessel	Heart, chest and stomach
The governing vessel	SI 3	BL 62, which opens the yang heel vessel	Inner corner of the eye, nape, ear, shoulder and back
The girdle vessel	GB 41	TB 5, which opens the yang linking vessel	Outer corner of the eye, cheek, neck and shoulder
The controlling vessel	LU 7	KI 6, which opens the yin heel vessel	Throat, chest and lung

The thirteen ghost points

Chapter 67 noted that even Sun Simiao kept thirteen points for ghosts. Entry 34 met them as the needling for madness. He gave each a second name and an order in which they are to be needled.

Order	Ghost name	Point
1	Ghost Palace	GV 26
2	Ghost Faith	LU 11
3	Ghost Fortress	SP 1
4	Ghost Heart	PC 7
5	Ghost Road	BL 62
6	Ghost Pillow	GV 16
7	Ghost Bed	ST 6
8	Ghost Market	CV 24

Order	Ghost name	Point
9	Ghost Cave	PC 8
10	Ghost Hall	GV 23
11	Ghost Store	CV 1
12	Ghost Minister	LI 11
13	Ghost Seal	Under the tongue

Six of the thirteen lie on the head, on the face or in the mouth. Two are the well points at the tip of the thumb and of the great toe. The list keeps, inside the learned medicine, the older reading of madness that chapter 44 described.

Points with a warning

The old books mark some points as forbidden, and the modern textbooks keep most of the warnings.

Warning	Points
Avoided in pregnancy, since they are used to bring on labour	LI 4, SP 6, GB 21, BL 60, BL 67, and the points of the lower belly and the sacrum
Never needled	ST 17, the nipple; CV 8, the navel
Needled only by the practised hand, and never deeply	BL 1 and ST 1 at the eye; GV 15 and GV 16 at the nape; ST 9 and ST 12 at the neck; the points of the chest and of the upper back, which lie over the lung
The old books forbid the mugwort	BL 1, GV 6 and GB 42, among others
Not needled in infants	GV 22, over the soft spot of the skull

Chapter 75 gave the count of harm. The needle is safe in trained hands. The injuries on record, a pierced lung above all, come from the points of the chest and the upper back.

Six further groups

The lower sea points. Each hollow organ has a point on the leg that treats the organ itself.

Organ	Lower sea point
Stomach	ST 36
Large intestine	ST 37
Small intestine	ST 39

Organ	Lower sea point
Gallbladder	GB 34
Bladder	BL 40
Triple burner	BL 39

The four command points. A verse that every student learns gives one point for each region. For the belly it is ST 36, for the loin and back BL 40, for the head and nape LU 7, and for the face and mouth LI 4. Later hands added PC 6 for the chest and GV 26 for fainting.

What the list shows

The count. The classics speak of 365 points, one for each day of the year. The lists that came down have fewer, and the modern standard has 361. The number was an aim before it was a count.

The limbs carry the most used points. Sixty of the 361 are the transport points between the tips of the limbs and the elbow or knee. Chapter 51 showed how they are used. A prescription joins near points at the place of the complaint with far points on the same vessel. The far points are most often of these groups. The needler treats the far end of a vessel to reach its near end.

The names are a landscape. In the translations used here, some forty names are waters: wells, springs, streams, marshes, pools and seas. Some forty are gates, doors, passes and windows. Some forty are valleys, mounds, hills and crevices. Some thirty are buildings: palaces, halls, courtyards, granaries and markets. Twenty name heaven and its lights, and seventeen name a spirit or a soul. The body is drawn as a country with its rivers, its walls and its sky.

The back repeats the organs. The inner line of the bladder vessel has a transport point for each organ. They follow the order in which the organs lie from the chest to the pelvis. The outer line has five points level with the five solid organs. They are named for what those organs house: the bodily soul, the spirit, the cloud soul, thought and the will.

The list is a count of twelve and five. Twelve vessels each have five transport points, one source, one net and one cleft. Chapter 73 tested the five and the twelve of Chinese medicine against the two ladders of the theory. The points are where that reckoning is laid on the skin.

What has been measured was given in chapter 51. Needling helps in several kinds of lasting pain and in nausea. A needle set beside the point often does nearly as well as a needle in it. No structure has been found under the skin that marks a point. The list is therefore best read as what it has always been: a map for the hand, tested by use.

95. The Chinese pharmacy, continued

What this chapter adds

Chapter 52 described the Chinese pharmacy and listed 101 chief drugs. The textbooks that Chinese students learn hold four to five hundred. This chapter lists 278 more, in the classes of chapter 52. The two tables together cover nearly all that a physician prescribes.

Each row gives the Chinese name, the material, and the plant, animal or mineral from which it comes. It then gives the nature and flavour, and the chief actions as the drug books state them. The Latin names are those of the Chinese pharmacopoeia or of common use. They are given so that a reader can search further.

The table describes a tradition. It is not advice for use. A drug is marked where it is poisonous, where it comes from a protected animal, and where harm has been recorded. Chapter 52 gave the trials of single drugs, and chapter 75 the harms.

Opening the surface

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Jingjie	Schizonepeta herb	*Schizonepeta tenuifolia*	Slightly warm; acrid	Wind at the surface, cold or hot; brings out rashes; charred, it stops bleeding
Xixin	Wild ginger root	*Asarum heterotropoides*, *A. sieboldii*	Warm; acrid	Cold in the head and nose; toothache; cold phlegm in the lung. Small doses only
Gaoben	Chinese lovage root	*Ligusticum sinense*	Warm; acrid	Headache at the crown; wind, cold and damp
Cang'erzi	Cocklebur fruit	*Xanthium sibiricum*	Warm; acrid, bitter; poisonous raw	Opens the nose; headache with a stuffed nose
Xinyi	Magnolia flower bud	*Magnolia biondii* and others	Warm; acrid	Opens the nose
Congbai	White of the scallion	*Allium fistulosum*	Warm; acrid	The first day of a cold, with fermented soybean
Xiangru	Mosla herb	*Mosla chinensis*	Slightly warm; acrid	Colds of the summer; swelling. Called the ephedra of summer
Niubangzi	Burdock fruit	*Arctium lappa*	Cold; acrid, bitter	Wind and heat; sore throat; brings out rashes
Chantui	Cast skin of the cicada	*Cryptotympana pustulata*	Cold; sweet	Hoarseness; itching rashes; a film on the eye; night crying and fits of children
Manjingzi	Vitex fruit	*Vitex trifolia*	Slightly cold; acrid, bitter	Headache; red, painful eyes
Dandouchi	Fermented soybean	*Glycine max*	Cool; acrid, bitter	Colds; restlessness and sleeplessness after a fever

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Fuping	Duckweed	*Spirodela polyrrhiza*	Cold; acrid	Brings out a sweat and rashes; lets water out
Muzei	Scouring rush	*Equisetum hyemale*	Neutral; sweet, bitter	Red eyes; a film on the eye

Clearing heat

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Lugen	Reed rhizome	*Phragmites communis*	Cold; sweet	Heat with thirst; vomiting from heat of the stomach; abscess of the lung
Tianhuafen	Trichosanthes root	*Trichosanthes kirilowii*	Slightly cold; sweet, slightly bitter	Thirst; the wasting and thirsting illness; sores. Avoided in pregnancy
Danzhuye	Lophatherum herb	*Lophatherum gracile*	Cold; sweet, bland	Restlessness with heat; sores of the mouth; scanty dark urine
Xiakucao	Selfheal spike	*Prunella vulgaris*	Cold; acrid, bitter	Fire of the liver; red, painful eyes; lumps of the neck
Juemingzi	Cassia seed	*Senna obtusifolia*	Slightly cold; sweet, bitter, salty	Red eyes; hard stools. Today a tea against high blood pressure
Gujingcao	Pipewort flower	*Eriocaulon buergerianum*	Neutral; acrid, sweet	Red eyes; a film on the eye
Mimenghua	Buddleja flower bud	*Buddleja officinalis*	Slightly cold; sweet	Red, tearing eyes; a film on the eye
Qingxiangzi	Celosia seed	*Celosia argentea*	Slightly cold; bitter	Fire of the liver in the eyes
Xuanshen	Figwort root	*Scrophularia ningpoensis*	Slightly cold; sweet, bitter, salty	Heat in the blood; sore throat; lumps of the neck; nourishes yin

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Zicao	Gromwell root	*Lithospermum erythrorhizon*; *Arnebia euchroma*	Cold; sweet, salty	Cools the blood; brings out rashes; in oil on burns and weeping skin
Shuiniujiao	Water buffalo horn	*Bubalus bubalis*	Cold; bitter	High fever with a clouded mind and bleeding. It replaces the horn of the rhinoceros, which is forbidden
Kushen	Sophora root	*Sophora flavescens*	Cold; bitter	Damp heat: dysentery, yellow skin, discharge; as a wash for itching skin
Qinpi	Ash bark	*Fraxinus rhynchophylla*	Cold; bitter, astringent	Dysentery with heat; red eyes
Baixianpi	Dittany root bark	*Dictamnus dasycarpus*	Cold; bitter	Itching, weeping skin; yellow skin. Injury of the liver has been reported
Daqingye	Woad leaf	*Isatis indigotica*	Cold; bitter	Epidemic fevers with rashes; sore throat; mumps
Qingdai	Natural indigo	*Baphicacanthus cusia* and other dye plants	Cold; salty	Heat poison; fits of children; on sores of the mouth. A compound from it was used in China against one leukaemia
Zihuading	Viola herb	*Viola yedoensis*	Cold; bitter, acrid	Boils and deep sores; snakebite
Yejuhua	Wild chrysanthemum flower	*Chrysanthemum indicum*	Slightly cold; bitter, acrid	Boils; sore throat; red eyes

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Yuxingcao	Houttuynia herb	*Houttuynia cordata*	Slightly cold; acrid	Abscess of the lung with foul sputum; cough with heat. Its injection was suspended in 2006 after deaths
Baitouweng	Pulsatilla root	*Pulsatilla chinensis*	Cold; bitter	Dysentery with blood and heat
Machixian	Purslane	*Portulaca oleracea*	Cold; sour	Dysentery; sores. A common pot herb
Baijiangcao	Patrinia herb	*Patrinia scabiosifolia*	Slightly cold; acrid, bitter	The abscess of the gut; abscess of the lung
Hongtenng	Sargentodoxa stem	*Sargentodoxa cuneata*	Neutral; bitter	The abscess of the gut; painful periods
Shegan	Blackberry lily rhizome	*Belamcanda chinensis*	Cold; bitter	A sore, swollen throat; phlegm with wheezing
Shandougen	Tonkin sophora root	*Sophora tonkinensis*	Cold; bitter; poisonous	A severe sore throat. Large doses have poisoned
Mabo	Puffball	*Lasiosphaera fenzlii*; *Calvatia*	Neutral; acrid	Sore throat; loss of voice; on a bleeding wound
Baihuasheshecao	Hedyotis herb	*Hedyotis diffusa*	Cold; slightly bitter, sweet	Heat poison; the abscess of the gut. Today widely given in cancer, without good trials
Banzhilian	Barbed skullcap	*Scutellaria barbata*	Cold; acrid, bitter	Heat poison; snakebite. Today given in cancer
Tufuling	Smilax rhizome	*Smilax glabra*	Neutral; sweet, bland	The great pox; poisoning by mercury; damp sores. The China root of entry 63

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Chuanxinlian	Andrographis herb	*Andrographis paniculata*	Cold; bitter	Fever, sore throat, dysentery. The Indian king of bitters of chapter 60
Yadanzi	Brucea fruit	*Brucea javanica*	Cold; bitter; slightly poisonous	Dysentery from amoebae; malaria; crushed on warts and corns
Chonglou	Paris rhizome	*Paris polyphylla*	Slightly cold; bitter; slightly poisonous	Snakebite; boils; fits
Baiwei	Swallowwort root	*Cynanchum atratum*	Cold; bitter, salty	Fever that lingers after an illness; heat after childbirth
Yinchaihu	Stellaria root	*Stellaria dichotoma*	Slightly cold; sweet	Heat from weak yin; fever of wasting children
Huhuanglian	Picrorhiza rhizome	*Picrorhiza scrophulariiflora*	Cold; bitter	Heat from weak yin; wasting of children; dysentery. A sister of the Indian drug of chapter 60

Purging

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Fanxieye	Senna leaf	*Senna alexandrina*	Cold; sweet, bitter	Hard stools. The name means the purging leaf of the foreigners. It came from the Arab pharmacy
Luhui	Dried juice of aloe	*Aloe vera*; *A. ferox*	Cold; bitter	Hard stools with heat; fire of the liver; worms of children
Yuliren	Bush cherry kernel	*Prunus humilis*; *P. japonica*	Neutral; acrid, bitter, sweet	Dry, hard stools; swelling
Gansui	Kansui root	*Euphorbia kansui*	Cold; bitter; poisonous	Drives out water by the bowel in great swelling. Prepared with vinegar
Jingdaji	Peking spurge root	*Euphorbia pekinensis*	Cold; bitter; poisonous	Water in the chest and belly
Yuanhua	Genkwa flower	*Daphne genkwa*	Warm; bitter, acrid; poisonous	Water in the chest. With the two above, the harsh purge of the Ten Jujubes Decoction
Qianniuzi	Morning glory seed	*Ipomoea nil*	Cold; bitter; poisonous	Swelling; hard stools; worms
Badou	Croton seed	*Croton tiglium*	Hot; acrid; very poisonous	The most violent purge. Used as a pressed powder in tiny doses
Shanglu	Pokeweed root	*Phytolacca acinosa*	Cold; bitter; poisonous	Swelling; on sores

Letting water out

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Zhuling	Polyporus fungus	*Polyporus umbellatus*	Neutral; sweet, bland	Swelling; scanty urine
Huashi	Talc	A mineral	Cold; sweet, bland	Painful urination with heat; summer heat; as a dusting powder
Mutong	Akebia stem	*Akebia quinata*; *A. trifoliata*	Cold; bitter	Painful urination; sores of the mouth; too little milk. The stem of a birthwort was long sold under this name and destroyed kidneys. It was forbidden in 2003
Tongcao	Pith of the rice-paper plant	*Tetrapanax papyrifer*	Slightly cold; sweet, bland	Painful urination; too little milk
Dengxincao	Pith of the rush	*Juncus effusus*	Slightly cold; sweet, bland	Restlessness; night crying of infants; scanty dark urine
Qumai	Fringed pink	*Dianthus superbus*	Cold; bitter	Painful urination with blood; missing periods. Avoided in pregnancy
Bianxu	Knotgrass	*Polygonum aviculare*	Slightly cold; bitter	Painful urination; itching from damp
Difuzi	Kochia fruit	*Kochia scoparia*	Cold; acrid, bitter	Painful urination; itching skin
Haijinsha	Spores of the climbing fern	*Lygodium japonicum*	Cold; sweet, salty	Stones and gravel of the urine

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Shiwei	Pyrrosia leaf	*Pyrrosia lingua*	Slightly cold; bitter, sweet	Painful urination with blood or stones; cough
Bixie	Yam rhizome	*Dioscorea hypoglauca*	Neutral; bitter	Cloudy urine; wind-damp pain
Jinqiancao	Gold coin herb	*Lysimachia christinae*	Slightly cold; sweet, salty	Stones of the urine and of the gall; yellow skin
Huzhang	Giant knotweed rhizome	*Polygonum cuspidatum*	Slightly cold; bitter	Yellow skin; burns; standing blood; cough
Donggua pi	Peel of the wax gourd	*Benincasa hispida*	Cool; sweet	Swelling; summer heat. The seed is given for abscess of the lung and the gut
Chixiaodou	Rice bean	*Vigna umbellata*	Neutral; sweet, sour	Swelling; the swollen legs of entry 58; sores
Yumixu	Corn silk	*Zea mays*	Neutral; sweet	Swelling; yellow skin. A drug that came from America
Fangji	Stephania root	*Stephania tetrandra*	Cold; bitter	Swelling; wind-damp pain. A birthwort root sold under a like name caused the kidney failures of chapter 52

Driving out wind and damp

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Qinjiao	Large-leaf gentian root	*Gentiana macrophylla*	Neutral; acrid, bitter	Wind-damp pain; fever from weak yin; yellow skin
Mugua	Chinese quince fruit	*Chaenomeles speciosa*	Warm; sour	Cramps of the calf; the swollen legs of entry 58; wind-damp pain
Wujiapi	Acanthopanax root bark	*Eleutherococcus gracilistylus*	Warm; acrid, bitter	Wind-damp pain; weak sinews and bones; late walking of children
Sangzhi	Mulberry twig	*Morus alba*	Neutral; slightly bitter	Wind-damp pain of the shoulder and arm
Xixiancao	Siegesbeckia herb	*Sigesbeckia orientalis*	Cold; bitter, acrid	Wind-damp pain; numb limbs; itching
Haifengteng	Kadsura pepper stem	*Piper kadsura*	Slightly warm; acrid, bitter	Wind-damp pain; stiff joints
Luoshiteng	Star jasmine stem	*Trachelospermum jasminoides*	Slightly cold; bitter	Hot, swollen joints; sore throat
Shenjincao	Clubmoss	*Lycopodium japonicum*	Warm; slightly bitter, acrid	Stiff, cramped sinews. The name means the herb that stretches the sinews
Qishe	Sharp-nosed pit viper	*Deinagkistrodon acutus*	Warm; sweet, salty; poisonous	Stubborn wind-damp pain; palsy after a stroke; leprosy. Taken in wine
Wushaoshe	Black-striped snake	*Zaocys dhumnades*	Neutral; sweet	The same uses. Not poisonous

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Leigongteng	Thunder god vine	*Tripterygium wilfordii*	Cold; bitter, acrid; very poisonous	Inflamed joints, as entry 25 told. It stops the monthly period and the making of seed, and has killed
Chuanwu	Main root of aconite	*Aconitum carmichaelii*	Hot; acrid, bitter; very poisonous	Severe cold pain of the joints. Only after long preparation
Gouji	Cibotium rhizome	*Cibotium barometz*	Warm; bitter, sweet	A stiff, weak lower back and knees
Qiannianjian	Homalomena rhizome	*Homalomena occulta*	Warm; bitter, acrid	Wind-damp pain in the old, taken in wine
Hugu	Tiger bone	*Panthera tigris*	Warm; acrid	Once given for weak bones and wind-damp pain. Forbidden in China since 1993

Transforming damp

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Huoxiang	Patchouli herb	*Pogostemon cablin*	Slightly warm; acrid	Damp of the centre; nausea; summer colds
Peilan	Eupatorium herb	*Eupatorium fortunei*	Neutral; acrid	A sticky, sweet taste in the mouth; foul breath; summer damp
Baidoukou	Round cardamom	*Amomum kravanh*	Warm; acrid	Nausea and vomiting; fullness from damp
Caodoukou	Katsumada's galangal seed	*Alpinia katsumadai*	Warm; acrid	Cold and damp of the stomach; vomiting
Caoguo	Tsaoko fruit	*Amomum tsao-ko*	Warm; acrid	Cold damp; malaria. Also a spice of the kitchen

Warming the inside

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Gaoliang jiang	Lesser galangal rhizome	*Alpinia officinarum*	Hot; acrid	Cold pain of the stomach; vomiting
Huajiao	Husk of Sichuan pepper	*Zanthoxylum bungeanum*	Warm; acrid	Cold pain of the belly; worms; as a wash for itching
Dingxiang	Clove	*Syzygium aromaticum*	Warm; acrid	Hiccup and vomiting from cold; loss of power. A spice of the Moluccas
Xiaohuixiang	Fennel fruit	*Foeniculum vulgare*	Warm; acrid	Cold pain of the lower belly; the rupture; a cold stomach
Bibo	Long pepper	*Piper longum*	Hot; acrid	Cold of the stomach; toothache. The Indian pippali of chapter 60
Hujiao	Black pepper	*Piper nigrum*	Hot; acrid	Cold of the stomach; phlegm. The name means the pepper of the western foreigners
Bichengqie	Litsea fruit	*Litsea cubeba*	Warm; acrid	Cold of the stomach; hiccup; the rupture from cold

Ordering the *qi*

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Qingpi	Green tangerine peel	*Citrus reticulata*	Warm; bitter, acrid	Breaks knotted *qi* of the liver; pain of the ribs and breast; food that stays
Zhiqiao	Bitter orange	*Citrus aurantium*	Slightly cold; bitter, acrid, sour	Fullness of the chest and belly. Milder than the immature fruit of chapter 52
Foshou	Buddha's hand citron	*Citrus medica* var. *sarcodactylis*	Warm; acrid, bitter, sour	Knotted *qi* of the liver and stomach; phlegm
Wuyao	Lindera root	*Lindera aggregata*	Warm; acrid	Cold pain of the lower belly; frequent urine; the rupture
Chenxiang	Aloeswood	*Aquilaria sinensis*	Slightly warm; acrid, bitter	Sends the *qi* down: wheezing, vomiting; cold pain of the belly. The trees are endangered by the trade
Tanxiang	Sandalwood	*Santalum album*	Warm; acrid	Pain of the chest and stomach
Chuanlianzi	Chinaberry fruit	*Melia toosendan*	Cold; bitter; slightly poisonous	Pain of the ribs and belly with heat; worms. Injury of the liver has been reported
Lizhihe	Lychee seed	*Litchi chinensis*	Warm; sweet, slightly bitter	The rupture; pain of the testicle; painful periods
Xiebai	Bulb of the long-stamen onion	*Allium macrostemon*	Warm; acrid, bitter	Pain of the chest that goes through to the back, with trichosanthes fruit
Dafupi	Areca husk	*Areca catechu*	Slightly warm; acrid	Fullness of the belly; swelling

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Meiguihua	Rose bud	*Rosa rugosa*	Warm; sweet, slightly bitter	Knotted *qi* of the liver; painful periods
Shidi	Persimmon calyx	*Diospyros kaki*	Neutral; bitter, astringent	Hiccup
Gansong	Spikenard root	*Nardostachys jatamansi*	Warm; acrid, sweet	Pain of the stomach from worry. The Indian jatamansi of chapter 60
Juhe	Tangerine seed	*Citrus reticulata*	Neutral; bitter	The rupture; lumps of the breast

Moving food on

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Shenqu	Medicated leaven	Fermented wheat flour, bran and herbs	Warm; sweet, acrid	Food that stays, above all grain and wine
Guya	Sprouted millet	*Setaria italica*	Warm; sweet	Poor appetite; starchy food that stays
Laifuzi	Radish seed	*Raphanus sativus*	Neutral; acrid, sweet	Food that stays, with fullness; cough with phlegm
Jineijin	Lining of the chicken’s gizzard	*Gallus gallus*	Neutral; sweet	Food that stays; wasting of children; stones; wetting the bed

Stopping bleeding

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Daji	Japanese thistle	*Cirsium japonicum*	Cool; sweet, bitter	Bleeding from heat; boils
Xiaoji	Field thistle	*Cirsium setosum*	Cool; sweet, bitter	Blood in the urine
Diyu	Burnet root	*Sanguisorba officinalis*	Slightly cold; bitter, sour, astringent	Bleeding of the lower body: piles, dysentery, the womb; on burns
Baimaogen	Cogon grass rhizome	*Imperata cylindrica*	Cold; sweet	Blood in the urine; nosebleed; thirst with heat
Huaihua	Flower of the pagoda tree	*Sophora japonica*	Slightly cold; bitter	Bleeding piles; blood in the stools
Cebaiye	Leafy twig of arborvitae	*Platycladus orientalis*	Cold; bitter, astringent	Bleeding from heat; cough; as a lotion against the falling of hair
Xianhecao	Hairy agrimony	*Agrimonia pilosa*	Neutral; bitter, astringent	Bleeding of every kind; dysentery. Its winter bud drives out tapeworm
Baiji	Bletilla tuber	*Bletilla striata*	Slightly cold; bitter, sweet, astringent	Bleeding of the lung and stomach; on cracked skin and sores
Oujie	Node of the lotus rhizome	*Nelumbo nucifera*	Neutral; sweet, astringent	Coughing and vomiting of blood
Puhuang	Cattail pollen	*Typha angustifolia*	Neutral; sweet	Stops bleeding and moves standing blood; painful periods

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Qiancao	Madder root	*Rubia cordifolia*	Cold; bitter	Bleeding from heat; missing periods. The Indian manjishtha of chapter 60
Xueyutan	Charred human hair		Neutral; bitter	Bleeding; difficult urination
Zonglütan	Charred palm fibre	*Trachycarpus fortunei*	Neutral; bitter, astringent	Bleeding of the womb and the bowel
Paojiang	Blast-fried ginger	*Zingiber officinale*	Hot; acrid	Bleeding from cold; pain of the belly after childbirth
Fulonggan	Baked earth from the centre of the stove		Warm; acrid	Vomiting; bleeding of the bowel from cold

Moving the blood

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Yujin	Curcuma root tuber	*Curcuma wenyujin* and others	Cold; acrid, bitter	Pain of the chest and ribs; a mind clouded by phlegm; yellow skin
Jianghuang	Turmeric rhizome	*Curcuma longa*	Warm; acrid, bitter	Pain of the shoulder; painful periods. The Indian haridra of chapter 60
Ezhu	Zedoary rhizome	*Curcuma phaeocaulis* and others	Warm; acrid, bitter	Breaks hard lumps of the belly; food that stays. Avoided in pregnancy
Sanleng	Burreed tuber	*Sparganium stoloniferum*	Neutral; acrid, bitter	With zedoary, for lumps and missing periods. Avoided in pregnancy
Ruxiang	Frankincense	*Boswellia sacra*	Warm; acrid, bitter	Pain from injuries and sores; painful periods. From Arabia and the Horn of Africa
Moyao	Myrrh	*Commiphora myrrha*	Neutral; acrid, bitter	With frankincense, for pain and sores
Wulingzhi	Droppings of the flying squirrel	*Trogopterus xanthipes*	Warm; bitter, salty, sweet	Stabbing pain of the chest and belly; painful periods. With cattail pollen it makes the Sudden Smile Powder
Jixueteng	Spatholobus stem	*Spatholobus suberectus*	Warm; bitter, slightly sweet	Moves and builds the blood; numb limbs; irregular periods
Zelan	Bugleweed	*Lycopus lucidus*	Slightly warm; bitter, acrid	Missing periods; pain after childbirth; swelling
Wangbuliuxing	Vaccaria seed	*Vaccaria segetalis*	Neutral; bitter	Missing periods; too little milk. Taped on the ear as a pressing seed

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Chuanshanjia	Pangolin scales	*Manis pentadactyla*	Slightly cold; salty	Too little milk; lumps; sores. Struck from the pharmacopoeia in 2020, as entry 91 told
Shuizhi	Leech	*Hirudo nipponica*; *Whitmania pigra*	Neutral; salty, bitter; slightly poisonous	Breaks standing blood; lumps; missing periods
Tubiechong	Ground beetle	*Eupolyphaga sinensis*	Cold; salty; slightly poisonous	Broken bones; lumps; missing periods
Sumu	Sappan wood	*Caesalpinia sappan*	Neutral; sweet, salty	Injuries; pain after childbirth
Xuejie	Dragon's blood resin	*Daemonorops draco*	Neutral; sweet, salty	Injuries; on wounds that will not close
Liujinu	Artemisia herb	*Artemisia anomala*	Warm; bitter	Injuries; missing periods
Chuannixi	Cyathula root	*Cyathula officinalis*	Neutral; sweet, slightly bitter	Leads the blood downward; painful joints of the legs
Gusuibu	Drynaria rhizome	*Drynaria fortunei*	Warm; bitter	Broken bones; loose teeth; ringing ears. The name means the mender of shattered bones
Zirantong	Pyrite	A mineral	Neutral; acrid	Broken bones
Mabiancao	Vervain	*Verbena officinalis*	Cool; bitter	Missing periods; malaria; swelling

Transforming phlegm and stopping cough

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Tiannanxing	Arisaema tuber	*Arisaema erubescens* and others	Warm; bitter, acrid; poisonous	Wind and phlegm: dizziness, palsy, fits. Prepared with ginger or with ox bile
Baifuzi	Typhonium tuber	*Typhonium giganteum*	Warm; acrid; poisonous	Wind and phlegm of the head and face; the crooked face of entry 79
Baijiezi	White mustard seed	*Sinapis alba*	Warm; acrid	Cold phlegm of the chest; as the summer plaster on the back of entry 10
Zaojia	Pod of the honey locust	*Gleditsia sinensis*	Warm; acrid, salty; slightly poisonous	Thick phlegm; blown into the nose to wake the senseless
Xuanfuhua	Inula flower	*Inula japonica*	Slightly warm; bitter, acrid, salty	Sends the *qi* down: phlegm, belching, vomiting
Baiqian	Cynanchum rhizome	*Cynanchum stauntonii*	Slightly warm; acrid, bitter	Cough with much phlegm and wheezing
Qianhu	Hogfennel root	*Peucedanum praeruptorum*	Slightly cold; bitter, acrid	Cough with thick phlegm; wind and heat
Zhebeimu	Zhejiang fritillary bulb	*Fritillaria thunbergii*	Cold; bitter	Cough with heat; lumps of the neck and breast
Zhuru	Bamboo shavings	*Bambusa tuldoides*; *Phyllostachys nigra*	Slightly cold; sweet	Vomiting from heat; phlegm with restlessness

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Zhuli	Sap of heated bamboo	*Phyllostachys nigra*	Cold; sweet	Phlegm that clouds the mind after a stroke
Tianzhuhuang	Bamboo silica	*Bambusa textilis*	Cold; sweet	Fits of children with phlegm and heat
Haizao	Sargassum seaweed	*Sargassum pallidum*	Cold; bitter, salty	Goitre and lumps of the neck, as entry 50 told
Kunbu	Kelp	*Laminaria japonica*; *Ecklonia kurome*	Cold; salty	The same
Haigeqiao	Clam shell	*Meretrix meretrix*; *Cyclina sinensis*	Cold; bitter, salty	Thick phlegm with heat; a sour stomach
Fuhaishi	Pumice	A mineral	Cold; salty	Old, sticky phlegm; stones
Pangdahai	Sterculia seed	*Sterculia lychnophora*	Cold; sweet	Hoarseness; sore throat. Steeped as a tea by singers and teachers
Kuandonghua	Coltsfoot flower	*Tussilago farfara*	Warm; acrid, slightly bitter	Cough and wheezing of every kind. The plant holds compounds that injure the liver
Ziwan	Aster root	*Aster tataricus*	Warm; acrid, bitter	Cough with phlegm, old or new
Baibu	Stemona root	*Stemona sessilifolia*	Slightly warm; sweet, bitter	Cough of every kind, whooping cough, consumption; as a wash against lice
Pipaye	Loquat leaf	*Eriobotrya japonica*	Slightly cold; bitter	Cough with heat; vomiting

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Zisuzi	Perilla seed	*Perilla frutescens*	Warm; acrid	Sends the *qi* down: wheezing with phlegm; hard stools
Tinglizi	Tansy mustard seed	*Descurainia sophia*; *Lepidium apetalum*	Very cold; acrid, bitter	Wheezing with water in the chest; swelling
Baiguo	Ginkgo nut	*Ginkgo biloba*	Neutral; sweet, bitter, astringent; poisonous raw	Wheezing; a white discharge; frequent urine. Dangerous to children in quantity
Yangjinhua	Datura flower	*Datura metel*	Warm; acrid; poisonous	Wheezing; pain. The thorn apple that entry 10 met
Luohanguo	Monk fruit	*Siraitia grosvenorii*	Cool; sweet	Cough with heat; sore throat. Its sweet compounds are sold as a sweetener

Calming the spirit

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Baiziren	Arborvitae seed	*Platycladus orientalis*	Neutral; sweet	Sleeplessness with palpitations; hard stools of the old
Hehuanpi	Bark of the silk tree	*Albizia julibrissin*	Neutral; sweet	Low spirits, anger and sleeplessness. The name means the bark of shared happiness
Yejiaoteng	Fleeceflower stem	*Polygonum multiflorum*	Neutral; sweet	Sleeplessness with many dreams; itching
Lingzhi	Reishi mushroom	*Ganoderma lucidum*	Neutral; sweet	Calms the spirit; cough and wheezing; weakness. A drug of the upper grade in the oldest drug book
Cishi	Magnetite	A mineral	Cold; salty	Settles fright; ringing ears; dizziness; wheezing from a weak kidney
Hupo	Amber	Fossil resin	Neutral; sweet	Fright; fits; blood in the urine
Zhenzhu	Pearl	*Pteria martensii* and others	Cold; sweet, salty	Fright and fits; a film on the eye; on sores
Zhenzhumu	Mother-of-pearl	*Hyriopsis cumingii* and others	Cold; salty	Settles the liver: dizziness, sleeplessness; red eyes
Longchi	Fossil teeth		Cool; sweet, astringent	Fright; madness; restless sleep

Settling the liver and extinguishing wind

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Shijueming	Abalone shell	*Haliotis diversicolor*	Cold; salty	Rising yang of the liver: headache, dizziness; dim, red eyes
Daizheshi	Haematite	A mineral	Cold; bitter	Rising yang; belching, hiccup and vomiting; bleeding
Lingyangjiao	Antelope horn	*Saiga tatarica*	Cold; salty	High fever with fits; rising yang. The animal is near its end, and goat horn is used in its place
Niuhuang	Ox gallstone	*Bos taurus*	Cool; sweet	High fever with a clouded mind and fits; sore throat. Now made artificially
Quanxie	Scorpion	*Buthus martensii*	Neutral; acrid; poisonous	Fits; the crooked face; stubborn headache and pain of the joints
Wugong	Centipede	*Scolopendra subspinipes*	Warm; acrid; poisonous	The same, and stronger; sores
Jiangcan	Silkworm killed by a white fungus	*Bombyx mori*	Neutral; salty, acrid	Fits; the crooked face; sore throat; itching
Dilong	Earthworm	*Pheretima aspergillum*	Cold; salty	Fever with fits; wheezing; palsy after a stroke
Jili	Caltrop fruit	*Tribulus terrestris*	Slightly warm; acrid, bitter	Headache, dizziness; itching; red eyes. The Indian gokshura of chapter 60
Luobumaye	Dogbane leaf	*Apocynum venetum*	Cool; sweet, bitter	Rising yang. A tea against high blood pressure

Opening the orifices

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Bingpian	Borneol	*Dryobalanops aromatica*, or made from camphor oil	Slightly cold; acrid, bitter	Wakes the senseless; on a sore throat, on sores and in the eyes
Suhexiang	Storax	*Liquidambar orientalis*	Warm; acrid	Sudden loss of the senses from cold and phlegm; pain of the chest
Anxixiang	Benzoin	*Styrax tonkinensis*	Neutral; acrid, bitter	The same; pain of the chest and belly

Building up the *qi* and the blood

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Xiyangshen	American ginseng root	*Panax quinquefolius*	Cool; sweet, slightly bitter	Builds *qi* and yin; thirst and tiredness after a fever. Shipped from North America since the eighteenth century
Taizishen	Pseudostellaria root	*Pseudostellaria heterophylla*	Neutral; sweet, slightly bitter	A mild builder of *qi* and fluids, for children
Baibiandou	Hyacinth bean	*Dolichos lablab*	Slightly warm; sweet	A weak spleen with loose stools; summer damp
Fengmi	Honey	*Apis cerana*	Neutral; sweet	Moistens the bowel and the lung; lessens the poison of aconite; the binder of pills
Yitang	Malt sugar	Made from grain	Warm; sweet	A weak centre with pain; dry cough
Ciwujia	Siberian ginseng	*Eleutherococcus senticosus*	Warm; acrid, slightly bitter	Tiredness; poor sleep; a weak back and knees
Jiaogulan	Gynostemma herb	*Gynostemma pentaphyllum*	Cool; bitter, slightly sweet	A folk tea of the south, taken up in the 1970s as a tonic
Hongjingtian	Rhodiola root	*Rhodiola crenulata*	Neutral; sweet, bitter	Tiredness; the sickness of great heights, as entry 80 told. A Tibetan drug
Longyanrou	Flesh of the longan	*Dimocarpus longan*	Warm; sweet	Builds heart and spleen: palpitations, poor memory, sleeplessness
Sangshen	Mulberry fruit	*Morus alba*	Cold; sweet, sour	Builds blood and yin; early greying; dry stools

Building up the yang

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Bajitian	Morinda root	*Morinda officinalis*	Slightly warm; sweet, acrid	Weak yang of the kidney: loss of power, barrenness; weak sinews
Xianmao	Curculigo rhizome	*Curculigo orchioides*	Hot; acrid; poisonous	Cold loss of power; cold pain of the loin
Buguzhi	Psoralea fruit	*Psoralea corylifolia*	Warm; acrid, bitter	Weak yang of the kidney; wetting the bed; wheezing. The seed against the white patches of entry 30
Yizhiren	Fruit of the sharp-leaf galangal	*Alpinia oxyphylla*	Warm; acrid	Frequent urine; wetting the bed; drooling
Tusizi	Dodder seed	*Cuscuta chinensis*	Neutral; acrid, sweet	Builds yang and yin of the kidney; loss of seed; dim sight; holds the child in the womb
Shayuanzi	Flat milkvetch seed	*Astragalus complanatus*	Warm; sweet	Loss of seed; frequent urine; dim sight
Xuduan	Teasel root	*Dipsacus asper*	Slightly warm; bitter, acrid	A weak loin and knees; broken bones; holds the child. The name means that which joins what is broken
Suoyang	Cynomorium stem	*Cynomorium songaricum*	Warm; sweet	Loss of power; dry stools
Hutaoren	Walnut kernel	*Juglans regia*	Warm; sweet	A weak kidney; wheezing; dry stools
Dongchongxiacao	Caterpillar fungus	*Ophiocordyceps sinensis*	Neutral; sweet	Builds lung and kidney: cough with blood, loss of power. A Tibetan drug. Its price has stripped the high meadows

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Gejie	Tokay gecko	*Gekko gecko*	Neutral; salty	Wheezing from a weak kidney; loss of power
Ziheche	Dried human afterbirth		Warm; sweet, salty	Wasting; barrenness. Struck from the pharmacopoeia in 2015
Haima	Seahorse	*Hippocampus kelloggi* and others	Warm; sweet, salty	Loss of power; lumps. The trade endangers the animals
Jiucaizi	Seed of the Chinese chive	*Allium tuberosum*	Warm; acrid, sweet	Loss of power; loss of seed; frequent urine

Nourishing the yin

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Beishashen	Glehnia root	*Glehnia littoralis*	Slightly cold; sweet, slightly bitter	Dry cough; thirst after a fever
Nanshashen	Adenophora root	*Adenophora tetraphylla*	Slightly cold; sweet	The same, with some action on phlegm
Tianmendong	Asparagus tuber	*Asparagus cochinchinensis*	Cold; sweet, bitter	Dry cough with thick sputum; thirst; dry stools
Yuzhu	Fragrant Solomon's seal	*Polygonatum odoratum*	Slightly cold; sweet	Dry cough; thirst
Huangjing	Siberian Solomon's seal	*Polygonatum sibiricum*	Neutral; sweet	Builds *qi* and yin of spleen, lung and kidney. A food of the Daoist hermits
Nüzhenzi	Privet fruit	*Ligustrum lucidum*	Cool; sweet, bitter	Weak yin of liver and kidney: early greying, dim sight
Mohanlian	Eclipta herb	*Eclipta prostrata*	Cold; sweet, sour	With privet fruit, the Two Solstices Pill; bleeding from heat. The Indian bhringaraja of chapter 60
Guijia	Under-shell of the tortoise	*Chinemys reevesii*	Slightly cold; salty, sweet	Nourishes yin and settles yang; weak bones; a skull that closes late
Biejia	Shell of the soft-shelled turtle	*Trionyx sinensis*	Slightly cold; salty	Nourishes yin; fever of wasting; softens hard lumps
Heizhima	Black sesame seed	*Sesamum indicum*	Neutral; sweet	Early greying; dry stools

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Yin'er	White jelly fungus	*Tremella fuciformis*	Neutral; sweet, bland	Moistens the lung. A food for the weak

Holding and binding

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Wumei	Smoked plum	*Prunus mume*	Neutral; sour, astringent	Lasting cough; lasting loose stools; roundworm in the bile duct; thirst
Hezi	Chebulic myrobalan	*Terminalia chebula*	Neutral; bitter, sour, astringent	Lasting loose stools; lasting cough with loss of voice. The Indian haritaki of chapter 60
Roudoukou	Nutmeg	*Myristica fragrans*	Warm; acrid	Lasting loose stools from cold; pain of the belly. Large doses poison
Chishizhi	Red clay	A mineral	Warm; sweet, sour, astringent	Lasting loose stools with blood; bleeding of the womb
Yingsuqiao	Husk of the opium poppy	*Papaver somniferum*	Neutral; sour, astringent; poisonous	Lasting cough; lasting loose stools; pain. It binds the patient to it, and the law controls it
Wubeizi	Gallnut of the sumac	*Rhus chinensis*	Cold; sour, astringent	Lasting cough; loose stools; sweating; bleeding; on sores
Mahuanggen	Ephedra root	*Ephedra sinica*	Neutral; sweet, astringent	Stops sweating. The stem brings out a sweat, and the root holds it
Fuxiaomai	Light grains of wheat	*Triticum aestivum*	Cool; sweet	Sweating by day and by night
Sangpiaoxiao	Egg case of the mantis	*Tenodera sinensis*	Neutral; sweet, salty	Wetting the bed, as entry 93 told; loss of seed
Jinyingzi	Hip of the Cherokee rose	*Rosa laevigata*	Neutral; sour, sweet, astringent	Loss of seed; frequent urine; lasting loose stools

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Fupenzi	Chinese raspberry	*Rubus chingii*	Warm; sweet, sour	Frequent urine; loss of seed; dim sight
Qianshi	Fox nut	*Euryale ferox*	Neutral; sweet, astringent	Loss of seed; a white discharge; lasting loose stools
Haipiaoxiao	Cuttlebone	*Sepiella maindroni*; *Sepia esculenta*	Warm; salty, astringent	Bleeding; a white discharge; a sour stomach; on wounds
Chunpi	Bark of the tree of heaven	*Ailanthus altissima*	Cold; bitter, astringent	A discharge with damp heat; lasting dysentery; bleeding of the womb

Driving out worms

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Shijunzi	Fruit of the Rangoon creeper	*Quisqualis indica*	Warm; sweet	Roundworm in children. Named after an official who is said to have used it
Kulianpi	Bark of the chinaberry	*Melia azedarach*	Cold; bitter; poisonous	Roundworm; hookworm; as a wash on ringworm
Nanguazi	Pumpkin seed	*Cucurbita moschata*	Neutral; sweet	Tapeworm, with areca nut
Leiwan	Thunder ball fungus	*Omphalia lapidescens*	Cold; slightly bitter	Tapeworm. Taken as a powder, since heat destroys it
Feizi	Torreya seed	*Torreya grandis*	Neutral; sweet	Worms of several kinds. A mild remedy that is eaten as a nut
Hecaoya	Winter bud of the hairy agrimony	*Agrimonia pilosa*	Cool; bitter, astringent	Tapeworm
Guanzhong	Wood fern rhizome	*Dryopteris crassirhizoma*	Slightly cold; bitter; slightly poisonous	Worms; epidemic fevers; bleeding

For outer use, and the minerals

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Liuhuang	Sulphur	A mineral	Warm; sour; poisonous	On the itch and on ringworm, as entry 67 told; inside, for cold weakness
Xionghuang	Realgar, an ore of arsenic	A mineral	Warm; acrid; poisonous	On sores and snakebite; against worms. Never heated
Pishuang	White arsenic	A mineral	Very hot; acrid, sour; very poisonous	On rotting flesh and piles; in tiny doses for wheezing and malaria. The source of the leukaemia drug of entry 49
Qingfen	Calomel, a salt of mercury	A mineral	Cold; acrid; poisonous	On the itch and on the sores of the great pox; as a purge
Baifan	Alum	A mineral	Cold; sour, astringent	On itching and sores; stops bleeding and loose stools; clears phlegm
Pengsha	Borax	A mineral	Cool; sweet, salty	Blown on a sore throat and on sores of the mouth, as entry 65 told
Luganshi	Calamine	A mineral	Neutral; sweet	In washes for the eye; on weeping sores
Shechuangzi	Cnidium fruit	*Cnidium monnieri*	Warm; acrid, bitter	As a wash for itching of the sexual parts; inside, for loss of power
Dafengzi	Chaulmoogra seed	*Hydnocarpus anthelminticus*	Hot; acrid; poisonous	Leprosy; the itch. The oil of a sister tree was the hospital's own treatment of leprosy until the 1940s
Chansu	Venom of the toad	*Bufo gargarizans*	Warm; acrid; poisonous	Boils; sore throat; in tiny doses to wake the senseless. It acts on the heart as foxglove does

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Banmao	Blister beetle	*Mylabris phalerata*	Hot; acrid; very poisonous	Raises blisters; on stubborn sores of the skin
Maqianzi	Seed of the poison nut	*Strychnos nux-vomica*	Warm; bitter; very poisonous	Palsy; pain of injuries. It holds strychnine, and is used only after preparation
Zhangnao	Camphor	*Cinnamomum camphora*	Hot; acrid; poisonous	On itching skin and painful joints; to wake the senseless
Dasuan	Garlic	*Allium sativum*	Warm; acrid	Dysentery; worms; whooping cough; crushed on sores
Fengfang	Wasp nest	*Polistes*	Neutral; sweet	Sores; toothache; itching
Ercha	Catechu	*Acacia catechu*	Slightly cold; bitter, astringent	On sores that will not close; on sores of the mouth
Tujingpi	Root bark of the golden larch	*Pseudolarix amabilis*	Warm; acrid; poisonous	On ringworm, in vinegar or wine
Mubiezi	Seed of the spiny gourd	*Momordica cochinchinensis*	Cool; bitter, slightly sweet; poisonous	Sores, swellings and piles, from outside

Bringing on vomiting

Chinese name	Material	Source	Nature and flavour	Chief actions in the drug books
Guadi	Stalk of the melon	*Cucumis melo*	Cold; bitter; poisonous	To bring up phlegm or spoiled food; snuffed against yellow skin
Changshan	Dichroa root	*Dichroa febrifuga*	Cold; bitter, acrid; poisonous	Malaria. Its compound was tested in the 1940s. It acts against the parasite and makes the patient vomit
Lilu	Root of the false hellebore	*Veratrum nigrum*	Cold; bitter, acrid; very poisonous	To bring up phlegm in madness and in the falling sickness

What the two tables show

The pharmacy is mostly plants, and not only plants. The two tables hold 379 drugs. More than four in five are parts of plants or fungi: roots, barks, leaves, flowers, fruits and seeds. The rest are minerals, shells, insects, snakes and parts of larger animals.

It took in drugs from everywhere. Senna came from the Arab lands, and frankincense and myrrh from Arabia and Africa. Cloves came from the Moluccas, pepper and long pepper from India, American ginseng and maize from the New World. The drug books record each arrival, and give the newcomer a nature, a flavour and a place among the classes.

The same plant serves two medicines. Nine rows of this chapter name the Indian drug of chapter 60 that is the same plant or its sister. Turmeric, long pepper, the chebulic myrobalan, madder, eclipta, caltrop, andrographis and spikenard are used in both pharmacies, mostly for the same complaints.

The poisons are named as poisons. The drug books mark their dangerous drugs, limit the dose and prescribe the preparation. The harm of recent decades came mostly from elsewhere. One plant was sold under the name of another. Herbs were given by injection. Drugs that were meant for short courses were taken for years.

Some drugs cost a species. Rhinoceros horn, tiger bone, pangolin scales, antelope horn, bear bile, seahorse and the caterpillar fungus stand in this pharmacy. For most of them the tradition itself has substitutes. Buffalo horn replaced rhinoceros horn in the pharmacopoeia, and the bear’s acid is made in a factory.

The names keep the reasoning. A drug is called the mender of shattered bones, the herb that stretches the sinews, or the bark of shared happiness. As with the points of chapter 94, the name tells what the drug is for.

96. Chinese formulas, continued

What this chapter adds

Chapter 52 explained how a formula is built, with its ruler, minister, assistant and envoy, and listed fifty-six formulas. This chapter lists 115 more. With them the reader has the formulas that the atlas of Part VIII named, and most of those that a student of Chinese medicine learns by heart.

The order is that of the textbooks, by what a formula does. The source is the book or the physician in which the formula first appears. The two halves of the work of Zhang Zhongjing, of about 200, are *Cold Damage* and *Golden Casket*. The book of 1798 that chapter 44 described is *Warm Illnesses*. The Song state formulary is the book of the imperial pharmacy of the twelfth century.

The table describes a tradition. It is not advice for use. Formulas that hold a poisonous or a forbidden material are marked.

Opening the surface

Formula	Chinese name	Source	Ingredients	Pattern
Kudzu Decoction	*Gegen tang*	*Cold Damage*	Kudzu, ephedra, cinnamon twig, white peony, fresh ginger, jujube, liquorice	Wind and cold with a stiff nape and back
Major Blue-Green Dragon Decoction	*Da qinglong tang*	*Cold Damage*	Ephedra, cinnamon twig, apricot kernel, gypsum, fresh ginger, jujube, liquorice	Wind and cold without sweat, with restlessness from heat within
Nine-Ingredient Decoction with Notopterygium	*Jiuwei qianghuo tang*	Zhang Yuansu, 12th century	Notopterygium, saposhnikovia, atractylodes, wild ginger, ligusticum, angelica dahurica, raw rehmannia, scutellaria, liquorice	Wind, cold and damp at the surface, with aching of the whole body
Ligusticum Powder Taken with Tea	*Chuanxiong chatiao san*	Song state formulary	Ligusticum, notopterygium, angelica dahurica, schizonepeta, saposhnikovia, wild ginger, mint, liquorice; with green tea	Headache from wind
Cyperus and Perilla Leaf Powder	*Xiang su san*	Song state formulary	Cyperus, perilla leaf, tangerine peel, liquorice	A mild cold with a full chest
Ginseng Powder to Overcome Poison	*Renshen baidu san*	Song, 12th century	Notopterygium, angelica pubescens, bupleurum, hogfennel, ligusticum, bitter orange, platycodon, poria, ginseng, liquorice	Wind, cold and damp in a weak person
Cocklebur Powder	*Cang'erzi san*	1253	Cocklebur fruit, magnolia bud, angelica dahurica, mint	A stuffed nose with thick discharge, as entry 70 told

Formula	Chinese name	Source	Ingredients	Pattern
Apricot Kernel and Perilla Leaf Powder	*Xing su san*	*Warm Illnesses*	Apricot kernel, perilla leaf, pinellia, tangerine peel, poria, hogfennel, platycodon, bitter orange, fresh ginger, jujube, liquorice	The cool dryness of autumn: a cough with thin sputum
Mulberry Leaf and Apricot Kernel Decoction	*Sang xing tang*	*Warm Illnesses*	Mulberry leaf, apricot kernel, glehnia, fritillaria, fermented soybean, gardenia peel, pear peel	The warm dryness of autumn: a dry cough with thirst

Clearing heat

Formula	Chinese name	Source	Ingredients	Pattern
Bamboo Leaf and Gypsum Decoction	*Zhuye shigao tang*	*Cold Damage*	Bamboo leaf, gypsum, ophiopogon, ginseng, pinellia, rice, liquorice	Heat that lingers after a fever, with thirst and weakness
Clear the Nourishing Level Decoction	*Qingying tang*	*Warm Illnesses*	Horn, raw rehmannia, figwort, ophiopogon, bamboo leaf, red sage root, coptis, honeysuckle, forsythia	Heat that has gone deep: fever at night, a clouded mind
Rhinoceros Horn and Rehmannia Decoction	*Xijiao dihuang tang*	Sun Simiao, 652	Horn, now that of the buffalo; raw rehmannia, red peony, moutan bark	Heat in the blood with bleeding and rashes
Universal Benefit Drink to Remove Poison	*Puji xiaodu yin*	Li Dongyuan, 1202	Scutellaria, coptis, burdock fruit, forsythia, mint, silkworm, figwort, puffball, woad root, platycodon, liquorice, tangerine peel, bupleurum, cimicifuga	An epidemic with a red, swollen head and face
Five-Ingredient Drink to Remove Poison	*Wuwei xiaodu yin*	*Golden Mirror*, 1742	Honeysuckle, wild chrysanthemum, dandelion, viola, and the tuber of a small plant of the buttercup family	Boils and deep sores
Clear the White Powder	*Xiebai san*	Qian Yi, 1119	Mulberry root bark, lycium root bark, liquorice, rice	Heat in the lung with cough and wheezing, in children
Jade Woman Decoction	*Yunü jian*	Zhang Jiebin, 1624	Gypsum, prepared rehmannia, ophiopogon, anemarrhena, achyranthes	Heat of the stomach with weak yin of the kidney: toothache, headache, thirst

Formula	Chinese name	Source	Ingredients	Pattern
Peony Decoction	*Shaoyao tang*	Liu Wansu, 12th century	Peony, angelica, coptis, scutellaria, rhubarb, areca nut, aucklandia, cinnamon bark, liquorice	Dysentery from damp and heat
Pulsatilla Decoction	*Baitouweng tang*	*Cold Damage*	Pulsatilla, coptis, phellodendron, ash bark	Dysentery with heat and blood
Sweet Wormwood and Turtle Shell Decoction	*Qinghao biejia tang*	*Warm Illnesses*	Sweet wormwood, turtle shell, raw rehmannia, anemarrhena, moutan bark	Fever at night that is gone by morning
Six-to-One Powder	*Liuyi san*	Liu Wansu, 12th century	Six parts of talc, one of liquorice	Summer heat with thirst and scanty urine, as entry 80 told
Clear Summer Heat and Build Up the *Qi* Decoction	*Qingshu yiqi tang*	Wang Mengying, 1852	American ginseng, dendrobium, ophiopogon, coptis, bamboo leaf, lotus stem, anemarrhena, liquorice, rice, watermelon peel	Summer heat that has injured *qi* and fluids
Major Bupleurum Decoction	*Da chaihu tang*	*Cold Damage*	Bupleurum, scutellaria, peony, pinellia, immature bitter orange, rhubarb, fresh ginger, jujube	The lesser yang with a full, hard upper belly; pain from stones of the gall
Sweet Wormwood and Scutellaria Decoction to Clear the Gallbladder	*Hao qin qingdan tang*	Yu Genchu, 18th century	Sweet wormwood, scutellaria, bamboo shavings, pinellia, poria, bitter orange, tangerine peel, with talc, liquorice and indigo	Damp and heat in the lesser yang: fever by turns, a bitter taste, nausea

Purging

Formula	Chinese name	Source	Ingredients	Pattern
Minor Order the *Qi* Decoction	*Xiao chengqi tang*	*Cold Damage*	Rhubarb, magnolia bark, immature bitter orange	A milder purge than the major one
Regulate the Stomach and Order the *Qi* Decoction	*Tiaowei chengqi tang*	*Cold Damage*	Rhubarb, mirabilite, liquorice	Dry heat of the stomach
Rhubarb and Moutan Decoction	*Dahuang mudan tang*	*Golden Casket*	Rhubarb, moutan bark, peach kernel, wax gourd seed, mirabilite	The abscess of the gut before pus has formed, as entry 74 told
Ten Jujubes Decoction	*Shizao tang*	*Cold Damage*	Kansui, Peking spurge and genkwa as a powder, taken in a broth of ten jujubes	Water in the chest and belly. All three drugs are poisonous
Rhubarb and Aconite Decoction	*Dahuang fuzi tang*	*Golden Casket*	Rhubarb, aconite, wild ginger	Cold that has gathered, with pain under the ribs and hard stools
Increase the Fluids Decoction	*Zengye tang*	*Warm Illnesses*	Figwort, ophiopogon, raw rehmannia	Dry stools after a fever. The boat is floated by raising the water

Harmonising

Formula	Chinese name	Source	Ingredients	Pattern
Powder for the Four Limbs that are Cold	*Sini san*	*Cold Damage*	Bupleurum, immature bitter orange, white peony, liquorice	Cold fingers from knotted *qi*. The root of all the later formulas for the liver
Bupleurum, Cinnamon Twig and Dried Ginger Decoction	*Chaihu guizhi ganjiang tang*	*Cold Damage*	Bupleurum, cinnamon twig, dried ginger, trichosanthes root, scutellaria, oyster shell, liquorice	The lesser yang with thin fluids: thirst, sweating of the head, restlessness

Damp and water

Formula	Chinese name	Source	Ingredients	Pattern
Poria, Cinnamon Twig, Atractylodes and Liquorice Decoction	*Ling gui zhu gan tang*	*Cold Damage*	The four drugs of the name	Thin phlegm: dizziness, palpitations, a full chest
Polyporus Decoction	*Zhuling tang*	*Cold Damage*	Polyporus, poria, alisma, talc, ass-hide glue	Water and heat knotted together, with weak yin: painful urination, thirst
Stephania and Astragalus Decoction	*Fangji huangqi tang*	*Golden Casket*	Stephania, astragalus, white atractylodes, liquorice, fresh ginger, jujube	Swelling with sweating and a heavy body
Five Peels Drink	*Wupi yin*	Song, 11th century	The peels of mulberry root, fresh ginger, poria, areca and tangerine	Swelling under the skin
Patchouli Powder to Right the *Qi*	*Huoxiang zhengqi san*	Song state formulary	Patchouli, perilla leaf, angelica dahurica, areca husk, poria, white atractylodes, pinellia, tangerine peel, magnolia bark, platycodon, liquorice	Summer colds with vomiting and loose stools. A household remedy all over China
Three Seeds Decoction	*Sanren tang*	*Warm Illnesses*	Apricot kernel, round cardamom, coix seed, talc, rice-paper pith, bamboo leaf, magnolia bark, pinellia	Damp warmth: fever in the afternoon, a heavy body, a full chest

Formula	Chinese name	Source	Ingredients	Pattern
Sweet Dew Pill to Remove Poison	*Ganlu xiaodu dan*	Ye Tianshi, 18th century	Talc, scutellaria, artemisia capillaris, acorus, fritillaria, akebia, patchouli, forsythia, round cardamom, mint, blackberry lily	Epidemics of damp and warmth
Two Marvels Powder	*Ermiao san*	Zhu Danxi	Phellodendron, atractylodes	Damp heat below: hot, swollen knees and feet; a discharge
Yam Drink to Separate the Clear	*Bixie fenqing yin*	12th century	Yam rhizome, fruit of the sharp-leaf galangal, acorus, lindera	Cloudy urine
Notopterygium Decoction to Overcome Damp	*Qianghuo shengshi tang*	Li Dongyuan, 1247	Notopterygium, angelica pubescens, lovage root, saposhnikovia, ligusticum, vitex fruit, liquorice	Wind and damp at the surface: a heavy, painful head and back
Cinnamon Twig, Peony and Anemarrhena Decoction	*Guizhi shaoyao zhimu tang*	*Golden Casket*	Cinnamon twig, peony, anemarrhena, ephedra, white atractylodes, saposhnikovia, aconite, fresh ginger, liquorice	Hot, swollen, painful joints with wasting, as entry 25 described

Warming

Formula	Chinese name	Source	Ingredients	Pattern
Evodia Decoction	*Wuzhuyu tang*	*Cold Damage*	Evodia, ginseng, fresh ginger, jujube	Vomiting with headache at the crown, from cold
Minor Build the Middle Decoction	*Xiao jianzhong tang*	*Cold Damage*	Cinnamon twig, a double measure of peony, fresh ginger, jujube, liquorice, malt sugar	A weak centre with cramping pain that warmth and food relieve
Angelica Decoction for Cold Limbs	*Danggui sini tang*	*Cold Damage*	Angelica, cinnamon twig, peony, wild ginger, akebia, jujube, liquorice	Cold hands and feet from too little blood
Decoction that Warms like the Sun	*Yanghe tang*	Wang Weide, 1740	Prepared rehmannia, glue of deer antler, cinnamon bark, blast-fried ginger, ephedra, white mustard seed, liquorice	Deep, cold sores without heat or colour
Ginseng and Aconite Decoction	*Shen fu tang*	Ming	Ginseng, aconite	Collapse of the yang: cold sweat, cold limbs, a pulse that fades

Ordering the *qi*

Formula	Chinese name	Source	Ingredients	Pattern
Trichosanthes, Onion Bulb and Wine Decoction	*Gualou xiebai baijiu tang*	*Golden Casket*	Trichosanthes fruit, bulb of the long-stamen onion, white wine	Pain of the chest that goes through to the back
Perilla Seed Decoction to Send the *Qi* Down	*Suzi jiangqi tang*	Song state formulary	Perilla seed, pinellia, angelica, hogfennel, magnolia bark, cinnamon bark, liquorice, fresh ginger, jujube	Wheezing with phlegm above and weakness below
Calm the Wheezing Decoction	*Dingchuan tang*	1550	Ginkgo nut, ephedra, perilla seed, coltsfoot, apricot kernel, mulberry root bark, scutellaria, pinellia, liquorice	Wheezing with phlegm and heat
Inula and Haematite Decoction	*Xuanfu daizhe tang*	*Cold Damage*	Inula flower, haematite, ginseng, pinellia, fresh ginger, jujube, liquorice	Belching and hiccup that will not stop
Tangerine Peel and Bamboo Shavings Decoction	*Jupi zhuru tang*	*Golden Casket*	Tangerine peel, bamboo shavings, ginseng, fresh ginger, jujube, liquorice	Hiccup from heat in a weak stomach
Lindera Powder of Tiantai	*Tiantai wuyao san*	Li Dongyuan	Lindera, aucklandia, fennel, green tangerine peel, galangal, areca nut, chinaberry fruit	The rupture from cold, as entry 73 told

Formula	Chinese name	Source	Ingredients	Pattern
Tangerine Seed Pill	*Juhe wan*	1253	Tangerine seed, seaweeds, chinaberry fruit, peach kernel, magnolia bark, akebia, immature bitter orange, corydalis, cinnamon bark, aucklandia	A swollen testicle; the rupture
Chinaberry Fruit Powder	*Jinlingzi san*	Liu Wansu, 12th century	Chinaberry fruit, corydalis	Pain of the chest, ribs and belly from knotted *qi* of the liver with heat

The blood

Formula	Chinese name	Source	Ingredients	Pattern
Peach Kernel Decoction to Order the *Qi*	*Taohe chengqi tang*	*Cold Damage*	Peach kernel, rhubarb, cinnamon twig, mirabilite, liquorice	Standing blood in the lower belly, with a restless mind
Four Ingredients Decoction with Peach Kernel and Safflower	*Tao hong siwu tang*	*Golden Mirror*, 1742	The four ingredients, with peach kernel and safflower	Standing blood in women: painful periods with clots
Warm the Monthly Course Decoction	*Wenjing tang*	*Golden Casket*	Evodia, cinnamon twig, angelica, ligusticum, peony, ass-hide glue, ophiopogon, moutan bark, ginseng, pinellia, fresh ginger, liquorice	Cold of the womb: irregular periods, barrenness
Drive Out Standing Blood from the Lower Belly Decoction	*Shaofu zhuyu tang*	Wang Qingren, 1830	Fennel, dried ginger, corydalis, myrrh, angelica, ligusticum, cinnamon bark, red peony, cattail pollen, droppings of the flying squirrel	Cold and standing blood below: painful periods, lumps
Sudden Smile Powder	*Shixiao san*	Song state formulary	Cattail pollen, droppings of the flying squirrel	Stabbing pain of the chest and belly from standing blood
Seven Thousandths Powder	*Qili san*	19th century	Dragon’s blood, musk, borneol, frankincense, myrrh, safflower, cinnabar, catechu	Injuries. Taken in the tiny dose of its name, and laid on

Formula	Chinese name	Source	Ingredients	Pattern
Restore Health by Moving the Blood Decoction	*Fuyuan huoxue tang*	Li Dongyuan	Bupleurum, trichosanthes root, angelica, safflower, liquorice, pangolin scales, rhubarb, peach kernel	Pain of the ribs after a fall or a blow
Red Sage Drink	*Danshen yin*	1801	Red sage root, sandalwood, amomum	Pain of the heart and stomach from standing blood
Ten Charred Drugs Powder	*Shihui san*	Ge Kejiu, 1348	Ten charred plants, among them the two thistles, arborvitae, cogon grass, madder, gardenia, rhubarb and palm fibre	Sudden bleeding from heat in the upper body
Field Thistle Drink	*Xiaoji yinzi*	1253	Field thistle, raw rehmannia, talc, akebia, cattail pollen, lotus node, bamboo leaf, angelica, gardenia, liquorice	Blood in the urine
Pagoda Tree Flower Powder	*Huaihua san*	Xu Shuwei, 1132	Pagoda tree flower, arborvitae leaf, schizonepeta spike, bitter orange	Bleeding piles; blood in the stools
Yellow Earth Decoction	*Huangtu tang*	*Golden Casket*	Stove earth, white atractylodes, aconite, raw rehmannia, ass-hide glue, scutellaria, liquorice	Blood after the stool, from a cold, weak spleen
Ass-Hide Glue and Mugwort Decoction	*Jiao ai tang*	*Golden Casket*	Ass-hide glue, mugwort leaf, the four ingredients, liquorice	Bleeding of the womb; a child that threatens to be lost

Phlegm, cough and dryness

Formula	Chinese name	Source	Ingredients	Pattern
Stop Coughing Powder	*Zhisou san*	Cheng Guopeng, 1732	Aster root, stemona, cynanchum rhizome, platycodon, schizonepeta, tangerine peel, liquorice	A cough that lingers after a cold
Fritillaria and Trichosanthes Powder	*Beimu gualou san*	Cheng Guopeng, 1732	Fritillaria, trichosanthes fruit and root, poria, tangerine peel, platycodon	A dry cough with sticky phlegm
Clear the *Qi* and Transform Phlegm Pill	*Qingqi huatan wan*	1584	Arisaema prepared with bile, trichosanthes seed, scutellaria, immature bitter orange, tangerine peel, apricot kernel, poria, pinellia	Thick yellow phlegm with heat
Minor Decoction for a Chest that is Bound	*Xiao xianxiong tang*	*Cold Damage*	Coptis, pinellia, trichosanthes fruit	Phlegm and heat knotted below the heart, tender to the touch
Pinellia, White Atractylodes and Gastrodia Decoction	*Banxia baizhu tianma tang*	Cheng Guopeng, 1732	Pinellia, gastrodia, white atractylodes, poria, tangerine peel, liquorice, fresh ginger, jujube	Dizziness and headache from wind and phlegm, as entry 78 told
Three Seeds Decoction to Nourish One’s Parents	*Sanzi yangqin tang*	16th century	White mustard seed, perilla seed, radish seed	Cough and wheezing of the old, with much phlegm
Ophiopogon Decoction	*Maimendong tang*	*Golden Casket*	A large measure of ophiopogon, with pinellia, ginseng, rice, jujube and liquorice	A dry cough with rising *qi*, from a dry lung and stomach

Formula	Chinese name	Source	Ingredients	Pattern
Clear Dryness and Rescue the Lung Decoction	*Qingzao jiufei tang*	Yu Chang, 1658	Mulberry leaf, gypsum, ophiopogon, ass-hide glue, sesame, apricot kernel, loquat leaf, ginseng, liquorice	Warm dryness that has injured the lung
Nourish the Yin and Clear the Lung Decoction	*Yangyin qingfei tang*	Zheng Meijian, 1838	Raw rehmannia, ophiopogon, figwort, fritillaria, moutan bark, white peony, mint, liquorice	The white throat of entry 65

Wind

Formula	Chinese name	Source	Ingredients	Pattern
Eliminate Wind Powder	*Xiaofeng san*	Chen Shigong, 1617	Schizonepeta, saposhnikovia, burdock fruit, cicada skin, atractylodes, sophora root, gypsum, anemarrhena, angelica, raw rehmannia, sesame, akebia, liquorice	Itching, weeping rashes, as entry 29 described
Powder that Leads the Face Straight	*Qianzheng san*	12th century	Typhonium, silkworm, scorpion	The crooked face of entry 79
True Jade Powder	*Yuzhen san*	Chen Shigong, 1617	Arisaema, saposhnikovia, angelica dahurica, gastrodia, notopterygium, typhonium	Lockjaw, as entry 66 told
Antelope Horn and Uncaria Decoction	*Lingjiao gouteng tang*	Yu Genchu, 18th century	Antelope horn, uncaria, mulberry leaf, chrysanthemum, raw rehmannia, white peony, fritillaria, bamboo shavings, poria, liquorice	High fever with fits
Major Pearl to Settle Wind	*Da dingfeng zhu*	*Warm Illnesses*	Egg yolk, ass-hide glue, white peony, tortoise shell, raw rehmannia, hemp seed, schisandra, oyster shell, ophiopogon, turtle shell, liquorice	Trembling from exhausted yin, late in a long fever

Building up

Formula	Chinese name	Source	Ingredients	Pattern
All-Inclusive Great Building Decoction	*Shiquan dabu tang*	Song state formulary	The eight treasures, with astragalus and cinnamon bark	*Qi* and blood both weak, with cold
Honey-Fried Liquorice Decoction	*Zhi gancao tang*	*Cold Damage*	Honey-fried liquorice, ginseng, raw rehmannia, cinnamon twig, ass-hide glue, ophiopogon, hemp seed, fresh ginger, jujube; cooked with wine	A pulse that halts; palpitations
Ginseng and Gecko Powder	*Renshen gejie san*	Yuan, 13th century	Gecko, ginseng, apricot kernel, liquorice, poria, fritillaria, mulberry root bark, anemarrhena	Long cough and wheezing with weakness
Ginseng, Poria and White Atractylodes Powder	*Shen ling baizhu san*	Song state formulary	Ginseng, poria, white atractylodes, hyacinth bean, Chinese yam, lotus seed, coix seed, amomum, platycodon, liquorice	A weak spleen with loose stools
Anemarrhena, Phellodendron and Rehmannia Pill	*Zhi bai dihuang wan*	*Golden Mirror*, 1742	The six-ingredient pill, with anemarrhena and phellodendron	Weak yin with fire: sweating at night, flushes of heat
Lycium Fruit, Chrysanthemum and Rehmannia Pill	*Qi ju dihuang wan*	18th century	The six-ingredient pill, with lycium fruit and chrysanthemum	Weak yin of liver and kidney: dry, dim eyes

Formula	Chinese name	Source	Ingredients	Pattern
Great Build the Yin Pill	*Da buyin wan*	Zhu Danxi	Prepared rehmannia, tortoise shell, phellodendron, anemarrhena, marrow of the pig's spine	Weak yin with rising fire
Linking Decoction	*Yiguan jian*	Wei Zhixiu, 1770	Glehnia, ophiopogon, angelica, raw rehmannia, lycium fruit, chinaberry fruit	Weak yin of the liver, with pain of the ribs and a sour stomach
Two Solstices Pill	*Erzhi wan*	17th century	Privet fruit, gathered at the winter solstice; eclipta, gathered at the summer solstice	Weak yin of liver and kidney; early greying
Two Immortals Decoction	*Erxian tang*	Shanghai, 1950s	Curculigo, epimedium, morinda, angelica, phellodendron, anemarrhena	The change of life with high blood pressure. A formula of the twentieth century
Seven Treasures Pill for a Fine Beard	*Qibao meiran dan*	Ming	Fleeceflower root, poria, achyranthes, angelica, lycium fruit, dodder seed, psoralea	Early greying and falling of the hair
Cinnamon Twig Decoction with Fossil Bone and Oyster Shell	*Guizhi jia longgu muli tang*	*Golden Casket*	Cinnamon Twig Decoction, with fossil bone and oyster shell	Loss of seed with dreams; fright

Holding and binding

Formula	Chinese name	Source	Ingredients	Pattern
Oyster Shell Powder	*Muli san*	Song state formulary	Oyster shell, astragalus, ephedra root, light wheat	Sweating by day and by night
Golden Lock Pill to Hold the Essence	*Jinsuo gujing wan*	1682	Flat milkvetch seed, fox nut, lotus stamen, fossil bone, oyster shell	Loss of seed
Mantis Egg Case Powder	*Sangpiao xiao san*	Kou Zongshi, 1116	Mantis egg case, polygala, acorus, fossil bone, ginseng, poria, angelica, tortoise shell	Frequent urine and wetting the bed, with forgetfulness
Shut the Sluice Pill	*Suoquan wan*	13th century	Lindera, fruit of the sharp-leaf galangal, Chinese yam	Frequent urine; wetting the bed, as entry 93 told
True Man’s Decoction to Nourish the Organs	*Zhenren yangzang tang*	Song state formulary	Poppy husk, nutmeg, myrobalan, ginseng, white atractylodes, angelica, peony, cinnamon bark, aucklandia, liquorice	Lasting dysentery with weakness. Holds the husk of the opium poppy
End the Discharge Decoction	*Wandai tang*	Fu Qingzhu, 17th century	White atractylodes, Chinese yam, ginseng, white peony, plantain seed, atractylodes, liquorice, tangerine peel, schizonepeta, bupleurum	A white discharge from a weak spleen

The spirit and the orifices

Formula	Chinese name	Source	Ingredients	Pattern
Cinnabar Pill to Calm the Spirit	*Zhusha anshen wan*	Li Dongyuan, 1247	Cinnabar, coptis, raw rehmannia, angelica, liquorice	A restless heart with fire. Holds an ore of mercury
Settle the Will Pill	*Dingzhi wan*	Sun Simiao, 652	Ginseng, poria, polygala, acorus	Fright; forgetfulness; the short sight of entry 81
Purple Snow	*Zixue*	8th century	Horn, gypsum and other minerals, musk, and a dozen further drugs	High fever with fits and a clouded mind
Greatest Treasure Pill	*Zhibao dan*	Song state formulary	Ox gallstone, musk, amber, horn, benzoin, cinnabar, realgar and others	Loss of the senses with phlegm and heat. With Purple Snow and the Calm the Palace Pill, one of the three treasures of the emergency
Storax Pill	*Suhexiang wan*	Song state formulary	Storax with some fourteen fragrant drugs	Sudden loss of the senses from cold; pain of the chest. The root of the modern Chinese pills for the heart

Women and children

Formula	Chinese name	Source	Ingredients	Pattern
Mount Tai Rock Powder	*Taishan panshi san*	Zhang Jiebin, 1624	Ginseng, astragalus, angelica, teasel root, scutellaria, white atractylodes, ligusticum, white peony, prepared rehmannia, amomum, liquorice, sticky rice	To hold a child, where one was lost before, as entry 90 told
Long Life for the Child Pill	*Shoutai wan*	Zhang Xichun, 1918	Dodder seed, mistletoe, teasel root, ass-hide glue	The same
Angelica and Peony Powder	*Danggui shaoyao san*	*Golden Casket*	Angelica, peony, ligusticum, poria, white atractylodes, alisma	Pain of the belly in pregnancy; swelling
Fat Child Pill	*Fei'er wan*	Song state formulary	Medicated leaven, coptis, nutmeg, fruit of the Rangoon creeper, sprouted barley, areca nut, aucklandia	Wasting of children with worms
Smoked Plum Pill	*Wumei wan*	*Cold Damage*	Smoked plum, wild ginger, dried ginger, coptis, angelica, aconite, Sichuan pepper, cinnamon twig, ginseng, phellodendron	Roundworm with cold limbs and colic

For outer use, and three modern remedies

Formula	Chinese name	Source	Ingredients	Pattern
Borneol and Borax Powder	*Bingpeng san*	Chen Shigong, 1617	Borneol, borax, cinnabar, mirabilite	Blown on a sore throat and on sores of the mouth
Golden Yellow Powder	*Ruyi jinhuang san*	Chen Shigong, 1617	Trichosanthes root, phellodendron, rhubarb, turmeric, angelica dahurica, magnolia bark, tangerine peel, liquorice, atractylodes, arisaema	Laid on hot, red swellings
Six Spirits Pill	*Liushen wan*	Suzhou, 19th century	Ox gallstone, musk, toad venom, realgar, pearl, borneol	Sore throat; boils. Tiny black pills that hold arsenic and toad venom
White Drug of Yunnan	*Yunnan baiyao*	Qu Huanzhang, 1902	A formula long kept secret, built on notoginseng	Bleeding and injuries. Carried by Chinese soldiers in the wars of the twentieth century
Compound Red Sage Dripping Pill	*Fufang danshen diwan*	1990s	Red sage root, notoginseng, borneol	Pain of the heart. The first Chinese formula to enter the later stages of American drug trials

What the list shows

The formulas are dated, and the dates cluster. The two tables hold 171 formulas. Nearly a third come from the two books of Zhang Zhongjing, of about 200. A second cluster of the same size comes from the state formulary and the masters of the Song, Jin and Yuan, between 1100 and 1350. A third comes from the physicians of the Qing and the school of warm illnesses, between 1650 and 1850. The pharmacy grew in bursts, and each burst answered an illness of its time: the cold damage of the Han, the epidemics of the south.

Old formulas stay in use. The Kudzu Decoction is a household remedy for colds in Japan today, eighteen centuries after it was written down. Chapter 65 told of the Japanese school of the old formulas, which went back to the books of Zhang Zhongjing and kept to them.

A formula is often named for its act. It warms the monthly course, shuts the sluice, leads the face straight or floats the boat by raising the water. The name is a short statement of the treatment principle that chapter 48 set out for each pattern.

The dangerous materials are few and are known. Cinnabar, realgar, toad venom, aconite, the poppy husk and the three harsh purges are marked in the tables. Horn of the rhinoceros and scales of the pangolin stood in classical formulas, and both are now replaced or left out.

Hardly any of these formulas has been tested as chapter 74 asked. A few have good trials. Entry 70 gave that of the Minor Blue-Green Dragon Decoction for the running nose, and chapter 74 those of the formulas for the irritable bowel. For most there are many small Chinese trials of poor design and nothing more.

97. The pharmacies of India, Tibet and the Unani physicians, continued

What this chapter adds

Chapter 60 listed fifty drugs of the Indian pharmacy. Chapter 64 described the Tibetan drugs and their jewel pills, and chapter 40 the treatment by drugs of the Unani physicians. This chapter adds the reference tables. They hold eighty-nine further Indian drugs and forty-eight Indian compound medicines. They hold the chief Tibetan drugs and formulas, and the single and compound drugs of the Unani pharmacy.

The three pharmacies overlap. Indian drugs fill the Tibetan books, and the Unani physicians of India took up Indian plants beside their Greek and Persian ones. The same plant therefore appears under several names.

The tables describe traditions. They are not advice for use. Indian, Tibetan and Unani medicines that are made with metals have poisoned patients, as chapter 75 told, and several of the plants are poisons.

Further Indian drugs: plants

The taste and the potency are those of the textbooks. Potency is hot or cold, as chapter 60 explained.

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Aragvadha	Pulp of the pod of the pudding-pipe tree, *Cassia fistula*	Sweet; cold	A mild purge, safe for children and the old; skin	
Ativisha	Root of *Aconitum heterophyllum*, an aconite without poison	Pungent, bitter; hot	Fever and loose stools of children	The plant is endangered in the Himalaya
Vatsanabha	Root of the Indian aconite, *Aconitum ferox*	Pungent, bitter; hot	Fever; pain. Only after purification	Among the deadliest of plants
Bhallataka	Marking nut, *Semecarpus anacardium*	Pungent, bitter, astringent; hot	Piles, skin, growths; a renewer	The raw juice blisters the skin. Used only after purification

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Chitraka	Root of leadwort, *Plumbago zeylanica*	Pungent; hot	Kindles the digestive fire; piles; raw matter	
Vidanga	Fruit of the false pepper, *Embelia ribes*	Pungent, astringent; hot	The chief drug against worms	
Khadira	Heartwood of the cutch tree, *Acacia catechu*	Bitter, astringent; cold	The chief drug for illnesses of the skin	The catechu of the Chinese pharmacy
Karanja	Seed and bark of *Pongamia pinnata*	Bitter, pungent; hot	Skin; sores; piles	
Kushtha	Root of costus, *Saussurea costus*	Bitter, pungent, sweet; hot	Skin; cough; gout	Traded to Rome and to China since antiquity. Now endangered
Daruharidra	Stem of the Indian barberry, *Berberis aristata*	Bitter, astringent; hot	The eyes; skin; yellow skin; the urinary illnesses	Holds the same yellow compound as the Chinese coptis
Ela	Cardamom, *Elettaria cardamomum*	Pungent, sweet; cold	Digestion; vomiting; cough	
Tvak	Cinnamon bark, *Cinnamomum verum*	Pungent, sweet, bitter; hot	Digestion; colds	
Lavanga	Clove, *Syzygium aromaticum*	Pungent, bitter; cold	Thirst; vomiting; toothache	
Jatiphala	Nutmeg, *Myristica fragrans*	Bitter, pungent; hot	Loose stools; sleeplessness	Large doses poison
Jiraka	Cumin, *Cuminum cyminum*	Pungent; hot	Digestion; the weeks after birth	

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Dhanyaka	Coriander fruit, *Coriandrum sativum*	Astringent, bitter, sweet; mildly hot	Thirst; burning urine; fever	
Yavani	Ajowan fruit, *Trachyspermum ammi*	Pungent, bitter; hot	Colic; wind; worms	
Methika	Fenugreek seed, *Trigonella foenum-graecum*	Bitter; hot	Wind; sweet urine; too little milk	Entry 91 gave the small trials for milk
Shatapushpa	Dill, *Anethum sowa*	Pungent, bitter; hot	Colic of infants; the monthly course	
Tagara	Indian valerian, *Valeriana wallichii*	Bitter, pungent, astringent; hot	Sleeplessness; fits	
Jyotishmati	Seed of *Celastrus paniculatus*, the tree of intellect	Pungent, bitter; hot	Memory and understanding	
Mandukaparni	Indian pennywort, *Centella asiatica*	Bitter; cold	Memory; skin; wounds; leprosy	Extracts have small trials for wounds and for swollen veins
Kushmanda	Ash gourd, *Benincasa hispida*	Sweet; cold	Madness; the falling sickness; as a jam for the wasted	
Draksha	Grape and raisin, *Vitis vinifera*	Sweet; cold	Thirst; fever; cough; a builder	
Dadima	Fruit and rind of the pomegranate, *Punica granatum*	Sweet, sour, astringent; mild	The rind for loose stools; the fruit for the heart and the appetite	

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Jambu	Seed of the black plum, *Syzygium cumini*	Astringent, sweet; cold	Sweet urine; loose stools	Small trials, with mixed results
Meshashringi	Leaf of *Gymnema sylvestre*. A later name means the destroyer of sugar	Astringent, bitter; hot	Sweet urine	The chewed leaf takes away the taste of sweetness for an hour
Vijayasara	Heartwood of the Indian kino tree, *Pterocarpus marsupium*	Astringent, bitter; cold	Sweet urine. Water is left overnight in a cup of the wood and drunk	
Karavellaka	Bitter gourd, *Momordica charantia*	Bitter, pungent; hot	Sweet urine; worms	The bitter melon of entry 18
Rasna	Root of *Pluchea lanceolata*	Bitter; hot	The chief drug for pains of wind	Several plants are sold under the name
Nirgundi	Leaf of the five-leaved chaste tree, *Vitex negundo*	Pungent, bitter; hot	Pain and swelling of the joints, as a warm pack	
Shigru	Drumstick tree, *Moringa oleifera*	Pungent, bitter; hot	Swellings; abscess; worms	The leaves are a food rich in vitamins
The five great roots	Bael, and four trees of the forest	Bitter, astringent; hot	Wind; swelling; fever after birth	With the five small roots, the ten roots of chapter 60
The five small roots	Two nightshades, two creeping pulses and the puncture vine	Sweet, bitter; mild	Wind and bile; cough; weakness	
Pushkaramula	Root of *Inula racemosa*	Bitter, pungent; hot	Cough; wheezing; pain of the chest	The manu of the Tibetan pharmacy

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Karkatashringi	Galls of *Pistacia integerrima*	Astringent, bitter; hot	Cough of children	
Bharangi	Root of *Clerodendrum serratum*	Bitter, pungent; hot	Wheezing; cough	
Talisa	Leaf of the Himalayan fir, *Abies webbiana*	Bitter, sweet; hot	Cough	
Vamshalochana	Bamboo silica	Sweet, astringent; cold	Cough; wasting; fever	The same drug stands in the Chinese and the Tibetan books
Kanchanara	Bark of the mountain ebony, *Bauhinia variegata*	Astringent; cold	Swollen glands of the neck; goitre	
Varuna	Bark of the three-leaved caper, *Crataeva nurvala*	Bitter, astringent; hot	Stones; held-back urine	Entry 72 met it
Pashanabheda	Rhizome of *Bergenia ligulata*. The name means the stone breaker	Astringent, bitter; cold	Stones	
Patola	Leaf of the pointed gourd, *Trichosanthes dioica*	Bitter; hot	Fever; skin; bile	
Kiratatikta	Chiretta, *Swertia chirayita*	Bitter; cold	Fever; the bitter tonic	Endangered
Parpata	Fumitory, *Fumaria indica*	Bitter; cold	Fever with thirst and burning	
Ushira	Root of vetiver, *Chrysopogon zizanioides*	Bitter, sweet; cold	Burning; thirst; fever	Woven into screens that cool a room when wetted

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Raktachandana	Red sandalwood, *Pterocarpus santalinus*	Bitter, sweet; cold	Bleeding; burning; skin	Endangered
Lodhra	Bark of *Symplocos racemosa*	Astringent; cold	Bleeding and discharges; the eyes; illnesses of women	
Nagakesara	Stamens of the ironwood flower, *Mesua ferrea*	Astringent, bitter; mildly hot	Bleeding piles; heavy periods	
Dhataki	Flower of *Woodfordia fruticosa*	Astringent; cold	Loose stools	The ferment that starts the medicated wines
Danti	Root of *Baliospermum montanum*	Pungent; hot	A strong purge	
Snuhi	Milky juice of the spurge *Euphorbia neriifolia*	Pungent; hot	A violent purge; on warts	It coats the cutting thread for the fistula, which chapter 60 described (ICMR 1991)
Apamarga	Prickly chaff flower, *Achyranthes aspera*	Bitter, pungent; hot	Its ash gives the caustic that is painted on piles	
Sariva	Indian sarsaparilla, *Hemidesmus indicus*	Sweet, bitter; cold	Skin; burning; called a cleanser of the blood	
Bakuchi	Seed of *Psoralea corylifolia*	Bitter, pungent; hot	The white patches	The seed of entry 30

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Chakramarda	Seed of *Senna tora*. The name means the destroyer of ringworm	Pungent; hot	Ringworm; itching	
Kumkuma	Saffron, *Crocus sativus*	Bitter, pungent; hot	The complexion; the monthly course; low spirits	Small Persian trials in melancholy, as entry 35 told
Ahiphena	Opium, *Papaver somniferum*	Bitter, astringent; hot	Loose stools; pain; sleep	It entered Indian medicine with the Muslims, as chapter 56 noted
Vijaya	Hemp, *Cannabis sativa*	Bitter; hot	Appetite; pain; loose stools; sleep	
Dhattura	Thorn apple, *Datura metel*	Pungent, bitter; hot	Wheezing, smoked; the bite of the mad dog	Poisonous. The source of the smoking cure of entry 10
Kupilu	Seed of the poison nut, *Strychnos nux-vomica*	Bitter; hot	Palsy; pain of the nerves. Only after purification	Holds strychnine
Jayapala	Croton seed, *Croton tiglium*	Pungent; hot	The most violent purge	Very poisonous
Langali	Tuber of the glory lily, *Gloriosa superba*	Pungent, bitter; hot	To speed labour and bring away the afterbirth	Holds the compound of the autumn crocus. Poisonous
Gunja	Seed of the rosary pea, *Abrus precatorius*	Bitter; hot	Skin; the falling of hair, from outside	The seed is a deadly poison. Goldsmiths used it as a weight
Arka	Giant milkweed, *Calotropis gigantea*	Pungent, bitter; hot	Skin; worms; piles	The milky juice is poisonous

Sanskrit name	Material and source	Taste; potency	Chief uses in the textbooks	Note
Yava	Barley, *Hordeum vulgare*	Sweet, astringent; cold	The grain for the urinary illnesses and for stoutness	
Mudga	Green gram, *Vigna radiata*	Sweet, astringent; cold	The best of pulses; the food of the sick	
Kulattha	Horse gram, *Macrotyloma uniflorum*	Astringent; hot	Stones, as a soup; cough	
Masha	Black gram, *Vigna mungo*	Sweet; hot	Builds flesh and seed	Entry 55 met it
Shashtika	A red rice that ripens in sixty days	Sweet; cold	The food of the sick. Boiled in milk, it is rubbed on a wasted limb	
Narikela	Coconut, *Cocos nucifera*	Sweet; cold	Thirst; burning. Its oil is the base of the medicated oils of Kerala	

Further Indian drugs: minerals and animal products

Chapter 56 told how the Indian adepts of mercury burned metals and minerals with herbs until a fine ash remained. Such an ash is called a *bhasma*. The table gives the chief ones, with the salts, the alkalis and the animal products.

Sanskrit name	Material	Chief uses in the textbooks	Note
Gandhaka	Sulphur, purified in milk or butter	Skin; a renewer	With mercury it forms the black sulphide from which most metal medicines start
Tamra bhasma	Calcined copper	Liver and spleen; pale blood; wheezing	Poisonous when it is badly made

Sanskrit name	Material	Chief uses in the textbooks	Note
Svarna bhasma	Calcined gold	A renewer; the mind	In some regions a trace is given to newborns
Rajata bhasma	Calcined silver	The nerves; wasting	
Abhraka bhasma	Calcined mica, burned up to a thousand times	The lung; wasting; a renewer	
Vanga, *Naga*, *Yashada*	Calcined tin, lead and zinc	The urinary illnesses; sweet urine	Lead in such medicines is a chief source of the poisonings of chapter 75
Shankha bhasma	Calcined conch shell	A sour stomach; colic	A form of chalk
Mukta and *Pravala pishti*	Pearl and coral, ground for days with rose water	Burning; a sour stomach; the heart	Forms of chalk
Godanti	Calcined gypsum	Fever; headache	
Tankana	Borax	Cough; used to purify aconite	
Sphatika	Alum	Bleeding; on sores; as a gargle	
Saindhava	Rock salt	The best of the salts; in vomits and enemas	
Yavakshara	Alkali from the ash of barley	Stones; difficult urination	
Karpura	Camphor	The eyes; cough	
Kasturi	Musk	The heart; fainting	From a protected deer
Dugdha	Milk of the cow	The first of the renewers; the vehicle of many drugs	

Sanskrit name	Material	Chief uses in the textbooks	Note
Takra	Buttermilk	Piles; swelling; the restless bowel	Entry 22 met it
Gomutra	Urine of the cow	Skin; worms; swelling; to process other drugs	

Forty-eight Indian compound medicines

The Indian pharmacy makes its compounds in fixed forms. A *churna* is a powder. A *vati* is a pill. A *guggulu* is a pill bound with the gum resin of that name. A *ghrita* is clarified butter in which drugs have been cooked, and a *taila* is an oil made in the same way. An *asava* or *arishta* is a medicated wine, fermented in a sealed jar for weeks. An *avaleha* is a jam. A *rasa* is a medicine made with mercury.

Name	Form	Chief ingredients	Use
Triphala	Powder	The three fruits: emblic, chebulic and beleric myrobalan	The bowel; a wash for the eyes; a daily renewer
Trikatu	Powder	The three pungents: dry ginger, black pepper, long pepper	Kindles the fire; phlegm; raw matter
Hingvashtaka	Powder	Asafoetida with the three pungents, ajowan, two cumins and rock salt	Wind in the belly. Taken in butter with the first mouthful
Sitopaladi	Powder	Rock sugar, bamboo silica, long pepper, cardamom, cinnamon	Cough; fever; wasting
Talisadi	Powder	Fir leaf, the three pungents, bamboo silica, cardamom, cinnamon, sugar	Cough; wheezing; poor appetite
Avipattikara	Powder	The three pungents, the three fruits, nut grass, clove, cardamom, turpeth, sugar	A sour, burning stomach; hard stools

Name	Form	Chief ingredients	Use
Lavana bhaskara	Powder	Several salts with cumin, long pepper, pomegranate and other spices	Poor digestion; wind; piles
Mahasudarshana	Powder	Chiretta with some fifty bitter drugs	Fevers of every kind
Dashamula kvatha	Decoction	The ten roots	Wind; fever after birth; cough
Yogaraja guggulu	Resin pill	Guggulu with some twenty-five spices and salts	Pains of wind; stiff joints
Kaishora guggulu	Resin pill	Guggulu, the three fruits, tinospora, the three pungents	Gout; skin; sores
Triphala guggulu	Resin pill	Guggulu, the three fruits, long pepper	Fistula; piles; swelling
Kanchanara guggulu	Resin pill	Bark of the mountain ebony, guggulu, the three fruits, the three pungents	Swollen glands; goitre; growths
Gokshuradi guggulu	Resin pill	Puncture vine, guggulu, the three fruits, the three pungents, nut grass	Painful urination; stones
Simhanada guggulu	Resin pill	Guggulu, the three fruits, sulphur, castor oil	The inflamed joints of entry 25
Mahayogaraja guggulu	Resin pill with metals	Yogaraja guggulu with calcined tin, lead, silver, iron, mica and mercury	Stubborn pain of wind. Lead poisonings are on record
Punarnavadi mandura	Pill	Rust of iron with boerhavia, the three fruits and others, prepared in cow’s urine	Pale blood; swelling, as entry 61 told
Navayasa lauha	Powder	Calcined iron with nine plants	Pale blood; skin

Name	Form	Chief ingredients	Use
Arogyavardhini	Pill	Picrorhiza for half the weight, with mercury, sulphur, iron, mica, copper, the three fruits and neem juice	The liver; skin; stoutness. Holds metals
Chandraprabha	Pill	Mountain pitch, guggulu, iron and some thirty plants	The urinary illnesses; weakness
Kutajaghana	Pill	The thickened extract of holarrhena bark	Loose stools; dysentery
Sanjivani	Pill	Vidanga, ginger, long pepper, the three fruits, sweet flag, tinospora, marking nut and aconite, in cow’s urine	Fever; cholera; snakebite. Holds aconite
Lashunadi	Pill	Garlic, cumin, rock salt, sulphur, the three pungents, asafoetida, lemon juice	Wind; food that stays
Khadiradi	Lozenge	Cutch with camphor and spices	Sore throat; the mouth
Brahmi ghrita	Medicated butter	Bacopa juice, sweet flag, costus and convolvulus, in old butter	Madness; the falling sickness; memory
Kalyanaka ghrita	Medicated butter	Twenty-eight drugs in butter	Madness; possession; barrenness
Mahatiktaka ghrita	Medicated butter	Some thirty bitter drugs in butter	Skin; bile; before the cleansings
Phala ghrita	Medicated butter	The three fruits, madder, costus and others, in butter and milk	Barrenness; for the woman with child
Mahanarayana taila	Medicated oil	Sesame oil cooked with wild asparagus, the ten roots, withania and many more, in milk	Rubbed on stiff and painful joints; palsy

Name	Form	Chief ingredients	Use
Kshirabala taila	Medicated oil	Country mallow cooked in sesame oil and milk, up to a hundred and one times	Wind; palsy. By mouth, by the nose and on the skin
Anu taila	Medicated oil	A fine oil of some twenty-five drugs with goat's milk	Dropped into the nose daily
Bhringaraja taila	Medicated oil	Eclipta juice in sesame oil	The hair; headache; sleep
Pinda taila	Medicated oil	Madder, sarsaparilla, the resin of the sal tree, beeswax	The burning joints of gout
Jatyadi taila	Medicated oil	Jasmine leaf, neem, turmeric, liquorice and others	Wounds; burns; cracks of the skin
Dashamularishta	Medicated wine	The ten roots and some sixty other drugs, fermented with honey and raw sugar	Weakness after childbirth; wind
Ashokarishta	Medicated wine	Bark of the ashoka tree	Heavy and painful periods
Drakshasava	Medicated wine	Raisins with spices	Weakness; cough; poor appetite
Kumaryasava	Medicated wine	Aloe juice with honey, iron and spices	Liver and spleen; missing periods
Arjunarishta	Medicated wine	Bark of the arjuna tree with raisins	The heart
Saraswatarishta	Medicated wine	Bacopa with wild asparagus and other drugs; in some recipes with gold	Memory; speech; the mind
Abhayarishta	Medicated wine	Chebulic myrobalan with raisins and vidanga	Piles; hard stools
Chyavanaprasha	Jam	Emblic fruit with some forty herbs, sugar, honey and butter	The household renewer of chapter 60

Name	Form	Chief ingredients	Use
Brahma rasayana	Jam	Chebulic and emblic fruits with the ten roots and many others	Renewal of body and mind
Agastya haritaki	Jam	Chebulic myrobalan with the ten roots	Wheezing; cough
Vasavaleha	Jam	Juice of the Malabar nut with long pepper, honey and butter	Cough with blood; wheezing
Kushmanda avaleha	Jam	Ash gourd with butter, sugar and spices	Wasting; bleeding; the mind
Makaradhvaja	Mercury medicine	Mercury, sulphur and gold, sublimed	A renewer; loss of power. Holds mercury
Tribhuvana kirti	Mercury medicine	Cinnabar, aconite, the three pungents, borax	Fever. Holds mercury and aconite

The chief Tibetan drugs

Chapter 64 told that a Tibetan physician hardly ever gives a single plant. The compounds are built from a few hundred materials. The table gives those that return in formula after formula. The Tibetan names are written as they are commonly spoken.

Tibetan name	Material	Nature in the books	Chief uses	Note
Arura	Chebulic myrobalan	All tastes but the salty; balanced	All three faults	Called the king of medicines. The master of medicine holds it in his hand in the paintings
Barura	Beleric myrobalan	Astringent; cool	Phlegm and bile	
Kyurura	Emblic fruit	Sour; cool	Blood and bile	With the two above, the three fruits of India
Chugang	Bamboo silica	Sweet; cool	Fever of the lung; wounds	The first of the six good drugs

Tibetan name	Material	Nature in the books	Chief uses	Note
Gurgum	Saffron, and often safflower	Sweet; cool	The liver; bleeding	The second of the six
Lishi	Clove	Pungent; warm	Cold wind in the vessel of life	The third
Dzati	Nutmeg	Pungent; warm	Wind at the heart	The fourth. Chapter 63 found it in every formula for the wind of life
Sugmel	Lesser cardamom	Pungent; warm	Cold of the kidney	The fifth
Kakola	Greater cardamom	Pungent; warm	Cold of the spleen and stomach	The sixth
Gabur	Camphor	Bitter; very cold	High fever	The chief of the cooling drugs
Tsenden karpo	White sandalwood	Astringent; cool	Fever of the lung and the heart	
Tsenden marpo	Red sandalwood	Astringent; cool	Fever of the blood	
Agar	Eaglewood	Bitter, pungent; warm	Wind at the heart and in the vessel of life	The aloeswood of the Chinese pharmacy
Ruta	Costus root	Pungent, bitter; warm	Wind and blood; a swollen belly; the lung	The Indian kushtha
Manu	Root of *Inula racemosa*	Sweet, bitter, pungent	Ripens a raw fever	
Sedru	Pomegranate seed	Sour, sweet; warm	The chief drug to raise the heat of digestion	
Pipiling	Long pepper	Pungent; warm	Cold; phlegm	

Tibetan name	Material	Nature in the books	Chief uses	Note
Shingtsa	Cinnamon	Pungent, sweet; warm	Cold of the stomach; wind	
Shingkun	Asafoetida	Pungent; warm	Wind; worms	
Tigta	Chiretta and its sisters	Bitter; cool	Bile; fever; the liver	
Honglen	Picrorhiza	Bitter; cool	Fever of blood and bile	
Bongkar	White aconite	Bitter; cool	Fever; poisoning; epidemics	A kind without poison
Bongnag	Black aconite	Very poisonous	Pain; epidemics; swellings, in tiny prepared doses	The books call it the great medicine and the great poison
Upel ngonpo	Blue poppy of the Himalaya	Sweet, astringent; cool	Fever of the liver and the lung	
Solo marpo	Rhodiola root	Sweet, astringent; cool	The lung; the breath at great heights	Entry 80 gave the trial
Yartsa gunbu	Caterpillar fungus	Sweet; warm	The kidney; strength	The name means summer grass, winter worm. First described by a Tibetan physician of the fifteenth century
Tarbu	Sea buckthorn berry	Sour	Phlegm; thick sputum; the blood	
Chumtsa	Rhubarb root	Sour, bitter; cool	A purge; fever of the hollow organs	

Tibetan name	Material	Nature in the books	Chief uses	Note
Giwang	Gallstone of the ox or the elephant	Bitter, sweet; cool	Fever of the liver; poisoning; epidemics	
Latsi	Musk	Bitter; cool	Epidemics; worms; poison	From a protected deer
Domtri	Bile of the bear	Bitter; cool	Bile; bleeding; the eyes	Entry 75 gave the price to the bear
Drakzhun	Mountain pitch	Cool	Every fever, above all of stomach, liver and kidney	The shilajit of India
Chongzhi	Calcite, prepared in several ways	By its preparation	Phlegm; a sour stomach; the bones	
Tsothel	A black ash of mercury and sulphur, with eight metals and eight minerals		The chief ingredient of the jewel pills	Chapter 64 gave the concern and the one study

Sixteen Tibetan formulas

Name	Chief ingredients	Use
Eaglewood Thirty-Five	Eaglewood, nutmeg, clove, the three fruits, the sandalwoods and other drugs	The wind of life: anxiety, sleeplessness, pain of the chest
Eaglewood Eight	Eaglewood, nutmeg, costus, bamboo silica and four more	Wind at the heart
Pomegranate Five	Pomegranate seed, cinnamon, cardamom, long pepper and a ginger	A cold, weak digestion
Camphor Twenty-Five	Camphor, the sandalwoods, the six good drugs, the three fruits and others	High and old fevers. The model of the Swiss formula of chapter 62
Decoction of the Three Fruits	The three myrobalans	Ripens and gathers a fever of the blood, before a bleeding
Inula Decoction of Four	Inula, tinospora, the stem of a raspberry, ginger	Ripens a raw fever, as chapter 63 told; the first days of a cold
Seven Jewels Decoction	The three fruits and the drugs of the decoction of four	Colds and epidemic fever in the raw stage
Garuda Five	Black aconite, chebulic myrobalan, costus, sweet flag, musk	Pain; swellings; epidemics; worms. Holds aconite
Chiretta Eight	Chiretta with seven bitter herbs	Fevers of bile; yellow skin; headache from bile
Saffron Seven	Saffron with six cooling drugs	Fever of the liver
The Great Black Pill of the Cold Compound	The black ash of mercury with some hundred and forty ingredients	Poisonings; long illnesses. The largest jewel pill, which chapter 64 described
The Wish-Fulfilling Jewel	Some seventy ingredients, with pearl, coral and other gems	Palsy and the state after a stroke; illnesses of the nerves
The Great Many-Compound Jewel Pill	Some fifty ingredients	Poisoning; the stomach and the liver

Name	Chief ingredients	Use
Moon Crystal	The black ash of mercury with some thirty-seven ingredients	Old illnesses of the stomach and gut; bleeding sores of the stomach
Turquoise Twenty-Five	Turquoise, coral, pearl and plants	The liver
The Great Iron Pill	Prepared iron filings with the three fruits and others	The eyes; the liver

Further single drugs of the Unani pharmacy

Chapter 40 listed twenty drugs that every hakim uses. The table adds forty more. The temperament is given as the Unani books give it. A blank means that the books differ.

Drug	Material	Temperament	Chief use
Khatmi	Marshmallow, flower and root	Cold and moist	Cough; to soften swellings
Khubbazi	Mallow seed	Cold and moist	Cough; burning urine
Badiyan	Fennel	Hot and dry	Wind; the eyes; to let water out
Anisun	Anise	Hot and dry	Wind; too little milk
Mako	Black nightshade	Cold and dry	A swollen liver; swellings, from outside
Turbud	Turpeth root	Hot and dry	A purge of phlegm
Hanzal	Colocynth	Hot and dry	A violent purge. Poisonous
Saqmunia	Scammony resin	Hot and dry	A violent purge of yellow bile
Sibr	Dried juice of aloe	Hot and dry	A purge of the head and stomach
Rewand chini	Chinese rhubarb	Hot and dry	A purge that strengthens the liver
Bisfaij	Polypody rhizome	Hot and dry	A purge of black bile

Drug	Material	Temperament	Chief use
Ghariqun	Agaric fungus	Hot and dry	A purge of phlegm; called a remedy for every organ
Mastagi	Mastic resin	Hot and dry	The stomach; the gums
Darchini	Cinnamon	Hot and dry	The stomach; the heart
Qaranful	Clove	Hot and dry	The stomach; the brain; toothache
Filfil siyah	Black pepper	Hot and dry	Digestion; phlegm
Khulanjan	Galangal	Hot and dry	A cold stomach; the voice
Kababchini	Cubeb	Hot and dry	The urinary passages
Zufa	Hyssop	Hot and dry	Wheezing; phlegm of the chest
Parsiyaoshan	Maidenhair fern		Cough; to open what is closed in the chest
Unsul	Squill bulb	Hot and dry	Dropsy; wheezing. The squill of entry 12
Shahtara	Fumitory	Hot and dry	To clean the blood; itching
Chob chini	China root	Hot and dry	The great pox; pain of the joints. Entry 63 met it
Ushba	Sarsaparilla	Hot and dry	The same
Asgand	Withania root	Hot and dry	Weakness; the joints. The Indian ashvagandha
Gilo	Tinospora stem	Hot and dry	Fevers. The Indian guduchi
Afyun	Opium	Cold and dry, in the fourth degree	Pain; cough; loose stools; sleep
Ajwain khurasani	Henbane seed	Cold and dry	Pain; sleep; toothache. Poisonous
Tukhm-e-kahu	Lettuce seed	Cold and moist	Sleep; burning

Drug	Material	Temperament	Chief use
Khashkhash	Poppy seed	Cold and moist	Sleep; dry cough
Behidana	Quince seed	Cold and moist	A dry throat and cough; burns
Sandal	Sandalwood	Cold and dry	The heart; burning; headache from heat
Kafur	Camphor	Cold and dry	Fevers; the heart; headache
Tabasheer	Bamboo silica	Cold and dry	Fevers; thirst; the heart
Mushk	Musk	Hot and dry	The heart and brain; fainting
Ambar	Ambergris	Hot and dry	The heart, the brain and the senses
Marwarid	Pearl		The heart; the eyes
Abresham	Cocoon of the silkworm	Hot and dry	To gladden and strengthen the heart
Momiyai	Mineral pitch	Hot and dry	Broken bones; injuries
Surma	Black powder for the eyes, of antimony and in the bazaar often of lead	Cold and dry	The eyes. Lead poisoning of children is on record

Twenty Unani compound medicines

Chapter 40 explained the forms. The table gives well-known medicines in each.

Name	Form	Chief ingredients	Use
Khamira abresham	Whipped confection	Silk cocoons with pearl, ambergris, saffron and rose water	To strengthen the heart and brain; palpitations
Khamira gaozaban	Whipped confection	Borage with coriander, sandalwood and lemon balm	Palpitations; worry

Name	Form	Chief ingredients	Use
Khamira marwarid	Whipped confection	Pearl, bamboo silica, sandalwood, rose water	The heart; the fevers of children
Dawa-ul-misk	Confection	Musk, pearl, amber, silk and sandalwood	The heart; low spirits
Mufarrih yaquti	Confection	Ground ruby and other gems, pearl, gold leaf, musk and herbs	To gladden the heart. The name means the ruby exhilarant
Jawarish Jalinus	Spiced confection	Mastic, spikenard, cardamom, cinnamon, saffron, cloves, ginger and pepper in honey	A weak stomach. Named after Galen, as entry 15 noted
Jawarish kamuni	Spiced confection	Cumin steeped in vinegar, with ginger, pepper and rue	Wind; food that stays
Itrifal ustukhuddus	Myrobalan confection	The three myrobalans with French lavender	Old headache; catarrh
Itrifal kishnizi	Myrobalan confection	The three myrobalans with coriander	Headache and dim eyes from the stomach
Majun falasifa	Confection	Ginger, the peppers, cinnamon, emblic fruit, pine kernels and others in honey	A weak back and memory; old age. The confection of the philosophers
Majun suranjan	Confection	Autumn crocus with senna, turpeth and ginger	Gout and pain of the joints
Majun dabid-ul-ward	Confection	Rose with spikenard, mastic, saffron and cinnamon	The liver; dropsy
Habb-e-ayarij	Pill	Aloe with spices: the sacred bitter of the Greeks	A purge of the head; headache
Tiryaq faruq	Antidote	Many ingredients, with the flesh of vipers and opium	Poisons. The theriac of chapter 41

Name	Form	Chief ingredients	Use
Sharbat bazoori	Syrup	Seeds of melon and cucumber, chicory and fennel root	Lets water out; fevers; the liver
Sharbat banafsha	Syrup	Violet flowers	Cough; fever
Laooq sapistan	Linctus	Cordia fruit with jujube, violet, mallow and liquorice	Dry cough; hoarseness
Qurs tabasheer	Tablet	Bamboo silica, rose, sandalwood, purslane seed	Fevers; thirst; consumption
Arq gulab	Distilled water	Roses	The heart; the eyes; to cool
Roghan badam	Oil	Sweet almonds	Dryness of the brain with sleeplessness; hard stools

What the three lists show

The pharmacies share a core. Some drugs stand in the Indian, the Tibetan and the Unani tables alike. They are the three myrobalans, long pepper, ginger, costus, cardamom, clove, nutmeg, saffron, camphor, sandalwood, musk and bamboo silica. Several stand in the Chinese tables of chapter 95 as well. The spice roads carried a common stock of drugs across Asia long before any of these books was written.

Each medicine has its own reason for a shared drug. The Indian physician gives nutmeg for loose stools. The Tibetan gives it for the wind of life, and the hakim for a cold stomach. The plant is one. The account differs with the doctrine.

All three compound heavily. A Chinese formula has four to twelve drugs. An Indian wine may have seventy, a Tibetan jewel pill a hundred and forty. Chapter 52 explained why a formula is hard to test. The whole compound can be put to a trial. Its parts cannot easily be told apart.

All three use metals. All three hold that the preparation removes the poison. The Indian ash, the Tibetan black powder and the Unani calcined metal are one technique. It spread from the Indian adepts of mercury. The analyses of chapter 75 show that the claim cannot be trusted for the medicines on sale. Whether it holds for a medicine made by the full classical process has hardly been examined.

The heart has a pharmacy of its own in the Unani list. Pearl, silk, ruby, musk, ambergris and rose are given to gladden the heart. Chapter 41 noted that this medicine treated grief, fear and love as illnesses. Its costliest remedies are for them.

98. The European herbal

What this chapter lists

Chapter 39 gave the drug book of Dioscorides, which the West used for sixteen centuries. Chapter 42 gave the leechbooks and the herb garden of the cloister. This chapter lists the plants of that tradition as it came down. It passed through the Latin herbals of the Middle Ages, the printed herbals of the sixteenth century and the village wise woman. It lives on with the German physicians who still prescribe plant extracts.

Date	Book	What it gave
About 65	Dioscorides, *On Medical Materials*	Some six hundred plants, described from the author’s own journeys
9th to 12th century	The cloister gardens; the Latin poem of Macer; Hildegard	The plants of the south, grown north of the Alps
1530 to 1554	The herbals of Brunfels, Bock, Fuchs and Dodoens	Plants drawn from life, and the plants of the north added
1597	Gerard’s *Herball*	The English herbal, with the first plants of America
1652	Culpeper’s *English Physician*	A cheap herbal in plain English for those who could not pay a physician
1978 to 1994	The German commission on plant medicines	Some four hundred plants judged one by one

The tables give the plant, its Latin name, its use in the herbals, and what is known today. They describe a tradition and are not advice for use. Many of these plants are poisons, and several of the mildest hold compounds that injure the liver when they are taken for long.

Stomach, liver and bowel

Plant	Latin name	Use in the herbals	What is known
Gentian root	*Gentiana lutea*	The chief bitter, for a weak appetite and digestion	Bitters raise the juices of the stomach. It flavours many drinks taken before a meal
Wormwood	*Artemisia absinthium*	The stomach; worms; fevers	The green spirit made with it was forbidden about 1910. A compound of the plant poisons the nerves in quantity
Centaury	*Centaurium erythraea*	A bitter for the stomach and for fever	Named after the centaur Chiron, the teacher of physicians
Dandelion	*Taraxacum officinale*	The liver and the gall; to let water out	Its French name records the second use
Artichoke leaf	*Cynara scolymus*	The liver and the gall	Eased an uneasy stomach in a German trial of 247 patients
Milk thistle seed	*Silybum marianum*	The liver	Its extract is given by vein in poisoning by the death cap mushroom. Trials in other liver illness are unclear
Chamomile flower	*Matricaria chamomilla*	Colic; the stomach; to calm; on wounds and eyes	A mild remedy. One small trial in worry
Peppermint	*Mentha* × *piperita*	Wind; colic; nausea	The oil helps the irritable bowel, as section A6 told
Fennel fruit	*Foeniculum vulgare*	Wind; the colic of infants; milk; the eyes	Entry 93 gave the trial in crying infants
Caraway fruit	*Carum carvi*	Wind	With peppermint oil it eased an uneasy stomach in trials
Anise fruit	*Pimpinella anisum*	Wind; cough; milk	

Plant	Latin name	Use in the herbals	What is known
Angelica root	*Angelica archangelica*	The stomach; a guard against the plague	Called the root of the Holy Ghost. It flavours the liqueurs of the monks
Lemon balm	*Melissa officinalis*	To gladden the heart; the stomach; sleep	The Carmelite water of Paris. A cream of it shortens cold sores a little
Sage leaf	*Salvia officinalis*	Sore throat; sweating. The school of Salerno asked why a man should die who has sage in his garden	It lessens sweating
Garlic	*Allium sativum*	Worms; infections. Galen called it the theriac of the peasants	Lowers the blood pressure a little
Liquorice root	*Glycyrrhiza glabra*	Cough; the stomach	It raises the blood pressure when taken in quantity. A drug for the ulcer was made from it in the 1960s
Senna leaf	*Senna alexandrina*	A purge	It came to Europe through the Arab physicians. A standard laxative
Rhubarb root	*Rheum palmatum*	A purge that also binds	Carried overland from China for a thousand years
Aloe	*Aloe vera*; *A. ferox*	The dried juice as a purge; the fresh gel on burns	Entry 52 gave the trials on burns
Alder buckthorn bark	*Frangula alnus*	A mild purge	The bark must be kept a year before use, or it brings on vomiting
Linseed	*Linum usitatissimum*	The bowel; as a hot poultice	

Plant	Latin name	Use in the herbals	What is known
Tormentil root	*Potentilla erecta*	Loose stools; the mouth and gums	Rich in tannin. Shortened the diarrhoea of small children in a Russian trial
Bilberry	*Vaccinium myrtillus*	The dried fruit for loose stools	
Oak bark	*Quercus robur*	To bind: weeping skin, piles, loose stools	Tannin
Lesser celandine	*Ficaria verna*	Piles	Chosen for its knobbly roots, which look like piles

Cough, chest and fever

Plant	Latin name	Use in the herbals	What is known
Marshmallow root	*Althaea officinalis*	Dry cough; sore throat	Its slime coats the throat. The sweet of that name was first made from it
Mullein flower	*Verbascum thapsus*	Cough; in oil for earache	
Coltsfoot leaf	*Tussilago farfara*	Cough. The Latin name means the cough-dispeller	Holds compounds that injure the liver
Ribwort plantain	*Plantago lanceolata*	Cough; on wounds and stings	
Iceland moss	*Cetraria islandica*	Dry cough; wasting	A lichen
Ivy leaf	*Hedera helix*	Cough	The commonest cough syrup of German children. Small trials favour it
Thyme	*Thymus vulgaris*	Cough; worms	Its oil kills organisms and was long used as a wash for wounds
Elecampane root	*Inula helenium*	Cough; the chest	A sister of the Tibetan and Indian drug of chapter 97
Horehound	*Marrubium vulgare*	Cough	
Lungwort	*Pulmonaria officinalis*	The lung	Chosen for its spotted leaf, which looks like a lung
Elder	*Sambucus nigra*	The flower to bring out a sweat; the berry for colds. Called the medicine chest of the country people	A berry extract shortened influenza in small trials
Lime flower	*Tilia cordata*	To bring out a sweat in a cold; to calm	

Plant	Latin name	Use in the herbals	What is known
Willow bark	*Salix alba*	Fever; pain	An English clergyman reported in 1763 that it cured agues. The forerunner of aspirin
Meadowsweet	*Filipendula ulmaria*	Fever; pain; a sour stomach	Aspirin takes its name from the old Latin name of this plant
Feverfew	*Tanacetum parthenium*	Fever; headache	Lessens attacks of migraine a little in trials
Yarrow	*Achillea millefolium*	Wounds; bleeding; fever	Named after Achilles, who is said to have dressed wounds with it
Butterbur	*Petasites hybridus*	The plague; cough	An extract matched a tablet in hay fever, as entry 70 told. The raw plant injures the liver
Scurvy grass	*Cochlearia officinalis*	Scurvy	Rich in the vitamin, as entry 57 told
Rose hip	*Rosa canina*	A tonic; the bite of the mad dog, from which the dog rose has its name	Rich in the vitamin. British children were given its syrup in the war of 1939
Sphagnum moss	*Sphagnum*	A dressing for wounds in the Highlands and in Ireland	Takes up many times its weight of fluid. Millions of dressings were made of it from 1915 to 1918

Heart, vessels and urine

Plant	Latin name	Use in the herbals	What is known
Foxglove	*Digitalis purpurea*	Sores; later dropsy	Entry 12 told its history. A poison
Lily of the valley	*Convallaria majalis*	The heart; dropsy	Holds compounds of the foxglove kind. A poison
Squill	*Drimia maritima*	Dropsy; cough	The same kind of compounds
Broom tops	*Cytisus scoparius*	Dropsy; the heart	
Hawthorn	*Crataegus monogyna*	The heart	Eases the complaints of a weak heart. A trial of 2,681 patients found no fewer deaths
Mistletoe	*Viscum album*	The falling sickness. A Roman writer says that the Druids called it the all-healer	Section A3 gave its use in cancer
Motherwort	*Leonurus cardiaca*	Palpitations; the womb	A sister of the Chinese drug for women
Horse chestnut seed	*Aesculus hippocastanum*	Piles; swollen veins	Entry 76 gave the trials
Butcher’s broom	*Ruscus aculeatus*	Swollen veins; piles	
Bearberry leaf	*Arctostaphylos uva-ursi*	Burning urine	Failed in the trials of entry 71
Parsley	*Petroselinum crispum*	Urine; stones; to bring on the monthly course	The oil of the seed has killed women who took it to end a pregnancy
Birch leaf	*Betula pendula*	Urine; aching joints	
Horsetail	*Equisetum arvense*	Urine; wounds	
Goldenrod	*Solidago virgaurea*	Urine; stones	

Plant	Latin name	Use in the herbals	What is known
Nettle	*Urtica dioica*	A cleanser in spring; the joints, by stinging; the root for the old man’s water	
Juniper berry	*Juniperus communis*	Urine; the stomach; burned against the plague	The flavour of gin, which began as a medicine
Meadow saxifrage	*Saxifraga granulata*	Stones	The name means stone breaker. It grows in the cracks of rocks and bears small bulbs like gravel at its root
Goat’s rue	*Galega officinalis*	The plague; worms; milk; thirst with much urine	Entries 18 and 91 told what came of it

Nerves, sleep and pain

Plant	Latin name	Use in the herbals	What is known
Valerian root	*Valeriana officinalis*	Sleep; the nerves; the falling sickness	Trials for sleep come out both ways
Hop cone	*Humulus lupulus*	Sleep	Hop pickers were known to grow drowsy
St John's wort	*Hypericum perforatum*	Wounds, as a red oil; melancholy. An old name is the chaser of devils	As good as the tablets in mild and middling depression (Linde 2008). It weakens many other drugs
Lavender	*Lavandula angustifolia*	Headache; the nerves	A capsule of the oil calmed worry better than a dummy in German trials (Kasper 2010)
Betony	*Stachys officinalis*	Headache. A remedy for everything in the Middle Ages	
Vervain	*Verbena officinalis*	A sacred herb of the Romans; the nerves; fever	
Peony root	*Paeonia officinalis*	The falling sickness, hung round the neck of a child	Galen reports that a boy stayed free of fits while he wore it
Wild lettuce	*Lactuca virosa*	Sleep; cough	Its dried milk was sold as a weak opium
Opium poppy	*Papaver somniferum*	Pain; sleep; cough; the flux	Morphine was drawn from it in 1804
Henbane	*Hyoscyamus niger*	Pain; toothache; sleep	A poison. A source of the drugs of entry 77
Deadly nightshade	*Atropa belladonna*	Pain; cramps; in the eye, to widen the pupil	A poison. The same
Mandrake root	*Mandragora officinarum*	Given in wine before cutting or burning	A poison. Chapter 39 gave Dioscorides on it
Monkshood	*Aconitum napellus*	Rubbed on for pain of the nerves	Among the deadliest plants of Europe

Plant	Latin name	Use in the herbals	What is known
Hemlock	*Conium maculatum*	Tumours; pain	The poison that killed Socrates
Black hellebore	*Helleborus niger*	Madness and melancholy, as a purge of black bile	A poison
Autumn crocus	*Colchicum autumnale*	Gout	Entry 20 told its history. A poison
Arnica flower	*Arnica montana*	Bruises and sprains, from outside	A gel did as well as a pharmacy gel on worn finger joints. Poisonous by mouth
Comfrey root	*Symphytum officinale*	Broken bones and sprains. An old name is knitbone	An ointment eased sprained ankles and aching backs in trials. By mouth it injures the liver

Women, wounds and skin

Plant	Latin name	Use in the herbals	What is known
Chaste tree fruit	*Vitex agnus-castus*	Called monks' pepper, to still desire; the monthly course	Eased the complaints before the period in a German trial of 170 women
Lady's mantle	*Alchemilla vulgaris*	Heavy periods; wounds	
Shepherd's purse	*Capsella bursa-pastoris*	Bleeding of the womb	
Raspberry leaf	*Rubus idaeus*	To ease labour	No clear effect in an Australian trial of 192 women
Mugwort	*Artemisia vulgaris*	The womb; the tired feet of travellers. The oldest of herbs in the English charm of nine herbs	The plant that the Chinese burn on their points
Fungus of rye	*Claviceps purpurea*	Given by midwives to hasten a birth	Entries 23 and 45 told what came of it. In bread it caused the burning sickness of the Middle Ages
Pennyroyal	*Mentha pulegium*	To bring on the monthly course	The oil has killed women who took it to end a pregnancy
Rue	*Ruta graveolens*	The eyes; against poison; to bring on the monthly course	A poison in quantity
Marigold flower	*Calendula officinalis*	Wounds; sore skin	An ointment lessened skin burns from radiation in a French trial of 254 women
Greater plantain	*Plantago major*	Wounds; stings. The waybread of the English charm	
Greater celandine	*Chelidonium majus*	Warts, with its yellow milk; the liver and the gall	Chosen for the colour of its juice. By mouth it has injured the liver

Plant	Latin name	Use in the herbals	What is known
Heartsease	*Viola tricolor*	Scaling skin of infants	
Burdock root	*Arctium lappa*	Skin; called a cleanser of the blood	The Chinese use its fruit
Eyebright	*Euphrasia officinalis*	The eyes	Chosen for its flower, which looks like an eye. No good trial
Walnut	*Juglans regia*	The leaf for skin; the kernel for the brain	The kernel was chosen for its likeness to a brain

Trees and bulbs that gave the hospital a drug

Plant	Latin name	What the people did with it	What the hospital made of it
Snowdrop	*Galanthus*	Villagers of the Balkans rubbed the bulb on the forehead	A drug for the fading mind, as entry 42 told
Golden rain	*Laburnum anagyroides*	Its leaves were smoked in place of tobacco	The tablet against smoking of entry 40
Yew	*Taxus baccata*	A poison, and the tree of churchyards	A drug against cancer of the breast is made from its needles
Sweet clover, spoiled	*Melilotus*	On farms of North America in the 1920s, cattle that ate the mouldy hay bled to death	The first tablet that thins the blood, and a rat poison
Meadow saffron, foxglove, poppy, nightshade		See above	Drugs for gout, the heart, pain and cramps

What the list shows

Three roads led to a remedy. Some plants were found by taste and effect. A bitter rouses the stomach, tannin binds, and a slimy root coats a sore throat. Some were chosen by likeness:

the lungwort for the lung, the eyebright for the eye, the yellow juice of the celandine for the gall. And some were poisons, whose dose was learned at a price.

The road of likeness gave the least. Chapter 42 gave the teaching of Paracelsus that nature marks each plant with a sign of its use. Section A2 followed it into the household herbals. Of the plants in these tables that were chosen for a likeness, none has a good trial in favour of the use that its likeness named. The meadow saxifrage breaks no stones.

The poisons gave the most. Foxglove, poppy, nightshade, henbane, autumn crocus, the fungus of rye and the yew became drugs of the hospital. The herbalists knew that these plants act. The hospital found the compound and the dose.

The mild plants have modest trials. Six of them did as well as a standard treatment, or better than a dummy, for a common complaint. They are St John’s wort, lavender oil, the chaste tree, peppermint oil, the husk of psyllium and the horse chestnut. Others, such as bearberry, raspberry leaf and hawthorn, did not do what was hoped.

Mild does not mean harmless. Coltsfoot, butterbur and comfrey hold one family of compounds that slowly injures the liver. The herbals did not know it, since the harm comes after months. It was found by counting, in the twentieth century.

99. The plants of the Americas

What this chapter lists

Chapters 16 to 20 described the healers of the Amazon, the Andes, Mexico and North America, and named their chief plants. Chapter 22 noted that the hospital took from these peoples its first drug against malaria, its first local anaesthetic and the poison that made modern surgery possible. This chapter gives a fuller list: some seventy plants and two animal remedies, with the people who used them and what became of each.

The tables describe traditions. They are not advice for use. Several of the plants are poisons, and several are sacred to the peoples who use them and are not theirs to give away.

North America

Plant	Latin name	People and use	What became of it
Purple coneflower	*Echinacea angustifolia*	The Plains nations: toothache, sore throat, snakebite	German physicians took it up in the 1930s. Trials for colds are weak, as section A6 told
Goldenseal	*Hydrastis canadensis*	Cherokee and Iroquois: the eyes, the skin, the stomach	Holds the yellow compound of the Chinese coptis. Dug out nearly everywhere, and now protected
Black cohosh	*Actaea racemosa*	Eastern nations: women's complaints; aching joints	No effect on the flushes of the change of life in trials
Blue cohosh	*Caulophyllum thalictroides*	To bring on labour	Harm to the hearts of newborns has been reported
American ginseng	*Panax quinquefolius*	Iroquois and others: a tonic	A Jesuit found it near Montreal in 1716. It has been shipped to China ever since
Slippery elm	*Ulmus rubra*	The inner bark for a sore throat, on wounds, and as a gruel for the sick	Sold as lozenges
Witch hazel	*Hamamelis virginiana*	Bark and leaf on bruises, piles and sore skin	A distilled water of it has been sold in pharmacies since the 1840s
Cascara	*Frangula purshiana*	The peoples of the Northwest coast: the bark as a purge	A standard laxative of the pharmacy for more than a century
Mayapple	*Podophyllum peltatum*	A purge; on warts	The paint for warts of entry 68, and a drug against cancer
Bloodroot	*Sanguinaria canadensis*	On growths of the skin; a red dye	Sold today as a black salve against cancer. It burns holes in healthy flesh

Plant	Latin name	People and use	What became of it
Indian tobacco	*Lobelia inflata*	Wheezing; to bring on vomiting	The chief remedy of the American herb doctors of the 1820s. Its compound failed as an aid to stop smoking
Sassafras	*Sassafras albidum*	A tea of the root bark for fevers and as a spring tonic	Shipped to Europe after 1600 against the great pox. Its oil causes cancer in animals and was barred from food in 1960
Wild cherry bark	*Prunus serotina*	Cough	Still the flavour of American cough syrups
Boneset	*Eupatorium perfoliatum*	Fevers with aching bones; to bring out a sweat	
Evergreen of the St Lawrence	Not known for certain	A drink of bark and needles against scurvy	Entry 57 told the history
Cranberry	*Vaccinium macrocarpon*	A food; a poultice on wounds	Lowers repeated infections of the bladder, as entry 71 told
Saw palmetto	*Serenoa repens*	A food of the peoples of Florida	No effect on the old man’s water in large trials
Wintergreen	*Gaultheria procumbens*	A tea for aches and fevers	Its oil is a sister of aspirin and is rubbed on sore muscles
Passionflower	*Passiflora incarnata*	The Southeast: to calm and bring sleep	Small trials in worry
Black haw	*Viburnum prunifolium*	Cramps of the womb; to hold a child	
Osha	*Ligusticum porteri*	The Southwest: colds; a root of protection	Bears have been seen to chew it and rub it into their fur

Plant	Latin name	People and use	What became of it
Creosote bush	*Larrea tridentata*	The Southwest: a remedy for many ills	Sold as a tea, it has destroyed livers
Devil's club	*Oplopanax horridus*	The Northwest coast: protection; aching joints; sweet urine	
White sage, sweetgrass and cedar		Burned to cleanse a person and a place, as chapter 20 told	White sage is now stripped from the wild for sale
Tobacco	*Nicotiana rustica*	The first of the sacred plants: offered, smoked in council, laid on wounds	Taken up by the whole world as a habit, it kills more people than any other plant
Thorn apple	*Datura wrightii*	California and the Southwest: a drink of vision at a young person's initiation	A poison. Deaths are on record
Peyote	*Lophophora williamsii*	The Huichol and the peoples of the plains: a sacrament, taken in a night meeting	Entry 40 gave its use against craving. The cactus is becoming scarce
Pacific yew	*Taxus brevifolia*	Wood for bows and paddles	A drug against cancer was found in its bark in 1971, by a search that owed nothing to its makers of bows

Mexico and Central America

Plant	Latin name	People and use	What became of it
Cacao	*Theobroma cacao*	The drink of Aztec lords, for strength; the vehicle of many medicines	Lowers the blood pressure a little
Chilli	*Capsicum annuum*	Rubbed on painful joints; for cough; its smoke as a punishment	The plaster for lasting pain of entries 25 and 69
Maguey	*Agave*	The sap with salt on wounds; the fermented sap for nursing mothers	Entry 53 gave the test of the wound dressing
Prickly pear	*Opuntia*	A food; given for sweet urine	Lowers the sugar of the blood after a meal in small trials
Guaiac wood	*Guaiacum officinale*	A remedy of the peoples of the Caribbean islands, which the Spaniards took home	The remedy of entry 63, which failed. Its resin became the hospital's test for hidden blood in the stools
Sarsaparilla	*Smilax aristolochiifolia*	Skin; aching joints	Shipped to Europe against the great pox. A flavour of soft drinks
Jalap	*Ipomoea purga*	A purging root, named after the town of Xalapa	In every European pharmacy until the twentieth century
Wild yam	*Dioscorea mexicana*	A fish poison of the forest peoples	An American chemist made a hormone of pregnancy from it in the 1940s. The contraceptive pill was first made from this root
Woman's medicine	*Montanoa tomentosa*	The Aztec midwife's drink to hasten a birth	Mexican researchers confirmed that it makes the womb contract

Plant	Latin name	People and use	What became of it
Epazote	*Dysphania ambrosioides*	Worms; cooked with beans against wind	Its oil was the standard drug against roundworm and hookworm until the 1940s
Papaya	*Carica papaya*	The milky juice against worms; the fruit on dirty wounds	Its enzyme is used to clean wounds
Guava leaf	*Psidium guajava*	Loose stools	Small Mexican trials favour it
White sapote	*Casimiroa edulis*	The Aztec name means the sapote of sleep	
Skin tree	*Mimosa tenuiflora*	The powdered bark on burns	Used on the burned after a gas explosion near Mexico City in 1984. The trials since are small and mixed
Damiana	*Turnera diffusa*	For desire	
Copal	*Bursera* and *Protium*	A resin burned to cleanse the patient and to feed the gods	
The sacred mushrooms	*Psilocybe*	The Mazatec night session of chapter 18	Their compound was isolated in 1958. Section A6 and entry 56 gave the trials
Seeds of the morning glory	*Turbina corymbosa*	Taken by the diviner to see the cause of an illness	They hold compounds close to the best known drug of visions
Leaf of the shepherdess	*Salvia divinorum*	Mazatec: divination, where the mushrooms are out of season	

South America

Plant	Latin name	People and use	What became of it
Fever bark	*Cinchona officinalis*	The Andes: the bark against the fever that returns	Entry 2 told its history. Quinine was drawn from it in 1820
Coca	*Erythroxylum coca*	The Andes: chewed with lime against hunger, tiredness and thin air; read by the diviner	Its compound became the first local anaesthetic in 1884, and a scourge
Arrow poisons	*Chondrodendron tomentosum*; *Strychnos toxifera*	The Guianas and the Amazon: the poison of the blowpipe dart	The drugs that still the muscles in an operation, from 1942
Ipecac	*Carapichea ipecacuanha*	Brazil: the root against the bloody flux; to bring on vomiting	Sold in Paris as a secret remedy in the 1680s. Its compound kills the amoeba of dysentery
Jaborandi	*Pilocarpus*	Brazil: to bring out sweat and spittle	Its compound has lowered the pressure of the eye since 1875
Vine of the soul	*Banisteriopsis caapi*, with *Psychotria viridis*	The brew of chapter 16	Small trials in melancholy that no drug had helped
San Pedro cactus	*Echinopsis pachanoi*	The night session of the healers of northern Peru, as chapter 17 told	Holds the compound of peyote
Snuffs of vision	*Anadenanthera*; *Virola*	The Orinoco and the Andes: blown into the nose of the shaman	
Angel's trumpet	*Brugmansia*	The Amazon and the Andes: to see sorcery and what is far away	A poison, feared by those who use it

Plant	Latin name	People and use	What became of it
Dragon's blood	*Croton lechleri*	The red sap on wounds; taken for loose stools	A compound from the sap was approved in 2012 as a drug for one kind of diarrhoea
Cat's claw	*Uncaria tomentosa*	The Asháninka of Peru: aching joints	One small trial in inflamed joints
Stone breaker	*Phyllanthus niruri*	Stones of the urine	Entry 21 gave the small trials
Maca	*Lepidium meyenii*	The high Andes: strength and fertility	Small trials
Boldo	*Peumus boldus*	The Mapuche of Chile: the liver and the digestion	In European pharmacies since the 1870s
Rhatany	*Krameria lappacea*	Peru: the root to clean the teeth and firm the gums	In toothpastes
Balsam of Peru	*Myroxylon balsamum*	A resin on wounds; for cough. It comes from Central America, and was shipped by way of Peru	In ointments. A common cause of skin allergy
Copaiba	*Copaifera*	A resin on wounds	
Quassia	*Quassia amara*	Suriname: a bitter against fever	Named after Kwasi, a healer of African birth, who made it known in the eighteenth century
Maté	*Ilex paraguariensis*	The Guaraní: a drink against tiredness	Drunk very hot, it goes with cancer of the gullet
Guaraná	*Paullinia cupana*	The Sateré-Mawé of the Amazon: seeds against tiredness	A source of caffeine in soft drinks
Sweet herb	*Stevia rebaudiana*	The Guaraní: to sweeten maté	A sweetener sold all over the world

Plant	Latin name	People and use	What became of it
Lapacho	*Handroanthus impetiginosus*	A bark tea for fevers	Sold against cancer. It has no effect, and its compound is poisonous
Soursop	*Annona muricata*	The leaf as a tea for many ills	Sold against cancer. Long use is linked with a shaking palsy on the island of Guadeloupe
Muña	*Minthostachys mollis*	The Andes: the stomach; thin air	
Poison of the tree frog	*Phyllomedusa bicolor*	The Matsés and their neighbours: burned into the skin of hunters, to purge and sharpen them	Offered to visitors as a cleansing. Deaths are on record
Ants and their jaws		The Amazon: stings as an ordeal; jaws to close a wound	Entry 53 met the jaws in India as well

What the list shows

No region gave the hospital more. Quinine began as a plant of the Americas. So did cocaine, with the local anaesthetics that followed it, and the drugs that still the muscles. So did the drug against the amoeba, an early drug against the pressure of the eye, the paint for warts with its cancer drug, and the first contraceptive pill.

The peoples who had the plants were seldom named or paid. The fever bark was taken out of the Andes and planted in Java. The yam of the pill made fortunes in which the Mexican diggers had no share. Kwasi of Suriname is the rare case of a healer whose name stayed on his plant.

The same plants are now sold as cures for cancer. Lapacho, soursop, bloodroot and cat's claw are offered to the gravely ill without evidence. Chapter 75 gave what such a choice costs.

The sacred plants travel badly. Tobacco was a sacrament, offered and smoked in council. Taken out of its rite, it became the deadliest plant on earth. Chapter 5 gave the rule that a remedy is taken whole, with its hour and its company. Peyote, the vine and the frog are on the same road today.

Demand strips the land. Goldenseal, American ginseng, white sage, peyote and osha are all scarce where they were common. The harm that chapter 75 counted for animals holds for plants as well.

100. The plants of Africa

What this chapter lists

Chapter 30 gave eight African plants that the world took up, and chapters 11 and 12 the remedies of the San and the Khoekhoe. The continent has many thousands of plants in use, and most of what is known of them is held by healers and has never been written down. This chapter lists sixty-four of the best documented, by region.

Chapter 13 listed the remedies of Aboriginal Australia, and chapter 70 those of the Pacific and the Asian islands. They are not repeated here.

The tables describe traditions. They are not advice for use. Several of these plants have killed, and the entries say so.

West and Central Africa

Plant	Latin name	People and use	What is known
Calabar bean	*Physostigma venenosum*	The Efik: the ordeal of the accused	Chapter 30 and entry 42 told what the hospital made of it
Sasswood	*Erythrophleum suaveolens*	The ordeal poison of much of West and Central Africa	A poison of the heart
Arrow poison vines	*Strophanthus*	Arrow poison of hunters	Two drugs for the failing heart, as chapter 30 told
Kola nut	*Cola nitida*	Chewed against tiredness; the gift at every greeting	A source of caffeine
Grains of paradise	*Aframomum melegueta*	A hot seed in the food, and in nearly every Yoruba medicine and offering	
Bitter kola	*Garcinia kola*	Chewed for cough and colds; held to be an antidote	One small Nigerian trial in worn knees
Bitter leaf	*Vernonia amygdalina*	Fever; worms; sweet urine	Sick chimpanzees of Tanzania chew the bitter pith of this shrub, and their worms decline
Yoruba snakeroot	*Rauvolfia vomitoria*	Madness and sleeplessness, as chapter 28 told	A sister of the Indian root of entry 34
Iboga	*Tabernanthe iboga*	Gabon: the root bark of initiation; a little against tiredness on the hunt	Entry 40 gave its use against craving. It can stop the heart
Yohimbe	*Pausinystalia johimbe*	The bark for desire	Entry 55 gave the review
Fever vine of Ghana	*Cryptolepis sanguinolenta*	The root against fever	Cleared the malaria parasite in a small Ghanaian trial
Stool wood	*Alstonia boonei*	The bark against fever	Laboratory work only

Plant	Latin name	People and use	What is known
Akuamma	*Picralima nitida*	The seed for pain and fever	Its compounds act where those of opium act, and more weakly
Chewing stick	*Zanthoxylum zanthoxyloides*	The root as a stick to clean the teeth	Nigerian chemists found in the 1970s that it keeps the red cells of entry 61 from changing shape
The four plants of Niprisan	*Piper guineense* and three others	A Nigerian healer's mixture for the inherited illness of the blood	The trial of entry 61 (Wambebe 2001)
Ethiopian pepper	*Xylopia aethiopica*	For the mother after birth; cough	
Scent leaf	*Ocimum gratissimum*	The stomach; fever; loose stools	Its oil kills organisms in the laboratory
Asthma weed	*Euphorbia hirta*	Wheezing; dysentery	
Shea butter	*Vitellaria paradoxa*	Rubbed on the newborn, on the skin and on aching joints	
Baobab	*Adansonia digitata*	The fruit pulp in water for fever and loose stools	Rich in the vitamin of entry 57
Cow's urine mixture	Tobacco, garlic, basil and other herbs steeped in the urine of a cow	Nigeria: given to children in fits	It has killed many children
Seeds for export	*Griffonia simplicifolia*; *Voacanga africana*	West African healers' plants	Gathered by villagers and sold to makers of drugs and supplements abroad

North Africa, the Sahel and the Horn

Plant	Latin name	People and use	What is known
Khella	*Ammi visnaga*	Egypt: a tea of the fruits for stones and for a tight chest	Entry 10 told of the asthma drug. A heart drug descends from the same compound
Bishop’s weed	*Ammi majus*	Egypt: the fruits with sunlight for the white patches	The compound of entry 30
Senna	*Senna alexandrina*	Sudan and Egypt: a purge	Shipped through Alexandria for a thousand years
Henna	*Lawsonia inermis*	A dye for skin and hair; cooling; on sores	Dangerous to newborns who lack the enzyme of entry 92
Black seed	*Nigella sativa*	A remedy for nearly everything in the medicine of the Prophet	Found in the tomb of Tutankhamun
Roselle	*Hibiscus sabdariffa*	Sudan, Egypt and West Africa: a sour red drink that cools	Lowers the blood pressure a little in trials
Argan	*Argania spinosa*	Morocco: the oil for food, skin and hair	
Tooth stick	*Salvadora persica*	From Morocco to Arabia: twigs to clean the teeth	Cleans about as well as a brush in trials
Frankincense	*Boswellia sacra*; *B. papyrifera*	The Horn and southern Arabia: burned, chewed and laid on swellings	Its Indian sister eased worn knees, as entry 25 told
Myrrh	*Commiphora myrrha*	Somalia and Ethiopia: on wounds; a wash for the mouth	The Egyptians embalmed with it
Khat	*Catha edulis*	Ethiopia, Kenya and Yemen: fresh leaves chewed for hours in company	A stimulant close to the amphetamines. Heavy use harms the heart and the mind

Plant	Latin name	People and use	What is known
Coffee	*Coffea arabica*	Ethiopia: the berries chewed with fat on a journey; the drink shared in a ceremony	
Koso	*Hagenia abyssinica*	Ethiopia: the flowers against tapeworm, taken every two months by eaters of raw beef	Sold in European pharmacies in the nineteenth century
Soapberry	*Phytolacca dodecandra*	Ethiopia: the berries as soap for washing clothes in the stream	An Ethiopian scientist saw in 1964 that the snails died below the washing places. The berry kills the snail that carries a great worm disease
Kinkéliba	*Combretum micranthum*	Senegal and Mali: a tea for fever and for the liver; the first drink at the end of a fast	
Prickly poppy	*Argemone mexicana*	Mali: a decoction against malaria. The plant came from Mexico	In a Malian trial of 301 patients it brought nearly as many through an attack as the standard drug

East and southern Africa

Plant	Latin name	People and use	What is known
Arrow poison tree	*Acokanthera schimperi*	East African hunters: arrow poison	A drug for the heart was drawn from it
African plum	*Prunus africana*	A bark tea for the old man’s water	Entry 72 gave the review, and the harm to the trees
African wormwood	*Artemisia afra*	Cough, colds and fever; the vapour breathed under a blanket	
Pepper bark	*Warburgia salutaris*	Colds and the chest; fever	Stripped nearly to extinction for the markets
Cape aloe	*Aloe ferox*	Khoekhoe: the dried bitter juice as a purge	Exported from the Cape since the eighteenth century
Devil’s claw	*Harpagophytum procumbens*	San, Khoekhoe and Nama: the tuber for pain and fever	Less back pain in the short term, as section A6 told
Buchu	*Agathosma betulina*	Khoekhoe: the leaf with fat as an ointment; the stomach and the bladder	Chapter 12 told its history
Rooibos	*Aspalathus linearis*	Khoekhoe and San: a tea	
Hunger cactus	*Hoodia gordonii*	San: chewed to still hunger and thirst on the hunt	Patented abroad. The San won a share in 2003. A trial then found no loss of weight
Kanna	*Sceletium tortuosum*	San and Khoekhoe: chewed for a calm mood and against thirst	Small trials of an extract
South African geranium	*Pelargonium sidoides*	Zulu and Xhosa: the root for cough and the chest	Entry 65 gave the trial

Plant	Latin name	People and use	What is known
Cancer bush	*Lessertia frutescens*	The Cape: a bitter for many ills	Promoted against AIDS about 2000. A trial found no benefit
African potato	*Hypoxis hemerocallidea*	Zulu: a tonic; the old man's water	Promoted in the same years, with the cost that chapter 75 counted
Everlasting	*Helichrysum*	Zulu and Xhosa: burned to call the ancestors	
African ginger	*Siphonochilus aethiopicus*	Zulu: colds and wheezing; a guard against lightning	Nearly gone from the wild
Ox-eye daisy of Natal	*Callilepis laureola*	Zulu: a root of protection, given by mouth and as an enema, also to children	It destroys the liver and the kidneys, and has killed many
Pregnancy mixtures	Many plants	Zulu: a tonic taken through the last months, to ease the birth	Some of the plants make the womb contract
Sausage tree	*Kigelia africana*	The fruit on sores and growths of the skin	
Marula	*Sclerocarya birrea*	The bark for dysentery; the fruit as food and beer	
Violet tree	*Securidaca longipedunculata*	The root for snakebite, pain and many other uses; an arrow poison	Poisonous
White clay		Eaten by women with child, as entry 89 told	It binds iron
Parts of vultures and other animals		Southern African markets: for foresight and luck	The trade is a chief cause of the fall of the vultures

Madagascar

Plant	Latin name	People and use	What is known
Rosy periwinkle	*Catharanthus roseus*	A tea for sweet urine	The two leukaemia drugs of entry 49
Pennywort	*Centella asiatica*	On wounds and on the sores of leprosy	French and Malagasy researchers on the island made a wound drug of it in the 1940s
The good leaf	*Cinnamomum camphora*	The leaf oil for colds	
Ordeal nut	*Cerbera manghas*	The ordeal of the accused, until 1863	It is said to have killed thousands a year under one queen

What the list shows

Three African plants began as instruments of judgement. The Calabar bean, sasswood and the nut of Madagascar were given to the accused. The first of them became a drug for the eye and for a weakness of the muscles, and the model of a drug for the fading mind. A poison that a people has watched closely is a drug that is half described.

The arrow gave what the ordeal gave. Two fast-acting heart drugs of the twentieth century came from the arrow poisons of African hunters.

Animals use some of the same plants. The chimpanzees of Tanzania pick the bitter leaf when they are sick and leave it when they are well. Chapter 99 noted the bear and its root. The healers of several peoples say that they learned plants by watching animals, and here the claim has been observed.

An everyday practice can hold a discovery. Ethiopian women washed clothes with a berry for centuries. One man noticed the dead snails. The remedy against a disease of two hundred million people had been in use as soap.

The harm is of four kinds. Some remedies are poisons given in good faith, as the root of Natal and the urine mixture are. Some were promoted against a deadly illness in place of the drugs that work. Some were taken abroad with no share for those who knew them. And the market empties the land of the pepper bark, the plum tree, the wild ginger and the vulture.

Very little has been tested. For a continent with so many healers and plants, the good trials are very few. The Malian trial of the prickly poppy and the Nigerian trial of the four plants show that it can be done, with the healers and at low cost.

101. The classical books: a reader’s guide

What this chapter is

The medicines with writing rest on books, and Parts IV and V named them as they went. This chapter sets them in one catalogue, tradition by tradition. For each book it gives the date and the author, the shape and the content, and where a reader without the old languages can begin. A source in the last column that is not explained here stands in the list of references at the end of the book.

A catalogue of this kind leaves out the medicines without writing. Their books are people: the diviner with his verses, the singer with his chant. Chapter 102 lists some of them by name.

Mesopotamia and Egypt

Book	Date and author	Shape and content	To read further
The Diagnostic Handbook	About 1050 before our era; edited by Esagil-kin-apli of Babylon	Forty tablets and some three thousand entries in six parts, from the signs on the healer's way to the patient to the illnesses of women and infants. Chapter 33 described it	Scurlock 2014; Scurlock 2005
The therapeutic series	Collected for the library of Nineveh, seventh century before our era	Recipes arranged from the head downward, each with its signs, its drugs and often its incantation	Scurlock 2014; Geller 2010
The Burning	First millennium before our era	Eight tablets of incantations and one of directions, for a night rite against witchcraft. Chapter 34 described it	Abusch 2002
The series against the broken oath	First millennium before our era	Nine tablets. The healer recites every wrong that the patient may have done. The patient peels an onion and pulls wool apart, and the pieces are burned. Chapter 34 described it	Reiner 1958
The surgical papyrus	Copied about 1600 before our era from a far older text	Forty-eight cases of wounds from the head downward, each with title, examination, verdict and treatment. Chapter 35 described it	Breasted 1930; Allen 2005
The great medical papyrus	About 1550 before our era	A roll of twenty metres with about 880 remedies, and short treatises on the heart and its vessels, on the stomach, on the eyes and on swellings	Nunn 1996

Book	Date and author	Shape and content	To read further
The papyrus of Kahun	About 1825 before our era	The oldest text on the illnesses of women: thirty-four sections on the womb, conception and pregnancy	Nunn 1996
The snake papyrus	About 450 before our era, or earlier	Thirty-eight kinds of snake by name and look, the outlook for each bite, and the treatments. Entry 51 met it	Nunn 1996

Greece and Rome

Book	Date and author	Shape and content	To read further
The Hippocratic Collection	About 430 to 330 before our era; many hands	Some sixty treatises. Chapter 38 named the chief ones	Lloyd 1978; Jouanna 1999
Aphorisms	Hippocratic	Some four hundred short sentences in seven sections, on prognosis, regimen, the seasons and the ages of life	Lloyd 1978
Prognostic	Hippocratic	The signs by which the physician foretells the course of an acute illness: the face, the posture, the breath, the sleep, the urine	Lloyd 1978
Epidemics	Hippocratic	Seven books of notes from a physician's travels. The first and third hold forty-two case histories, of which most end in death	Lloyd 1978
Airs, Waters, Places	Hippocratic	How the winds, the water and the lie of a town shape the illnesses of its people	Lloyd 1978
On the Sacred Disease	Hippocratic	The falling sickness is no more sacred than any other illness, and has a natural cause. Entry 39 met it	Lloyd 1978
The Nature of Man	Hippocratic	The four humours and their seasons	Lloyd 1978
Regimen	Hippocratic	Four books on food and exercise. The fourth is on dreams as signs	Lloyd 1978
On Fractures and *On Joints*	Hippocratic	The setting of broken and dislocated bones, by a master of the craft	

Book	Date and author	Shape and content	To read further
On Medical Materials	About 65; Dioscorides	Five books and some six hundred plants, with animal and mineral drugs. Chapter 39 described it	Beck 2005; Riddle 1985
On Medicine	About 30; Celsus	Eight books in Latin by a layman: regimen, the general signs, the illnesses, drugs, surgery and the bones	Spencer 1935
Gynaecology	About 100; Soranus of Ephesus	Four books on the midwife, on pregnancy and birth, on the newborn and on the illnesses of women	Temkin 1956
On the Causes and Signs of Acute and Chronic Diseases	First or second century; Aretaeus of Cappadocia	The best descriptions of single illnesses that antiquity left: sweet urine, the falling sickness, lockjaw, the sores of the throat	
The works of Galen	129 to about 216	More than a hundred surviving works. The chief ones are on the natural faculties, on the use of the parts, on the pulse, on simple drugs, on the keeping of health, and the *Method of Healing* in fourteen books	Singer 1997; Mattern 2013; Nutton 2013

The Islamic world and Europe

Book	Date and author	Shape and content	To read further
The Comprehensive Book	About 900; al-Razi	His notebooks, gathered after his death: for each illness the opinions of Greek, Syrian, Indian and Arab physicians, and then his own cases	Pormann 2007
On Smallpox and Measles	About 900; al-Razi	The first work to tell the two apart, as entry 4 noted	
The Complete Book of the Medical Art	About 980; al-Majusi	Twenty discourses, ten on theory and ten on practice. The textbook that the West knew as the Royal Book	Pormann 2007
The Method	About 1000; al-Zahrawi of Cordoba	Thirty treatises. The last is on surgery, with drawings of some two hundred instruments	Spink 1973
The Canon of Medicine	1025; Ibn Sina	Five books: principles; simple drugs; the illnesses from head to foot; illnesses of the whole body; compound drugs. Chapter 40 described it	Gruner 1930
Commentary on the Anatomy of the Canon	1242; Ibn al-Nafis	Holds the first account of the passage of the blood through the lungs	
The works of Maimonides	1138 to 1204	Ten medical works, among them a regimen of health for a sultan’s son, a book of medical aphorisms, and a book on asthma, which entry 10 met	Rosner 1998
Compendium of Simple Drugs and Foods	About 1240; Ibn al-Baytar	Some fourteen hundred drugs and foods in the order of the alphabet. Several hundred of them are not in the Greek books	

Book	Date and author	Shape and content	To read further
The medicine of the Prophet	Collected from the ninth century. The best known is by Ibn Qayyim, who died in 1350	The sayings of the Prophet on health and remedies, arranged as a medicine. Chapter 42 described it	Ibn Qayyim 1998
The leechbooks	About 950; England	Bald's book in two parts, from the head downward and on inner illnesses, with a third book and a collection of charms. Chapter 42 described them	Cameron 1993
The *Salernitan Rule of Health*	Twelfth to thirteenth century	A Latin poem of health, which grew with each copying from a few hundred lines to several thousand. Chapter 42 described it	Siraisi 1990
The *Trotula*	Twelfth century; Salerno	Three texts on the illnesses of women and on the care of the body, one of them by a woman physician	Green 2001
Physica and *Causes and Cures*	About 1150; Hildegard of Bingen	Nine books on plants, elements, trees, stones, fish, birds, beasts, reptiles and metals; and a book on the body and its illnesses. Chapter 42 described them	Throop 1998
The printed herbals	1530 to 1652	Chapter 98 listed them	Arber 1986

Book	Date and author	Shape and content	To read further
The works of Paracelsus	1493 to 1541	Written in German, in a language of his own making: on the four pillars of medicine, on the invisible causes, on the miners' illness. Chapter 42 described them	

China

Book	Date and author	Shape and content	To read further
The manuscripts of Mawangdui	Buried in 168 before our era	Silk and bamboo texts from a tomb: eleven vessels, recipes for fifty-two ailments, exercises, and the nourishing of life	Harper 1998
Inner Classic of the Yellow Emperor: Plain Questions	Compiled by the first century before our era	Eighty-one chapters of dialogue on yin and yang, the seasons, the organs, the causes of illness and the pulse. Chapter 45 described it	Unschuld 2011
Inner Classic of the Yellow Emperor: Divine Pivot	The same	Eighty-one chapters, chiefly on the vessels and the needle	Unschuld 2016
The Classic of Difficult Issues	First or second century	Eighty-one questions and answers. The pulse at the wrist, the five phases and the needle, made into one system	Unschuld 1986
Classic of the Divine Farmer	First or second century	Three hundred and sixty-five drugs in three grades: those that nourish life, those that nourish the constitution, and those that treat illness	Yang 1998
Treatise on Cold Damage	About 200; Zhang Zhongjing	Three hundred and ninety-eight clauses and a hundred and thirteen formulas, by the six stages of an illness from cold	Mitchell 1999
Essentials from the Golden Casket	The same author	Twenty-five chapters on the other illnesses, with some two hundred and sixty formulas	
Pulse Classic	About 280; Wang Shuhe	Ten scrolls. The first book on the pulse alone, with twenty-four pulses	

Book	Date and author	Shape and content	To read further
Systematic Classic of Needling and Burning	About 260; Huangfu Mi	Twelve scrolls. The first book that lists the points one by one: three hundred and forty-nine of them	
Origins and Signs of All Illnesses	610; Chao Yuanfang	Fifty scrolls and more than seventeen hundred illnesses, with causes and signs and with exercises in place of drugs	
Prescriptions Worth a Thousand in Gold	652; Sun Simiao	Thirty scrolls and some five thousand formulas. It opens with the duties of the physician, and puts women and children first	Wilms 2007
Key to the Patterns and Medicines of Children	1119; Qian Yi	The first work devoted to the illnesses of children	
The state formulary of the Song	1078 to 1151	The formulas of the imperial pharmacy, which sold ready-made medicines to the people	Scheid 2009
Treatise on the Spleen and Stomach	1249; Li Dongyuan	Illness comes from within, when the stomach and the spleen are injured. He is one of the four masters in the table of chapter 44	
Systematic Materia Medica	Printed in 1596; Li Shizhen	Fifty-two scrolls, 1,892 drugs and some eleven thousand formulas, the work of twenty-seven years	Unschuld 2021
Great Compendium of Needling and Burning	1601; Yang Jizhou	Ten scrolls that gather all earlier writing on the points, with the author’s own cases	

Book	Date and author	Shape and content	To read further
On Pestilence	1642; Wu Youxing	Epidemics come from a particular *qi* that enters by the nose and the mouth	
The Golden Mirror of Medicine	1742; an imperial commission	Ninety scrolls. The textbook of the last dynasty, in verses to be learned by heart	
Systematic Differentiation of Warm Illnesses	1798; Wu Jutong	The fevers that begin with heat, by the three burners	
Corrections of Errors among Physicians	1830; Wang Qingren	Anatomy from his own observation of the dead, and the formulas that drive out standing blood	

India and Tibet

Book	Date and author	Shape and content	To read further
The hymns of the *Atharvaveda*	About 1000 before our era	Charms against fever, worms, wounds and demons. Chapter 56 described them	Zysk 1991
The compendium of Caraka	First centuries of our era, revised later	A hundred and twenty chapters in eight parts. Chapter 56 gave the table	Sharma 1981; Wujastyk 2003
The compendium of Sushruta	First centuries of our era, revised later	A hundred and eighty-six chapters in six parts. The book of the surgeons, with a hundred and one blunt and twenty sharp instruments	Wujastyk 2003
The Bower manuscript	Fourth to sixth century; found in 1890 in a ruin on the Silk Road	Seven texts on birch bark, among them a treatise on garlic and a book of formulas	Wujastyk 2003
The Heart of the Eight Limbs	About 600; Vagbhata	A hundred and twenty chapters in verse, which join the two older books. Translated into Tibetan and Arabic	Murthy 1991
The compendium of Kashyapa	About the seventh century	The illnesses of children and of women with child	Wujastyk 2003
The Diagnosis of Madhava	About 700	The illnesses one by one, with the causes, the early signs, the full signs and the outlook. No treatment	Meulenbeld 1999
The books of the science of mercury	Tenth to thirteenth century	The eighteen operations on mercury; the burning of metals to ash	Meulenbeld 1999

Book	Date and author	Shape and content	To read further
The compendium of Sharngadhara	About 1300	Thirty-two chapters on pharmacy, with the first account of the pulse in Indian medicine	Meulenbeld 1999
The Light on Medicine	Sixteenth century; Bhavamishra	The whole of medicine with the new drugs and the new illness of entry 63	Meulenbeld 1999
The Four Tantras	Twelfth century; Yuthok Yonten Gonpo	A hundred and fifty-six chapters in four parts. Chapter 62 gave the table	Clark 1995; Gyatso 2015
The Blue Beryl	1688; Desi Sangye Gyatso	The great commentary on the *Four Tantras*, with a set of seventy-nine paintings that show the whole of the medicine	Parfionovitch 1992
The Crystal Rosary	1727; Deumar Tenzin Phuntsok	The drug book of chapter 64, with more than two thousand materials	

Korea, Japan, Southeast Asia and the Americas

Book	Date and author	Shape and content	To read further
Prescriptions from the Heart of Medicine	984; Tanba Yasuyori, Japan	Thirty scrolls that preserve passages from more than a hundred Chinese books, many of them lost in China	
Treasured Mirror of Eastern Medicine	1613; Heo Jun, Korea	Twenty-five volumes in five parts: the inner body, the outer body, the illnesses, the drugs and the needle. On the world register of documents since 2009	
Longevity and Life Preservation in Eastern Medicine	1894; Lee Je-ma, Korea	The four kinds of people of chapter 65	
The inscriptions of Wat Pho	1830s; Bangkok	The knowledge of the Thai physicians cut in stone on the walls of a temple, with figures of the lines of the body. Chapter 70 described them	
The *Little Book of the Medicinal Herbs of the Indians*	1552; Martín de la Cruz and Juan Badiano, Mexico	An Aztec herbal in Latin, in thirteen chapters from the head downward, with paintings of 185 plants. Chapter 18 described it	Gates 2000
The General History of the Things of New Spain	1577; Bernardino de Sahagún and his Aztec co-workers	Twelve books in Nahuatl and Spanish. The tenth is on the body and its illnesses, the eleventh on plants. Chapter 18 described it	Sahagún 1950
The *Ritual of the Bacabs*	Copied in the eighteenth century; Yucatán	About forty Maya chants for fits, fevers, asthma, burns and bites. The healer addresses each illness as a person. Chapter 18 described it	Roys 1965

Book	Date and author	Shape and content	To read further
Ka Po‘e Kahiko	1860s; Samuel Kamakau, Hawai‘i	Newspaper articles by a Hawaiian historian who had known the old experts. Chapter 68 drew on them	Kamakau 1964

What the catalogue shows

The books are few, and they are old. Each literate medicine rests on two or three founding books. Nearly all of them were written before the year 300. A handful of later works put those books in order. A physician of China, of India or of Tibet still learns passages of a book that is two thousand years old.

They were made to be learned by heart. Many of the books are in short lines or in verse. The *Aphorisms* are, and so are the *Four Tantras*, the Indian compendia, the Chinese textbook of 1742 and the poem of Salerno. The medicines without writing hand on their knowledge in the same way. The Yoruba diviner learns his verses and the Navajo singer his chants. The medicines with writing kept the habit long after they had books.

Many are dialogues. The Yellow Emperor asks, and his minister answers. The sage Born of Mind asks, and the sage Wisdom of Awareness answers. In Caraka’s book the sages dispute, and Atreya gives the ruling. The classic of difficult issues is eighty-one questions. The form keeps the question in the text beside the doctrine.

Some counts recur. Three of the Chinese classics have eighty-one chapters each, which is nine times nine. The divine farmer’s drugs number three hundred and sixty-five, and so do the points as the classics count them. The books of Caraka and Vagbhata have a hundred and twenty chapters each. Chapter 73 took up the counts of the old medicines.

Translation carried them. The Greek books went into Syriac and Arabic at Baghdad, and from Arabic into Latin at Salerno and Toledo. The Indian books went into Tibetan, Persian and Arabic. The Chinese books went to Korea, Japan and Vietnam. Each passage changed the medicine that received it, and none arrived whole.

102. Healers and scholars: a who’s who

What this chapter lists

This book names several hundred people. Some were healers, some wrote the books of the old medicines, and some sat with healers and wrote down what they said. Others tested a remedy, or founded one of the newer methods of Appendix A. This chapter lists them in eight groups, each in the order of time.

The last column gives every chapter in which the person appears. A number with the letter A is a section of Appendix A. Dates are given where they are known. A healer of a people without books often has no dates. Such a healer is placed by the decade in which a visitor wrote the words down.

The list holds no gods and no first teachers of legend, with a few exceptions that the notes mark. Orunmila, Asklepios, the Yellow Emperor, the Divine Farmer and the Medicine Buddha stand in the chapters of their traditions.

Egypt, Mesopotamia, Greece and Rome

Name	Dates	Who	Chapter
Hesy-Ra	About 2650 before our era	Chief of dentists and physicians under King Djoser of Egypt. The earliest physician whose name is known	35
Imhotep	About 2650 before our era	Djoser’s minister and the builder of the first pyramid. No record of his own time calls him a physician. Two thousand years later the Egyptians worshipped him as a god of healing	35, 36
Peseshet	The age of the pyramids	Overseer of the women physicians of Egypt. The first woman of medicine whose name is known	35
Esagil-kin-apli	Eleventh century before our era	Scholar of Babylon. He put the handbook of diagnosis in its order of forty tablets	32, 33, 101
Epimenides of Crete	Legend	He slept for decades in a cave and woke as a prophet and a purifier of cities. One of the men whom Dodds called the Greek shamans	37
Pythagoras	Sixth century before our era	Teacher in the Greek cities of southern Italy. He taught the wandering of the soul, a rule of diet, and healing by music	2, 6, 37
Alcmaeon of Croton	About 500 before our era	Pythagorean physician. He said that health is the equal standing of the powers in the body	37, 38, 43
Parmenides of Velia	Fifth century before our era	Philosopher. Inscriptions found at Velia from 1958 led Kingsley to argue that he was a healer in the service of Apollo	37
Empedocles of Sicily	Fifth century before our era	Physician and worker of wonders. He taught the four roots of everything: earth, water, air and fire	6, 37, 109

Name	Dates	Who	Chapter
Hippocrates of Kos	About 460 to 370 before our era	The most famous physician of Greece. Some sixty treatises carry his name. It cannot be shown that he wrote any one of them	37, 38, 39, 40, 41, 42
Herophilus of Chalcedon	About 300 before our era	Anatomist at Alexandria. He described the brain and held that it is the seat of thought. He traced the nerves, and told those of feeling from those of movement	39, 43
Erasistratus of Keos	Third century before our era	Anatomist at Alexandria. He described the valves of the heart and saw that they let the blood pass one way only	39, 40, 41, 43
Celsus	First century	Roman writer. His eight books are the clearest ancient account of medicine. He reports the dissections at Alexandria	39, 41, 101
Scribonius Largus	First century	Physician to the emperor Claudius. His book of recipes holds the first account of treatment with a live electric ray	39
Dioscorides of Anazarbus	First century	A Greek from what is now southern Turkey, who had travelled widely. He wrote the drug book that the West and the Islamic world used for sixteen centuries	39, 98, 101, 103, 109
Rufus of Ephesus	About 100	He wrote the first work on how to question a patient	39, 41
Soranus of Ephesus	About 100	The best of the Methodist physicians. He wrote on the illnesses of women, on birth and on the care of the newborn	39, 41, 101, A1
Aretaeus of Cappadocia	First or second century	He wrote descriptions of illnesses that have not been bettered, and gave diabetes its name	39, 101

Name	Dates	Who	Chapter
Galen of Pergamon	129 to about 216	Physician to gladiators and to emperors. He joined anatomy, the four humours and philosophy into one system, which was taught for nearly fifteen centuries	37, 38, 39, 40, 41, 42, 43, 50, 55, 62, 72, 73, 74, 80, 91, 97, 98, 101, 104, 105, 109, A1, A11
Aelius Aristides	Second century	A famous public speaker, and for most of his life a patient of Asklepios. His *Sacred Tales* record the dreams and orders of the god	37, 43
Julius Apellas	Second century	A patient at Epidaurus. His inscription lists what the god told him to do, day by day	37

The Islamic world and Europe

Name	Dates	Who	Chapter
Ben Sira	Second century before our era	Jewish teacher. He settled the question whether a believer may use a physician. Honour him, he wrote, for the Lord created him	42
Hunayn ibn Ishaq	Died 873	Christian Arab physician at Baghdad. The chief of the translators who put Greek medicine into Syriac and Arabic	40
Al-Razi, in Latin Rhazes	About 865 to 925	Director of hospitals at Rayy and Baghdad, and a clinician first. He told smallpox from measles. He left one group of patients unbled, to compare	40, 41, 43, 78, 101, 104, A2
Ishaq ibn Imran	About 900	Physician of Kairouan. His treatise on melancholy carried the Greek doctrine to Europe	41
Al-Majusi, in Latin Haly Abbas	Tenth century	Persian physician. His complete book of the medical art was the textbook before the *Canon*	101, A2
Al-Zahrawi, in Latin Albucasis	About 936 to 1013	Physician of Cordoba. His treatise on surgery shows some two hundred instruments	101
Ibn Sina, in Latin Avicenna	980 to 1037	Philosopher and statesman, born near Bukhara. His *Canon of Medicine* put the whole of Galenic medicine in order, in five books	40, 41, 42, 43, 101, A2, A3
Ibn Butlan	Eleventh century	Physician of Baghdad. He set the six necessary conditions of health out in tables	40
Constantine the African	Eleventh century	Monk of Monte Cassino. He put Arabic medical books into Latin, and with them Greek medicine came back to Europe	41, 42
Trota of Salerno	Twelfth century	Woman physician. The three texts known as the *Trotula* are connected with her	42, 101
Hildegard of Bingen	1098 to 1179	Abbess in the Rhineland. She wrote on plants, stones and illnesses, and saw by a light that took her pain away	42, 43, 91, 98, 101, 106, A2, A9

Name	Dates	Who	Chapter
Gerard of Cremona	Twelfth century	Translator at Toledo. He put the *Canon* into Latin	40
Moses Maimonides	1138 to 1204	Rabbi and philosopher, born at Cordoba. Physician to the court of Saladin near Cairo. He wrote ten medical works	42, 43, 79, 101, 104
Ibn al-Nafis	1213 to 1288	Physician of Damascus and Cairo. He gave the first account of the passage of the blood through the lungs	101
Ibn al-Baytar	Died 1248	Botanist of Málaga. His compendium lists some fourteen hundred drugs and foods	101
Jacoba Felicie	Tried in 1322	A woman healer of Paris. The medical faculty brought her before a church court for practising without a licence. Her own patients testified for her	42, 106
Ibn Qayyim of Damascus	Died 1350	Scholar of religion. He wrote the best-known book of the medicine of the Prophet. A physician who ignores the heart, he held, treats half a patient	42, 43, 101
Ibn al-Khatib of Granada	1313 to 1374	Statesman and physician. He wrote that the plague passes from person to person, and that the senses show it	41, 88
Walahfrid Strabo	Died 849	Abbot of Reichenau on Lake Constance. About 840 he wrote a poem on the two dozen plants of his own garden	42
Pierre Brissot	1478 to 1522	Paris physician. He went back to the Greek texts on where to let blood, and began a long quarrel	41
Paracelsus	1493 to 1541	Swiss physician, born Theophrastus of Hohenheim. He threw the textbook into a fire, taught three principles, gave the body a second body, and treated by likeness	6, 42, 43, 98, 101, 103, A1, A2, A3
Girolamo Fracastoro	About 1478 to 1553	Physician of Verona. In 1546 he wrote that illness is carried by seeds, which pass by touch, by goods and through the air	41, A1

Name	Dates	Who	Chapter
Andreas Vesalius	1514 to 1564	Anatomist at Padua. In 1543 he published what he had found in opened human bodies, and corrected Galen	39, 42
William Harvey	1578 to 1657	London physician. He showed that the blood goes round the body in a circle	42
Jan Baptist van Helmont	1580 to 1644	Physician of Brussels. He offered a wager: to divide the sick into two groups by lot, and to treat one without bloodletting	41, 42, 74, A1
Robert Burton	1577 to 1640	Oxford scholar who suffered from melancholy himself. He gathered the whole tradition into one book in 1621	41
Guy Patin	1601 to 1672	Paris physician and champion of bloodletting. He is recorded to have bled his wife twelve times and his son twenty	41
Thomas Willis	1621 to 1675	English physician. In 1674 he reported that the urine of patients with the wasting thirst tastes sweet	41
Thomas Sydenham	1624 to 1689	London physician. He taught that illnesses are kinds, like the kinds of plants, each with a course of its own	42
Nicholas Culpeper	1616 to 1654	English apothecary. In 1652 he published a herbal in plain English, and joined the herbs to the planets	98, A2
Hendrik van Rheede	1636 to 1691	Dutch governor of the Malabar coast. With a physician of a toddy-tapping caste and three Brahmins he recorded the plants of the coast in twelve volumes	56
John Floyer	1649 to 1734	English physician. In 1707 he published a book on timing the pulse with a watch	50
Giovanni Battista Morgagni	1682 to 1771	Anatomist of Padua. In 1761 he tied the illnesses of the living to what is found in the organs of the dead	42, A1

Name	Dates	Who	Chapter
William Heberden	1710 to 1801	London physician. In 1745 he attacked the great compound of the old pharmacy as a heap of ingredients thrown together without reason	41
William Withering	1741 to 1799	English physician. He learned of the foxglove from an old woman’s recipe for the dropsy	103, A2
Franz Anton Mesmer	1734 to 1815	Physician of Vienna and Paris. From 1774 he treated patients with magnets, and soon with his hands alone	A1, A3, A7
Samuel Hahnemann	1755 to 1843	German physician. The founder of homeopathy	38, A1, A3
Benjamin Rush	1746 to 1813	The most respected physician of the young United States. He treated with mercury and with bleeding on a scale not seen before	41
Edward Jenner	1749 to 1823	English country physician. His cowpox improved on the older inoculation with smallpox itself	44
François Broussais	1772 to 1838	Paris professor. He laid nearly all illness to an inflamed stomach and gut, and treated it by hunger and leeches	41
Pierre Louis	1787 to 1872	Paris physician. He kept exact records of every patient on his ward, and counted. In 1835 his numbers showed how little bloodletting did	41, 42, 74, 105
Joseph Dietl	1804 to 1878	Physician in Vienna. In 1849 he compared patients who were bled with patients who were left alone	41, 43

China

Name	Dates	Who	Chapter
Bian Que	Legend	The first great physician of Chinese tradition. The historian Sima Qian wrote his life about 90 before our era, from stories of several centuries	44, 45, 58
Chunyu Yi	Second century before our era	A physician who was accused before the emperor about 167. He accounted for his art with twenty-five cases, the oldest case records of China	44
Jing Fang	First century before our era	Scholar of the calendar and of music. He went on past twelve notes and found that the fifty-third comes back almost to the first	2, 46, 73
Zhang Zhongjing	About 150 to 219	Author of the *Treatise on Cold Damage*. Nearly a third of the formulas that this book lists are his	44, 45, 50, 54, 65, 89, 96, 101, 103, 109
Hua Tuo	Died about 208	The surgeon of Chinese tradition. He is said to have opened the belly of patients whom a powder in wine had made senseless. He taught the play of the five animals	44, 53, 94
Wang Shuhe	About 280	Author of the *Pulse Classic*. He described twenty-four pulses and fixed the three places at each wrist	44, 50, 101
Huangfu Mi	215 to 282	He fell ill with a palsy and taught himself medicine. He arranged all that the older books said on needling into one work with 349 points	44, 66, 101, 106
Ge Hong	283 to 343	Alchemist. His small book of remedies for emergencies holds the line that led Tu Youyou to her drug against malaria	44, 52
Chao Yuanfang	About 610	Court physician. His book describes more than seventeen hundred conditions. It gives exercises and no drugs	44, 53, 54, 88, 101

Name	Dates	Who	Chapter
Sun Simiao	581 to 682	The best-loved physician of China, honoured in temples as the King of Medicine. He declined office under three emperors. His great book opens with the duties of a physician	44, 46, 52, 53, 54, 66, 67, 87, 89, 94, 96, 101, 104, 106
Wang Bing	Eighth century	The editor of the *Inner Classic*. In 762 he added seven long chapters on the cycle of sixty years	45
Wang Weiyi	Eleventh century	In 1027 he had two hollow bronze figures cast, pierced at each of 354 points, for the examination of students	44
Qian Yi	Died about 1113	Author of the first work devoted to the illnesses of children	44, 52, 96, 101
Chen Yan	Twelfth century	In 1174 he sorted all causes of illness into three groups: the outer, the inner, and those that are neither	44
Liu Wansu	About 1120 to 1200	The first of the four masters. Most illness is fire and heat, he taught. His method was to cool and to clear	44, 96
Zhang Congzheng	About 1156 to 1228	The second of the four masters. Illness is an evil that has entered and must be driven out. He also treated one feeling with another	44, 46, 59
Li Dongyuan	1180 to 1251	The third of the four masters. Illness comes from within, when worry, hunger and overwork injure the stomach and the spleen	44, 52, 96, 101, 103, 109
Zhu Danxi	1281 to 1358	The fourth of the four masters. Yin always falls short, since desire consumes it. His method was to nourish yin and to moderate desire	44, 52, 54, 96
Song Ci	Thirteenth century	A judge. In 1247 he wrote a manual for officials who must examine the dead	44

Name	Dates	Who	Chapter
Li Shizhen	1518 to 1593	A physician’s son from Hubei. He worked for twenty-seven years on a drug book with 1,892 entries, and wrote the verses on the pulse	44, 50, 67, 73, 101, 103
Zhu Zaiyu	Sixteenth century	A prince of the Ming house. In 1584 he calculated twelve equal steps that close the octave exactly	46
Yang Jizhou	About 1600	He gathered all earlier writing on the needle into the great compendium of 1601	44, 101
Zhang Jiebin	1563 to 1640	Physician of the late Ming. The formulas that build up the yin and the yang of the kidney are his	52, 96
Wu Youxing	Seventeenth century	In 1642, in years of epidemic, he wrote that pestilence comes from a particular *qi* that enters by the nose and the mouth	44, 101
Ye Tianshi	1667 to 1746	Physician of Suzhou. He described how a warm illness passes inward through four levels	44, 54, 96
Wu Jutong	1758 to 1836	He made a textbook of the doctrine of warm illnesses in 1798	44, 101
Wang Qingren	1768 to 1831	He went to a burial ground during an epidemic to see the organs for himself. His formulas drive out standing blood	44, 52, 54, 96, 101
Zhang Xichun	1860 to 1933	Physician of the first years of the republic. He joined Chinese formulas with the new drugs of the West	52, 96
Mao Zedong	1893 to 1976	Ruler of China from 1949. His government at first followed the reformers. In 1954 he reversed the course, and colleges of Chinese medicine were founded	44
Han Jisheng	1928 to 2021	Physiologist at Beijing. In the 1970s he showed that needling makes the brain release its own opiates	51

Name	Dates	Who	Chapter
Tu Youyou	Born 1930	Chemist. She found artemisinin by following a fourth-century text, which told her to steep the herb in cold water. Nobel Prize, 2015	8, 44, 52, 55
Wang Qi	Our time	Beijing professor. His doctrine of nine constitutions was adopted as a national standard in 2009	55

India, Tibet, Japan, Korea and Vietnam

Name	Dates	Who	Chapter
Atreya	Legend	The sage whose teaching Caraka's book records. In its chapters the sages dispute and Atreya gives the ruling	56, 59, 67, 101
Jivaka	Fifth century before our era	The physician of the Buddha. He studied for seven years at Taxila. His teacher sent him out to find a plant that is not a medicine, and he found none	56, 60, 70
Caraka	First or second century	The physician who revised the older collection of Agnivesha. The book of inner medicine carries his name	56, 57, 58, 59, 60, 66, 67, 73, 74, 86, 101, 103, 104, 106, 109
Sushruta	First centuries of our era	The name on the book of the knife, which records the teaching of a king of Benares to his pupil	56, 57, 58, 59, 60, 61, 67, 81, 82, 84, 85, 101, 104, 107
Patanjali	About the fourth century	The name on the aphorisms of yoga	61
Vagbhata	About 600	He joined the teaching of the two older books in clear verse. His book became the most used textbook of Indian medicine	56, 57, 60, 62, 67, 70, 73, 101
Madhava	About 700	He wrote the first Indian book on diagnosis alone	56, 59, 101
Agastya	Legend	The sage at the head of the eighteen masters of the Tamil medicine of the south	61, 97

Name	Dates	Who	Chapter
Sharngadhara	About 1300	Author of a short handbook of pharmacy, with the first account of the pulse in Indian medicine	56, 101, 103
Bhavamishra	Sixteenth century	He took up the materials that had come with the Muslims and the Portuguese, and described the new illness of the Franks	56, 101
Hakim Ajmal Khan	1868 to 1927	Unani physician of Delhi and a leader of the national movement. He founded a college that taught Unani and Indian medicine side by side	40
Salimuzzaman Siddiqui	1897 to 1994	Chemist. In 1931 he isolated the first active compound from the snakeroot that the healers gave to the insane	40
Songtsen Gampo	Died 649	King of Tibet. The histories say that he invited three physicians to his court: one from India, one from China and one from the west	62
Trisong Detsen	Eighth century	King of Tibet. The histories say that he called nine physicians from the surrounding lands to a meeting	62
Yuthok Yonten Gonpo the Younger	1126 to 1202	The physician in whose hands the *Four Tantras* reached their present form	62, 101
Zurkharwa	Sixteenth century	Tibetan physician. He argued, openly and early, that the *Four Tantras* were composed in Tibet and not spoken by the Buddha	62
Sangye Gyatso	1653 to 1705	Regent of the Fifth Dalai Lama. He wrote the *Blue Beryl* and had seventy-nine paintings made to teach it. In 1696 he founded a college of medicine at Lhasa	62, 101
Tanba Yasuyori	Tenth century	Japanese court physician. In 984 he compiled thirty scrolls of passages from Chinese books, many of them now lost in China	101

Name	Dates	Who	Chapter
Sugiyama Waichi	Seventeenth century	A blind needler of Japan. He invented the small tube through which a very fine needle is tapped in, and founded schools for the blind	65
Yoshimasu Todo	1702 to 1773	The sharpest of the Japanese school of the old formulas. All illness, he taught, comes from one poison. He found it by feeling the belly	65
Sugita Genpaku	1733 to 1817	Japanese physician. In 1771 he watched a dissection with a Dutch book of anatomy in his hand, and then translated the book	65
Hanaoka Seishu	1760 to 1835	Japanese surgeon. He searched for twenty years for a drink that would put a patient to sleep. In 1804 he removed a cancer of the breast from a woman who slept through it	65
Morita Shoma	1874 to 1938	Japanese psychiatrist. He devised a cure in four stages for people who are worn out by fear and by watching themselves	65
Heo Jun	1539 to 1615	Korean court physician. He finished the *Treasured Mirror of Eastern Medicine* in 1610, after fourteen years of work	65, 101
Lee Je-ma	1837 to 1900	Korean physician and former soldier. In 1894 he taught that people are born in four kinds, and that medicine must begin from the kind	65, 101
Tue Tinh	Fourteenth century	Buddhist monk, honoured as the founder of the southern medicine of Vietnam. He described several hundred native drugs	65
Le Huu Trac	Eighteenth century	The greatest physician of Vietnam. He refused office and took the pen name of the Lazy Old Man. His work fills sixty-six books	65

Healers of the peoples without books

Most healers of these peoples are not named in any record. The following are known because they chose to speak to a visitor, or wrote for themselves.

Name	Dates	Who	Chapter
//Kabbo	1870s	A /Xam man of the rain, about sixty years old. His name means Dream. He was the greatest of the storytellers who taught Bleek and Lloyd	12
Diä!kwain	1870s	A /Xam man from the Katkop hills. He gave most of what is known about the /Xam healers	12
Swimmer	1880s	Cherokee healer. He let Mooney copy his notebook of some hundred and thirty formulas in Cherokee script	20
George Sword	About 1900	Oglala holy man. With others he taught the agency physician James Walker what is holy	20
Quesalid, who was George Hunt	About 1900	A Kwakwaka'wakw man. He told Boas how he became a shaman in order to expose the shamans. He had in truth been initiated in earnest	9
Igjugarjuk	1920s	Shaman of the Caribou Inuit. He told Rasmussen how an old man left him in a snow hut for thirty days, with a little water	10
Aua	1920s	Shaman of the Iglulik. He became a shaman in a fit of joy so great that he had to sing	10
Black Elk	1863 to 1950	Holy man of the Oglala. He lay as dead for twelve days at the age of nine and was shown his calling. He told it in 1931 and in 1947	10, 20
John Fire Lame Deer	1903 to 1976	Lakota holy man. He told his life in the 1960s	20
Raimundo Irineu Serra	Died 1971	A rubber tapper of African descent in Brazil. He learned the vine brew from native people and founded the church of Santo Daime	16
Tahupōtiki Wiremu Rātana	1873 to 1939	Māori farmer. After a vision he began to heal by prayer, and told the people to give up their fear of sorcery	70

Name	Dates	Who	Chapter
Rua Kēnana	1869 to 1937	Māori prophet. The law of 1907 against the Māori experts was aimed in part at him	70
Kau Dwa	1960s	Blind healer of the Ju/’hoansi. God, he told Katz, keeps his eyes in a little bag and puts them back when the dance begins	11
Wa Na	1960s	A blind old woman of the Ju/’hoansi, who was spoken of as the most powerful healer of all	11
Essie Parrish	1902 to 1979	Dreamer and religious leader of the Kashaya of California. She allowed a full cure to be filmed and explained it afterwards	20
María Sabina	1894 to 1985	Mazatec healer of Oaxaca. She ate the mushrooms to learn what to do for her dying sister, and the Principal Ones appeared to her	10, 18, 23
Eduardo Calderón	1930 to 1996	Healer of the north coast of Peru. He explained every object on his table to Douglas Sharon	17
Juan Gregorio	1970s	Shaman of the O’odham. He set out the theory of his craft in his own language, as he himself reasons it	20
Eleuterio Terte	1940s	Filipino healer. He began to perform what looked like operations with his bare fingers	70
Antonio Agpaoa	1960s	Pupil of Terte. He made the practice famous, and sick foreigners arrived by the planeload	70
Jero Tapakan	1970s and 1980s	Balinese medium. Her work was filmed and described over several years	70
Morrnah Simeona	1913 to 1992	Hawaiian healer who worked with her hands. From 1976 she taught a new form of setting right, for one person alone	69

Name	Dates	Who	Chapter
Margaret Machado	1916 to 2009	Hawaiian teacher of the art of the hands. She defined it as the loving touch	68
Henry Auwae	Died 2000	The best-known Hawaiian healer of his generation. He knew some two and a half thousand preparations. Healing, he said, is eighty parts spiritual and twenty parts medicine	68
Pablo Amaringo	1938 to 2009	Painter and former healer of the Peruvian Amazon. He recorded his visions in paintings	16
Davi Kopenawa	Our time	Yanomami shaman. In 2010 he published his own account of his training and his world	16
Olivia Arévalo	Died 2018	A respected Shipibo healer. She was shot dead in her village	16

Those who wrote it down

The medicine of a people without books reaches a reader through someone who listened. The first were missionaries, officers and travellers. Some of them wrote in order to condemn, and preserved what they condemned. Later came the anthropologists, and at last members of the peoples themselves.

Before 1900

Name	Dates	Who	Chapter
Ramón Pané	1490s	A friar whom Columbus ordered to live among the Taíno of Hispaniola and record their beliefs. His is the first European report on the healers of the Americas	16
Jacques Cartier	1491 to 1557	French explorer. In the winter of 1535 an Iroquoian town on the St Lawrence showed his dying men a tree against scurvy	20
Bernardino de Sahagún	About 1499 to 1590	Franciscan in Mexico for sixty years. He questioned Aztec elders, town by town, and had Aztec physicians check his account of the remedies	18, 101

Name	Dates	Who	Chapter
Martín de la Cruz and Juan Badiano	1552	An Aztec physician who composed a book of remedies, and the fellow Aztec who put it into Latin	18, 33, 101
Francisco Hernández	About 1515 to 1587	Physician to Philip II. He spent seven years in Mexico from 1570 and recorded its medicines	18
Hernando Ruiz de Alarcón	1629	A parish priest of Mexico. He wrote down the spells of the Aztec healers of his district in order to expose them, and so preserved them	18
Johannes Schefferus	1621 to 1679	Professor at Uppsala. His Latin book of 1673 gathered the reports of the clergy on the Sámi and their drums	14
Nicolaas Witsen	1641 to 1717	Burgomaster of Amsterdam. His book of 1692 holds the first European picture of a Siberian shaman	9
Johann Georg Gmelin	1709 to 1755	German naturalist. He watched Siberian shamans in the 1730s and described their sessions as jugglery	9
James Cook	1728 to 1779	English navigator. His ships reached Hawai‘i in 1778, and the diseases of the outside world came with them	68, 70
David Malo and Samuel Kamakau	Nineteenth century	Hawaiian historians who had known the old experts, and described their specialities	68, 101
Elias Lönnrot	1802 to 1884	Country doctor, and the maker of the Finnish national epic. He wrote his medical thesis on the magic medicine of the Finns	14
George Turner	1818 to 1891	Missionary in Samoa for some forty years. He described what a family did when one of its members fell ill	69
Henry Callaway	1817 to 1890	Missionary. In the 1860s he wrote down in Zulu, from his informants’ words, the first full account of the making of a diviner	10

Name	Dates	Who	Chapter
Wilhelm Bleek and Lucy Lloyd	1870 to 1884	A German scholar of languages at Cape Town and his sister-in-law. They wrote down, word for word, what /Xam prisoners told them	12
Joseph Orpen	1873	Magistrate. He crossed the Maloti mountains with a young San guide, who explained the rock paintings to him	12
Richard Spruce	1817 to 1893	English botanist. He saw the vine brew drunk on the Vaupés river in 1852	16
Alfred Howitt	1830 to 1908	He wrote down in the 1880s how an Aboriginal man of south-east Australia was made a healer	10
Baldwin Spencer and Francis Gillen	1890s	A biologist and a postmaster. They recorded the making of a healer among the Arrernte of central Australia	10
Washington Matthews	1843 to 1905	Army surgeon. He wrote down two great Navajo chants in the 1880s and 1890s	19
James Mooney	1861 to 1921	Ethnologist. From 1887 he copied the notebooks of the Cherokee healers	20
Franz Boas	1858 to 1942	The founder of American anthropology. He recorded the story of Quesalid	9
Elsdon Best	1856 to 1931	Ethnographer of the Māori. The elder Tamati Ranapiri explained to him what the *hau* of a gift is	70
Walter Skeat	1866 to 1953	He collected Malay practices in the 1890s	70

The north and Inner Asia

Name	Dates	Who	Chapter
Waldemar Bogoras	1865 to 1936	He lived for years with the Chukchi. He found the shamans nervous and odd, and many colleagues agreed	9, 10, 14

Name	Dates	Who	Chapter
Knud Rasmussen	1879 to 1933	Explorer, of Greenlandic descent on his mother’s side. The Inuit shamans told him how they were made and what the inner light is	6, 7, 10, 20
Sergei Shirokogoroff	1887 to 1939	He lived among the Evenki from 1912 to 1917. The shaman, he wrote in 1935, is the opposite of a sick person	9, 10, 14
Gavriil Ksenofontov	1888 to 1938	Himself a Sakha. He collected the accounts of how shamans are taken apart and made again	10, 14
Arkadii Anisimov	1930s	He described the tent of the Evenki shaman as a model of the three worlds	14
Mircea Eliade	1907 to 1986	Historian of religions. His book of 1951 gathered the reports on shamans from the whole world	7, 9, 10
Mongush Kenin-Lopsan	1925 to 2022	Tuvan writer. He collected the shamans’ songs through the Soviet decades and founded a society of shamans in 1992	14
Piers Vitebsky	Our time	He observed that the old shaman worked for a clan, and the new one for single clients	14
Robert Desjarlais	Our time	He apprenticed himself to a shaman of the Yolmo of Nepal and described soul loss as the villagers feel it	15
Laurel Kendall	Our time	She worked for years with a shaman near Seoul. The unit of illness, she stresses, is the house	10, 15
Manduhai Buyandelger	Our time	She lived with the Buryat of Mongolia in the years of economic collapse	9, 15
Anne Fadiman	Our time	She told the story of the Hmong child Lia Lee and her American doctors, with equal respect for both sides	15

Africa

Name	Dates	Who	Chapter
Lorna Marshall	1898 to 2002	She wrote the first full account of the healing dance of the Ju/’hoansi and of the beliefs behind it	11, 14
Richard Lee	Our time	He worked at the Dobe waterholes from 1963, and counted who danced, who healed and how often	11
Richard Katz	Our time	Psychologist. In 1968 he talked at length with the healers of /Kae/kae about what they feel and see	11, 70
Megan Biesele	Our time	She speaks Ju/‘hoan fluently and recorded the healers’ own accounts	11
Mathias Guenther	Our time	He did the same work among the Naro of Ghanzi	11
Chris Low	Our time	He found massage to be the commonest treatment among the San and the Khoekhoe	11
David Lewis-Williams	Our time	He read the rock paintings of southern Africa with the /Xam testimony, as records of the healers’ visions	7, 9, 12
Axel-Ivar Berglund	Twentieth century	Swedish missionary and anthropologist who grew up among the Zulu	10
Harriet Ngubane	1929 to 2007	Anthropologist, herself Zulu. She explained why most Zulu diviners are women	10
William Bascom	1912 to 1981	He studied Ifá among the diviners of Ife from 1937 and published the standard description	24, 25, 26, 27
Pierre Verger	1902 to 1996	Photographer and initiate. He collected the plant medicines and the spoken formulas of the Yoruba	24, 27, 28
Wande Abimbola	Born 1932	A trained Ifá priest and later the head of a university. He published the verses and explained the system from within	24, 25, 27, 28
Raymond Prince	1925 to 2012	Psychiatrist. In the 1950s he studied the Yoruba healers who treated the mad, and their root	28, 29

Name	Dates	Who	Chapter
Thomas Adeoye Lambo	1923 to 2004	Yoruba psychiatrist. From 1954, at Aro, his patients boarded in four villages with a relative, and traditional healers held their rites for them	29
Victor and Edith Turner	1950s; 1985	They described the Ndembu rite of the tooth of the dead hunter. She went back and saw the tooth come out	21, 30
John Janzen	Our time	He followed the cults of affliction across the Bantu-speaking half of Africa, under the name of the drum	21
James Fernandez	Our time	He described the rite of the iboga root among the Fang	30
Oye Gureje	Our time	Psychiatrist at Ibadan. In 2020 his team reported the first trial of healers and clinics working together	29, 83

The Americas

Name	Dates	Who	Chapter
Alfred Kroeber	1876 to 1960	He surveyed the peoples of California and their sucking doctors	20
James Walker	1849 to 1926	Agency physician among the Oglala. The holy men taught him around 1900	20
John Neihardt	1881 to 1973	Poet. Black Elk told him his vision in 1931	10, 20
Berard Haile, Gladys Reichard, Clyde Kluckhohn and Leland Wyman	1900s to 1970s	The chief recorders of the Navajo chants and of the Navajo theory of illness	19
Irving Hallowell	1892 to 1974	He asked the Ojibwe whether all stones are alive. No, they said, but some are	9, 20
Gordon Wasson	1898 to 1986	New York banker. In 1955 he took part in a session of María Sabina and made it known	18

Name	Dates	Who	Chapter
Albert Hofmann	1906 to 2008	Swiss chemist. He isolated the compound of the sacred mushrooms in 1958	18
Evon Vogt	1918 to 2004	He and his students worked for more than thirty years among the Maya of Zinacantán	18
Gerardo Reichel-Dolmatoff	1912 to 1994	He described the Tukano of Colombia and their visions	16
Johannes Wilbert	Twentieth century	He gathered the records on tobacco, which nearly three hundred peoples of South America used	16
Michael Harner	1929 to 2018	He studied with the Shuar and the Conibo, and taught drumming and journeying to Western students	9, 10, 16, A9
Douglas Sharon	Our time	He learned the table of the Peruvian healer Eduardo Calderón in the 1970s	17
Joseph Bastien	Our time	He recorded how the Kallawaya of Bolivia see the body as their mountain	17
Luis Eduardo Luna	Our time	He asked the mestizo healers of Peru where their knowledge came from. The plants had taught them, they said	7, 10, 16
Alfredo López Austin	1936 to 2021	Mexican scholar. He reconstructed how the Aztecs understood the body and its three souls	18
Bernard Ortiz de Montellano	Our time	In 1975 he asked whether the Aztec remedies worked, by the Aztecs' own standards	18
Barbara Tedlock	Our time	She was trained and initiated as a diviner among the K'iche' Maya	18
Daniel Moerman	Our time	He catalogued the plants of native North America, and proposed to speak of the meaning response	8, 20, A7

Australia, the Pacific and the islands of Asia

Name	Dates	Who	Chapter
Herbert Basedow	1881 to 1933	Physician. In 1925 he described a man who learns that the bone has been pointed at him	13
William Stanner	1905 to 1981	He spent fifty years with Aboriginal people. The Dreaming, he said, cannot be fixed in time	13
Janice Reid	Our time	She set out most clearly how the Yolngu sort illness	13
Te Rangi Hīroa and Māui Pōmare	Early twentieth century	The first Māori physicians. They campaigned against the healers of their own people, and one of them later described their methods with care	70
Mary Kawena Pukui	1895 to 1986	Hawaiian scholar. Most of what this book says on Hawaiian healing and on the family meeting rests on her testimony	68, 69
Reo Fortune	1903 to 1979	He lived among the Manus in 1928 and described how the ghost of the house was called	70
Clifford Geertz	1926 to 2006	He lived in an east Javanese town in the 1950s and listed more than a dozen kinds of healer	70
Stanley Tambiah	1929 to 2014	He described the binding of the soul in north-east Thailand	70
Carol Laderman	Twentieth century	She apprenticed herself to a Malay healer in the 1970s and recorded the teaching of the inner winds	15, 70
Linda Connor	Our time	With the film-makers Timothy and Patsy Asch she recorded the work of a Balinese medium	70
Unni Wikan	Our time	She described how the fear of sorcery governs daily conduct in Bali	70
Mason Durie	Born 1938	Māori psychiatrist. In 1982 he described health as a house with four walls	70

Name	Dates	Who	Chapter
Paul Cox	Our time	Botanist. In 1984 Samoan healers showed him a forest tree. A compound from its bark protects cells against the virus of AIDS in the test tube	70

Readers of the old texts

Name	Dates	Who	Chapter
Edwin Smith and Georg Ebers	1862; 1873	An American dealer and a German scholar. The two great medical papyri of Egypt carry their names	5, 35, 36, 43, 44
James Breasted	1865 to 1935	He published the surgical papyrus in 1930	35, 101
Reginald Campbell Thompson	1876 to 1941	He published the medical tablets of Nineveh and a study of their plants	32
René Labat	1904 to 1974	He edited the Babylonian handbook of diagnosis in 1951	32
Franz Köcher	1916 to 2002	He copied the therapeutic tablets of Mesopotamia in six volumes	32
JoAnn Scurlock, Markham Geller, Marten Stol, Nils Heeßel and Barbara Böck	Our time	The scholars who have made the whole body of Mesopotamian medical texts accessible	32, 33, 34, 101
Guido Majno	1922 to 2010	Pathologist. He tested the wound dressings of Mesopotamia and Egypt in his laboratory	34, 35
Emma and Ludwig Edelstein	1945	They collected every ancient statement about Asklepios	37
Eric Dodds	1893 to 1979	He called Epimenides and his like the Greek shamans	37

Name	Dates	Who	Chapter
Peter Kingsley	Our time	He argued from the inscriptions of Velia that the first Greek philosophy arose among healers	37
Paul Unschuld	Born 1943	Historian. The translator of the *Inner Classic*, the *Classic of Difficult Issues* and the great drug book of 1596	44, 45, 46, 101
Nathan Sivin	1931 to 2022	Historian of Chinese science. He wrote that *qi* is both what makes happen and that in which it happens	46
Shigehisa Kuriyama	Our time	Japanese historian. He compared the Greek and the Chinese way of touching the pulse	50
Kenneth Zysk	Our time	Historian. He showed that classical Indian medicine grew among wandering ascetics and in the Buddhist monasteries	56, 101
Richard Wilhelm	1873 to 1930	Missionary and translator. In 1929 he put a Chinese text on turning the light around into German	53

Those who compared

Name	Dates	Who	Chapter
Forrest Clements	1932	He went through the reports from the whole world and found five causes of illness that peoples name	8, 9
George Murdock	1897 to 1985	In 1980 he counted the theories of illness of 139 societies	8
Claude Lévi-Strauss	1908 to 2009	He made the story of Quesalid famous, and compared the shaman’s cure with the talking cure	9, A10
Gilbert Rouget	1916 to 2017	Ethnomusicologist. The shaman goes to the spirits, he wrote. The possessed person is visited by them	9
Michael Winkelman	Our time	He compared the religious healers of 47 societies	9

Name	Dates	Who	Chapter
Arthur Kleinman and Leon Eisenberg	1970s	Psychiatrists. They drew the distinction between disease, which the physician treats, and illness, which the patient suffers	8, 21, 22, 54, A6
James Dow	1986	He proposed that all healing by symbols has the same four steps	8
Thomas Csordas	Our time	He found three matching steps in religious healing among American Catholics, and studied Navajo healing	8, 19, A9
William Buckner	Our time	He found the sucking out of an object described for 62 of 89 hunter-gatherer societies	4, 8, 21

The hospital and the laboratory

The following worked inside the medicine of the hospital, or tested the old medicines with its methods.

Name	Dates	Who	Chapter
Franciscus Sylvius	1614 to 1672	Professor at Leiden from 1658. He held that illness is an excess of acid or of alkali, and treated with the opposite	A1
Georg Ernst Stahl and Friedrich Hoffmann	About 1700	Two professors at Halle. Stahl taught that a soul governs the chemistry of the body. Hoffmann placed illness in the tone of the fibres and nerves	A1
William Cullen and John Brown	Eighteenth century	Scottish physicians. Cullen placed illness in the tone of the nerves. Brown laid it to too much or too little stimulation	A1
Xavier Bichat	1771 to 1802	Paris anatomist. He placed illness in the tissues	42
René Laennec	1781 to 1826	Paris physician. He invented the stethoscope	42
Ignaz Semmelweis	1818 to 1865	In 1847 he had the students of a Vienna lying-in ward wash their hands, and the deaths of the mothers fell	A1

Name	Dates	Who	Chapter
John Snow	1813 to 1858	London physician. He showed in 1854 that the cholera of one district came from the water of one street well	A1
Florence Nightingale	1820 to 1910	The founder of modern nursing. She designed her airy wards on the theory that bad air causes illness	A1
Claude Bernard	1813 to 1878	French physiologist. He taught that the body keeps its inner state constant	A1
Louis Pasteur	1822 to 1895	French chemist. He showed that living germs cause fermentation and disease	42, A1
Robert Koch	1843 to 1910	German physician. He found the germs of tuberculosis and cholera	42, A1
Rudolf Virchow	1821 to 1902	Berlin pathologist. He placed illness in the cell, and held that medicine is a social science	42, A1, A10
Carl Koller	1857 to 1944	Viennese eye doctor. In 1884 he showed that a few drops of the compound of coca numb the eye for surgery	17
Niels Finsen	1860 to 1904	Danish physician. He treated tuberculosis of the skin with light. Nobel Prize, 1903	A8
Charles Bouchard and Arbuthnot Lane	About 1900	A French physician and a London surgeon. They held that the bowel poisons the body, and Lane removed the bowel for it	A1
Henry Cotton	1876 to 1933	Psychiatrist of New Jersey. He had teeth, tonsils and lengths of bowel taken from his mental patients	A1
Mary Walker	1888 to 1974	London doctor. In 1934 she tried the compound of the Calabar bean on a woman with weak muscles, and it worked at once	30
Walter Cannon	1871 to 1945	American physiologist. In 1942 he collected the reports of death from sorcery and proposed how lasting fear can kill	13, 21, 68

Name	Dates	Who	Chapter
Sigmund Freud and Carl Jung	1856 to 1939; 1875 to 1961	The founders of the talking cure and of its chief branch. Jung took up the old image of the wounded physician	6, 7, 10, 20, 53, A3
George Engel	1913 to 1999	American physician. In 1977 he proposed a model of illness that includes the mind and the surroundings	A7
Aaron Antonovsky	1923 to 1994	Sociologist. He asked what keeps people well, and named a sense that life hangs together	A7
Robert Ader	1932 to 2011	Psychologist. In the 1970s he showed that the immune system of a rat can learn from a taste	22, A7
Ronald Melzack	1929 to 2019	Pain researcher. In 1977 he compared the tender knots of muscle with the needling charts	47
Norman Farnsworth	1930 to 2011	He counted the drugs that are single compounds from plants. Most had the use that the old medicines gave the plant	22
David Barker	1938 to 2013	English physician. He showed that the months in the womb shape the illnesses of later life	A10
Dean Ornish	Born 1953	American physician. He put patients with narrowed arteries of the heart on a programme of yoga, breathing, walking and diet	61, 74, 79, A10
Luciano Bernardi	Our time	Italian physician. He found that the rosary and a mantra both slow the breath to six a minute	5, 61, 74, A9
Helene Langevin	Our time	American researcher. She found that most needling points lie where sheets of connective tissue meet	47
Ted Kaptchuk	Born 1947	Trained in Chinese medicine, and later a researcher of placebo at Harvard	8, 22, 51, 74, A1

Name	Dates	Who	Chapter
Fabrizio Benedetti	Our time	Italian physiologist. He showed in the laboratory how the announcement of pain raises pain	21, 22
James Pennebaker	Our time	Psychologist. He asked students to write for four days about the worst experience of their lives	21, 91
Julianne Holt-Lunstad	Our time	She pooled 148 studies and found that people with strong ties live longer	22, 69, 86
Kevin Tracey	Our time	American surgeon. In 2002 he described a reflex by which the brain restrains inflammation	A3
Michael Levin	Our time	American biologist. He studies how a body knows its shape	A3
Michael Huffman	Our time	Primatologist. In the 1980s he watched a sick chimpanzee treat itself with a bitter plant	28
Machteld Huber	Our time	Dutch physician. In 2011 she proposed to define health as the ability to adapt and to manage oneself	A10

Founders of the newer methods

Appendix A describes the methods. This table gives their founders.

Name	Dates	Who	Chapter
Vincenz Priessnitz	1799 to 1851	Silesian farmer. Cold water, air and exercise	A5, A8
Johann Schroth	1798 to 1856	Silesian carter. The dry cure	A5
Samuel Thomson	1769 to 1843	American herb doctor. Lobelia and steam	A1
Constantine Hering	1800 to 1880	He carried homeopathy to America	A3
Per Henrik Ling	1776 to 1839	Swedish fencing master. Medical gymnastics	A4

Name	Dates	Who	Chapter
Sebastian Kneipp	1821 to 1897	Bavarian priest. Water, herbs, movement, food and order	42, A5, A8
Phineas Quimby	1802 to 1866	American mind healer	A7, A9
Mary Baker Eddy	1821 to 1910	Christian Science	A9
Allan Kardec	1804 to 1869	French founder of Spiritism	70, A9
Wilhelm Schüssler	1821 to 1898	The twelve tissue salts	A6
Ignaz von Peczely	1826 to 1911	Hungarian physician. The reading of the iris	A11
Andrew Taylor Still	1828 to 1917	Country physician of Missouri. Osteopathy	A4
Daniel David Palmer	1845 to 1913	Chiropractic	A4
Johan Mezger	1838 to 1909	Amsterdam physician. The strokes of modern massage	A4
Benedict Lust	1872 to 1945	A German who had been cured at Kneipp's house. He brought the nature cure to New York in 1892 and gave it the name naturopathy	A5
Rudolf Steiner and Ita Wegman	1861 to 1925; 1876 to 1943	Anthroposophic medicine	42, A3
Maximilian Bircher-Benner	1867 to 1939	Zurich physician. Raw food	A5
Franz Xaver Mayr	1875 to 1965	Austrian physician. The cure of the bowel	A5
Otto Buchinger	1878 to 1966	German physician. Fasting	A5
Max Gerson	1881 to 1959	A diet against cancer	A5

Name	Dates	Who	Chapter
Weston Price	1870 to 1948	American dentist. In the 1930s he travelled to peoples who still ate as their ancestors had	A5
Frederick Matthias Alexander	1869 to 1955	Australian actor. The use of the self	A4
William Fitzgerald and Eunice Ingham	1872 to 1942; 1889 to 1974	Zones of the body, and the map of the feet	A4
William Sutherland	1873 to 1954	Osteopath. The movement of the bones of the skull	A4
Mikao Usui and Hawayo Takata	1865 to 1926; 1900 to 1980	Reiki, and the woman who took it to the West	A3
Edward Bach	1886 to 1936	English physician. The flower remedies	A6
Edgar Cayce	1877 to 1945	American who gave readings in a sleep	A11
Albert Abrams	1863 to 1924	American physician. The first of the devices that were said to read a vibration	A3
George Ohsawa and Michio Kushi	1893 to 1966; 1926 to 2014	Macrobiotics	A5
Wilhelm Reich	1897 to 1957	Pupil of Freud. The armour of the muscles	A3, A4
Ida Rolf	1896 to 1979	American biochemist. Deep work on the wrappings of the muscles	A4
Moshe Feldenkrais	1904 to 1984	Physicist. Learning through small movements	A4
Milton Trager	1908 to 1997	Rocking and loosening	A4

Name	Dates	Who	Chapter
Janet Travell	1901 to 1997	American physician. The tender knots of muscle and the pain they send elsewhere	17, 40, 82, 89, 104, A4
Randolph Stone	1890 to 1981	Polarity therapy	A3
Reinhold Voll	1909 to 1989	German physician. Measuring the skin at the needling points	A3, A11
Heinrich Reckeweg	1905 to 1985	German physician. Homotoxicology	A3
Paul Nogier	1908 to 1996	French physician. In 1957 he drew the map of the ear	51, A3
Linus Pauling	1901 to 1994	Chemist with two Nobel Prizes. Vitamins in great doses	A5, A6
Johanna Budwig	1908 to 2003	German chemist. Quark and linseed oil	A5
Konstantin Buteyko	1923 to 2003	Soviet physician. Breathing less	A8
Milton Erickson	1901 to 1980	American psychiatrist. Hypnosis by suggestion in ordinary talk	A7
Viktor Frankl	1905 to 1997	Viennese psychiatrist. Healing through meaning	A7
Jacob Moreno	1889 to 1974	Psychodrama	A7
Alexander Lowen	1910 to 2008	Pupil of Reich. Work on the body beside the talking cure	A4
George Goodheart	1918 to 2008	American chiropractor. The testing of muscles	A11
Dolores Krieger and Dora Kunz	1970s	A professor of nursing and a healer. Therapeutic touch	A3
John Upledger	1932 to 2012	American osteopath. Craniosacral therapy	A4
Tom Bowen	1916 to 1982	Australian. Light rolling moves with pauses	A4

Name	Dates	Who	Chapter
Shizuto Masunaga	1925 to 1981	Japanese. Shiatsu along the lines of the body	A4
Stanislav Grof	Born 1931	Czech psychiatrist. Fast breathing to music	A8
Francine Shapiro	1948 to 2019	American psychologist. Movements of the eyes while a memory is held	A7
Jon Kabat-Zinn	Born 1944	The eight-week course of mindfulness, from 1979	A7
Bert Hellinger	1925 to 2019	German. Family constellations	A7
Ryke Geerd Hamer	1935 to 2017	German physician who lost his licence. He laid every cancer to a shock	A7
Hulda Clark	1928 to 2009	She laid all illness to parasites, and sold a device against them	A5
Louise Hay	1926 to 2017	American author. A thought for every illness	A7
Fritz-Albert Popp	1938 to 2018	German physicist. The faint light of living cells	A3
Jacques Benveniste	1935 to 2004	French immunologist. The claim of 1988 that water remembers	A3
Semyon Kirlian	1898 to 1978	Soviet electrician. Photographs of a glow around the fingers	A11
Rupert Sheldrake	Born 1942	English biologist. Fields of form	A3
Deepak Chopra	Born 1946	Physician of Indian birth in America. Indian medicine in the language of the quantum	61, A3
Andrew Weil	Born 1942	American physician. In 1994 he founded a training in what he called integrative medicine	A10

What the list shows

Many of the healers came to the craft through an illness of their own. Huangfu Mi had a palsy. Hildegard was ill until she obeyed. Black Elk lay as dead for twelve days. Aelius

Aristides was a patient for most of his life. Kneipp treated his own consumption in a cold river. Chapter 10 described the passage, and it does not end with the peoples without books.

Many founders were not physicians. The list of the newer methods holds a farmer, a carter, a priest, an actor, a dentist and an electrician. The hospital has its own: Pasteur was a chemist, and Nightingale a nurse.

The best testimony was freely given. //Kabbo stayed for two years to tell his stories. Swimmer let his notebook be copied. Juan Gregorio reasoned out his doctrine for the record. María Sabina told her life. Where a healer chose to speak, the account is full. Where the words were taken from an unwilling people, it is thin.

Women are scarce in the books and common in the practice. Peseshet, Trota, Hildegard and Jacoba Felicie are the few names from the old writings. Among the Zulu most diviners are women, and Wa Na was held the strongest healer of her people.

The same person often stood on both sides. Te Rangi Hīroa was a Māori and a physician. Lambo was a Yoruba and a psychiatrist. Ngubane, Abimbola, Ksenofontov and Pukui wrote about their own peoples. The bridge between a medicine and its readers has usually been one person who belonged to both.

103. Measures, doses and preparations

What this chapter gives

The chapters on the pharmacies named the drugs. This chapter is on the craft that lies between the plant and the patient. It tells how a drug was gathered, prepared, measured and given, and it sets the traditions side by side. It also gives the old weights in grams, so that a reader of an old prescription can see what it asked for.

The tables describe what was done. They are not advice for use. Many of the old preparations are poisons in a wrong dose, and several are poisons in any dose.

Gathering

Every old pharmacy held that a plant is not the same drug at every time and place.

Tradition	The rule	Chapter
Greece	Dioscorides tells the gatherer to work in clear weather and to know each plant at every age, from the shoot to the seed. Plants of high, cold and windy places are stronger than plants of wet plains and shade	39
China	A drug has a true region. Ginseng of the north-eastern mountains, aconite and coptis of Sichuan and rehmannia of Henan are preferred to the same plants from elsewhere. Roots are dug in late autumn or early spring. Leaves are taken at full growth, flowers as they open, and fruit when it is ripe	52
India	Caraka asks that the gatherer be clean, face east or north and honour the gods. Leaves and branches are taken in the rains and in spring. Roots are dug in summer or late winter. Bark, tubers and milky sap are taken in autumn, and heartwood in early winter	60
Tibet	Seven rules: the right place, the right time, right drying, freshness, the removal of what harms, the making mild, and right compounding. The gatherer recites as he works	64
England, tenth century	The leechbooks name the day and the hour, and the prayers to be sung over a plant before it is dug. For one root the healer goes at sunset on a Thursday, sings over the plant, and returns to dig it at dawn	42

The rules are not only piety. The amount of a compound in a plant changes with the soil, the height, the season and the age of the plant, and this has been measured for many drugs. A ginseng root of six years is a different drug from a root of two. The old pharmacies had no means of measuring a compound. They fixed the place and the season in its stead.

The forms of a remedy

Form	How it is made	Where it is used, and what is said of it
Pressed juice	A fresh plant is crushed and squeezed	India counts it the strongest of its five simple forms
Cold infusion	The drug stands in cold water, often overnight	India. In China a recipe of the fourth century asked for sweet wormwood to be steeped cold. Boiling destroys its compound, as chapter 44 told
Hot infusion	Boiling water is poured on the drug	The herb tea of Europe; India
Decoction	The drug is boiled in water until a set part is left	The chief form in China. Zhang Zhongjing states for each formula how much water to take and how far to boil it down
Powder	Dried drugs are ground and sieved	Taken in water, or boiled for a short time. The state pharmacy of the Song sold powders for boiling, which saved drugs
Pill	A powder is bound with honey, water, flour paste or wax and rolled	For long use, for drugs that taste foul, and for poisons whose dose must be exact. The common form in Tibet today
Paste to be licked	A powder is stirred into honey or boiled sugar	The theriac of the Greeks; the *majun* of the Unani physicians; the Indian jam of Chyavana
Syrup	A juice or decoction is boiled with sugar	A gift of the Arabic pharmacy, which had cane sugar. The words syrup and julep are Arabic and Persian
Honey and vinegar	Honey is boiled with vinegar and water	The Hippocratic drink in fevers. The Unani physicians still give it
Drug wine and tincture	The drug stands in wine or spirit	The old Chinese sign for medicine holds the sign for a wine jar. Europe took to tinctures when distilled spirit became common
Fermented drink	A decoction with sugar or honey ferments for weeks	India; the medicinal beer of Tibet
Distilled water	The drug is distilled with water	Rose water; the distillates of the Unani pharmacy

Form	How it is made	Where it is used, and what is said of it
Medicated butter and oil	Fat is boiled with a decoction and a paste until the water is gone	India and Tibet. The fat is said to carry the drug into the deep tissues
Ash	A metal or mineral is cleaned, ground with plant juices, sealed in a vessel and burned, many times over	India, Tibet and the Unani pharmacy. Lead, mercury and arsenic have been found in such medicines, as chapter 61 told
Ointment, plaster and poultice	Drugs in fat, oil or wax; spread on cloth; or laid on warm and moist	Everywhere. Egypt laid honey and fat on wounds
Smoke and steam	The patient breathes it or sits in it	Fumigation in Egypt and Mesopotamia; the cleansing smoke and the sweat lodge of North America; the steam tent of Hawai‘i
Snuff and nose oil	A powder is blown, or an oil dripped, into the nose	The Indian treatment of the head; the snuffs of the Amazon
Enema	A liquid is passed in from below	Egypt; India, where it is the chief treatment of wind; southern Africa
Eye medicine	A fine powder or paste is laid on the lids	Egypt; India. Roman eye doctors sold theirs as small sticks with the maker’s stamp

The form is part of the remedy. A saying that is given to Li Dongyuan sets three forms apart. A decoction washes through, and it is for a grave illness. A powder scatters, and it is for a sudden one. A pill is slow, and it is for a long one. The Tibetan book of chapter 64 gives the same order. Decoctions and powders act quickly and are given first. Pills and butters act slowly and are given for long illnesses.

Preparing the raw drug

Few drugs are used as they are gathered. Chapter 52 listed the Chinese methods: steaming with wine, frying with honey, with vinegar or with salt water, charring, and long boiling to reduce a poison. Three further methods belong to the same craft. A root may be steamed and dried nine times over. A mineral may be ground under water, so that only the finest part is poured off and kept. Shells and stones are burned until they crumble.

The Indian pharmacy has two words for the work on a dangerous material. The first means cleansing. Aconite root is soaked for days in the urine of a cow. The seed of the poison nut is fried in clarified butter or boiled in milk. The second word means killing, and it is used of metals. The metal is burned to ash again and again, until it passes three tests. The ash is so fine that it fills the lines of a fingertip. It floats on still water. And it cannot be brought back to the metal.

The Unani physicians speak of correcting a drug. Chapter 40 noted that each drug in their books has a degree, a corrective and a substitute. The corrective is a second drug that is added to keep the first from harming an organ.

The Tibetan pharmacists tame mercury in a process of several weeks, with eight metals and eight minerals, as chapter 64 told.

Dioscorides wrote on keeping as well as on gathering. Flowers and scented parts go into dry boxes of lime wood. Moist drugs go into vessels of silver, glass or horn. Most plant drugs lose their strength within three years, he says, though the hellebores keep for many.

Old and fresh. Most traditions want a drug fresh. Each has its exceptions. The Indian books say that all drugs are best when new, except honey, clarified butter, raw sugar, long pepper and the seed of embelia. The Chinese name six drugs that are better when they are old. The best known is the peel of the mandarin, whose Chinese name means the aged peel.

Weights and measures

The table gives the common units of the old prescriptions with their rough value. The values changed with the century and the city, and the figures are a guide only.

Tradition	Unit	About	Note
Egypt	*ro*	15 millilitres	A mouthful. Doses are written as the halving fractions of chapter 36
Egypt	*hin*	0.5 litre	
Mesopotamia	Shekel	8 grams	A shekel is 180 barleycorns
Mesopotamia	Mina	500 grams	Sixty shekels
Greece	Obol	0.7 gram	
Greece and Rome	Drachm	3.4 to 4.3 grams	Six obols. The Roman drachm is the lighter
Rome	Ounce	27 grams	
Rome	Pound	327 grams	Twelve ounces
Rome	*Cyathus*	45 millilitres	A ladle of wine or water

Tradition	Unit	About	Note
The Islamic world	*Dirham*	3 grams	
The Islamic world	*Mithqal*	4.5 grams	
The Islamic world	*Ratl*	400 grams	It differed from city to city
India	*Ratti*	0.12 gram	The red and black seed of the rosary pea
India	*Masha*	1 gram	Eight *ratti*
India	*Tola* or *karsha*	12 grams	Twelve *masha*
India	*Pala*	48 grams	Four *karsha*
China, Han dynasty	*Liang*	14 to 16 grams	The unit of Zhang Zhongjing. Its value is disputed
China, Song to Qing	*Liang*	37 grams	Ten *qian*
China, practice today	*Qian*	3 grams	By convention
China, Han dynasty	*Sheng*	200 millilitres	The measure of water for a decoction
Europe to the nineteenth century	Grain	65 milligrams	The English apothecaries' values. Each country had its own
Europe	Scruple	1.3 grams	Twenty grains
Europe	Drachm	3.9 grams	Three scruples
Europe	Ounce	31 grams	Eight drachms
Europe	Pound	373 grams	Twelve ounces

The smallest weights are seeds. The Mesopotamian weighed with a barleycorn and the European apothecary with a grain of corn. The Arab weighed with the seed of the carob, which gave the jeweller his carat. The Indian weighed with the seed of the rosary pea.

One question has stayed open for many centuries. Zhang Zhongjing wrote his formulas in the weights of the Han. Later dynasties used the same words for heavier weights, and physicians had to guess what he meant. Li Shizhen ruled that one old *liang* should be read as

one *qian* of his own day. Scholars who have weighed Han measures from tombs put the old *liang* near fifteen grams. That is about four times as much as Li Shizhen's reading gives. Both readings are in use today (Mitchell 1999).

Much was never weighed. Zhang Zhongjing counts as often as he weighs: twelve jujubes, seventy apricot kernels, a lump of gypsum as large as a hen's egg. The healers without writing measure by the handful, the pinch, the length of a finger, and the count. The count is seldom free. Chapter 73 gave the numbers that each people holds to.

The patient's own measure

The old medicines took several of their units from the patient.

The Chinese needler finds a point with the body inch, which is the breadth of the patient's own thumb. Chapter 47 described it. The Indian and the Tibetan physician use the patient's own finger-breadth. Caraka gives the height of a well-made body as eighty-four finger-breadths of that person's own fingers. He gives the amounts of the fluids of the body in that person's own cupped hands.

The dose follows the same rule. The Indian books tell the physician to look at the digestive fire, the strength and the age of the patient, and at the season, before he fixes it. Sharngadhara gives a scale for children. An infant of one month gets one *ratti*. The dose rises by one *ratti* for each month of the first year, and by one *masha* for each year after it, up to the age of sixteen. The Chinese books give a child a fraction of the dose of a grown person.

A strong poison is given by the response and not by the weight. Zhang Zhongjing tells the physician to begin an aconite formula low and to raise it step by step until the patient feels it. Withering, who brought the foxglove into the hospital, did the same. Chapter 42 gave the sentence of Paracelsus. The dose alone makes that a remedy is not a poison.

The hour and the carrier

The hour. The preface of the *Classic of the Divine Farmer* fits the hour to the place of the illness. For an illness above the chest the patient eats first and takes the drug after. For an illness below the heart he takes the drug first. For the limbs and the vessels he takes it fasting in the morning. For the bones and the marrow he takes it on a full stomach at night.

Caraka lists ten times at which a drug can be taken. Among them are dawn on an empty stomach, before a meal, in the middle of it, after it, between two meals, with each mouthful, and at bedtime. Each of the three faults has its hours of the day, as chapter 57 told, and the hour of a drug is chosen with them in mind.

The Hippocratic physicians tied purging to the season. An aphorism warns against it in the dog days and just before them. Chapter 90 met those days.

The carrier. A drug is seldom swallowed alone. The Indian physician gives it with honey against phlegm, with clarified butter against bile, and with oil or warm water against wind. The Tibetan physician calls the carrier the horse of the medicine. He gives hot water with a drug for a cold illness and cooled boiled water with a drug for a hot one. The Chinese physician takes a pill with salt water to lead it to the kidney, or with wine to move the blood. The Greek gave his drugs in wine, in honey water or in barley water.

What the chapter shows

The dose is read from the patient. The inch, the finger and the cupped hand are the patient's own. The dose follows his strength, his age, his digestion and the season. Chapter 5 gave this as the first rule for acting: read the state first. The hospital took a fixed dose for a fixed weight of drug. It has since begun to fit the dose to the patient again, by age, by weight, and by the working of the liver and the kidneys.

The form goes to the place. A salve is laid on the eye, and a snuff is blown toward the head. An enema is given for wind in the lower belly. Salt leads a pill to the kidney. The second rule of chapter 5 asks that what is offered have the form of the place where it is to close. The old pharmacist chose a form by that rule, in his own words.

The remedy is offered whole. A formula has its ruler, its helpers and its envoy. It has its hour and its carrier. Chapter 5 gave the fifth rule: offer the whole window at once. The cold steep of the sweet wormwood shows what is lost when one part of the instruction is dropped. For sixteen centuries the recipe said cold, and boiled extracts failed.

After the act comes rest. The Indian purge is followed by days of a thin gruel that thickens step by step. The Navajo patient rests for four days. The sixth rule of chapter 5 is to leave silence after each offering.

The same matter kills and cures. Aconite, mercury, the poison nut and the foxglove stand in every chapter of this part. The craft of cleansing, correcting, taming and killing is a search. It looks for the form and the amount in which a strong direction turns a pattern back and leaves the body whole. Where the craft failed, the harm was real. Chapter 75 counted it.

Much of this has not been tested. Does a root fried with vinegar act more on pain than the raw root? It has been measured for a few drugs and not for most. Whether a drug works better at its hour has hardly been asked of the old remedies. The hospital has found that the hour matters for some of its own.

104. The atlas by tradition

What this chapter does

The atlas of Part VIII goes illness by illness. Under each illness it sets the traditions side by side. This chapter turns the atlas a quarter. It goes tradition by tradition, and under each it sets the illnesses in the order of the atlas. A reader who follows one medicine can see here, in one table, how that medicine named and explained each illness and what it did.

No new matter is added. Every row was taken by a program from the tables of the atlas. The program put a row under a heading when the name of the tradition in the atlas held one of the words of that heading. A row that names two traditions, such as Greece and the Unani physicians, stands under both. Where the atlas gave a narrower name, such as a country or a date, the row keeps it in italics.

The chapter begins with a count that the turning makes possible.

What each tradition blames: a count

For each tradition the program looked at the names and causes that the atlas gives. It counted in how many entries a word of a certain kind occurs: wind, heat, bile, a spirit, a broken rule. The first row of each table gives the number of entries in which the atlas has a name or a cause for the tradition.

The peoples without writing

Cause named	Shaman’s world	Africa	Australia	Americas	Pacific
Entries with a name or cause	*15*	*13*	*5*	*21*	*11*
Wind, air or breath				2	1
Heat or fire	1			1	1
Cold				1	1
Damp, water or phlegm				2	1
Food and drink	1	1		2	1
A worm or other small creature	1				
A spirit, a ghost, a god or the dead	4	8	3	7	2

Cause named	Shaman's world	Africa	Australia	Americas	Pacific
Another person: sorcery, envy, the eye	1	4			1
A broken rule, oath or duty		3			
The soul lost, or a fright	6		2	1	1
A feeling	2	1	3	4	1
Birth and inheritance		4			
The sky, the season or the weather				4	
Brought by strangers	2			3	1
None of these words	2	1	2	4	4

From Mesopotamia to Europe

Cause named	Mesopotamia	Egypt	Greece, Rome	Islamic world	Europe
Entries with a name or cause	*20*	*20*	*62*	*26*	*21*
Wind, air or breath			4	2	4
Heat or fire	1	1	9	5	2
Cold			8	6	3
Damp, water or phlegm		1	17	11	3
Blood	1	1	6	3	1
Bile			14	7	1
Food and drink			6	5	2
A worm or other small creature	1	1			1
A spirit, a ghost, a god or the dead	12	3		1	2
Another person: sorcery, envy, the eye	1		1	1	1

Cause named	Mesopotamia	Egypt	Greece, Rome	Islamic world	Europe
A broken rule, oath or duty					1
The soul lost, or a fright			1		
A feeling			6	2	1
Birth and inheritance			1		
The sky, the season or the weather	1		4	3	3
A poison			1		2
Age and wear			1		
The humours or the faults, not named singly			14	7	2
An organ, the *qi* or the essence		1	18	11	1
None of these words	7	15	9		5

The medicines of Asia

Cause named	China	India	Tibet	Japan, Korea
Entries with a name or cause	*74*	*73*	*16*	*5*
Wind, air or breath	15	22	5	
Heat or fire	35	9	1	
Cold	16	1	2	
Damp, water or phlegm	36	10	1	
Blood	16	7	1	
Bile		7	2	
Food and drink	10	18	3	

Cause named	China	India	Tibet	Japan, Korea
A worm or other small creature	4	1		
A spirit, a ghost, a god or the dead	1	3	5	3
Another person: sorcery, envy, the eye		2		
A broken rule, oath or duty		2	1	
The soul lost, or a fright	2	1	1	
A feeling	7	10	2	1
Birth and inheritance	2	2		
The sky, the season or the weather	2	2	2	
A poison	2	2	1	
Age and wear	1	2		
The humours or the faults, not named singly		20		
An organ, the *qi* or the essence	50	3	3	
None of these words	4	7	3	1

What the count shows

Greek medicine names no spirit. In sixty-two entries the atlas gives no god, ghost or demon as a cause for the Greek and Roman physicians. Every other tradition in the tables has some.

The Hippocratic sentence of entry 39 was a programme, and the count shows that the physicians kept to it. The Greek patient who looked for a god went to the sanctuary of chapter 37, which stood beside the medicine and outside its books.

Mesopotamia names little else. In twelve of its twenty entries the cause is the hand of a god, a ghost or a demon. In seven the atlas has a description or an outlook from the tablets, and no cause.

Egypt describes and treats. In fifteen of twenty entries the atlas finds no cause in the papyri. They state what the physician sees, what he will say, and what he is to do. Chapter 35 showed this form in the papyrus on wounds.

China looks inside. In fifty of seventy-four entries the Chinese cause is an organ, the *qi* or the essence. Damp and phlegm come next, with thirty-six, and heat, with thirty-five. A spirit is named once. Bile is never named. The fluid that fills the Greek books has no place in the Chinese ones.

India names wind and food. Wind stands in twenty-two of seventy-three entries, and food and drink in eighteen. No other tradition names food so often. The three faults together, without a single one picked out, are named in twenty.

Bile marks one family. It is named for Greece and Rome, for the Unani physicians, for India and for Tibet, and once for Europe. These are the medicines of the humours and of the three faults. The count shows the family in one row.

The soul that leaves belongs to the shaman's world. It is named in six of fifteen entries there. It is rare elsewhere, though the Americas, Aboriginal Australia and the Pacific each have it.

Another person is blamed most in Africa. Sorcery or envy stands in four of thirteen entries, a broken rule in three, and birth and inheritance in four. The last is the Yoruba teaching of the head that is chosen before birth, and of the child that is born to die.

What the count cannot show

The count is of the atlas and not of the traditions. It finds the words in which this book summed up a cause. A tradition with few entries cannot be judged: Aboriginal Australia and Japan with Korea have five each. The kinds overlap, and one cause can fall under two. A cause can also be given in words that the program did not look for. The last row of each table shows how often that happened.

The count does not say which causes are true. It shows where each medicine looks first. Chapter 72 called the name of an illness an address, which tells the healer what to do next. A tradition that names an organ goes to the organ. A tradition that names a ghost goes to the ghost. The tables that follow show the address and the act side by side.

The shaman’s world, Siberia and the north

The atlas has rows under this heading in 17 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	Heat	An intrusion, or the nearness of a spirit or of the dead	
4. The poxes	A Russian woman who travels from camp to camp	An illness that came with the Russians	
5. Epidemics		*Siberia, Hawai‘i, Mexico:* Illnesses that came with the strangers	
8. Worms	The worm as a figure of the intruding illness	Sent, or entered by itself	
26. The broken bone	*Mongolia:* Bone-setters of certain families		
28. Pain without a wound	A person who is not wholly there	Chapter 21 gave the signs of soul loss: tired, in pain, without appetite, sleeping badly	
34. Madness	The illness of one who is called and refuses; the theft or loss of the soul; an intruder		
35. Melancholy	A person whose soul has gone	Fright, grief, homesickness	

Entry	Name or kind	Cause as the tradition gives it	What was done
36. Fear, fright and the lost soul	*Hmong, Thai, Lao, Khmer:* The soul that has left	*Hmong, Thai, Lao, Khmer:* A fright, an illness, a journey	*Hmong:* The shaman rides out after the soul and bargains for it. At the door a soul-caller calls it home
39. The falling sickness	*Hmong:* The spirit catches you and you fall down	*Hmong:* A soul that has fled; also a sign that the person may become a shaman	
41. Grief		The dead draw the living after them	
56. Dying		A dead person must reach the place of the dead. One who lingers makes the living ill. The shaman escorts the soul	Care of the dying: The shaman escorts the soul to the place of the dead. The Nanai of the Amur held a great rite for this, sometimes years after the death
57. Scurvy	*Arctic peoples:* Not known among them	*Arctic peoples:* They ate fresh meat and the skin of the whale, raw	
82. Illness sent by another	Sorcery, the dart, the pointed bone		The object is taken out and sent back. The patient is closed and guarded
83. Illness from a broken rule			
84. Illness from the dead			

Entry	Name or kind	Cause as the tradition gives it	What was done
88. The call		The shaman’s illness. It comes between twelve and twenty. Among the Evenki it is the illness of the whole clan, gathered in one person	

Africa and its diaspora

The atlas has rows under this heading in 22 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
4. The poxes	The illness of Shopona, king of the world	The orisha of the earth, who strikes those who offend him	
5. Epidemics		*Yoruba and its diaspora:* The lord of the earth, honoured as the master of epidemics and of their cure	
24. Pain of the back			The root of devil’s claw
34. Madness	The raving madness and several quieter kinds	Sorcery, a broken taboo, an offended orisha, the person’s own head, or inheritance	The patient lives for months in the healer’s compound. A decoction of a root brings deep sleep, again and again. Sacrifice, and a rite of discharge at the river
35. Melancholy			*Zimbabwe today:* A talk with a trained grandmother on a bench outside the clinic

Entry	Name or kind	Cause as the tradition gives it	What was done
37. Possession	*Ethiopia, Sudan, Egypt:* A spirit of the *zar* kind, which takes women above all; *From Congo to the Cape:* An ancestor or a foreign spirit that wants to be served; *Haiti, Cuba, Brazil:* The spirits and the orisha, who mount their servants		
39. The falling sickness	The falling sickness	Sorcery; in the common belief, the foam of another sufferer	
40. Craving			*Gabon:* The root bark of iboga, taken once, in a night watched by others
44. Barrenness		A matter of the head that one chose before birth; of an offended orisha; of the companions of a child that is born and dies again	A consultation of Ifá, a sacrifice, and a visit to the orisha of the river, who gives children

Entry	Name or kind	Cause as the tradition gives it	What was done
48. The child that does not thrive	The child that is born to die; *Ghana:* The sickness of the child that is put aside when the next one is born	A child that belongs to companions in the other world and has promised to return to them; *Ghana:* Too early weaning	A consultation of Ifá; a sacrifice to the companions; marks and names that hold the child here; *Nigeria:* For fits, a mixture of tobacco and cow's urine
51. The bite of a snake		*Many African peoples:* The bite of a snake is seldom chance. A healer asks who sent it	Cuts over the bite, with powdered herbs rubbed in. A black stone, made of charred bone, laid on the wound to draw the venom
52. Burns			The mashed fruit of the papaya, to clean a dirty burn
55. The failing of desire			The bark of the yohimbe tree
61. Pale blood	*Yoruba and Igbo:* The child that is born to die and comes again	*Yoruba and Igbo:* A child that belongs to companions in the other world	*Nigeria:* A healer's mixture of four plants for the inherited illness
65. The strangling throat			The root of a geranium, for coughs and the chest, as chapter 30 listed
72. The old man's water	*Southern and central Africa:* The trouble of old men		Drugs: A tea of the bark of the African plum tree
82. Illness sent by another	The work of the mothers of the night		An offering at night for the mothers, with what the verse of Ifá names

Entry	Name or kind	Cause as the tradition gives it	What was done
83. Illness from a broken rule			
85. Too much thinking and the wind that rises	*Shona of Zimbabwe:* Thinking too much	*Shona of Zimbabwe:* Troubles that have no way out	*Zimbabwe:* A talk with an older woman who listens and helps to sort one trouble from the next
88. The call		The illness that makes a diviner; An orisha wants the person as a priest. The illness will not end until the person is initiated	
89. The sickness of the first months			*Africa and the southern United States:* White clay, eaten in small pieces
93. The crying child, the teeth and the wet bed			The teeth: The tooth buds are dug out with a nail or a bicycle spoke

Aboriginal Australia

The atlas has rows under this heading in 9 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
23. The headache			A cord or a vine tied tightly round the head
26. The broken bone	Limbs are splinted with bark		

Entry	Name or kind	Cause as the tradition gives it	What was done
29. The itching and scaling skin			The crushed leaves of the tea tree
36. Fear, fright and the lost soul	The spirit that has shifted from its seat	Fright, grief, homesickness	
41. Grief		Grief makes the spirit shrink. The name of the dead is not spoken	
53. Wounds and sores			Dressing: The crushed leaves of the tea tree; clay
54. The weakness of old age		*Hawai‘i and Aboriginal Australia:* The old are the keepers of knowledge, and they keep a task	
67. The itch			The oil of the tea tree
87. The illness of longing	The spirit is moved from its seat by homesickness. Elders say that they cannot get well off their country		

The Americas

The atlas has rows under this heading in 36 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
2. The fever that returns			The bark of the cinchona tree
4. The poxes	The great rash	Brought by a Spanish soldier in 1520	
5. Epidemics		A smoke that rises when the earth is opened for gold and metals, and that spreads over the forest; *Siberia, Hawai‘i, Mexico:* Illnesses that came with the strangers	
7. Leprosy	One of the illnesses of the rain god	Sent by Tlaloc and his helpers	
8. Worms			The milky sap of a wild fig; *Mesoamerica:* Wormseed
12. Dropsy	One of the illnesses of water	Sent by the rain god	
13. Stroke and palsy	Palsy and a twisted face in children	The spirits of women who died in childbirth, at the crossroads	
20. Gout	One of the illnesses of water	Sent by the rain god	
21. Stone			*South America:* Drugs: A small herb whose Spanish name means stone breaker
23. The headache	The headache of great heights	Thin air	Coca leaf, chewed

Entry	Name or kind	Cause as the tradition gives it	What was done
25. Worn and inflamed joints			Chilli, rubbed on
33. The failing ear	Deafness	One of the troubles that the masked gods send	
36. Fear, fright and the lost soul	*The Andes and Mexico:* Fright	*The Andes and Mexico:* The soul has jumped out at a shock: a fall, a dog, thunder, a death in the house	The healer goes at night to the place of the fright with the patient's clothes. He calls the soul by name, and walks back without turning round, ringing a bell and trailing the clothes; The patient is swept with herbs and with an egg. The soul is called, with a pinch of earth from the place; *The Plains and the Navajo:* The returning warrior is cleansed before he comes home: by the sweat lodge, or by a chant against the ghosts of the enemy dead
38. Sleeplessness	The sleeplessness of long worry	Too much thought	

Entry	Name or kind	Cause as the tradition gives it	What was done
40. Craving	*The Andes, the Amazon, the Plains:* The sacred plants		*The native nations of North America:* The sweat lodge and the peyote meeting, used today in centres for the addicted. A Seneca prophet founded a movement of abstinence in 1799; The vine brew, within a stay of months at a centre
41. Grief		A mother’s grief spoils her milk	
45. Birth			
48. The child that does not thrive	Fits, palsy and wasting; The fallen fontanelle	The spirits of women who died in childbirth; A fall or a sudden pulling away from the breast	The healer pushes up the palate, or holds the child by the feet and taps the soles
51. The bite of a snake			*The Americas:* Plants named for the purpose; tobacco; sucking
53. Wounds and sores		Wounds of war were washed, dressed with the sap of the maguey and salt, and bound	
55. The failing of desire			The root of maca
57. Scurvy	*Iroquoian peoples of the St Lawrence:* An illness of the winter	*Iroquoian peoples of the St Lawrence:* Not recorded. The remedy was known	*Iroquoian:* A drink boiled from the bark and needles of an evergreen tree, as chapter 20 told; Beer brewed from the tips of the spruce

Entry	Name or kind	Cause as the tradition gives it	What was done
59. The illness of maize	*Mexico and Central America:* Not known		
64. The mad dog			A stone from the stomach of a deer, laid on the bite to draw the poison
65. The strangling throat			*The Plains of North America:* The root of the purple coneflower, chewed
66. Lockjaw			*The Guianas and the Amazon:* No treatment for this illness. Their arrow poison, which stills the muscles, was tried against lockjaw in London in the nineteenth century
68. Warts			The resin of the mayapple root
71. Burning urine			The cranberry, a food of the eastern nations that the settlers took up
72. The old man’s water			Drugs: The berries of the saw palmetto, a food of the peoples of Florida
80. The stroke of the sun and the sickness of great heights	The illness of the pass	Thin air, in the judgement of a Jesuit who crossed in the 1570s	Against height: Coca leaf, chewed or as a tea. A slow ascent

Entry	Name or kind	Cause as the tradition gives it	What was done
84. Illness from the dead			
85. Too much thinking and the wind that rises	Too much thinking, named by the hand-trembler beside a ghost and a wrong marriage		A chant of nine nights
86. Too hot, too cold		*Mesoamerica and the Andes:* Each person, food, plant and illness has a place between hot and cold. The native doctrine met the Spanish one and kept its own ground	
88. The call		*The Mapuche, the peoples of Mexico:* The call comes through illness and dreams	
90. The child that is lost		An eclipse seen by the mother. She carries a piece of metal or a red thread against it	
91. Too little milk and the inflamed breast			For more milk: Maize gruel; the fermented sap of the maguey

Mesopotamia

The atlas has rows under this heading in 24 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	Fever and sweat; the fever of the sun’s heat	The hand of a god. A sudden fever is the hand of the god of plague	Willow and other plants; rites to the god whose hand it is
2. The fever that returns	The fever that returns on the third day	Observed and listed	
5. Epidemics		The hand of the god of plague	
10. Wheezing			*Egypt and the Near East:* The fruits of a plant of the carrot family, drunk as a tea
12. Dropsy	The swelling that pits under the finger	Listed with its outlook	
13. Stroke and palsy	The one-sided attack; described with the seizures	The hand of a god or of a ghost	
17. Yellow skin and the hardened liver	The yellowing	Listed with its outlook. The yellow of the eyes is noted	
23. The headache	Headache, with a series of incantations of its own	The hand of a ghost	Incantations; a band with plants bound round the temples
27. The aching tooth	The toothache	A worm. In the charm it asks the gods for a place between the teeth and the jaw, to suck the blood of the tooth and gnaw at its roots	The charm is spoken three times over a paste of beer, malt and oil, which is laid on the tooth

Entry	Name or kind	Cause as the tradition gives it	What was done
29. The itching and scaling skin	Named diseases of the skin, in tablets of their own	The hand of a god; uncleanness	
33. The failing ear	Ringing ears	The hand of a ghost	
34. Madness	States of the mind, listed with the seizures	The hand of a god or a ghost	
37. Possession	A ghost of the dead who has no one to feed it; a demon		
39. The falling sickness	The falling sickness, with a tablet of its own	The hand of a god, a ghost or a demon	Rites, amulets and salves, by the being whose hand it is
44. Barrenness		A god, a ghost, or the demoness who hates mothers	Stones worn at the waist; rites; salves
45. Birth			
48. The child that does not thrive	The grip of the demoness	She snatches and sickens infants	
53. Wounds and sores		*Sumer:* A tablet of about 2100 before our era shows three steps: wash, make a plaster, bind	*Sumer:* Washing: Beer and hot water. Dressing: A plaster of plants, oil and river mud. Closing: A bandage

Entry	Name or kind	Cause as the tradition gives it	What was done
56. Dying		The handbook gives the outcome in fixed phrases: he will live; he will die. A case marked “he will die” was not treated	
64. The mad dog		A law code of the early second millennium before our era fines the owner of a mad dog that bites a man who then dies	
82. Illness sent by another	The hand of mankind		The rite of the Burning, through one whole night. Figures of the unknown witch are burned. The patient is washed at dawn and declares himself clean
83. Illness from a broken rule			
84. Illness from the dead			
92. The yellow newborn		*Turkey and the Near East:* Not named. The child is covered with a yellow cloth, and a gold coin is laid on it	

Egypt

The atlas has rows under this heading in 23 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
5. Epidemics		The lioness goddess Sekhmet, who sends plague and takes it away	
8. Worms	Worms of the belly, named by kind	Seen in the stool	The bark of the root of the pomegranate
10. Wheezing	Not named; treated		The vapour of herbs laid on a heated brick, drawn in through a reed; *Egypt and the Near East:* The fruits of a plant of the carrot family, drunk as a tea
11. Pain of the heart	A pain in the breast and in one arm	An old papyrus adds that death threatens the patient	
16. The restless bowel and hard stools			Castor oil. A Greek visitor wrote that the Egyptians purged themselves for three days in every month
18. Sweet urine	Too much urine	A remedy in an old papyrus drives it out	
23. The headache	The pain of half the head	Treated with a salve and a spell	
24. Pain of the back	A sprain in a vertebra of the spine	An injury; treated as such, without a spell	
26. The broken bone	The physician of the papyrus on wounds, who states the outlook before he treats		The binding: Splints padded with linen. The rule: The hopeless case is not treated

Entry	Name or kind	Cause as the tradition gives it	What was done
27. The aching tooth	Troubles of the teeth, with a chief of dentists at court about 2650 before our era		
30. The white patches	White patches	Not known; treated by village healers	The powdered fruits of a weed of the Nile valley, of the carrot family, followed by sun
32. The sore eye and blindness at night	Many named illnesses of the eye; blindness in the dusk		For the sore eye: Salves of honey, of copper green and of black eye paint. For blindness at night: The liver of an ox, roasted, pressed and given
37. Possession	*Ethiopia, Sudan, Egypt:* A spirit of the *zar* kind, which takes women above all		
43. The monthly course	*Egypt and Greece:* Illness from a womb that moves about, or that holds its blood back	*Egypt and Greece:* The womb is dry and seeks moisture; the passage is closed	
45. Birth			

Entry	Name or kind	Cause as the tradition gives it	What was done
49. Tumours	Bulging swellings of the breast, cool and hard to the hand	Not given. The verdict is: an ailment not to be treated	Nothing, for the grave kind. For others the fire drill
51. The bite of a snake		A papyrus lists the snakes by name and look, says for each whether the bitten man will live, and gives a treatment	The wound is cut out. Onion, salt and beer. Spells
52. Burns		Remedies for a burn by the day: one for the first day, another for the second, and so on. A spell tells how a goddess cooled her burnt son	Honey, fat and resin on linen
53. Wounds and sores		A papyrus on wounds goes down the body from the skull. Each case has an examination, a verdict and a treatment	Dressing: Fresh meat on the first day. Then honey, fat and lint, every day. Closing: Strips of linen with gum; stitches
56. Dying		About a third of the cases in the papyrus on wounds carry the verdict that the ailment is not to be treated. Even then the physician is often told to make the patient comfortable	

Entry	Name or kind	Cause as the tradition gives it	What was done
66. Lockjaw	A head wound with a locked jaw and a stiff neck. The verdict: not to be treated		
76. Swollen veins and the sore that will not close	Windings like a serpent in the leg. The papyrus forbids the knife		
93. The crying child, the teeth and the wet bed			The crying: Poppy pods

Greece and Rome

The atlas has rows under this heading in 66 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	Fever, an illness in itself. Continuous, daily, third-day and fourth-day	A humour that rots: blood, phlegm, yellow bile or black bile	Rest and a thin gruel of barley. The physician waits for the cooking and the crisis and does not force them. Later physicians bled
2. The fever that returns	Third-day fever; fourth-day fever	Yellow bile; black bile. The Hippocratic writers tied it to marshes and to late summer	

Entry	Name or kind	Cause as the tradition gives it	What was done
3. Consumption	*Phthisis*, wasting	An ulcer of the lung, from a flux of phlegm or after the spitting of blood	Milk, rest, a sea voyage, a stay in dry air
5. Epidemics		*Greece and medieval Europe:* Corrupted air. In 1348 the faculty of Paris named a conjunction of three planets as the first cause	
6. The flux	Flux; dysentery; cholera, a violent emptying of bile upward and downward	Bile, sharp humours, spoiled food, the heat of late summer	Rest, astringent drinks, rice or barley water. Opium for the pain and the flux
9. The cough and the cold	Catarrh, a running down	Phlegm that runs from the head into the nose and the chest, after a chill	Honey in water; barley gruel; warmth and rest
10. Wheezing	*Asthma*, panting	Thick phlegm that fills the pipes of the lung	
11. Pain of the heart	A trouble of the mouth of the stomach or of the heart	Not clearly told apart from pain of the stomach	

Entry	Name or kind	Cause as the tradition gives it	What was done
12. Dropsy	Dropsy, from the word for water. Of the belly, of the flesh, and with wind	A chilled liver that makes water in place of blood	Squill in vinegar; purging; hot sand and sweating; walking; the tapping of the belly with a tube; *The Greek sanctuary:* Chapter 37 gave the cure of a woman with dropsy, for whom her mother slept in the hall
13. Stroke and palsy	Apoplexy, a being struck down; palsy	Phlegm or black bile that closes the passages of the brain	Bloodletting at once in the strong; warmth and rubbing of the limbs; walking as soon as the patient can
15. Pain of the stomach and bad digestion	Pain at the mouth of the stomach; bad cooking of food	A stomach too cold or too hot; sharp humours; a wrong regimen	The gum of the mastic tree; wine in measure; a light diet
16. The restless bowel and hard stools	A dry belly; a slippery belly	A gut too dry or too moist; a wrong regimen	Figs, plums and honey. From the ninth century the pods of senna, which Arab physicians made known
17. Yellow skin and the hardened liver	Jaundice	Yellow bile that spreads through the body, when its passage from the liver is closed or the liver is hot	Purges of bile; chicory and endive; whey
18. Sweet urine	*Diabetes*, a siphon	The flesh and the limbs melt down into urine, wrote a physician of the second century	

Entry	Name or kind	Cause as the tradition gives it	What was done
19. Stoutness	The fat constitution	Moist and cold. Those who are fat by nature die sooner than the lean, says an aphorism	Exertion before meals; one meal a day; a hard bed; walking; no bath before eating
20. Gout	*Podagra*, the trap of the foot	A humour that falls drop by drop into the joint. The word gout comes from the Latin for a drop	*Byzantium:* The bulb of the autumn crocus, from the sixth century; A sober regimen; purging; bleeding
21. Stone	The stone	Thick, muddy urine that is baked by the heat of the bladder, as clay is baked in a kiln	Drugs: Plants that drive the urine; baths. The knife: Left to craftsmen. The Hippocratic Oath forbids the physician to cut for stone. A Roman writer of the first century describes the operation in full
22. Piles	Haemorrhoids, a running of blood	Bile or phlegm that settles in the veins of the seat and heats the blood	The hot iron; tying with a thread; cutting. A Hippocratic treatise describes each
23. The headache	*Hemicrania*, half the skull, from which the word migraine comes	Vapours or bile that rise from the stomach to the head	Rest in the dark; bleeding; a purge
24. Pain of the back	*Ischias*, pain of the hip that runs down the leg	A humour that settles in the joint	Cups; the hot iron over the hip; walking
25. Worn and inflamed joints	Arthritis; rheumatism, a streaming	A humour that streams into the joints and settles there	*Greece, Rome and Europe:* Warm springs; bleeding; willow bark; stinging with nettles

Entry	Name or kind	Cause as the tradition gives it	What was done
26. The broken bone	The Hippocratic authors of the books on fractures and joints		The binding: Bandages with wax; splints from the seventh day, when the swelling has gone. The rule: Not too tight; look again every third day
29. The itching and scaling skin	*Psora*, the itch; *lepra*, the scaly	Salt phlegm and black bile driven outward	Baths in the sea and in sulphur springs; tar of pine and juniper
31. The clouded lens	A running down: a humour that has run down before the pupil and set there	Thick humour from the brain	Record of the operation: A medical writer of the first century
32. The sore eye and blindness at night	*Trachoma*, the roughness of the lid; night blindness	A sharp humour	For the sore eye: The rough lid is scraped; salves of copper. For blindness at night: Raw liver of an ox, dipped in honey
34. Madness	Mania; melancholy with fixed belief; frenzy with fever	Yellow or black bile that has reached the brain	A purge of hellebore. A later school asked for a quiet, light room, soft speech, music, travel and work
35. Melancholy	Melancholy: fear and sadness without a cause	Black bile that has risen to the brain. A second kind rises from the organs under the ribs	Regimen: baths, light food, wine in measure, music, travel, and talk that neither flatters nor scolds
36. Fear, fright and the lost soul	Fear without a cause, a part of melancholy	Black bile	

Entry	Name or kind	Cause as the tradition gives it	What was done
38. Sleeplessness	Wakefulness. Sleep and sleeplessness beyond measure are both bad, says an aphorism	Dryness and heat of the brain; care	The poppy; lettuce; a warm bath; rocking; the sound of water
39. The falling sickness	The sacred disease. One Hippocratic author denies that it is sacred	Phlegm that closes the passages of the brain; inherited	Regimen by the season. The author scorns the purifiers who forbid baths and black clothes; *Rome and Europe:* The root of the peony, hung round the neck. Mistletoe. Appeals to a saint. Fasting and prayer
40. Craving	Drunkenness and its harms		
42. The fading mind	The second childhood	The cold and the dryness of old age	An old man must use his mind daily, a Roman author wrote. His speaker learned Greek in old age
43. The monthly course	*Egypt and Greece:* Illness from a womb that moves about, or that holds its blood back	*Egypt and Greece:* The womb is dry and seeks moisture; the passage is closed	Fumigation of the womb with sweet and foul scents; warm baths; pessaries; marriage, as the cure for the stopped course of a girl
44. Barrenness		The mouth of the womb is closed, turned or too moist; the seed is too cold	*The Greek sanctuary:* Women slept in the hall of the god and dreamed. Chapter 37 gave the stones on which their children are recorded
45. Birth			

Entry	Name or kind	Cause as the tradition gives it	What was done
47. The change of life		The courses end between forty and fifty. Gout and other ills of men may come after	
48. The child that does not thrive	*The Mediterranean, the Islamic world, India:* The evil eye	*The Mediterranean, the Islamic world, India:* Envy and praise	*The Mediterranean and India:* Amulets; a black mark on the face; no praise without a blessing
49. Tumours	*Karkinos*, the crab, for the swollen veins that reach out from the growth like legs	Black bile that gathers and hardens	The knife and the hot iron, early and only where the whole growth can be reached. A Roman writer warns that cutting later makes it worse
50. The swollen neck	The swollen throat of the people of the Alps	Bad water, from melted snow	
51. The bite of a snake		Poems and books on venomous beasts. A king of Pontus took small doses of poisons daily to become proof against them	The same band and cut. A compound antidote of many drugs, with the flesh of vipers
53. Wounds and sores		The Hippocratic surgeon keeps a wound dry and lets it rest. Later schools held that pus is a good sign and must be brought on	Washing: Wine. Dressing: Dry lint; wool soaked in wine. Closing: Stitches; bandages

Entry	Name or kind	Cause as the tradition gives it	What was done
54. The weakness of old age		A child is warm and moist, and an old person is cold and dry. The old need warmth and moisture: warm baths, rubbing with oil, wine in measure, gentle walks, food in small meals	The regimen of the first row of the table above
55. The failing of desire		A cold temperament of the parts	
56. Dying		The physician looks first at the face. That of the dying has a sharp nose, hollow eyes, sunken temples and cold ears. He leaves alone those who are "overmastered by their diseases"	
60. Soft bones	*Rome, second century:* Bent legs of the city's children	*Rome, second century:* Children who are made to sit and walk too early	
61. Pale blood			A legend tells of a seer who cured a childless prince with the rust of a knife, drunk in wine

Entry	Name or kind	Cause as the tradition gives it	What was done
64. The mad dog		The illness is named after the fear of water	The wound is sucked out with a cup and burned with iron or caustic. A patient who already fears water is thrown into a pond without warning; *Rome, a folk custom:* The burnt hair of the dog that bit is laid in the wound
65. The strangling throat	The dog's choking; the Egyptian or Syrian sores of the tonsils, with a white or grey crust, which kill children	A sharp humour that runs down from the head	Bleeding under the tongue; gargles; cups on the neck. In the last need a reed is pushed into the throat, or the windpipe is cut open
66. Lockjaw	*Tetanos*, the stretching. The saying is that a spasm after a wound is deadly		Warmth, oil rubbed in, wine, the poppy; a quiet and dark room
67. The itch	*Psora*; *scabies*, from the word for scratching	A sharp or salty humour that the body pushes to the skin	Sulphur mixed with pitch; *Mediterranean women:* The mite, lifted out with a pin
71. Burning urine	Strangury, the urine that comes drop by drop	Sharp humours in the bladder	
72. The old man's water	Stoppage of urine	A growth of flesh at the neck of the bladder; thick humours	The tube: A curved tube of bronze, in sizes for men and for women. Drugs: Warm baths; oil

Entry	Name or kind	Cause as the tradition gives it	What was done
73. The rupture	*Hernia*; the gut that has come down into the scrotum	A tear or a stretching of the inner lining, from lifting or straining	The lump is pushed back with the patient’s head low. A band with a pad holds it. A Roman writer describes the cutting
74. The abscess of the gut	Not told apart from other pains and abscesses of the belly		
75. Stones of the gall	Colic; an illness of the liver. A physician of the sixth century mentions stones in the passages of the bile	Thick, burnt bile	
76. Swollen veins and the sore that will not close	*Kirsos*, the swollen vein. The sores of the shin go with it	Black bile and thick blood that sink into the legs	Small pricks in the vein; a firm bandage; rest with the leg raised; The vein is tied, burned or drawn out. A Roman general bore the cutting of one leg without bonds and refused the other. He said that the cure was not worth the pain
77. The shaking palsy	A trembling of the limbs at rest, told apart from the trembling of a limb in use	Weakness of the nerves	*The Mediterranean:* No treatment is recorded. The broad bean, a daily food there, holds the same compound as the Indian seed

Entry	Name or kind	Cause as the tradition gives it	What was done
78. Dizziness	The dark dizziness	Vapours and humours that rise to the head	Bleeding, purging and powders that bring on sneezing
80. The stroke of the sun and the sickness of great heights	The illness of the Dog Star	The heat of the days when that star rises with the sun	*The Arab lands and the Mediterranean:* Against heat: The head cloth; rest at midday
83. Illness from a broken rule			
86. Too hot, too cold		Every person, organ, food and drug is hot or cold, and dry or wet, in one of four degrees. A person with a hot illness is fed cooling food, and the reverse	
87. The illness of longing	The grief that is not confessed	Galen finds it with his fingers on the wrist. The pulse turns uneven when one name is spoken	
89. The sickness of the first months	The craving, from the second month: nausea, a dislike of food and a longing for strange foods, even for earth and coals	The stomach is upset by the new burden	A day’s fast, then a little plain food; walks; a plaster on the stomach

Entry	Name or kind	Cause as the tradition gives it	What was done
90. The child that is lost	The untimely birth	Fright, grief, sudden joy, a fall, a blow, lifting, leaping, coughing, purging, bleeding	*Greece, Rome and Europe:* To hold the child: Rest in bed. A stone that rattles, called the eagle stone, bound to the arm
91. Too little milk and the inflamed breast		The nurse's food, drink and conduct govern her milk	*Greece, Rome and Europe:* For more milk: Fennel, anise and dill. Barley drinks and dark beer. The herb goat's rue, which was also fed to cows for their milk. For the inflamed breast: A cabbage leaf laid on the breast; poultices of linseed
93. The crying child, the teeth and the wet bed			The crying: Rocking, swaddling, a change of nurse. The teeth: The gums are rubbed with butter, honey or the brain of a hare

The Islamic world and the Unani physicians

The atlas has rows under this heading in 33 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	Fever, an illness in itself. Continuous, daily, third-day and fourth-day	A humour that rots: blood, phlegm, yellow bile or black bile	

Entry	Name or kind	Cause as the tradition gives it	What was done
2. The fever that returns	Third-day fever; fourth-day fever	Yellow bile; black bile. The Hippocratic writers tied it to marshes and to late summer	
4. The poxes	Smallpox and measles, first told apart by al-Razi	A boiling of the blood, as new wine ferments	
6. The flux	Flux; dysentery; cholera, a violent emptying of bile upward and downward	Bile, sharp humours, spoiled food, the heat of late summer	Rest, astringent drinks, rice or barley water. Opium for the pain and the flux
9. The cough and the cold	Catarrh, a running down	Phlegm that runs from the head into the nose and the chest, after a chill	A packet of dried herbs, boiled and drunk hot
10. Wheezing	*Asthma*, panting	Thick phlegm that fills the pipes of the lung	*Maimonides, at Cairo:* A book of regimen for an asthmatic prince: clean dry air, light food, sleep in measure, a calm mind
11. Pain of the heart	A trouble of the mouth of the stomach or of the heart	Not clearly told apart from pain of the stomach	Cordials for the heart, made with rose, sandalwood, pearl and amber
12. Dropsy	Dropsy, from the word for water. Of the belly, of the flesh, and with wind	A chilled liver that makes water in place of blood	

Entry	Name or kind	Cause as the tradition gives it	What was done
13. Stroke and palsy	Apoplexy, a being struck down; palsy	Phlegm or black bile that closes the passages of the brain	
15. Pain of the stomach and bad digestion	Pain at the mouth of the stomach; bad cooking of food	A stomach too cold or too hot; sharp humours; a wrong regimen	A spiced confection after meals. The best known is named after Galen
16. The restless bowel and hard stools	A dry belly; a slippery belly	A gut too dry or too moist; a wrong regimen	Figs, plums and honey. From the ninth century the pods of senna, which Arab physicians made known
17. Yellow skin and the hardened liver	Jaundice	Yellow bile that spreads through the body, when its passage from the liver is closed or the liver is hot	Purges of bile; chicory and endive; whey
18. Sweet urine	*Ziabetes*	A hot kidney that draws water and cannot hold it	Fenugreek and other seeds; cooling regimen
19. Stoutness	Excessive fatness	A cold and moist temperament. The *Canon* has a chapter on its dangers and its cure	Bulky food of little nourishment; hard exercise; the bath before the meal
23. The headache	*Hemicrania*, half the skull, from which the word migraine comes	Vapours or bile that rise from the stomach to the head	
25. Worn and inflamed joints	Arthritis; rheumatism, a streaming	A humour that streams into the joints and settles there	*Unani and Europe:* Leeches on the joint

Entry	Name or kind	Cause as the tradition gives it	What was done
27. The aching tooth			The tooth stick, cut from the root of the arak tree, used before each prayer
30. The white patches	White patches	Phlegm in the skin	The same seeds, by mouth and on the skin, with exposure to the sun
31. The clouded lens			Record of the operation: An oculist of about the year 1000 drew the cloud out through a hollow needle
34. Madness			A ward of the hospital, with baths, music and running water
35. Melancholy	Melancholy: fear and sadness without a cause; Passionate love, an illness of the head	Black bile that has risen to the brain. A second kind rises from the organs under the ribs; A fixed image of the beloved	*Persia:* Saffron, which the books call a gladdener of the heart
37. Possession	The jinn		
38. Sleeplessness	Wakefulness	A dry temperament of the brain	A warm liquid poured in a steady stream on the forehead. Lettuce seed. The poppy, with care
48. The child that does not thrive	*The Mediterranean, the Islamic world, India:* The evil eye	*The Mediterranean, the Islamic world, India:* Envy and praise	

Entry	Name or kind	Cause as the tradition gives it	What was done
54. The weakness of old age		A regimen for the old: warmth, sleep, light food, laxatives in measure, pleasant company	
55. The failing of desire		A cold temperament of the parts	
56. Dying			*Jewish and Islamic custom:* Care of the dying: He makes his confession and is not left alone. The words of faith are the last that he says or hears
62. The plague			A saying of the Prophet: do not enter a land where the plague is, and do not flee from one
67. The itch			*Persia and the Caucasus:* The dried flowers of a daisy, as a powder against lice and fleas
70. Sneezing in spring	*Persia, tenth century:* A physician writes a treatise on a scholar who gets a cold in the head every spring when the roses bloom	*Persia, tenth century:* The scent of the rose	

Entry	Name or kind	Cause as the tradition gives it	What was done
72. The old man’s water			The tube: A fine tube of silver
79. The crooked face	*Persia and the Arabic books: Laqwa*	*Persia and the Arabic books:* Cold and moisture in the nerves of the face	*Persia:* Warmth; rubbing of the face
86. Too hot, too cold		Every person, organ, food and drug is hot or cold, and dry or wet, in one of four degrees. A person with a hot illness is fed cooling food, and the reverse	

Europe

The atlas has rows under this heading in 54 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
2. The fever that returns	Bad air, *mal aria*	The exhalation of marshes	*Europe before the bark:* Bleeding and purging, without effect
3. Consumption	The king’s evil, in its form in the glands of the neck	Unknown; cured by the touch of a king	*Europe, 1850 to 1950:* The sanatorium: months of rest in bed in mountain air and sun, with rich food
5. Epidemics		*Greece and medieval Europe:* Corrupted air. In 1348 the faculty of Paris named a conjunction of three planets as the first cause	

Entry	Name or kind	Cause as the tradition gives it	What was done
7. Leprosy	*Medieval Europe:* Leprosy	*Medieval Europe:* A corruption of the humours; a mark of sin	Separation in a house outside the walls
8. Worms			Wormwood, the flower heads of a related plant from the East, and the root of the male fern
12. Dropsy			*England:* Foxglove
15. Pain of the stomach and bad digestion			Bitter herbs before a meal; peppermint, caraway and chamomile after it
16. The restless bowel and hard stools	*Europe, about 1900:* Poisoning from the bowel	*Europe, about 1900:* Stale matter in the gut	
17. Yellow skin and the hardened liver			The seeds of the milk thistle. Yellow plants by the rule that like cures like
18. Sweet urine			The herb goat’s rue, for thirst and frequent urine
23. The headache			Feverfew; willow bark; later the fungus of rye
24. Pain of the back			*Finland:* The bone-setter, who works the whole body from the feet upward

Entry	Name or kind	Cause as the tradition gives it	What was done
25. Worn and inflamed joints			*Greece, Rome and Europe:* Warm springs; bleeding; willow bark; stinging with nettles; *Unani and Europe:* Leeches on the joint
26. The broken bone	The bone-setter, outside the faculty		
27. The aching tooth	The tooth worm, until the eighteenth century	A worm in the hollow of the tooth	The smoke of henbane seed, drawn into the mouth. Cloves. The barber’s pincers
28. Pain without a wound	*Europe, about 1880:* Weakness of the nerves	*Europe, about 1880:* Exhaustion by modern life	
32. The sore eye and blindness at night	*England, about 950:* A lump on the eyelid		*England:* For the sore eye: A salve of garlic, leek, wine and ox gall, kept nine nights in a brass bowl
35. Melancholy			St John’s wort. An English book of 1621 on the whole subject ends with six words: be not solitary, be not idle
37. Possession	*Christian Europe:* A demon		
38. Sleeplessness			Valerian root; hops

Entry	Name or kind	Cause as the tradition gives it	What was done
39. The falling sickness			*Rome and Europe:* The root of the peony, hung round the neck. Mistletoe. Appeals to a saint. Fasting and prayer
40. Craving			*The fellowships, from 1935:* Meetings of people who have the illness themselves. A helper who has been through it. A turning to a power greater than oneself; *Eastern Europe:* The leaves of the golden rain tree, smoked in place of tobacco
42. The fading mind			*Europe and East Asia:* The leaf of the ginkgo tree
43. The monthly course			The fruit of the chaste tree; yarrow; lady’s mantle; fennel; a warm stone or bottle on the belly
50. The swollen neck			*Europe, from the twelfth century:* The ash of burnt sponge from the sea
52. Burns		*Iceland:* A burnt hand is held at once in cold water	

Entry	Name or kind	Cause as the tradition gives it	What was done
56. Dying			*Christian Europe:* Care of the dying: A small book of the fifteenth century, widely printed, taught the art of dying well: the five temptations of the deathbed and the answer to each
57. Scurvy	*European physicians, 1500 to 1800:* Scurvy	*European physicians, 1500 to 1800:* The damp and foul air of a ship; salt meat; idleness and low spirits; a thickened black bile	*European herbals:* Scurvy grass, cress and brooklime, eaten fresh; *Ships' surgeons:* An English captain praised oranges and lemons in 1593. The surgeon general of the East India Company prescribed lemon juice in 1617; *The Dutch company:* Gardens on board, and from 1652 a station at the Cape that grew greens for passing ships; *European physicians:* Vinegar, a dilute acid, fresh air, exercise
59. The illness of maize	*Asturias, 1735:* The illness of the rose; *Northern Italy, from 1771: Pellagra*; *The southern United States, 1906 to 1940:* Pellagra	*Asturias, 1735:* A physician linked it to the diet of the poor; *Northern Italy, from 1771:* The sun; later, spoiled maize, which was held to carry a poison; *The southern United States, 1906 to 1940:* An infection, carried by a fly or by filth	

Entry	Name or kind	Cause as the tradition gives it	What was done
60. Soft bones	*England, 1650:* The rickets. Abroad it was called the English disease	*England, 1650:* Cold and moist distemper of the body	*The coasts of Scotland, Norway and the Baltic:* The oil of cod liver, a remedy of fishing villages for aching joints and weak children; *European physicians:* Tonics, splints and rubbing. A French physician prescribed cod liver oil and sun from the 1860s
61. Pale blood	*Europe, from 1554:* The illness of maidens; later the green sickness	*Europe, from 1554:* Held-back monthly blood; unfulfilled love	Marriage, as the first describer advised. From 1681, iron filings steeped in wine. Springs with iron in the water. From 1832, a pill of an iron salt
62. The plague			*European physicians:* Bleeding; the compound antidote called theriac; cutting or burning the lumps; fires and sweet smoke against the bad air. In the seventeenth century, a mask with a beak full of herbs

Entry	Name or kind	Cause as the tradition gives it	What was done
63. The great pox			Mercury, which Arab physicians had long used in ointments for the skin. It was rubbed in, or breathed as smoke in a heated box, until the patient poured out spittle. The teeth loosened, as chapter 43 told; *Europe, from the 1510s:* The wood of the guaiac tree, shipped from the Caribbean. The reasoning was that the remedy grows where the illness comes from. A banking house held the trade; *Europe, from 1535:* The same Chinese root, called the China root, and its American cousin the sarsaparilla
65. The strangling throat			Gargles of sage, honey and vinegar. A blessing of throats with two crossed candles, on the day of a saint in February
67. The itch	*Europe, to 1834:* The itch	*Europe, to 1834:* A humour. A German physician built a whole doctrine of long illness on the itch driven inward	

Entry	Name or kind	Cause as the tradition gives it	What was done
68. Warts			The yellow milk of the greater celandine; the white milk of spurge or of the fig tree; *Europe, charms:* The wart is rubbed with a cut potato, a bean or a piece of meat, which is then buried. As it rots, the wart goes. Or the warts are counted, and a knot is tied for each in a string that is thrown away. Or they are sold to a charmer for a coin
69. The girdle of fire			*Italy:* Healers who sign the fire with a gesture and a formula that are handed on within a family
70. Sneezing in spring	*England, 1819:* Summer catarrh. A physician describes his own case	*England, 1819:* He blamed the heat of summer	The leaf of the butterbur; nettle; honey of the neighbourhood
71. Burning urine			The leaf of the bearberry, known in Wales since the thirteenth century. Juniper berries; parsley root
72. The old man’s water			*Central Europe:* Drugs: Pumpkin seeds; the root of the nettle

Entry	Name or kind	Cause as the tradition gives it	What was done
73. The rupture			*Medieval Europe:* Travelling cutters, who often took the testicle with the sac. A truss of iron and leather; *England, a folk rite:* A young ash is split. The ruptured child is passed through the cleft at dawn. The tree is bound up, and as it grows together the child heals
74. The abscess of the gut	*Europe, to 1886:* An inflammation round the blind gut		*Europe before the operation:* Opium, rest, poultices and waiting
75. Stones of the gall			The juice of black radish; artichoke leaf; dandelion; oil of peppermint
76. Swollen veins and the sore that will not close			A laced stocking of dog leather, from 1676. A boot of gauze and zinc paste, from 1885. The seed of the horse chestnut
77. The shaking palsy			*Europe, from 1867:* The alkaloids of henbane and deadly nightshade, two old poison plants
79. The crooked face	*Europe, among the people:* Struck by a draught	*Europe, among the people:* Sleeping by an open window; a cold wind on one cheek	Warm cloths; later, weak electric shocks

Entry	Name or kind	Cause as the tradition gives it	What was done
81. Short sight			*Italy, from the fifteenth century:* Hollow lenses
82. Illness sent by another	*England, about 1000:* The shot of elves and witches; *From Scotland to India and Latin America:* The eye		
83. Illness from a broken rule			
87. The illness of longing	*Europe, to the seventeenth century:* The same illness, under a Latin name		
89. The sickness of the first months			Ginger; mint; dry bread before rising; *Africa and the southern United States:* White clay, eaten in small pieces
90. The child that is lost			*Greece, Rome and Europe:* To hold the child: Rest in bed. A stone that rattles, called the eagle stone, bound to the arm

Entry	Name or kind	Cause as the tradition gives it	What was done
91. Too little milk and the inflamed breast			*Greece, Rome and Europe:* For more milk: Fennel, anise and dill. Barley drinks and dark beer. The herb goat’s rue, which was also fed to cows for their milk. For the inflamed breast: A cabbage leaf laid on the breast; poultices of linseed
93. The crying child, the teeth and the wet bed			The crying: Teas of fennel, dill and chamomile. A water of dill and soda, from 1851. Syrups of opium, sold in every shop until about 1900. The teeth: The gums are cut open with a lancet. Powders of a mercury salt. Necklaces of coral and of amber. The wet bed: A roasted mouse, eaten. Shaming and beating

China

The atlas has rows under this heading in 82 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	Cold damage; warm illness	Cold or warmth that enters from outside and passes inward by stages	At the surface, a decoction that brings out a light sweat. Deeper, drugs that clear heat or that purge

Entry	Name or kind	Cause as the tradition gives it	What was done
2. The fever that returns	An illness of alternating cold and heat	A harmful *qi* of damp places, lodged half outside and half inside	Sweet wormwood, soaked in cold water and wrung out, in a handbook of the fourth century
3. Consumption	Wasting of the lung	Weak yin of the lung. Old books add a taint that passes from the dead to the living of one house	Drugs that moisten the lung and feed the yin
5. Epidemics		A particular harmful *qi* that enters by the nose and the mouth, as a physician wrote in 1642	
6. The flux	Loose stools; the dysentery of red and white	Cold and damp; damp and heat; spoiled food; a weak spleen	For damp and heat, bitter cold drugs such as coptis. For weakness, drugs that warm and build the spleen
7. Leprosy	The great wind	A harmful wind that enters the flesh	The same oil, which came from the south
8. Worms	Worms; accumulation in children	Unclean food; damp and heat in the gut	Areca nut, pumpkin seed and the fruit of the Rangoon creeper

Entry	Name or kind	Cause as the tradition gives it	What was done
9. The cough and the cold	Wind and cold; wind and heat	Wind that enters at the surface when the defensive *qi* is weak or the pores stand open	*China, wind and cold:* Ephedra Decoction or Cinnamon Twig Decoction, taken hot, to bring out a light sweat. Fresh ginger with the white of spring onion at home; *China, wind and heat:* Honeysuckle and Forsythia Powder; Mulberry Leaf and Chrysanthemum Drink; *China, a person who catches every cold:* Jade Windscreen Powder between colds, to strengthen the surface
10. Wheezing	Wheezing and panting	Phlegm that lies hidden in the lung and is roused by cold, by food or by feeling. In long illness a weak lung, and a kidney that does not grasp the *qi*	In the attack, ephedra with other drugs by the kind of phlegm. Between attacks, drugs that build the lung, the spleen and the kidney. In the hottest days of summer, plasters on points of the back against the attacks of winter
11. Pain of the heart	Impediment of the chest; true heart pain	Weak yang of the chest, on which cold, phlegm or standing blood settle	*China, the old formula:* Trichosanthes fruit and the bulb of Chinese chive, boiled in wine; *China, later:* Drive Out Standing Blood from the Mansion of Blood Decoction; red sage root; notoginseng root; *China, needling:* Points on the inner forearm

Entry	Name or kind	Cause as the tradition gives it	What was done
12. Dropsy	Swelling with water. A yang kind and a yin kind	The lung, the spleen and the kidney fail to move the water	*China, the yin kind:* Five-Ingredient Powder with Poria; True Warrior Decoction, which holds prepared aconite
13. Stroke and palsy	Stroke by wind	First a wind from outside. Since the thirteenth century a wind stirred within, by a liver whose yang rises, by phlegm and by fire	*China, the closed kind with heat:* Calm the Palace Pill with Cattle Gallstone, dissolved and poured in; *China, the deserting kind:* Ginseng and prepared aconite in a strong decoction, to hold what is leaving; *China, afterwards:* Build Up the Yang to Restore Five Tenths Decoction: a large dose of astragalus with drugs that move the blood. Needling of the weak side and of the scalp. Kneading and exercises
15. Pain of the stomach and bad digestion	Pain in the upper belly; fullness below the heart	Cold; food that stays; a knotted liver that invades the stomach; heat; a weak spleen and stomach	By the pattern. A book of 1249 is given wholly to the spleen and stomach as the centre from which other illness springs
16. The restless bowel and hard stools	Hard stools; loose stools; pain of the belly	Heat that dries; knotted *qi*; weak *qi* that cannot push; too little blood to moisten; a knotted liver that presses on the spleen	By the kind. Rhubarb root only for heat, and not for long. Kneading of the belly in the direction of the gut

Entry	Name or kind	Cause as the tradition gives it	What was done
17. Yellow skin and the hardened liver	Yellow skin. A yang kind and a yin kind	Damp and heat that steam the liver and gallbladder; or cold and damp in a weak spleen	*China, the yang kind:* Artemisia Capillaris Decoction: the herb with gardenia fruit and rhubarb root
18. Sweet urine	Wasting and thirst: upper, middle and lower	Sweet and fat food that turns to inner heat; strong feeling; a weak yin	Drugs that feed the yin and clear heat. Six-Ingredient Pill with Rehmannia for the lower kind; *The Philippines, India, China:* The bitter melon, as food and as medicine
19. Stoutness	The stout have much phlegm and a weak *qi*	Sweet and fat food that turns to damp and phlegm	Drugs that dry damp and move phlegm; needles in the ear in modern practice
20. Gout	The white tiger that runs through the joints; the hot kind of impediment	Damp and heat that pour downward	Phellodendron bark with atractylodes rhizome, to dry damp and clear heat below
21. Stone	Painful urination with stones, one of six kinds	Damp and heat that boil the urine down to sand	Drugs: Eight Corrections Powder; plantain seed; a creeping herb named for its coin-shaped leaves. The knife: Not done
22. Piles	Piles. Nine in ten have them, a saying goes	Damp and heat that pour downward; long sitting; rich food and wine	The flower of the pagoda tree to stop the bleeding; washes; tying with a thread

Entry	Name or kind	Cause as the tradition gives it	What was done
23. The headache	Headache from outside and from within	Wind with cold, heat or damp; rising yang of the liver; phlegm; too little *qi* and blood; standing blood	Ligusticum rhizome in nearly every formula for the head. Needles at the temples, at the base of the skull, and between thumb and forefinger
24. Pain of the back	Pain of the lower back, the mansion of the kidney	Cold and damp that lodge; damp and heat; standing blood after a strain; a weak kidney	Needles; burning of mugwort; cups; kneading; exercises
25. Worn and inflamed joints	Impediment of the joints: wandering, painful, fixed and hot	Wind, cold and damp arrive together and lodge in the vessels. One of the three leads	Angelica Pubescens and Mistletoe Decoction for the long illness. Needles and burning of mugwort. For the hot kind, the vine of the thunder god
26. The broken bone	The bone-setter, a craft beside inner medicine		The binding: Small splints of willow that leave the joints above and below free. The rule: Move the joints from the first day
27. The aching tooth	Toothache; decay by worms	Fire of the stomach that rises along its vessel to the gums; wind and fire; a weak kidney, in the old; worms	Clear the Stomach Powder. A needle between thumb and forefinger, the point that the old verse gives for the face and the mouth
28. Pain without a wound	Impediment of the flesh; pain of the whole body	Too little *qi* and blood to feed the flesh; a knotted liver; damp	
29. The itching and scaling skin	The wind of the four bends, in the folds of the limbs; the white crust	Wind, damp and heat in the skin. In long illness the blood is dry and no longer feeds the skin	Decoctions by the pattern; washes; an ointment of the blue dye of the indigo plant for the scaling kind

Entry	Name or kind	Cause as the tradition gives it	What was done
31. The clouded lens	The inner screen; the round shade	A weak liver and kidney, whose essence no longer reaches the eye	Record of the operation: Brought by Indian monks; called the golden needle
32. The sore eye and blindness at night	The red eye; the eye of the sparrow, which cannot see at dusk	Wind and heat; fire of the liver. For the dusk, a liver that does not feed the eye	For the sore eye: Chrysanthemum flower and mulberry leaf; drugs that clear the liver. For blindness at night: The liver of a pig or a sheep
33. The failing ear	Ringing and deafness. A full kind and an empty kind	Fire of the liver or phlegm that rises; or a weak kidney, since the kidney opens into the ears	
34. Madness	Withdrawal and mania	Phlegm with knotted *qi*; phlegm with fire. Strong feeling begins it	Purging for mania; needles at thirteen points that an old book reserves for this illness; in one school, a feeling roused to master another feeling
35. Melancholy	Constraint	Knotted *qi* of the liver, from wishes that are not met. Later fire, phlegm, and a heart that is not fed	By the pattern. Needles on the vessel of the liver
36. Fear, fright and the lost soul	Fright; fear	Fright throws the *qi* into disorder. Fear makes it sink. The heart and the gallbladder are timid	For a child, the mother calls its name at the door at dusk. For an adult, Warm the Gallbladder Decoction; minerals that settle the spirit; a needle at the wrist

Entry	Name or kind	Cause as the tradition gives it	What was done
38. Sleeplessness	Not sleeping	The yang does not enter the yin at night. Heart and spleen are both weak; heart and kidney do not meet; fire of the liver; hot phlegm; a timid heart and gallbladder	By the pattern. Needles at the wrist and below the inner ankle. In one famous case, a physician cured a woman who had not slept for two years by making her angry
39. The falling sickness	The falling illness; the bleat of the sheep	Wind and phlegm that cloud the heart. In a child, a fright of the mother while she carried it	Drugs that still wind and clear phlegm: gastrodia tuber, uncaria stem, acorus rhizome; scorpion and centipede
40. Craving	The opium of the nineteenth century		
41. Grief		Grief dissolves the *qi* and injures the lung	
42. The fading mind	Dullness	The essence of the kidney is used up, and the sea of marrow is no longer filled. Phlegm clouds the openings of the heart	Acorus rhizome with polygala root, to open the heart; ginseng
43. The monthly course	Painful periods; flooding and trickling; the stopped course	Knotted *qi* with standing blood; cold that congeals in the womb; heat in the blood; too little blood	Four Ingredients Decoction as the base of nearly every formula for women. Motherwort, whose Chinese name means the herb that helps mothers. Chinese angelica root. Burning of mugwort on the lower belly. A point above the inner ankle where three vessels cross

Entry	Name or kind	Cause as the tradition gives it	What was done
44. Barrenness		The periods are out of order; the womb is cold; the essence of the kidney is weak. In stout women, phlegm closes the womb	First the periods are set in order. Then the womb is warmed with mugwort and cyperus, or the kidney is built up. For the man, a pill of five seeds
45. Birth			
47. The change of life		A woman's life runs in sevens. At twice seven the monthly blood comes. At seven times seven it ends, and she can no longer bear	
48. The child that does not thrive	Accumulation in children	Food that stays; a weak spleen; worms. A physician of 1119 wrote that the organs of a child are tender and that its illnesses change quickly	Kneading of the child's hands, belly and spine in fixed patterns. A prick at the creases of the four fingers. Drugs that move food and build the spleen
49. Tumours	The rock, above all the rock of the breast; accumulations in the belly	Feeling that has been held in for years, so that the *qi* of the liver and the spleen is knotted; phlegm and standing blood that harden	Early, drugs that move the knotted *qi* and soften what is hard. Late, drugs that support the patient, and nothing that attacks; *Northern China, as a folk remedy:* White arsenic
50. The swollen neck	The swelling of the neck, in several kinds	The water and soil of mountain country; pent-up feeling	Seaweeds, steeped in wine. The neck glands of sheep and deer, dried and eaten

Entry	Name or kind	Cause as the tradition gives it	What was done
52. Burns		A matter of the outer medicine. Fire poison must be led out, so that it does not turn inward	Powdered rhubarb root and other cooling drugs in sesame oil. A modern ointment of sesame oil and beeswax with herbs, which keeps the wound moist and uncovered
53. Wounds and sores		The outer medicine has three steps for a sore: to disperse it early, to support the patient while it ripens, and to build up when it has opened	Washing: Decoctions. Dressing: Powders that stop bleeding, such as notoginseng root. Closing: Bandages
54. The weakness of old age		A woman’s life moves in steps of seven years, and a man’s in steps of eight. The essence that a person receives at birth is used up along the way. The nourishing of life slows the loss	Ginseng, astragalus, rehmannia and the fruit of lycium. The slow exercises. Moderation in food, in wine and in the bedchamber. Rising and resting with the sun; *China, at court:* Elixirs of mercury and other minerals, in search of a life without end
55. The failing of desire		The yang of the kidney is weak; or fear and worry have injured the heart and the kidney; or damp and heat have poured downward	Epimedium leaf, cistanche stem, the velvet of deer antler. Restore the Right Pill
57. Scurvy			*Chinese seafarers:* A traveller of the fourteenth century saw greens and ginger grown in wooden tubs on the great junks

Entry	Name or kind	Cause as the tradition gives it	What was done
58. The swollen legs of the rice eaters	*Jiaoqi*, the *qi* of the legs. A dry kind that wastes and a wet kind that swells	A damp poison that rises from the low ground of the south and enters by the feet	Sun Simiao gave a porridge cooked with the bran of the grain to prevent it. Other formulas use areca nut, evodia and the Chinese quince
60. Soft bones	The five slownesses and the five softnesses: late standing, walking, hair, teeth and speech	A weak inheritance from the parents; a weak kidney, which governs bone	The Six-Ingredient Pill with Rehmannia. Its author made it in 1119 for children whose skull does not close. Fossil bone and oyster shell
61. Pale blood	Too little blood: a pale face, pale lips and nails, dizziness, a thin pulse. A yellow swelling of farmers	A weak spleen makes too little blood; blood has been lost	Formulas that build up the blood, among them the Four Ingredients Decoction and the Angelica Decoction. Ass-hide glue. For the yellow swelling, pills of green vitriol, which is a salt of iron; *China and many households:* Liver and red dates for the pale
62. The plague			
63. The great pox			Mercury and arsenic. The root of a smilax, which the books also give against the poisoning by mercury. A monograph on the illness appeared in 1632

Entry	Name or kind	Cause as the tradition gives it	What was done
64. The mad dog		A physician of the fourth century writes of the bite of the mad dog and of the illness that breaks out later	*China, fourth century:* Kill the dog, take out its brain and lay it on the wound. Mugwort is burned on the bite
65. The strangling throat	Throat wind; the throat moth, for swollen tonsils; from 1838 the white throat	Wind and heat; a dry heat of the season that burns the yin of the lung	Powders of borax and borneol, blown into the throat through a tube. The point at the corner of the thumbnail, pricked to bleed. For the white throat, the Nourish the Yin and Clear the Lung Decoction of 1838
66. Lockjaw	The wind of the broken wound. In the newborn, the wind of the navel	Wind enters by the wound, or by the cut cord	Powders that drive out wind, made of arisaema, gastrodia, scorpion and silkworm. For the newborn, searing of the cord at birth
67. The itch	*Jie*, the itching sores	Damp and heat. A book of 610 adds that small worms live in the sores, and that people pick them out with a needle	Sulphur in pig fat
68. Warts			*China and Japan:* The seed of coix, taken by mouth for weeks. A caustic seed crushed on the wart
69. The girdle of fire			The Gentian Decoction to Clear the Liver. Needles set in a ring round the band. Cups on pricked skin. A burning wick touched to the head and the tail of the snake

Entry	Name or kind	Cause as the tradition gives it	What was done
70. Sneezing in spring	The running, sneezing nose. Known since the *Inner Classic*	A weak guard at the surface, so that wind and cold enter the nose	Jade Windscreen Powder to strengthen the guard. Minor Blue-Green Dragon Decoction for the running nose. A powder of xanthium fruit and magnolia buds. Needles at the points beside the nose
71. Burning urine	*Lin*, the dribbling illness, in six kinds: of heat, of stone, of knotted *qi*, of blood, of cloudy urine and of exhaustion	Damp and heat that have poured down into the bladder	Eight Corrections Powder, which chapter 52 listed. Plantain seed and talc
72. The old man's water	Dribbling and closing	The yang of the kidney is too weak to move the water; or damp and heat lie below	The tube: Sun Simiao used the hollow leaf of an onion and blew through it. Drugs: The Kidney *Qi* Pill from the Golden Casket
73. The rupture	*Shan*, the mounting *qi*	Cold that lodges in the vessel of the liver, which circles the sexual organs	Drugs that warm the liver's vessel and move the *qi*, among them lindera root and the seed of the tangerine. Mugwort burned at the first point of the liver, on the great toe

Entry	Name or kind	Cause as the tradition gives it	What was done
74. The abscess of the gut	*China, about 200:* The abscess of the gut	*China, about 200:* Heat and standing blood that knot in the gut and ripen into pus	*China, before pus:* The Rhubarb and Moutan Decoction of the *Golden Casket*: rhubarb, moutan bark, peach kernel, the seed of the wax gourd and a purging salt; *China, after pus:* A powder of coix seed, patrinia and a little aconite; *China, from the 1950s:* The old decoction with needles at the point of the blind gut, in hospitals that operated only when this failed
75. Stones of the gall	Pain under the ribs; the yellow illness with pain	Damp and heat in the liver and the gallbladder; knotted *qi* of the liver	The Major Bupleurum Decoction. The herb named for its coin-shaped leaves, with turmeric tuber and the lining of a chicken's gizzard. The bile of the bear, in the drug books since 659
76. Swollen veins and the sore that will not close	The knot of sinews; the sore of the shin, which the people call the old rotten leg	Standing blood and damp that sink	Plasters on the sore, under a tight binding of cloth
77. The shaking palsy	The trembling illness	Wind that stirs within, when the yin of liver and kidney is too weak to hold the yang	Decoctions that settle the liver and still the wind, with gastrodia and uncaria. The slow exercises

Entry	Name or kind	Cause as the tradition gives it	What was done
78. Dizziness	Dizziness of the head and the eyes. Three schools give three causes	All wind with shaking and dizziness belongs to the liver. Without phlegm there is no dizziness. Without emptiness there is no dizziness	Gastrodia and Uncaria Drink for rising yang. Pinellia, white atractylodes and gastrodia for phlegm. Decoctions that build up for emptiness; *China, India and the sailors of many nations:* Ginger against the sickness
79. The crooked face	The mouth and the eye awry	Wind strikes the net vessels of the face. The books tell it apart from wind that strikes the organs, which is the stroke of entry 13	A needle from the corner of the mouth toward the angle of the jaw. A point on the opposite hand. A powder of typhonium, silkworm and scorpion, named for bringing the face straight
80. The stroke of the sun and the sickness of great heights	The stroke of summer heat; *China, about 30 before our era:* An official names the Great Headache Mountain and the Little Headache Mountain on the road to the west	One of the six excesses, which enters and consumes the *qi* and the fluids; *China, about 30 before our era:* The ground makes men feverish, pale and sick	Against heat: Shade and rest. A powder of six parts of talc and one of liquorice. Generate the Pulse Powder for the exhausted. Soup of mung beans; watermelon. Against height: A root of the high meadows, taken before a journey

Entry	Name or kind	Cause as the tradition gives it	What was done
81. Short sight	Able to see near and timid to see far	Too little yang to carry the sight outward. The classic adds: long looking injures the blood	The Settle the Will Pill, of ginseng, poria, polygala and acorus. Lycium fruit and chrysanthemum; *China, from 1963:* Twice a day every schoolchild presses and rubs the points round the eyes, to music, for five minutes
84. Illness from the dead			
85. Too much thinking and the wind that rises	Worry and brooding knot the *qi*	The spleen and the lung are struck: no appetite, a full belly, a tight chest	Drugs that free the knotted *qi*. In one school, a feeling is roused on purpose to break the brooding; *Cambodia, Java, Vietnam, China:* The oiled skin is rubbed with the edge of a coin until red stripes rise. The wind is given a way out
86. Too hot, too cold		Hot or cold is one of the four broad questions of every examination. Foods and drugs are warm, hot, cool or cold	
87. The illness of longing	The illness of thinking of each other	Brooding knots the *qi*	

Entry	Name or kind	Cause as the tradition gives it	What was done
89. The sickness of the first months	The loathing that hinders	The *qi* of the vessel that feeds the womb rushes upward, and the stomach's *qi* can no longer go down	A pill of dried ginger, ginseng and pinellia, from the *Golden Casket*. Fresh ginger; perilla stem; amomum. Pressure on the point called Inner Pass, above the wrist
90. The child that is lost	The restless child; the leaking; the slippery child, for the loss that repeats	A kidney too weak to hold; too little *qi* and blood; heat in the blood; a fall	To hold the child: Scutellaria and white atractylodes, which chapter 52 listed as calming the child. A pill of dodder seed, mistletoe, teasel root and ass-hide glue. A rule of conduct for each month. The mother is to see and hear only what is beautiful. After a loss: The small month: rest and warm food, as after a birth
91. Too little milk and the inflamed breast	The milk that does not move, in two kinds. The abscess of the breast	Milk is made from blood. Either the mother has too little *qi* and blood, and the breasts are soft. Or the *qi* of the liver is knotted by anger or grief, and the breasts are full and sore	For more milk: Soup of pig's trotters with the pith of the rice-paper plant. The seed of vaccaria. A point at the corner of the nail of the little finger. For the inflamed breast: Dandelion, inside and as a paste. The breast is combed toward the nipple with a wooden comb, and the milk is drawn off

Entry	Name or kind	Cause as the tradition gives it	What was done
92. The yellow newborn	The yellow of the womb. A bright kind, like a tangerine, and a dull, smoky kind	Damp and heat that passed from the mother to the child	The Artemisia Capillaris Decoction in small doses. Today, a liquid of artemisia and gardenia with scutellaria and honeysuckle, widely given in Chinese nurseries; *China and Southeast Asia, a custom:* Coptis root, very bitter and cold, is given to the newborn in its first days to clear the poison of the womb
93. The crying child, the teeth and the wet bed			The crying: Cicada skin and the pith of rush as a tea. Kneading of the belly and the back. For fright, the calling of the soul. The wet bed: A powder of the egg case of the mantis. A pill of alpinia, lindera and yam. Mugwort burned below the navel

India

The atlas has rows under this heading in 79 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	*Jvara*, heat. Eight kinds	The faults, alone or together, or a cause from outside. In the story, the wrath of the god Rudra	Fasting while the fever is raw. Then bitter decoctions. A purge if needed

Entry	Name or kind	Cause as the tradition gives it	What was done
2. The fever that returns	*Vishama jvara*, the uneven fever: daily, third-day, fourth-day	The faults lodged in the tissues	Bitter drugs; cleansing; old clarified butter
3. Consumption	*Rajayakshma*, the king's wasting	Overexertion, held-back urges, the wasting of the tissues, irregular food	Building up: meat broths, milk, clarified butter, rest; nothing that depletes
4. The poxes	*North India:* The visit of the Cool One, a goddess	*North India:* Her presence in the body of the child	
6. The flux	*Atisara*, running through. Six kinds, two of them from fear and from grief	The faults; raw matter in the gut	The flux is not stopped while raw matter is present. Light gruel. Then astringent barks and fruits: the bark of holarrhena, the unripe bael fruit
7. Leprosy	The gravest of the eighteen kinds of *kushtha*, that which disfigures	All three faults, lodged in skin, blood, flesh and lymph; grave misdeeds	Repeated cleansing; bitter drugs; the oil of the seeds of a forest tree, by mouth and on the skin
8. Worms	*Krimi*, in twenty kinds, outer and inner	Sweet and spoiled food; too little movement	The berries of embelia; bitter and pungent drugs

Entry	Name or kind	Cause as the tradition gives it	What was done
9. The cough and the cold	*Kasa*, cough, in five kinds	Wind, bile or phlegm; an injury of the chest; wasting	For the dry cough, clarified butter and liquorice. For the cough with phlegm, the leaf of the Malabar nut, long pepper, ginger and honey; *Thailand and India:* The bitter herb andrographis
10. Wheezing	*Shvasa*, breath, in five kinds	Wind and phlegm that close the channels of the breath	Sweating; warm oil on the chest; the leaf of the Malabar nut; a thorny nightshade; long pepper. The smoke of the thorn apple, breathed in
11. Pain of the heart	*Hridroga*, illness of the heart, in five kinds	The faults in the heart. One kind has a stabbing pain	The bark of the arjuna tree, boiled in milk
12. Dropsy	*Shotha*, swelling; *udara*, the belly, in eight kinds	The faults; a weak fire; a stopped channel	Drugs that increase the urine, among them the herb whose name means that which makes new; a diet without salt; a diet of milk alone; tapping
13. Stroke and palsy	The striking of one side; palsy of the face	Wind, the first of the eighty illnesses of wind	Oil rubbed in daily; warmth and sweating; enemas of oil; oil dropped into the nose; rest
15. Pain of the stomach and bad digestion	The undigested; slow fire; sour bile	A fire that is too weak, too sharp or uneven for the food that is eaten	A fast until hunger returns. Hot water. Then dry ginger, long pepper and black pepper to kindle the fire. Asafoetida for wind. Liquorice and emblic fruit for sour bile

Entry	Name or kind	Cause as the tradition gives it	What was done
16. The restless bowel and hard stools	Wind held in the lower gut; illness of the seat of the fire	Wind, roused by dry food, by fasting, by travel and by urges held back	The three myrobalans at bedtime; castor oil; the husk of a plantain seed in water; warm oil on the belly; a fixed hour at dawn
17. Yellow skin and the hardened liver	*Kamala*, of the channels and of the trunk	Bile roused by hot, sour food and drink, and by anger. It often follows the pale illness	A purge of bile; then bitter drugs: the root of picrorhiza, the phyllanthus herb, the king of bitters; The newborn with yellow skin is laid in the morning sun
18. Sweet urine	*Prameha*, in twenty kinds; the last is honey urine	Sweet, rich and new food; sleep by day; a life without exertion. In some, the seed of the parents	*India, the stout patient:* Barley in place of rice and wheat; bitter and astringent drugs; hard exercise. One book orders him to dig a well, or to walk a hundred leagues; *India, the lean patient:* Building up, and nothing that depletes; *The Philippines, India, China:* The bitter melon, as food and as medicine
19. Stoutness	*Sthaulya*, stoutness; one of the eight despised builds	Sweet, heavy, oily food; sleep by day; no exertion; a cheerful, careless mind; the seed of the parents	Reducing. Barley, millet and pulses in place of rice and wheat; honey in water; the gum resin of a thorn tree; hard rubbing with dry powders; exertion; less sleep; worry is even named as a remedy

Entry	Name or kind	Cause as the tradition gives it	What was done
20. Gout	*Vatarakta*, wind and blood	Blood spoiled by salt, sour and rich food, by wine and by riding, and driven by wind. It begins in the great toe and spreads like rat poison	Bloodletting near the joint; cooling pastes; purging; the stem of tinospora, the chief drug for this illness
21. Stone	*Ashmari*, stone, in four kinds	Phlegm that is dried in the bladder by wind and bile, as water leaves a crust in a new pot	Drugs: Plants that break stone; the fruit of the puncture vine; alkali made from plant ash; much fluid. The knife: Described step by step, with a warning. The surgeon first asks leave of the king, since the patient may die
22. Piles	*Arshas*, the enemy. A dry and a bleeding kind	A weak fire; straining; long sitting on hard seats; riding; urges held back	Buttermilk; the chebulic myrobalan; a sitz bath. Then a caustic paste of plant ash, painted on. Then the hot iron. Last, the knife; *India, for a fistula beside the outlet:* A thread coated with caustic, drawn through the channel and tightened week by week until it has cut its way out
23. The headache	Eleven illnesses of the head. Two stand out: the splitting of half the head, and the headache that turns with the sun	The three faults, most often wind	Oil or medicated butter dropped into the nose; oil poured on the forehead; clarified butter by mouth; rest

Entry	Name or kind	Cause as the tradition gives it	What was done
24. Pain of the back	The seizing of the loins; the vulture's gait, when the pain runs down the leg	Wind	Warm oil held on the back within a ring of dough; enemas of oil; castor oil; the hot iron at the foot for the pain of the leg
25. Worn and inflamed joints	*Amavata*, raw matter and wind; and wind in the joints	Raw matter from a weak fire, carried by wind into the joints; or wind alone, in age	*India, raw matter and wind:* First fasting and light food. Bitter, warming drugs. Castor oil. No oil is rubbed on while raw matter is present; *India, wind in the joints:* Warm oil, rubbed in daily; warmth; the gum resins of the thorn tree and of Indian frankincense
26. The broken bone	The surgeon of the school of Sushruta, who counts twelve kinds of fracture and six of dislocation		The binding: Splints of bamboo and bark; a bed with pegs that holds a broken thigh still. The rule: Cool the fresh break; feed milk and clarified butter
27. The aching tooth	Illnesses of the teeth and the gums; the worm-eaten tooth	The faults; worms	A fresh twig of the neem tree, chewed to a brush, every morning. Oil held in the mouth. Oil of cloves on the aching tooth. The hot iron in the hollow
28. Pain without a wound	Wind in the flesh and the sinews	Wind, roused by grief, by lack of sleep, by fasting and by overexertion	

Entry	Name or kind	Cause as the tradition gives it	What was done
29. The itching and scaling skin	Among the eighteen kinds of *kushtha*: an itching, oozing kind and a dry, scaling one	The three faults in skin, blood, flesh and lymph; wrong pairs of food, such as fish with milk	Repeated cleansing; bitter drugs by mouth, among them neem and turmeric; medicated oils and butters on the skin; buttermilk poured on the head and body
30. The white patches	*Shvitra*, the white; a hymn of the oldest collection asks a dark plant to give the skin its colour back	The faults in the skin; misdeeds	The seeds of a plant of the pea family, ground and rubbed on the patch, or taken by mouth. The patient then sits in the morning sun
31. The clouded lens	An illness of the lens, in six kinds	Phlegm that hardens before the pupil	Record of the operation: The collection of Sushruta
32. The sore eye and blindness at night	Seventy-six illnesses of the eye; night blindness among them	The faults in the layers of the eye	For the sore eye: Washes of the three myrobalans; honey; clarified butter pooled on the eye. For blindness at night: Liver of a goat, cooked with long pepper
33. The failing ear	The sounding ear; the deaf ear	Wind in the channels of sound	
34. Madness	*Unmada*, the wandering of the mind, in five kinds	Each fault, all three, or a seizer from outside. It strikes a weak mind after grief, fright or a great wrong	Cleansing; clarified butter kept for ten years; the root of the snakeroot; counsel and the rousing of the opposite feeling; offerings. The books also order fright, bonds and a dark room; *South India:* A stay at a temple or a shrine

Entry	Name or kind	Cause as the tradition gives it	What was done
35. Melancholy	Dejection, which the books call the first of all that makes illness worse	Loss, wrong done or suffered, and a mind in which darkness rules	Counsel; the company of friends; good news; oil poured on the forehead; the root of withania
37. Possession	The seizers: gods, ancestors, wandering dead and others, each known by the conduct that it brings. Nine seize children		
38. Sleeplessness	Loss of sleep	Wind and bile, roused by worry, grief, anger, fasting, overwork and an uneasy bed	Warm oil rubbed on the head and the soles of the feet at bedtime. Warm milk. A soft bed, pleasant scents and sounds, a mind at ease. The root of withania, whose Latin name means bringer of sleep
39. The falling sickness	*Apasmara*, the going away of memory, in four kinds	The faults that close the channels of the heart and mind, in a person troubled by worry and grief	Cleansing; old clarified butter cooked with bacopa and sweet flag. The patient is kept from fire, water and heights; *India, in the nineteenth century:* Hemp, which a British physician at Calcutta took from Indian practice for fits

Entry	Name or kind	Cause as the tradition gives it	What was done
40. Craving	The illness of wine		The illness of wine is treated with wine, in falling measure, with milk and with cooling foods. The books explain: what was caused by wrong use is undone by right use
41. Grief		Grief is a cause of illness in its own right. It can bring a flux, a fever and madness	
42. The fading mind	The loss of memory and understanding in the decade of wind	Wind, which rules the last part of life	Drugs that feed the understanding: bacopa, a creeping bindweed, the stem of tinospora, liquorice, clarified butter. They are taken for years, from middle age, as part of the rule for a long life
43. The monthly course	Twenty illnesses of the womb	Wind above all, since wind moves the monthly blood downward	The bark of the ashoka tree for heavy bleeding. The root of a wild asparagus. Warm oil on the belly. Rest and plain food on the days of bleeding
44. Barrenness		Four must be sound, as for a sprout: the season, the field, the water and the seed	Cleansing of both; clarified butter cooked with herbs for the woman; milk, clarified butter and the root of withania for the man; a rite at conception
45. Birth			

Entry	Name or kind	Cause as the tradition gives it	What was done
47. The change of life		The courses end at about fifty, when the time of wind begins	
48. The child that does not thrive	The nine seizers of children; *The Mediterranean, the Islamic world, India:* The evil eye	Beings that seize a child whose mother or nurse has been careless or unclean; *The Mediterranean, the Islamic world, India:* Envy and praise	Fumigation, baths and offerings against the seizer; drugs; daily rubbing of every infant with oil; *The Mediterranean and India:* Amulets; a black mark on the face; no praise without a blessing
49. Tumours	The knot and the great swelling	The faults lodged in flesh, blood and fat	Cutting out to the root, followed by the hot iron or caustic, so that nothing is left
50. The swollen neck	The swelling of the throat that hangs like a bag	Phlegm and fat	
51. The bite of a snake		One of the eight limbs of medicine deals with poison. The books sort the snakes into hooded, banded and striped, and give the signs and the stages of the poisoning for each	A band tied above the bite. The wound is cut, and sucked through a piece of cloth, or burned. Drugs by mouth and nose; the root of the snakeroot. Formulas are recited while the band is tied
52. Burns		Four degrees of burn, from the singed to the overburnt, each with its signs and treatment	For the slight burn, warmth and not cold. For the deeper, clarified butter and cooling pastes. For the gravest, the dead tissue is removed and the wound is dressed as an ulcer

Entry	Name or kind	Cause as the tradition gives it	What was done
53. Wounds and sores		The school of Sushruta lists sixty measures for a wound, from cleansing to the making of a good scar	Washing: Decoctions of astringent barks. Dressing: Honey with clarified butter; pastes of turmeric and neem. Closing: Stitches of thread and hair. For the gut, the jaws of large ants
54. The weakness of old age		One of the eight limbs of medicine is given to old age. Its aim is to renew the tissues of a person who is well, old or recovering	The jam of Chyavana: emblic fruit with some forty herbs, taken daily. For the stronger cure, a retreat of weeks or months in a hut of three chambers, sheltered from wind and sun. For everyone, a regimen of conduct: truthfulness, calm, clean living, respect for teachers and elders. The books call this conduct itself a medicine for long life
55. The failing of desire		One of the eight limbs of medicine is given to potency and the begetting of children	Milk, clarified butter, sugar, honey and black gram. The root of withania; the seed of the velvet bean; a wild asparagus. A calm mind and a loved companion, which the books name first
56. Dying		Twelve chapters of Caraka’s book deal with the signs of approaching death, in the body, in the shadow and in dreams	Care of the dying: He is laid on the ground. Water of the holy river and a leaf of holy basil are put in his mouth. The name of God is said in his ear

Entry	Name or kind	Cause as the tradition gives it	What was done
58. The swollen legs of the rice eaters	*Malay world and Ceylon:* Beriberi		*South India:* Rice that is steamed in the husk before it is milled. The custom is old, and it carries the vitamin into the grain
60. Soft bones	The child that cannot walk at one year	Bad milk; an illness of the mother or the nurse	Every infant is rubbed with oil daily and laid in the morning sun
61. Pale blood	*Pandu*, the pale illness, in five kinds. One comes from eating earth	The faults spoil the blood, and the body loses its colour	Burnt iron, and iron rust prepared with the three fruits. Clarified butter; emblic fruit
62. The plague			
63. The great pox			Mercury, in the book that first names the illness
64. The mad dog		The books describe the mad dog, with its hanging jaw and tail and its running spittle. The bitten person who comes to fear water cannot be saved	The wound is bled and burned with hot clarified butter. Antidotes are laid on. Old butter is drunk
65. The strangling throat	Illnesses of the throat. One is a growth that closes the passage and kills within days	The three faults and the blood	Gargles held long in the mouth; drops in the nose; bleeding; scraping
66. Lockjaw	The stiffness of the bow	Wind that has seized the channels	Oil, sweating and drugs against wind

Entry	Name or kind	Cause as the tradition gives it	What was done
67. The itch	Several kinds of itching eruption among the skin illnesses	The faults, above all phlegm and bile	Sulphur; a paste of neem leaves and turmeric; oil
68. Warts			Caustic made of plant ash; the hot iron
70. Sneezing in spring	Catarrh of the nose, in several kinds	The faults, lodged in the head	Oil dropped into the nose. The washing of the nose with salt water, which is one of the six cleansings of yoga
71. Burning urine	Painful urination, in eight kinds	The faults; a stone; an injury	The fruit of the puncture vine; sandalwood; water in which coriander has stood
72. The old man’s water	Held-back urine, in a dozen kinds. One is a hard, round swelling between the bladder and the gut, like a stone	Wind	The tube: Tubes of gold, silver, iron or wood, smeared with clarified butter. Drugs: The bark of the three-leaved caper; the fruit of the puncture vine; the black pitch of the mountains
73. The rupture	The swelling of the scrotum by the gut, one of seven kinds of swelling there	Wind, roused by lifting loads and by straining	The hot iron at set places; a band
75. Stones of the gall	Not told apart from other pains of the belly		

Entry	Name or kind	Cause as the tradition gives it	What was done
76. Swollen veins and the sore that will not close	The knot of veins	Wind, in those who walk far and then stand in cold water	Leeches; bleeding of the vein
77. The shaking palsy	The trembling wind: trembling of the hands and head, slowness and stiffness	Wind	The seed of the velvet bean, with other drugs against wind. Oil rubbed in daily
78. Dizziness	The whirling	Wind and bile	*China, India and the sailors of many nations:* Ginger against the sickness
80. The stroke of the sun and the sickness of great heights	*North India:* The stroke of the hot wind	*North India:* The wind of May and June	Against heat: A drink of raw mango with salt and sugar; buttermilk; an onion carried in the pocket
81. Short sight	The first stage of the dimming of sight	The faults in the first layer of the eye	Gazing at a flame without blinking, one of the six cleansings of yoga. Washing of the eyes with the three fruits
82. Illness sent by another	*From Scotland to India and Latin America:* The eye		
84. Illness from the dead			

Entry	Name or kind	Cause as the tradition gives it	What was done
89. The sickness of the first months	The vomiting of the woman with child	The child presses upward; the mother’s longings are not met	Water in which puffed rice has stood, with honey and sugar. Pomegranate; cardamom. The books order that the longings of a woman with child be granted
90. The child that is lost	The falling of the fruit	Blows, journeys in a jolting cart, strong feelings, wrong food	To hold the child: A diet for each month of pregnancy, with milk and butter. Cold cloths and rest when blood shows
91. Too little milk and the inflamed breast	Too little milk; spoiled milk, which makes the child ill	Grief, anger, fasting, hard work, a new pregnancy. Good milk mixes evenly when a drop falls in water	For more milk: The root of a wild asparagus; fenugreek; cumin; garlic; milk. For the inflamed breast: Warmth; emptying of the breast
92. The yellow newborn	The yellow illness of the newborn	Spoiled milk; the faults of the mother	Every infant is rubbed with oil and laid in the morning sun, as entry 60 told
93. The crying child, the teeth and the wet bed			The crying: Warm oil rubbed on the belly; a paste of asafoetida on the navel

Tibet

The atlas has rows under this heading in 16 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
1. Fever	Raw, full, empty, hidden and old fever	Bile and blood, driven by the season, by food or by conduct	A decoction of four plants that ripens a raw fever. Only a ripe fever is cooled, with camphor and the like
4. The poxes	Counted among the fevers that spread	Treated in the chapters on fever	
7. Leprosy	An illness from the serpent spirits	The spirits of springs, lakes and trees, when they are offended	Rites to the offended spirits, with drugs
15. Pain of the stomach and bad digestion	A cold stomach; the brown phlegm	Loss of the stomach’s warmth, from cold, raw and stale food	
17. Yellow skin and the hardened liver	A spreading of bile	Bile that leaves its seat and enters the skin and the eyes	
25. Worn and inflamed joints	Illnesses of the yellow fluid	A spoiled fluid that gathers in the joints and under the skin	Baths in hot springs and in decoctions of five plants
31. The clouded lens	Named among the illnesses of the eye that need the instrument		Record of the operation: Done with one of the small instruments
34. Madness	Madness from seizure by spirits; from wind in the channel of life		

Entry	Name or kind	Cause as the tradition gives it	What was done
35. Melancholy	Wind in the heart	Grief, brooding and want	Warm, rich food; a warm and dim room; nutmeg; fire on the points of wind; the company and pleasant talk of friends
36. Fear, fright and the lost soul	The life principle frightened out or stolen	A shock; a spirit	A rite that calls the life principle back
37. Possession	Elemental spirits, each with its signs		
39. The falling sickness	Seizure sent by the spirits of the planets		The golden needle, heated on the crown of the head
56. Dying		The physician learns the stages of dying from within. The elements of the body withdraw one after another. The care goes on for forty-nine days after the last breath	Care of the dying: A lama or a friend reads to the dying and the dead person from a book of guidance, for up to forty-nine days. The book tells him where he is and what he is seeing, and that he should not flee it
80. The stroke of the sun and the sickness of great heights	The poison of the pass	A vapour of the ground or of plants	

Entry	Name or kind	Cause as the tradition gives it	What was done
85. Too much thinking and the wind that rises	The wind of life, roused. The person is anxious and sad without cause, sighs, sleeps badly, and feels his heart beat	Grief, worry, too much thinking, too little food and sleep, strain in meditation	Warmth, rich food, the company of friends, kind speech, and rest in a quiet and dimly lit place
86. Too hot, too cold		All illnesses come down to two kinds. The first question in every case is whether it is hot or cold	

Japan and Korea

The atlas has rows under this heading in 11 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
35. Melancholy	The knot of grief and resentment that has had no outlet	Wrongs swallowed for years	
37. Possession	The gods who descend on the woman they have chosen		
41. Grief		The dead who were not mourned, or who died with a grudge, make the living ill	
42. The fading mind			*Europe and East Asia:* The leaf of the ginkgo tree

Entry	Name or kind	Cause as the tradition gives it	What was done
43. The monthly course			Two Chinese formulas of the third century, which most Japanese women’s physicians prescribe today
58. The swollen legs of the rice eaters	*Kakke*, the same word. Also the affliction of Edo	An illness of the city. Those who left for the country recovered	*Japan, the old school:* Barley and red beans in place of white rice; a move to the country
68. Warts			*China and Japan:* The seed of coix, taken by mouth for weeks. A caustic seed crushed on the wart
84. Illness from the dead			
88. The call		The spirit sickness, by which the gods call the shaman north of the Han River	
90. The child that is lost			After a loss: A rite at a temple for the water child, with a small stone figure that is dressed and visited
91. Too little milk and the inflamed breast			For more milk: Soup of seaweed, daily for weeks after the birth

The Pacific and the islands of Asia

The atlas has rows under this heading in 24 of the 93 entries.

Entry	Name or kind	Cause as the tradition gives it	What was done
5. Epidemics		*Siberia, Hawai‘i, Mexico:* Illnesses that came with the strangers	
6. The flux	Illness of the bowel	Counted among the troubles for which plants suffice	The leaf tips of a shrubby speedwell, chewed
7. Leprosy			From 1866, removal to a settlement on the island of Moloka‘i
9. The cough and the cold	*Hawai‘i and Aotearoa:* An ordinary illness	*Hawai‘i and Aotearoa:* No spirit is sought. Plants suffice	The bark of the root of a native mallow, chewed for a sore throat; *Aotearoa:* The vapour of tea tree leaves; *Thailand and India:* The bitter herb andrographis
18. Sweet urine			*The Philippines, India, China:* The bitter melon, as food and as medicine
19. Stoutness			*Hawai‘i today:* A return to the food of the ancestors: taro, sweet potato, greens, fruit and a little fish, eaten to fullness
24. Pain of the back			*Thailand, Hawai‘i, Samoa:* Kneading with thumbs, elbows and feet, in a fixed order
26. The broken bone	*The Philippines, Samoa, Hawai‘i:* The healer who kneads		

Entry	Name or kind	Cause as the tradition gives it	What was done
36. Fear, fright and the lost soul	*Hmong, Thai, Lao, Khmer:* The soul that has left	*Hmong, Thai, Lao, Khmer:* A fright, an illness, a journey	*Thai, Lao, Khmer:* An elder chants an invitation to the soul. Cotton threads are tied round the wrists to hold it in; Kava
38. Sleeplessness			Kava in the evening
40. Craving			*Thailand:* A vow made once for life at a monastery, with a herbal drink that brings vomiting, and steam
45. Birth			
52. Burns			The gum of the flax plant and of the tea tree; *South and Southeast Asia:* The leaf of the banana, as a dressing. The pulp of aloe
53. Wounds and sores			Dressing: The gum and the bark of the tea tree of New Zealand
54. The weakness of old age		*Hawai‘i and Aboriginal Australia:* The old are the keepers of knowledge, and they keep a task	
56. Dying		Care did not end at death. Some went as far as the meeting with their ancestors and were sent back	Care of the dying: The family gathers. Quarrels are set right, so that the soul can leave without a tie that holds it

Entry	Name or kind	Cause as the tradition gives it	What was done
58. The swollen legs of the rice eaters	*Malay world and Ceylon:* Beriberi		
71. Burning urine			A decoction of the leaves of the tea tree, as chapter 70 listed
82. Illness sent by another	Praying to death		A second expert finds the sender and returns his work. A victim who sees the sorcerer’s gesture and makes it himself sends the harm back
83. Illness from a broken rule			
84. Illness from the dead			
85. Too much thinking and the wind that rises	*Malay:* The sickness of the winds	*Malay:* Inborn winds that life does not let out: the illness of artists without a stage	*Malay:* A performance that lasts a night. The healers sing the story of the figure whose wind the patient has. The patient rises and dances it before the village
86. Too hot, too cold		*The Malay world and the Philippines:* Every villager sorts foods and illnesses into hot and cold. A body that is hot from work must not meet cold water	

Entry	Name or kind	Cause as the tradition gives it	What was done
92. The yellow newborn			*China and Southeast Asia, a custom:* Coptis root, very bitter and cold, is given to the newborn in its first days to clear the poison of the womb

How to use the tables

A row in these tables is a pointer and not a full account. The entry in Part VIII gives the signs by which the illness was known, the trials, and the reading with the Net. The chapters of Parts II to VI give the tradition as a whole.

105. The hour, the day and the season

What this chapter gathers

Every old medicine asks when. It asks at what hour an illness grows worse, on which day a fever will break, and in which season a cure may be begun. The chapters of this book gave the answers one tradition at a time. This chapter sets them in one calendar, from the hour to the length of a life. It then gives what has been measured, and reads the whole with the third rule of cure.

The hours of the day and the night

Tradition	The rule	Chapter
China	The day has twelve double hours. Each of the twelve vessels has its height in one of them: the lung before dawn, the stomach in the morning, the heart at noon, the kidney toward evening, the liver after midnight	47
China, from the twelfth century	A school of needling chooses the point by the hour and the day. It is still taught, and it has been little tested	47
India and Tibet	Phlegm rules the first third of the day and of the night, bile the middle third, and wind the last	57
Greece	The fevers are named by their hours and days. One returns every day, one on the third day and one on the fourth	41
The Greek sanctuary	The god comes to the patient in the sleep of the night	37
The San	The dance begins after dark and lasts until the sun is up	11
The Amazon and Mexico	The session with the vine or the mushrooms is held at night, in the dark	16, 18
The Navajo	A chant runs through its last night without a pause, and ends with the songs of dawn	19

Healing belongs to the night. The table shows it for four peoples who had no contact. Chapter 72 counted sleep and dream among the points on which the old medicines agree. The physicians of the learned traditions worked by day and divided the day. The healers who work by a meeting work in the dark.

The days

Tradition	The rule	Chapter
Mesopotamia	Lists of lucky and unlucky days. On the seventh, fourteenth, nineteenth, twenty-first and twenty-eighth of the month the physician does not lay his hand on a sick person	33
Egypt	Calendars mark each day of the year as good or bad. The five days at the end of the year are dangerous, and the plague of the year is feared in them	
Greece	The crisis of a fever falls on the fourth day, the seventh, the eleventh, the fourteenth, the seventeenth or the twentieth. Galen tied the series to the moon	38, 41
India	The books give the day on which a fever breaks as the seventh, the tenth or the twelfth, by the fault that rules it. A long treatment begins on a lucky day	60
China	The almanac names the days for the needle. An old book marks, for each day of the moon, the place of the body where needle and fire must not go	
Tibet	A life principle moves through the body with the days of the moon and stands at the crown at full moon. Blood is not let and fire is not set where it stands	62
The Islamic world	The sayings of the Prophet name the seventeenth, the nineteenth and the twenty-first day of the moon for cupping	42
Europe, to the seventeenth century	The calendars mark the days on which no blood may be let. A figure of a man shows which sign of the zodiac rules each part. A part is not cut while the moon stands in its sign	41
The Yoruba	The week has four days, and each belongs to one of the powers. The diviners hold their rites on the day of Ifá	24
Mesoamerica	A count of 260 days. The day of birth marks a person’s lot. The daykeepers of the highland Maya still count it, and the training of a diviner lasts one round	18
Hawai‘i	Each of the thirty nights of the moon has a name, with its rules for planting, for fishing and for prayer	68

Two kinds of day stand in the table. The first is counted from the start of the illness: the day of the crisis, the day on which the fever breaks. The second is counted from the sky: the day of the moon, the day of the week, the place in a round of 260. The first kind belongs to the illness. The second belongs to the world in which the illness occurs. Most traditions use both.

The moon is the commonest clock. Mesopotamia, Greece, China, Tibet, the Islamic world, medieval Europe and Hawai‘i all time an act by it. The rule is most often a prohibition. It says when the knife, the needle or the fire must stay away.

The seasons

Tradition	The rule	Chapter
Greece	Each season raises one humour: phlegm in winter, blood in spring, yellow bile in summer, black bile in autumn. The physician purges in spring and not in the dog days	38
China	Each season has its organ and its harmful influence: wind in spring, heat in summer, damp in late summer, dryness in autumn, cold in winter. The pulse changes with the season, and the physician expects the change	46, 50
India	The year has six seasons. A fault gathers in one season, rises in the next and settles in the third. Phlegm rises in spring, and the patient is made to vomit. Bile rises in autumn, and he is purged. Wind rises in the rains, and he is given the enema	57, 60
Tibet	In each season one organ leads, and its pulse should then be strongest	63
The Navajo	The Night Chant may be sung only in winter, when the snakes sleep and the thunder is silent	23
The first chapters of the Chinese classic	The sages rose and slept with the season, and so did not fall ill	45

The same thought stands in three learned medicines. An illness does not begin when it shows. It is prepared a season earlier. The Indian physician therefore cleanses at the turn of the season, before the fault has risen. The Chinese classic says that the best physician treats what is not yet ill.

The year and the life

The year. In 762 the editor of the Chinese classic added seven chapters that forecast the illnesses of a year from its place in the cycle of sixty. Chapter 45 described them. The masters of Paris laid the plague of 1348 to a meeting of three planets three years before. Chapter 41 gave their answer to the king.

The life. The Chinese classic lets a woman's life move in steps of seven years and a man's in steps of eight. The Greeks counted the ages of a man by sevens. They feared every seventh year, and most of all the sixty-third, which is seven times nine. The Indian books give childhood to phlegm, the middle of life to bile and old age to wind.

The length of a cure. A Navajo chant lasts two, five or nine nights. The mother lies in for a month or for forty days in China and in the Malay world. The ports of the Mediterranean kept ships waiting forty days. Chapter 73 gave the counts of each people.

What has been measured

The body keeps time. Every cell of the body carries a clock of about a day, and the Nobel Prize of 2017 went to those who found how it turns. The pressure of the blood, the warmth of the body and several hormones rise and fall with it. Attacks of the heart are commonest in the first hours after waking (Muller 1985). Attacks of wheezing are commonest in the last hours of the night. That is the double hour which the Chinese gave to the lung.

Two fevers keep the Greek count. The parasite of the commonest malaria breaks out of the red cells every forty-eight hours, and that of another kind every seventy-two. The fever of the third day and the fever of the fourth are these two. Entry 2 told the history. Here the count of days was exact, two thousand years before the cause was seen.

The other critical days have not been confirmed. No modern study has found that the crisis of a fever keeps to the fourth, seventh and eleventh day. The antibiotic has also removed most of the fevers in which the series was observed.

The hour of a drug matters for some drugs. Several drugs against cholesterol work better at night, when the liver makes most of it. For the pills against high blood pressure the question was put to a trial. More than twenty thousand British patients took their pills in the morning or in the evening, as the lot fell. After five years the two groups had the same number of strokes and attacks of the heart (Mackenzie 2022).

The moon has not been found in the numbers. Counts of births and of admissions to hospital show no rise at full moon (Margot 2015). No trial supports the rule that blood is lost more freely at one phase than at another.

A feared day can kill. Among Americans of Chinese and Japanese descent, deaths of the heart rise on the fourth of the month. In both languages the word for four sounds like the

word for death (Phillips 2001). Chapter 21 gave the study. The unlucky days of the old calendars may have worked in this way, on those who knew them.

The seasons are real. Many illnesses keep a season. Chapter 90 gave the heat of the dog days, and entry 70 the sneezing of spring. A sadness that returns each winter is treated with bright light in the morning, and several trials support it.

Read with the Net

The third rule of cure in chapter 4 is a question. Does the act match direction and phase? Does it ask which way the person turns, and what hour and season it is? The book on the body counts a rhythm that runs against the day among the eight forms of failure, as the form of direction (Konstapel 2026c). The rule asks that an act meet a turning form at the right place of its turning.

The old medicines asked the question of this rule before any other medicine did. The count of this chapter shows how they answered, and the measurements show how the answers have fared.

Where the clock is in the body, the old rule has held. The round of day and night is carried by the body itself. The Chinese double hours, the Indian thirds of the day and the healing of the night all rest on it. The two fevers that return by the calendar are a clock as well, kept by another living form inside the patient.

Where the clock is in the sky alone, the rule has not held. The moon, the planets and the count of lucky days are rhythms outside the body. The body does not carry them, as far as has been measured. A rule that ties the knife to the moon is a rule about a phase that the patient does not have.

The count of days was the first trial. The Greek physician who wrote down the day of each crisis did what Pierre Louis did in Paris with his numbers. He was wrong about the series, and right about two fevers. He was also right in his method. Chapter 43 noted that a week of seven days stands on neither ladder of the theory. The theory does not hold that every count is a phase.

The prohibition is the wiser half. Most rules of the calendar say when not to act. The first rule of cure is to read before acting, and the sixth rule of chapter 5 is to leave silence after an offering. A day on which the physician keeps his hands off is a day of rest for the patient, whatever the reason given for it. The harm of the old calendars lay elsewhere: in the patient who needed the knife on a forbidden day.

106. Training, oath, fee and law

What this chapter gathers

A medicine is carried by people, and every people has had to settle four matters. Who may heal, and how is such a person made? What does the healer promise? What is he given? And what does the ruler allow? The chapters of this book answered for one tradition at a time. This chapter sets the answers side by side.

How a healer is made

Tradition	The road	Chapter
Siberia, southern Africa, the highland Maya	An illness calls. It ends when the person accepts the calling and is taught by an older healer	10, 14, 18
The San	No school and no rank. A learner is given *n/om* by an older healer, and much of a dance is taken up with looking after the learners	11
The Amazon	Months alone in a hut in the forest, and in the old days years, on a strict diet, with the plants as teachers	10, 16
The Navajo	A singer learns one chant from an older singer, song by song, over years. In 1969 a school at Rough Rock paid six singers and twelve apprentices a wage, so that the chants would not be lost	19
The Yoruba	Ten years or more with a master, until the verses of the 256 signs are known by heart	25
Hawai‘i	A boy was chosen young and lived in a master’s household for fifteen or twenty years. He learned the plants, the prayers and the signs by heart	68
Mesopotamia	The school of the scribes. A text lists about a hundred works that an *āšipu* had to master	32
Egypt	The House of Life, which was attached to the great temples	35
Greece	In the family, and with a master for a fee. The physicians of Kos called themselves the family of Asklepios	37, 38
India	The pupil lives for years with his teacher. He is received before a fire, with a charge on how he is to live	56
China	The pupil of a master, and from the seventh century the school of the state. In 1027 students were examined on a bronze figure pierced at each point	44
Tibet	The colleges at Lhasa, founded in 1696 and in 1916. The student learns the *Four Tantras* by heart	62
The Islamic world	The hospital as a school. After a death by a physician’s error, the caliph had the physicians of Baghdad examined in 931	40

Tradition	The road	Chapter
Europe	The university. In 1231 the emperor Frederick the Second required eight years of study, a year under a master, and an examination at Salerno	42
Japan	From the seventeenth century, schools and guilds of the blind for needling and for the art of the hands	65

Two roads stand in the table. On the first, the healer is taken: by an illness, by a dream, by the choice of an elder. On the second, he applies, studies and is examined. The first road belongs to the medicines of the meeting. The second belongs to the medicines of the book. Chapter 10 described the first, and chapter 72 counted it among the points of agreement. Several learned traditions kept a trace of it. Huangfu Mi and Hildegard were formed by their own illness, and the highest physician of the Tibetan book is one who has freed himself.

What the healer promises

The Greek oath. The physician swears by Apollo, Asklepios, Hygieia and Panakeia. He will honour his teacher as a parent and teach the teacher’s sons without a fee. He will use treatment to help the sick and never to harm them. He will give no deadly drug, though he is asked. He will not cut for the stone, and will leave that to those whose craft it is. He will enter a house for the good of the sick and keep from every wrong, above all from the seduction of those who live there. What he sees and hears he will not spread abroad.

The Indian charge. Caraka gives the words that the teacher speaks to the pupil before the fire. The pupil is to strive for the relief of the patient with his whole heart, even where his own life is at stake. He is not to harm a patient even in thought, and not to covet his goods or his wife. He is to dress plainly and not to drink. What happens in the patient’s house is not spoken of outside. And where he sees that a patient will die, he does not say so in a place where the words would hurt the patient or others.

The Chinese essay. Sun Simiao opens his book of 652 with the duties of a great physician. He treats all alike: rich or poor, old or young, friend or enemy, Chinese or foreign. He looks on the suffering of the patient as his own. He does not hold back because of danger, night, cold, hunger or weariness, and he does not think of his gain. Chapter 44 gave the passage. In 1617 the surgeon Chen Shigong set down five warnings and ten rules for his craft. The first warning is to go at once when called, to the poor as to the rich.

The Tibetan chapter. The student regards his teacher as a Buddha and his patients as his own children. He regards pus and blood as a dog or a pig regards them, which is without disgust. The physician treats all alike without regard to gain. He is also told to ask for his fee in good time, before the patient has forgotten the illness. Chapter 62 gave the text.

The Islamic world. In the ninth century the physician al-Ruhawi wrote a whole book on the conduct of the physician, the first of its kind in Arabic. The inspector of the markets, who checked weights and wares, had the physicians swear the Greek oath.

The healers without books swear nothing and keep much. The Amazonian healer learned on a diet without salt, sugar, pork or alcohol, and without sex, and he keeps such a diet before he works. The Navajo singer must give the chant without a single mistake. The San healer is not paid, and has no more say in the camp than anyone else. The rule is a way of life, and the people among whom the healer lives are its judges.

What the promises share. Five clauses return in the written texts. Help and do not harm. Treat all alike. Keep silent about the house. Do not exploit the patient. Honour the teacher. Two clauses are less expected. The Greek and the Indian text both tell the physician what he must leave undone, the stone in one and the announcement of death in the other. And both the Greek and the Tibetan text speak of the fee without embarrassment.

What the healer is given

Tradition	The fee	Chapter
The San	None. Being a healer gives no standing in other matters	11
Siberia	A share of the animal that was offered	9
The Amazon and the Navajo	A fixed fee, which can be high. The Navajo diagnostician receives a small one	9, 19
California	A high fee, agreed beforehand. The doctor gave it back if the patient died within a year	20
The Yoruba	A small sum in cowries for the diviner. The sacrifice is the larger cost	28
The Andes	The offering to the earth is itself called a payment	17
Hawai‘i	No fixed fee. A healer who asked for payment was held to lose his power	68
Mesopotamia	The law of Hammurabi sets the surgeon’s fee by the rank of the patient: ten shekels of silver for a nobleman, five for a commoner, two for a slave	32
The Greek sanctuary	The cure must be paid for and made known. A man who did not pay lost his sight again	37
India	A physician who takes on an incurable case loses his fee, his learning and his good name	58
Sicily, 1231	The physician treats the poor without a fee and owns no share in a pharmacy	42

The fee is seldom a price. In several traditions it is part of the act. The Yoruba patient pays the powers, and the diviner’s sum is small beside it. The Andean offering is a payment to the earth. At Epidaurus the cure that was not paid for was taken back. Chapter 7 named an exchange among the five steps of a meeting. Chapter 31 called the Yoruba act mainly a payment.

Other traditions hold the opposite, with the same seriousness. The San healer and the Hawaiian healer may not ask. What they give is not theirs to sell.

The learned medicines stand between the two. They allow the fee and guard against it. The physician of Frederick’s law may not own a share in the pharmacy from which he prescribes. That rule is eight hundred years old, and it has not lost its use.

What the ruler allows

Year	Place	The rule	Chapter
About 1754 before our era	Babylon	The surgeon’s fees are fixed. If a nobleman dies under the knife, the surgeon’s hand is cut off	32
931	Baghdad	The physicians of the city are examined	
1231	Sicily	Nobody practises without study, a year under a master and an examination	42
1322	Paris	The faculty brings Jacoba Felicie to court for healing without a licence. Her patients testify that she cured them	42
1543	England	An act of Parliament lets any subject who knows herbs treat outward sores and swellings. The surgeons had sued such people, it says, while the poor went without help	
1692, 1693	Norway, Sweden	Sámi men are tried for the use of the drum. One is killed in custody and one is burned	14
1868	Hawai‘i	Healers who use plants are licensed, after decades in which the whole of the old healing was classed with sorcery	68
1870s	Japan	Western medicine becomes the only legal one. In 1895 the parliament rejects a petition to keep a licence for the old medicine	44, 65
1907	Aotearoa	A law punishes the Māori expert who gathers people round him. It is repealed in 1962	70
1920s and 1930s	The Soviet Union	Shamans lose the vote and are taxed. Many are sent to camps or shot, and their drums are burned	14
1929	China	A government conference adopts a proposal to abolish the old medicine. It is not carried out	44
1939	Germany	A law licenses healers who are not physicians, after an examination that tests only whether they are a danger	
1954	China	The course is reversed. Colleges of Chinese medicine are founded	44

Year	Place	The rule	Chapter
1954	Nigeria	A mental hospital lodges its patients in villages and brings the healers in	29
1969	The Navajo nation	A school pays singers to teach apprentices	19
2007	South Africa	An act sets up a council that registers diviners, herbalists and traditional midwives	
2010	India	Tibetan medicine is recognised beside the Indian, the Unani and the Tamil systems	62
2013	Bolivia	A law recognises the traditional healers	17

The law followed the book. A medicine that could be read in a text could be examined, and one that could be examined could be licensed. The Chinese state school, the examination at Baghdad and the law of Sicily all tested what a candidate had read. The healer who was made by a calling had no paper to show. He was tried, taxed or forbidden, in Norway, in Hawai‘i, in Aotearoa and in Siberia.

The reversal came in one lifetime. Between 1954 and 2013 a series of states invited the old healers back, or let them train their successors. The World Health Organization counted 170 member states that report the use of traditional medicine, as the preface noted. The old question has returned in a new form. A state that licenses a healer must say what it examines. A singer cannot be tested on paper for a chant of nine nights.

The oldest rule on liability is the harshest. Hammurabi cut off the hand that failed. The Californian peoples asked for the fee back. The Indian physician lost his good name. The first rule of cure, to read before acting, was first written as a rule for the healer’s own protection. The Egyptian verdict of chapter 35 says the same: this is an ailment that I will not treat.

What the chapter shows

Chapter 72 counted two points that bear on this chapter. The healer is formed by a passage of his own. And healer and patient are a pair. The four tables add something to each.

The passage of the healer has been made in two ways, and the two do not replace each other. Study gives what can be written. The calling, the diet and the long nights give what the healers call seeing. A tradition that has both, as the Tibetan and the Yoruba have, asks both of its best healers.

The pair of healer and patient is guarded on every side. The oath guards the patient against the healer. The fee, where it is part of the act, binds the patient to the cure. The law guards the

public, and has often guarded one medicine against another. None of these is the healing. All of them are the frame in which a meeting between two people can be trusted to take place.

107. The tools and the places of the healer

What this chapter gathers

A healer works with something in the hand, and in a place that has been made ready. The chapters of this book described the tools and the places of each tradition as they came. This chapter sets them in two lists. It then asks what the lists show.

Tools for reading

Tool	Where	What is done with it	Chapter
The hand alone	Everywhere	The pulse under three fingers in China, India and Tibet. The belly in Japan. The whole body in Hawai‘i, where the art of feeling was taught on pebbles laid out as a man	50, 65, 68
The trembling hand	The Navajo	The seer’s arm begins to shake of itself over the patient, and by its movement he names the cause	19
A clear flask	Greece, the Unani physicians, medieval Europe	The first urine of the morning is held against the light. The flask became the sign of the physician in European pictures	40, 41
A bowl, and a stick	Tibet	The urine is stirred and read three times as it cools	63
A drop of oil	India	It is let fall on the urine, and its spreading is read	58
The chain and the sixteen nuts	The Yoruba	The chain is cast, or the nuts are passed from hand to hand, and the sign is marked in the dust of the tray	25
Coca leaves	The Andes	They are let fall on a cloth and read	17
Seeds and crystals	The highland Maya	The daykeeper counts them out by the days of the calendar and attends to the lightning in his own blood	18
Quartz crystal	Aboriginal Australia	Pieces of crystal are put into the healer when he is made. After that he can see	10, 13
The liver of a sheep	Mesopotamia	The diviner reads its marks. When the king is ill, he is asked whether a planned treatment will succeed	32
The bronze figure	China	A hollow man pierced at each point, on which students were examined	44
A watch	Europe	In 1707 an English physician timed the pulse with a watch that ran for one minute	50

Tools for acting

Tool	Where	What is done with it	Chapter
The drum	Siberia, the Sámi, Inner Asia, Korea	A hoop of larch with a hide on one side. It is brought to life in a rite, and it carries the shaman	14, 15
The rattle	The Americas	A bundle of leaves in the Amazon, whose dry rustle keeps the beat through the night. A gourd in the north	16, 20
The coat and the mirror	Siberia, Mongolia	A coat hung with cloth and metal, a fringe that hides the eyes, a bronze mirror on the chest	14, 15
The table	The north coast of Peru	Objects of the dark on the left and of the light on the right, with staffs and swords set upright behind	17
The bundle	The Navajo	Rattles, feathered wands, bags of pollen and coloured earths, crystals, and soil from the four sacred mountains	19
Coloured sand	The Navajo	A painting is made on the floor, and the patient sits in it. Then it is destroyed. It must not see the sun go down	19
A tube	The north-west coast of America; the Cherokee	A hollow bone in which a strayed soul is caught and carried home. A cane through which the medicine is blown	20
The mouth	Among most peoples without writing	The healer sucks at the place and shows what he has drawn out	8, 72
The nine needles	China	Nine shapes, from a blunt tip that presses to a long needle for the deep joints. The fine needle is one of the nine	51
The tube for the needle	Japan	A blind needler’s invention, through which a very fine needle is tapped in without pain	65
Mugwort	China, Tibet, Japan	Cones or sticks of the dried leaf are burned on or over a point	51, 64

Tool	Where	What is done with it	Chapter
The golden needle	Tibet	It is set on the crown of the head and heated	64
The cup	Greece, the Islamic world, China, Europe	A vessel of bronze, glass, horn or bamboo is fixed on the skin by suction, with or without a scratch. The bronze cup stands on the gravestones of Greek physicians	40, 51
The lancet and the leech	Greece to nineteenth-century Europe; India; Tibet	A vein is opened, or the animal is set on the skin	41, 60, 64
The burning iron	Greece, the Islamic world, India, Tibet	A hot iron on a point or on a wound. The Egyptian used the fire drill	60, 64
The knife	India, Greece, the Islamic world	Sushruta lists a hundred and one blunt instruments and twenty sharp ones, and says that the hand is the best of them. Al-Zahrawi drew some two hundred	56, 101
The syringe for the bowel	Egypt, India, Europe	A liquid is passed in from below. The Indian instrument was a bladder tied to a tube	60, 103
Mortar, sieve and still	Every pharmacy	Chapter 103 gave the forms of a remedy	103

The hand comes first. It reads and it acts, and no tradition is without it. The Indian surgeon said so in a book of a hundred and twenty-one instruments. His pupils learned to cut on gourds and cucumbers, to stitch on cloth and hide, and to probe in worm-eaten wood, before they touched a patient.

The tools of the meeting are made alive. The drum is a tree and an animal, and it is woken in a rite. The sixteen nuts are the body of Orunmila on earth, and they are fed. The Navajo bundle is handed down from singer to singer. None of these could be bought and put to use. Such a tool belongs to the one who uses it, as his voice does.

The tools of the craft are shaped by the act. A needle, a cup, a lancet and a probe each do one act at one depth. Nine needles are nine depths. The surgeon’s hundred and twenty-one are

as many acts. A new tool of this kind was a new treatment, as the tube of the blind needler was.

Some tools read and act at once. The sucking mouth finds the place and takes the illness out. The needler's hand feels the *qi* arrive under the needle. The hand that kneads a belly reads it. Chapter 72 counted this first among the points of agreement: the healer reads by making contact.

Places

Place	Where	What it is	Chapter
The fire and the circle	The San	The women sit round a fire and sing. The healers dance round them through the night	11
The tent	Siberia	A tent that stands for the three worlds, with a gallery of young trees	14
The house of the family	The Navajo	The round house with its door to the east. The singer blesses its beams, and from that moment it is a holy place	19
The sweat lodge	The Plains	A low dome of willow under hides. Red-hot stones lie in a pit at its centre	20
The dark house	The Amazon, the Mazatec	A room at night without a light	16, 18
The grove	The Yoruba	The place outside the town where a diviner is initiated	25
The House of Life	Egypt	A school attached to the great temples, where the texts were kept, copied and composed	35
The sanctuary	Greece	At Epidaurus, a theatre, a stadium, baths and a guest house of a hundred and sixty rooms. At its heart was the hall in which the sick slept	37
The infirmary and the garden	The monasteries of Europe	The plan of about 820 shows an infirmary, a house for the physician, a house for bloodletting and a herb garden of sixteen beds	42
The house of the sick	The Islamic world	The hospital in the modern sense, at Baghdad from the tenth century, at Damascus from the twelfth and at Cairo from 1284	40
The endowed hospital	South India	An inscription of 1069 records fifteen beds, a physician, a surgeon, two nurses, two men to fetch herbs and a barber	56
The public pharmacy	China, from the eleventh century	The state sold standard remedies at fixed prices	44

Place	Where	What it is	Chapter
The college on the hill	Lhasa	Founded in 1696, and destroyed by shellfire in 1959	62
The temple as a library	Bangkok	In 1832 a king had the knowledge of the physicians cut in stone on the walls of a monastery, for all to read	70
The shrine and the spring	Europe	At Lourdes a medical office has examined those who say that they were cured, since 1883	42
The villages round the hospital	Nigeria	From 1954 the patients of a mental hospital boarded with a relative in four villages	29
The hospital with two medicines	China	A patient with pneumonia is likely to receive an X-ray, an antibiotic and a decoction	55

The oldest place is made for one night. The fire of the San, the hogan of the Navajo and the dark room of the Mazatec are ordinary places. They become places of healing by what is done in them, and they are ordinary again in the morning. The Navajo painting must not see the sun go down.

The place holds the group. Nearly every place in the first half of the table has room for the family and the neighbours. The sick person is in the middle and is not alone. Chapter 72 counted rhythm, sound and the group among the points of agreement. The sanctuary of Epidaurus kept the same order on a great scale. It had a theatre for fourteen thousand beside the hall of sleep.

The hospital began as a work of mercy. Ashoka’s edict and Benedict’s rule are acts of a ruler or a community. So are the endowments of Baghdad and Cairo. They were meant for those who had no household to care for them. The hospital took the sick person out of the group. It gave him a bed, a physician and a record. Chapter 40 called it the gift of the Islamic world to medicine.

One modern place put the group back. At Aro the patient went home each evening to a village and to a relative. He took part in its festivals and its farm work. It showed that the physician and the group can be had together.

Read with the Net

The fifth rule of chapter 5 is to offer the whole window at once. A tool or a drug is one part of a window. The place, the hour and the company are the others. The peoples without writing

built the place anew for each cure, and so they never offered the tool alone. The hospital keeps its place standing. It offers the tool, and trusts the rest to chance or to the family.

The sixth rule is to leave silence after an offering. The hall at Epidaurus, the hut of the Amazonian novice and the four days of rest of the Navajo patient are places and times that hold that silence. The ward of a modern hospital at night does not hold it well. Studies of noise and of sleep in hospital wards have shown it.

108. One plant in four pharmacies

What this chapter does

Chapters 40, 52, 60, 95 and 97 listed the drugs of the Chinese, the Indian, the Tibetan and the Unani pharmacy, each in a table of its own. Trade carried many drugs from one pharmacy to the next. Cloves came from the Moluccas, sandalwood from India, saffron from Persia and Kashmir, musk from the mountains of Tibet. Each pharmacy that took up a drug gave it a name and a nature of its own.

A program went through the tables of this book and picked out every material that stands in more than one of them. The match was made on the English name, and the list was then gone through by hand. Four pairs were struck out, since the same English word hid two unrelated plants. Fifty-one materials remain. Seventeen of them stand in three pharmacies or in all four, and four in all four. Where the pharmacies use different kinds of one genus, the first column says so.

The table gives each name with the nature that the pharmacy’s own books give. The Chinese entry begins with the temperature. The Indian and the Tibetan entry end with it. The Unani entry gives the two qualities of the temperament.

Material	China	India	Tibet	Unani
Black pepper	*Hujiao*. Hot; acrid	*Maricha*. Pungent; hot		*Filfil siyah*. Hot and dry
Inula racemosa		*Pushkaramula*. Bitter, pungent; hot	*Manu*. Sweet, bitter, pungent	
Poison nut	*Maqianzi*. Warm; bitter; very poisonous	*Kupilu*. Bitter; hot		
Aconite (three kinds of one genus)	*Fuzi*. Very hot; acrid; poisonous	*Vatsanabha*. Pungent, bitter; hot	*Bongkar*. Bitter; cool	
Aloe	*Luhui*. Cold; bitter	*Kumari*. Bitter; cold		*Sibr*. Hot and dry
Asafoetida		*Hingu*. Pungent; hot	*Shingkun*. Pungent; warm	

Material	China	India	Tibet	Unani
Asparagus (two kinds of one genus)	*Tianmendong*. Cold; sweet, bitter	*Shatavari*. Sweet, bitter; cold		
Bamboo silica	*Tianzhuhuang*. Cold; sweet	*Vamshalochana*. Sweet, astringent; cold	*Chugang*. Sweet; cool	*Tabasheer*. Cold and dry
Beleric myrobalan		*Bibhitaki*. Astringent; hot	*Barura*. Astringent; cool	
Camphor	*Zhangnao*. Hot; acrid; poisonous		*Gabur*. Bitter; very cold	*Kafur*. Cold and dry
Cardamom		*Ela*. Pungent, sweet; cold	*Sugmel*. Pungent; warm	
Caterpillar fungus	*Dongchongxia cao*. Neutral; sweet		*Yartsa gunbu*. Sweet; warm	
Chebulic myrobalan	*Hezi*. Neutral; bitter, sour, astringent	*Haritaki*. Five tastes, chiefly astringent; hot	*Arura*. All tastes but the salty; balanced	
Chiretta		*Kiratatikta*. Bitter; cold	*Tigta*. Bitter; cool	
Cinnamon (twig in China, bark elsewhere)	*Guizhi*. Warm; acrid, sweet	*Tvak*. Pungent, sweet, bitter; hot	*Shingtsa*. Pungent, sweet; warm	*Darchini*. Hot and dry
Clove	*Dingxiang*. Warm; acrid	*Lavanga*. Pungent, bitter; cold	*Lishi*. Pungent; warm	*Qaranful*. Hot and dry
Costus		*Kushtha*. Bitter, pungent, sweet; hot	*Ruta*. Pungent, bitter; warm	
Croton	*Badou*. Hot; acrid; very poisonous	*Jayapala*. Pungent; hot		

Material	China	India	Tibet	Unani
Dodder (two kinds of one genus)	*Tusizi*. Neutral; acrid, sweet			*Aftimoon*. Hot and dry
Eclipta	*Mohanlian*. Cold; sweet, sour	*Bhringaraja*. Pungent, bitter; hot		
Emblic		*Amalaki*. Five tastes, chiefly sour; cold	*Kyurura*. Sour; cool	
Fennel	*Xiaohuixiang*. Warm; acrid			*Badiyan*. Hot and dry
Frankincense (two sister trees)	*Ruxiang*. Warm; acrid, bitter	*Shallaki*. Bitter, sweet, astringent; cold		
Fumitory		*Parpata*. Bitter; cold		*Shahtara*. Hot and dry
Galangal	*Gaoliangjiang*. Hot; acrid			*Khulanjan*. Hot and dry
Garlic	*Dasuan*. Warm; acrid	*Lashuna*. Five tastes, lacking sour; hot		
Ginger	*Shengjiang*. Warm; acrid	*Shunthi*. Pungent; hot		*Zanjabil*. Hot and dry
Hemp (the seed in China, the leaf in India)	*Huomaren*. Level; sweet	*Vijaya*. Bitter; hot		
Honey	*Fengmi*. Neutral; sweet	*Madhu*. Sweet, astringent		
Jujube	*Dazao*. Warm; sweet			*Unnab*. Balanced
Liquorice	*Gancao*. Level; sweet	*Yashtimadhu*. Sweet; cold		*Asl-us-soos*. Hot and moist

Material	China	India	Tibet	Unani
Long pepper	*Bibo*. Hot; acrid	*Pippali*. Pungent; mildly hot	*Pipiling*. Pungent; warm	
Madder	*Qiancao*. Cold; bitter	*Manjishtha*. Bitter, astringent, sweet; hot		
Musk	*Shexiang*. Warm; acrid		*Latsi*. Bitter; cool	*Mushk*. Hot and dry
Nutmeg	*Roudoukou*. Warm; acrid	*Jatiphala*. Bitter, pungent; hot	*Dzati*. Pungent; warm	
Opium		*Ahiphena*. Bitter, astringent; hot		*Afyun*. Cold and dry, in the fourth degree
Pearl	*Zhenzhu*. Cold; sweet, salty			*Marwarid*
Picrorhiza	*Huhuanglian*. Cold; bitter	*Katuki*. Bitter; cold	*Honglen*. Bitter; cool	
Psoralea	*Buguzhi*. Warm; acrid, bitter			*Babchi*. Hot and dry
Rhodiola	*Hongjingtian*. Neutral; sweet, bitter		*Solo marpo*. Sweet, astringent; cool	
Rhubarb (kinds of one genus)	*Dahuang*. Cold; bitter		*Chumtsa*. Sour, bitter; cool	*Rewand chini*. Hot and dry
Rose (two kinds of rose)	*Meiguihua*. Warm; sweet, slightly bitter			*Gul-e-surkh*. Cold and dry
Saffron		*Kumkuma*. Bitter, pungent; hot	*Gurgum*. Sweet; cool	*Zafran*. Hot and dry

Material	China	India	Tibet	Unani
Sandalwood	*Tanxiang*. Warm; acrid	*Chandana*. Bitter, sweet; cold	*Tsenden karpo*. Astringent; cool	*Sandal*. Cold and dry
Senna	*Fanxieye*. Cold; sweet, bitter			*Sana*. Hot and dry
Sesame	*Heizhima*. Neutral; sweet	*Tila*. Sweet; hot		
Snakeroot		*Sarpagandha*. Bitter; hot		*Asrol*
Spikenard	*Gansong*. Warm; acrid, sweet	*Jatamansi*. Bitter, astringent, sweet; cold		
Tinospora		*Guduchi*. Bitter, astringent; hot		*Gilo*. Hot and dry
Turmeric	*Jianghuang*. Warm; acrid, bitter	*Haridra*. Bitter, pungent; hot		
Turpeth		*Trivrit*. Bitter, pungent; hot		*Turbud*. Hot and dry

Do the pharmacies agree?

The program compared the temperature that two pharmacies give to the same drug. Hot and warm were counted as one side, and cold and cool as the other. A drug that one pharmacy calls level, neutral or balanced was counted apart.

The two pharmacies	Drugs in both	Same side	Opposite sides	One of them level
China and India	24	14	6	4
China and Tibet	14	8	4	2
China and Unani	18	9	6	3
India and Tibet	16	10	5	1
India and Unani	13	8	5	0

The two pharmacies	Drugs in both	Same side	Opposite sides	One of them level
Tibet and Unani	8	5	3	0
All pairs	*93*	*54*	*29*	*10*

They agree more often than not, and far from always. Of 93 comparisons, 54 put the drug on the same side. In 29 the two pharmacies put it on opposite sides. In 10 one of them calls it level.

Some disagreements are famous. Sandalwood is warm in China and cold in India, in Tibet and for the Unani physicians. Camphor is hot in China, very cold in Tibet and cold for the Unani physicians. Rhubarb is cold in China and Tibet and hot for the Unani physicians. Opium is hot in the Indian books and cold in the fourth degree in the Unani ones. Clove is cold in the Indian table and warm or hot in the other three.

Some agreements run through all four. Cinnamon is warm or hot everywhere. Bamboo silica is cold or cool everywhere.

What the count can and cannot bear

The count rests on fifty-one drugs and on the tables of this book. A drug book of one tradition often gives more than one opinion, and the tables give the commonest. Two pharmacies also do not always use the same part of the plant, or the same kind. The table should be read as a first look.

One conclusion can be drawn. The hot or cold of a drug is not read off the plant as its weight is. If it were, four careful pharmacies could not differ on sandalwood and camphor for a thousand years. Each pharmacy found the nature of a drug by its own test. It went by the taste on the tongue, and by what the drug did to the patterns that its physicians knew. A different test gave a different nature.

Read with the Net

Chapter 52 described a Chinese drug as a direction at a place, with a temperature. The temperature is part of a direction. It says which way the drug turns a pattern.

The first rule for acting in chapter 5 quotes the theory. “The response of a medium depends on its state, not on universal constants. The same signal meets a different response in a different state.” On this rule a drug has no direction by itself. It has a direction in a body that is in a certain state. The people of a hot plain, who eat one food, and the people of a cold plateau, who eat another, are media in different states. The same resin may warm the one and cool the other.

The theory does not show that this is so for sandalwood. It shows that the question is a fair one. The four pharmacies need not be read as three errors and one truth. They can be read as four sets of observations, each made on its own patients.

This can be tested. One drug on which two pharmacies disagree could be given to patients whom each pharmacy calls hot and cold. The warmth of the skin, the pulse and the patient's own report could be recorded. No such trial has been found for this book. Chapter 74 listed the designs that would serve.

109. Small ills and sudden dangers

What this chapter adds

The atlas of Part VIII took the great illnesses. Most of what a household meets is smaller: a nose that bleeds, a hiccup, a sting, a sprain, a head that aches after a feast. A few of the sudden troubles are grave, such as a faint that does not end. This chapter gives nine of them in short form. For each it says what several peoples did and what is known today. The entries have no numbers and are not counted with the atlas.

Philip Clarke noted of Aboriginal Australia that two systems stand side by side. The healer deals with what is sent. The household deals with what merely happens. Chapter 13 gave his words. This chapter is about the second system, which every people has.

The tables describe what was done. They are not advice for use.

A bleeding nose

Tradition	What was done
Greece and Rome	Cold water on the face. A plug of wool. Galen set a cup on the belly below the ribs, on the side of the bleeding nostril. In a fever the Hippocratic physician took a nosebleed for a good sign, and let it run
China	Charred human hair, ground fine, is blown into the nose. Crushed garlic is bound to the soles of the feet, to lead the heat downward. Drugs that cool the blood are given where the bleeding returns
India	The juice of a cooling grass or of pomegranate flowers is dripped into the nose. Cold cloths are laid on the head
Europe	Yarrow, which the English also called nosebleed, and shepherd’s purse. A charm told the blood to stand still as the Jordan stood. A cold key was dropped down the back

What is known. The bleeding nearly always comes from the front of the nose. Pinching the soft part for ten minutes, with the head bent forward, stops most of it. Cold on the neck has not been shown to help.

The hiccup

Tradition	What was done
Greece	An aphorism says that sneezing ends a hiccup. In a dialogue of Plato a physician tells a guest to hold his breath, then to gargle, then to tickle his nose until he sneezes
China	A decoction of the calyx of the persimmon with clove, for a hiccup from cold in the stomach. The point above the wrist that is used for nausea
India	The books know five kinds, two of them deadly. For the common kind Caraka lists a sudden splash of cold water, a fright and a surprise
Many households	To hold the breath; to drink from the far side of the cup; a spoonful of sugar

What is known. A common hiccup ends by itself within minutes. One that lasts for days can be the sign of a grave illness, as the Indian books saw. A letter in a medical journal of 1971 reported that a spoonful of dry sugar stopped the hiccup in nineteen of twenty patients. No remedy has been tested in a good trial.

The faint and the seeming death

Tradition	What was done
China	A nail or a needle is pressed into the point below the nose. Zhang Zhongjing tells how to revive one who has hanged himself. He is taken down gently. One helper presses on the chest with his hands, again and again. Others bend and stretch the arms and legs. They go on for as long as it takes to cook a meal
Greece	It was told of Empedocles that he revived a woman who had lain without breath for thirty days
The San	A healer who has fallen in the dance is rubbed with sweat and worked on until he comes round
Europe	Vinegar or a burnt feather under the nose. In 1767 citizens of Amsterdam founded a society for the rescue of the drowned. It taught the public to warm and rub the body, to breathe into the mouth, and to blow tobacco smoke into the bowel

What is known. Pressing on the chest and breathing into the mouth became the rule of first aid in 1960. The Chinese text describes the first of the two some eighteen centuries earlier. The Amsterdam society reported many rescues, and its method of breathing was sound. The tobacco smoke was given up early in the next century.

Stings

Tradition	What was done
Egypt	The stung person is Horus, whom a scorpion stung in the marshes. Water is poured over a stone slab that is covered with spells, and he drinks it
The Islamic world	Verses are recited over the place. The best-known account of such a recitation is of a chief who had been stung by a scorpion
India	A class of healers treats poisons alone, with plants and with spoken formulas
Europe and North America	A leaf of plantain is chewed and laid on. A cut onion, or wet earth

What is known. The sting of a bee is scraped out and the place is cooled. Most stings need nothing more. The danger lies in the few people whose bodies answer a sting with a collapse, and in a few kinds of scorpion. For both the hospital has a remedy.

Drunkenness and the morning after

Tradition	What was done
Greece and Rome	Cabbage, eaten before the feast and after it. A purple stone was worn against drunkenness, and its Greek name, amethyst, means not drunken
China	The flower of the kudzu vine, which the drug books say releases wine. Li Dongyuan built a formula on it
The Aztecs	The fermented sap of the maguey was free only to the old. A young person who was found drunk was punished severely
The Islamic world	Wine is forbidden. The physicians went on writing about its uses and its harms, as their Greek books did

What is known. A review of 2005 looked for trials of remedies against the hangover and found no remedy with convincing proof (Pittler 2005). The surest rule is the Aztec one. Entry 40 gave what the old medicines did for those who could not stop.

Tiredness on the road

Plant	Where	How it is taken	Chapter
Tea	China	The leaf in hot water	
Coffee	Ethiopia	The berries chewed with fat on a journey; later the drink	100
Kola	West Africa	The nut chewed; the gift at every greeting	100
Khat	Ethiopia, Kenya, Yemen	Fresh leaves chewed for hours in company	100
Coca	The Andes	The leaf chewed with lime	17, 99
Maté and guaraná	South America	A drink of the leaf; the ground seed in water	99
Cacao	Mexico	A drink of the lords, for strength	99
Betel	South Asia to the Pacific	A leaf wrapped round a slice of areca nut with lime	70
Tobacco	The Americas	Smoked, chewed, drunk or blown	16, 99
Pituri	Inland Australia	The dried leaf chewed with ash against hunger and tiredness	13

What is known. Tea, coffee, kola, maté and guaraná all hold caffeine, and cacao a little with a sister compound. They are unrelated plants of three continents. Each people picked, from the thousands of plants about it, one of the few that hold this compound. Tobacco and pituri share nicotine in the same way, across an ocean. The harm is as real as the effect. Tobacco kills more people than any other plant, and the areca nut causes cancer of the mouth, as chapter 75 told.

Lice

Tradition	What was done
Egypt	Combs with fine teeth lie in the tombs. The priests shaved the whole body, as a Greek traveller reports
Greece and Rome	The seed of a larkspur, ground and rubbed in with oil. Dioscorides gives the plant a second name, the louse-killer
Medieval Europe	An ointment of quicksilver
Mexico	The ground seed of a plant of the lily family, which Europe later bought as louse powder
Everywhere	Picking by hand, between mother and child and between friends

What is known. The fine comb, used on wet hair, still works. So does an oil of silicone that coats the louse. The insect has become resistant to several of the poisons that replaced the comb.

Hair that falls or turns grey

Tradition	What was done
Egypt	A papyrus mixes the fat of a lion, a hippopotamus, a crocodile, a cat, a snake and an ibex
Greece	An aphorism observes that eunuchs do not grow bald
China	The root of the fleeceflower, and the Seven Treasures Pill for a Fine Beard that is built on it
India	An oil of eclipta, one of whose Sanskrit names means the ruler of the hair, and of the emblic fruit

What is known. The common baldness of men depends on the male hormone and on descent. The aphorism had seen the first of the two. None of the old remedies has passed a good trial. The fleeceflower has injured the liver of people who took it for their hair, as chapter 52 noted.

Sprains and bruises

Tradition	What was done
Europe	Arnica, from outside only. Comfrey root, whose old English name is knitbone
China	Notoginseng root by mouth, and the powder called Yunnan baiyao. The schools of fighting kept their own liniments for blows and falls
North America	Witch hazel, bark and leaf
India	A warm paste of turmeric. Rubbing with oil
Many peoples	The bone-setter and the kneader of entry 26

What is known. An ointment of comfrey eased sprained ankles in trials, as chapter 98 told. Arnica has done no better than a dummy in most trials on bruises. Rest for a day or two and then early movement do as much as any remedy.

What the chapter shows

Most of these troubles end by themselves. The book on the body says of the common cold that simple means are the whole of correct care. Entry 9 gave the sentence. The same holds for most nosebleeds, hiccups, stings, hangovers and sprains. A remedy that is given for a trouble that ends by itself will seem to work every time. Chapter 74 drew that lesson from the history of bloodletting.

The household keeps what is harmless and near. The remedies of this chapter are a leaf, a kitchen plant, cold water, a comb. Where the household reached for something strong, such as quicksilver or tobacco smoke, later generations gave it up.

Peoples without contact found the same compound. The table of the road is the clearest case in this book. Five unrelated plants were chosen for one compound, by peoples who could not name it. Chapter 22 noted that most plant drugs of the hospital have the use that the old medicines gave them. The stimulants show how such knowledge is made. Many people try many plants over many generations, and they keep what they can feel within the hour.

The same knowledge fails where the effect is slow. A people can feel that a leaf wakes them. It cannot feel that the same habit, forty years on, brings a cancer of the mouth. The old pharmacies were good at what acts quickly and poor at harm that comes late. Chapter 75 gave the cases.

Even a small ill has its word. The stung Egyptian drinks the story of Horus. The bleeding nose is told of the Jordan. Chapter 72 counted the reciting of an origin among the points of agreement. The household keeps it.

Appendices

A1. Historical theories of what causes illness

How to read Appendix A

The seven parts of this book describe the old medicines that have many practitioners and a full account of illness. Many other theories and methods of healing exist. The research for this book drew up a list of three hundred. Appendix A goes through that list in its eleven groups.

Section	Group	Entries
A1	Historical theories of what causes illness	22
A2	Traditional medical systems	26
A3	Fields, frequencies and information	44
A4	Structure and touch	22
A5	Nutrition, terrain, cleansing and natural cure	41
A6	Plants and remedies outside the pharmacy	18
A7	Mind, feeling and body	35
A8	Breath, movement, rhythm and nature	28
A9	Spiritual and religious healing	21
A10	Scientific frameworks beyond the single compound	25
A11	Other ways of diagnosis	18

Each entry follows one plan. It says where the method comes from, what it holds, how it finds an illness, and what it treats and how. It says what has been measured, and what harm is known. It ends with a line on how the method stands to the book on the body, on which Part I rests (Konstapel 2026c). That line is taken from the table of Appendix B, which sets every entry of the list beside that book.

An entry that a chapter has already treated is short and gives the chapter.

The entries do not judge by reputation. A method with many followers may have nothing measured, and a method that is mocked may have a sound trial. The entry says what there is.

Humorism

Chapters 38 to 41 describe it. Health is a right mixture of four humours, and illness an excess, a lack or a corruption of one. The physician restores the mixture by regimen, food and drugs of the opposite quality, and removes excess by bleeding and purging.

Read with the book on the body. To restore by regimen is the second rule of cure. The book has no measure of a humour. It has the removal of blood as the first treatment of two disorders in which there is truly too much of it.

Miasma

Origin. The Hippocratic book on airs, waters and places taught that the air of a place shapes the illnesses of its people. From the plague of 1348 until the 1880s, physicians held that epidemics come from bad air. It rises from rot, marshes, graves and filth. The word is Greek and means a stain.

What it holds. The air is the cause. Whoever breathes it falls ill, and the stench is the sign of danger. Malaria is named after it: the word is Italian for bad air.

What was done. Cities were cleaned. The English reformers of the 1840s, who were convinced that smell is disease, built sewers, brought in clean water, cleared slums and aired hospitals. Florence Nightingale designed her wards on the theory.

What has been measured. The reforms worked. Cholera and typhoid fell wherever sewage was led away and water was brought in clean. The theory behind them was mistaken. John Snow showed in 1854 that cholera in a London district came from the water of one street well and not from the air. Robert Koch found the organism thirty years later.

Bad air does kill, in another way than the reformers thought. The World Health Organization puts the deaths from polluted air at several million a year.

Read with the book on the body. Clean air and clean water are what the book calls the surround. It is the outermost layer at which a cure can act. Hospital medicine reaches for it first in only 23 of 375 illnesses.

Contagion

Origin. The Veronese physician Girolamo Fracastoro published a book on contagion in 1546. He held that some illnesses are carried by seeds too small to see. They pass by touch, by clothing and goods, and through the air. Physicians of Muslim Spain had said as much of the plague two centuries earlier.

What was done. Ports held ships and travellers apart for forty days, which is the origin of the word quarantine. The city of Ragusa began the practice in 1377.

What has been measured. In 1847 Ignaz Semmelweis had the students of a Vienna lying-in ward wash their hands in chlorinated lime before they examined women. Deaths from childbed fever fell from more than one in ten to about one in fifty. He could not say what the hands carried. The answer came with the germ theory.

Read with the book on the body. A foreign organism is the form of failure that the book calls unread: a form that the body's own test does not see. That an illness passes from one person to the next is not among the book's laws.

Terrain theory

Origin. Antoine Béchamp, a French chemist and a rival of Pasteur, held that microbes are a result of disease and not its cause. In his account, tiny living granules in every cell turn into bacteria when the body's inner state is spoiled. The physiologist Claude Bernard, with whom the theory is often joined, taught that the body keeps a constant inner environment.

What it holds. The ground decides and not the seed. A healthy body does not fall ill, whatever it meets. Healing means improving the ground by food, rest and cleansing.

What has been measured. Béchamp's granules do not exist, and bacteria do not arise from cells. The second half of the theory has more to it. The state of the host matters greatly. Nine of ten people who carry the bacillus of consumption never fall ill with it. Hunger, age and other illness decide who does.

Harm. In its modern form the theory is used to deny that microbes cause disease at all, and to refuse vaccines and the drugs against AIDS. Chapter 75 gave the cost of one such refusal.

Read with the book on the body. The first rule of cure is to read the state before acting. The book also computes that a form returns by itself while fewer than a third of its places are wrong. Both give the host its weight. Neither removes the organism from the account.

Pleomorphism

Origin. The German zoologist Günther Enderlein published in 1925 a theory that microbes pass through a cycle of forms. In his account, tiny particles live in the blood of every person in harmless partnership. In a spoiled inner state they grow into higher forms, bacteria and fungi, which cause the chronic illnesses. Others made similar claims, among them Royal Rife and Gaston Naessens.

How it finds the illness. A drop of fresh blood is examined under a microscope with dark-field lighting. The practitioner reads the moving particles and the shapes of the blood cells.

What it treats, and how. Remedies made from fungi are given to lead the higher forms back to the harmless ones. The inner state is corrected by an alkaline diet.

What has been measured. Bacteriology since Koch has found that species of bacteria are stable. The particles in fresh blood are fragments of cells and droplets of fat. Two German studies tested the dark-field reading. Practitioners could not tell the blood of cancer patients from that of healthy people, and two readers of one sample did not agree (Teut 2006).

Read with the book on the body. The book has no law by which a microbe changes its kind with the state of the host.

Vitalism

Origin. The doctrine is as old as Aristotle, who gave every living being a soul as its form. Georg Ernst Stahl at Halle taught about 1700 that a soul governs the chemistry of the body and keeps it from rotting. The school of Montpellier spoke of a vital principle. The embryologist Hans Driesch and the philosopher Henri Bergson defended forms of it about 1900.

What it holds. Living matter obeys a principle that dead matter lacks. Illness is a weakening or a misdirection of that principle. The physician's task is to support it.

What became of it. Chemists made the compounds of living bodies in the laboratory, and in 1897 showed that fermentation goes on in the juice of crushed cells. Biology gave up the vital principle. The healing systems that were founded in the nineteenth century kept it. Homeopathy speaks of a life principle, chiropractic of the innate, and naturopathy of the healing power of nature. The *qi* of China and the *prana* of India are often translated by the same words, which hides what they mean in their own systems.

Read with the book on the body. The book has no object for a vital principle. It describes the difference between what lives and what does not by closure alone. A living form is one that returns to itself after it has been changed. Chapter 4 gave the limit of that return. The question that vitalism asked is kept, and its answer is not.

The Brunonian system

Origin. John Brown, an Edinburgh physician, published his *Elements of Medicine* in 1780.

What it holds. Life is a forced state, kept up by stimuli. Every body has a store of excitability. Health is a middle degree of excitement. All illnesses are of two kinds: too much excitement or too little. Brown set them on a scale from zero to eighty. He held that nearly all illness is of the weak kind.

What it treats, and how. Weak illnesses were given stimulants: wine, spirits, opium, rich food. The few strong ones were bled and purged.

What became of it. The system was simple, and it spread through Germany, Italy and America within twenty years. Opium and spirits were given by the pint. Contemporaries said

that it had killed more people than the wars of Napoleon. Brown died in 1788, of his own remedies.

Read with the book on the body. A stimulant and a sedative both add. The second rule of cure says that only the change which closes the open place restores, and that an addition elsewhere leaves it open.

Animal magnetism

Origin. The physician Franz Anton Mesmer began in Vienna in 1774 to treat patients with magnets, and soon with his hands alone. He moved to Paris in 1778.

What it holds. A fine fluid fills the universe and passes through every living body. Illness is an obstacle to its course. A person who has much of it can direct it into another and remove the obstacle.

What it treats, and how. Mesmer made long passes with his hands over the patient. He also seated groups round a tub of iron filings and bottles, from which each patient held an iron rod. Music played. Patients trembled, wept, fell into convulsions and afterwards felt well. He called the convulsion the crisis, as the Greek physicians had called the turn of a fever.

What has been measured. In 1784 the king of France appointed a commission, with Benjamin Franklin and the chemist Lavoisier among its members. They made the first blind trials in the history of medicine. Subjects were told that they were being magnetised when they were not, and were magnetised without being told. They fell into crisis when they believed, and not otherwise. The commission concluded that the fluid does not exist and that the effects come from imagination (Kaptchuk 1998).

A pupil of Mesmer found in the same year that some patients fell into a sleeping state in which they spoke and obeyed. From that observation came hypnosis, which section A7 describes. A British surgeon in India performed several hundred operations on patients in that state before ether was known.

Read with the book on the body. The book computes that coupling keeps a closed rhythm and cannot close an open one. Chapter 5 gave the measurements of two people who fall into step, and of the pain that eases when they do. The commission proved that there is no fluid. It also showed, without intending to, that what passes between two persons can throw a body into crisis. It held the meeting constant and so subtracted it, as chapter 74 said of later trials.

Focal infection

Origin. The English physician William Hunter proposed in 1900 that hidden pockets of infection, above all in the teeth and gums, poison the whole body. American physicians took up the idea.

What it holds. A small, silent infection in a tooth, a tonsil, the gall bladder or the bowel sends its poisons or its microbes to distant organs. Inflamed joints, kidney disease, heart disease and madness follow.

What it treats, and how. The focus is cut out. Between 1910 and 1940 millions of teeth and tonsils were removed on this ground. At a state hospital in New Jersey the psychiatrist Henry Cotton had the teeth, the tonsils and lengths of bowel taken from his mental patients. He reported that most were cured. A later review of his records found that about a third of those whose bowel was removed had died of the operation (Scull 2005).

What has been measured. In 1938 two physicians followed two hundred patients with inflamed joints whose teeth and tonsils had been removed. They had gained nothing (Cecil 1938). The theory was given up within a few years.

It lives on in the removal of teeth with filled roots by some dentists. The experiments of the 1920s on which that rests have not been repeated with success.

Read with the book on the body. To take out a focus is to act at the layer that the book calls Mesh, and that layer cures most often. The history shows the condition. The focus must be there. Chapter 72 found that taking out is the most widespread act of healing, and chapter 74 that it satisfies whether or not it helps.

Autointoxication

Origin. The idea that the body is poisoned by the contents of its own bowel is among the oldest in medicine. The Egyptian papyri of chapter 35 name a harmful matter that passes from the bowel into the vessels (Steuer 1959). The French physician Charles Bouchard gave the idea its modern name in 1887.

What it holds. Food that stays too long in the bowel putrefies. The poisons are taken up into the blood. They cause tiredness, headache, a bad skin, low spirits and in the end most chronic illness.

What it treats, and how. The bowel is emptied and washed. About 1910 the London surgeon Arbuthnot Lane removed the whole large bowel of patients for this reason. The Russian biologist Metchnikoff recommended sour milk, to replace the bacteria of rot with those of souring.

What has been measured. In 1919 and 1922 two American physicians showed that the symptoms of a full bowel come from its stretching. They filled the rectum of volunteers with cotton and produced the headache and the dullness, which vanished when the cotton was removed (Alvarez 1919). No poison was needed.

Two narrow cases are real. In failure of the kidneys or the liver, compounds made by the bacteria of the bowel do build up in the blood and harm the brain. Physicians treat the second case with a purge.

Read with the book on the body. Washing the bowel removes without naming what is removed. The book's layer of removal asks for a named tissue or organism.

Thomsonian medicine

Origin. Samuel Thomson, a farmer of New Hampshire with no schooling in medicine, took out a patent on his system in 1813. He sold the right to use it to families for twenty dollars.

What it holds. Heat is life and cold is death. All illness is a loss of the body's heat. It is restored by clearing the stomach and bowel and by warming.

What it treats, and how. The patient was given an emetic of lobelia, then cayenne pepper, then a steam bath, in a numbered course of six remedies. The motto of the movement was that every man should be his own physician.

What became of it. By the 1830s Thomson claimed several million followers. His system was harsh, but it used neither the lancet nor mercury, which the regular physicians of the time gave freely. Chapter 41 described their effect. A patient of Thomson's may well have fared better. The movement split after his death in 1843 and passed into the botanical schools.

Read with the book on the body. The book has nothing on cold as the single cause of illness.

Eclectic medicine

Origin. Wooster Beach opened a reformed school of medicine in New York in 1827. The Eclectic Medical Institute of Cincinnati taught from 1845 to 1939.

What it holds. The physician should choose what works from every school and reject what harms. In practice the Eclectics rejected bleeding and mercury and built on the plants of North America, many of them learned from native healers.

How it finds the illness. The later Eclectics matched single remedies to exact signs: a particular coat of the tongue, a particular quality of the pulse. They called it specific medication.

What it treats, and how. With tinctures of single plants in small doses. Echinacea, goldenseal and black cohosh entered Western herbal practice through them. So did the mayapple, from which a drug against cancer was later made.

What became of it. At their height the Eclectics had some ten thousand practitioners. A report of 1910 on American medical schools condemned all schools without laboratories, and theirs closed one by one (Haller 1994).

Read with the book on the body. The book on the body takes its cures from medicine as it stands and says so. In that one respect it is eclectic too.

Spagyric medicine

Chapter 42 describes Paracelsus, who gave this art its name. A plant is fermented and distilled. The residue is burned to ash, the salts are washed out of the ash, and the three products are joined again. The practitioner holds that the remedy then contains the whole plant in a purified form. Several European makers sell such remedies. No trial has compared a spagyric preparation with a plain extract of the same plant.

Read with the book on the body. Paracelsus is remembered for the saying that the dose makes the poison. The book has two laws of dose. One says how much load a form can bear in each cycle. The other concerns how much of a cure must fall between two returns, and the book has withdrawn the prediction that it drew from it.

Iatrochemistry

Chapter 42 describes Van Helmont. The school that followed him explained the body by chemistry. Franciscus Sylvius, who taught at Leiden from 1658, held that illness is an excess of acid or of alkali, and treated with the opposite. He opened one of the first chemical laboratories of any university. The doctrine of acid and alkali was given up within fifty years. Section A5 describes its modern return.

Read with the book on the body. The book also begins with chemistry. It reads chemistry as the first depth and places the body in the depths above it.

Pneuma

Chapter 39 describes it. The Greek physicians held that a fine breath is drawn in with the air and is worked up in the heart and the brain. It carries life, movement and sensation through the body. The Stoics added that the breath holds each body together by its tension.

The word is often set beside the Chinese *qi*, the Indian *prana* and the Hebrew *ruach*. Each belongs to its own system, and Part V warned against treating them as one.

Read with the book on the body. The book has no pneuma. It has a measurement that the Greek physicians would have recognised. Heart and breath lock in whole numbers more often than chance allows, and most firmly in deep sleep.

Methodism

Chapter 39 names this school among those of Rome. Its physicians, of whom Soranus is the best known, held that hidden causes are of no use to the healer. Every illness shows one of three common states. The body is too tight, too loose, or both at once in different parts. What is tight is relaxed, with warmth, oil and bathing. What is loose is drawn together, with cold, vinegar and rest. Treatment went in periods of three days.

Read with the book on the body. The book has no object for the pores of the Methodists. Two of its three states are a pair of opposites, and the third is a mixture of them.

Empiricism

Chapter 39 names this school as well. Its physicians rejected all theories of hidden causes and all cutting of bodies to find them. A physician knows three matters: what he has seen himself, what trustworthy others report, and what is like a case that he knows.

The Yoruba healers of chapter 24 hold a rule of the same kind. Only what one has seen is known, and the rest is accepted report.

Read with the book on the body. The book marks each of its statements as computed, measured or read, and keeps a list of its misses. It does not take observation alone for a cure.

Solidism

Origin. The humoral physicians looked for illness in the fluids of the body. From about 1700 a second view gained ground. Friedrich Hoffmann at Halle and William Cullen at Edinburgh placed illness in the solid parts, and above all in the tone of the fibres and nerves. In 1761 Giovanni Battista Morgagni of Padua published seven hundred cases in which he set the complaints of the living patient beside what he had found in the opened body.

What it holds. An illness has a seat. It is a change in an organ, later in a tissue, and from 1858, with Rudolf Virchow, in the cell.

What it treats, and how. The solidists of the eighteenth century gave tonics for slack fibres and calming drugs for tense ones. Their lasting gift was the search for the seat of a disease, on which surgery and the whole of hospital medicine rest.

Read with the book on the body. A lasting change in a solid part is the first of the eight forms of failure: what is fixed, lodged in what lives. A plaque, a stone and a scar are its examples.

The germ theory

Origin. Louis Pasteur showed in the 1860s that fermentation and rot are the work of living organisms. Robert Koch proved in 1876 that one bacterium causes anthrax, and found the organisms of consumption and cholera in 1882 and 1883.

What it holds. Each infectious disease has its own organism. Koch gave the tests. The organism is found in every case. It can be grown outside the body. Given to a healthy animal, it produces the disease.

What it treats, and how. By keeping the organism out, with clean hands, clean water and clean instruments. By teaching the body to know it, with a vaccine. By killing it, with a drug.

What has been measured. No theory in the history of medicine has saved more lives.

Its limits were seen early. Koch himself found people who carried the organism of cholera and stayed well. The organism is needed for the disease. It is not enough. Age, food, other illness and the body's earlier meetings with the organism decide the rest. Section A10 describes the frameworks that take this up.

Read with the book on the body. A foreign organism is the form called unread. Hospital medicine treats first by removal or killing in 138 of 375 illnesses, and in 26 of the 42 infections in the book's atlas. Where it does so, it most often cures.

Constitution and diathesis

Origin. Every literate medicine has a doctrine of the inborn type. Chapter 39 gave the temperaments of Galen, chapter 57 the Indian constitution, and chapters 55 and 65 the Chinese and Korean types. European physicians of the nineteenth century spoke of a diathesis: an inborn leaning to gout, to consumption or to nervous illness.

What it holds. People are not alike. A person's type decides which illnesses he is prone to, how they will run and which treatment suits him.

How it finds the illness. By build, colouring, pulse, temper, habits, and the illnesses of the family.

What has been measured. Chapter 8 gave the findings for the Indian types. Men who had been sorted by physicians into the three constitutions differed at 52 places of their hereditary material. Attempts of the twentieth century to read character and illness from the shape of the body alone did not hold up.

Hospital medicine has come back to the idea by another road. It now reads risk from the genes, and speaks of an inborn leaning that needs a trigger.

Read with the book on the body. An inherited leaning is the form called frame: an error in the text of the cell that is carried into every daughter cell. Chapter 72 listed the other half of the old doctrine. Health is judged against a person's own first state. The book on the body has no counterpart to the advice to strengthen a constitution.

Miasm

Origin. Samuel Hahnemann, the founder of homeopathy, published his theory of chronic diseases in 1828. He used the old word miasma in a sense of his own.

What it holds. Chronic illnesses do not yield to remedies chosen by the symptoms of the day. Beneath them lies a deeper taint, acquired long ago or inherited. Hahnemann named three. The first and by far the commonest he traced to the itch, and he held it to be the root of seven eighths of all chronic disease. The other two he traced to the two venereal diseases of his time. Later homeopaths added taints of consumption and of cancer.

How it finds the illness. By the whole history of the patient and of the family, with special weight on skin diseases that were driven in by ointments.

What has been measured. Nothing bears out the three taints. The itch is caused by a mite, which was shown six years after Hahnemann's book.

Read with the book on the body. A taint that is inherited and that lies deeper than any infection can be read as the form called frame. Hahnemann's three are not in the book.

Theories of place

Origin. Many peoples hold that a place can make ill. Chapter 21 gave examples from the shaman's world, and chapter 70 the forest of the Chamorro ancestors. The Chinese art of siting houses and graves is of this kind. In Europe a German dowser claimed in 1929 that the cancer deaths of a Bavarian town lay over underground streams. In the 1950s two German physicians proposed nets of lines that cover the earth, a few metres apart. They held that a bed set on a crossing of lines brings illness.

What it holds. Radiation from the ground, or from water, faults and the lines of the nets, weakens those who sleep over it.

How it finds the illness. A dowser walks the house with a rod or a pendulum and marks the harmful places.

What it treats, and how. The bed is moved, or the place is shielded.

What has been measured. In the 1980s the German government paid for a large test of dowsers near Munich. Some five hundred dowsers were screened, and the best forty-three were asked to find a water pipe hidden under the floor of a barn. A later analysis of the published results found that they had done no better than chance (Enright 1999).

One harm that comes from the ground is real. Radon, a gas that seeps from certain rocks into cellars, causes cancer of the lung. It is found with an instrument.

Read with the book on the body. To move or shield a sleeper is to change the surround. The book has no measurement of such places.

What the historical theories show

The twenty-two theories of this section are attempts to say where illness comes from. Set side by side, they fall into four answers.

The answer	Theories
From a wrong mixture or amount within the body	Humorism, the Brunonian system, iatrochemistry, Methodism

The answer	Theories
From outside: the air, a seed, an organism, a place	Miasma, contagion, the germ theory, theories of place
From a seat within the body: a focus, a lesion, a full bowel	Solidism, focal infection, autointoxication
From what the person is, or from the ground on which the seed falls	Constitution, miasm, terrain, pleomorphism, vitalism

The old medicines of Parts II to VI gave a fifth answer, which none of these European theories has. Illness comes from what stands between a person and others, living, dead or unseen.

Three lessons can be drawn from the section.

A right act can rest on a wrong theory. The sewers of the miasma theory saved more lives than any drug of their century.

A coherent theory can kill. The Brunonian stimulants, the surgery for focal infection and the bowel operations for autointoxication each followed from a clear doctrine. Each was ended by counting.

The ground and the seed are both needed. The quarrel between Pasteur and Béchamp has been settled for the seed. The measurements of the last fifty years have given the ground more weight than Pasteur’s followers allowed.

A2. Traditional medical systems

Where the traditional systems are described

The list has twenty-six entries in this group. Twenty-three of them are the subject of Parts II to VI. The table gives the chapters, and for each entry the line of Appendix B that sets it beside the book on the body.

Entry of the list	Described in	Beside the book on the body
Traditional Chinese medicine	Chapters 44 to 55	No object for *qi*, yin or yang. Nearest are the carriers and rhythm. Two of its drugs are in the book’s atlas
The five phases	46	Five stands against the book’s period of three. Tests that looked for three as an amount all missed
Acupuncture	47, 51	Only a change at the place of the error closes a ring. The book has no trial of needling
Moxibustion	51	Nothing
Qigong	53	Slow movement, breath and attention belong to the layer called Phase. The lock of heart and breath is measured
Kampo	65	A formula matched to the patient’s pattern keeps the first rule of cure
Traditional Korean medicine	65	The first rule reads a state, not a type
Ayurveda	56 to 61	Daily rhythm and diet belong to Phase

Entry of the list	Described in	Beside the book on the body
Ayurvedic cleansing	60	To expel and then rebuild is Mesh followed by Phase
Siddha medicine	61	Nothing
Tibetan medicine	62 to 64	Nothing on wind, bile and phlegm
Unani medicine	40	Regimen and diet belong to Phase. Nothing on humours
Hippocratic medicine	38	Rest lets a form return by itself while fewer than a third of its places are wrong
Galenic medicine	39, 41	A drug of the opposite quality adds a counter-direction, and opposite directions never join
Hildegard medicine	42	Nothing
Shamanism	9 to 23	The book says that its laws of reading give no number for a mind
Native American healing	19, 20	Nothing
Curanderismo	18	Nothing on fright as a cause
Aboriginal bush medicine	13	Nothing
Traditional African medicine	24 to 30	The book also allows up to three forms in one illness
The healers of southern Africa	10, 30	A reader finds the place, and needs carriers to pass on what it has read
Rongoā Māori	70	Nothing
Jamu	70	Nothing

The last column shows how little the book on the body, which was built from hospital medicine, has to say on these systems. It is one reason why the present book was written.

Three entries of the group were not given a chapter. They follow.

Traditional Mongolian medicine

Origin. The Mongols had a medicine of the steppe before they had books. Chapter 15 described their shamans. Beside the shamans worked bone-setters, who inherited their art in the family, and healers who bled, burned and gave the milk of mares. The oldest Chinese classic says that the burning of herbs on the skin came from the north.

In the sixteenth and seventeenth centuries the Mongols became Buddhists of the Tibetan school. The monasteries founded colleges of medicine, and the Tibetan *Four Tantras* of chapter 62 were translated. Mongolian physicians wrote commentaries and books on drugs of their own, mostly in Tibetan.

What it holds. The teaching is that of chapter 62, in Mongolian words. There are three faults of wind, bile and phlegm, and seven constituents of the body. Illness is first divided into hot and cold.

How it finds the illness. By the pulse, the urine and the tongue, as in Tibet.

What it treats, and how. With the Tibetan pharmacy, adapted to the plants of the steppe. Four practices are the Mongols' own. Bones are set without cutting, by hand and with splints of felt and wood. A shaken brain is treated by measured blows and binding. Fermented mare's milk is given as a cure for wasting illnesses. Russian physicians took it up in the nineteenth century and opened sanatoria for it. The fourth is bathing in hot and mineral springs.

What became of it. In the 1930s the government of Mongolia destroyed the monasteries and killed many thousands of monks, the physicians among them. The medicine was forbidden for fifty years. It has been taught again since 1990. In the Mongol regions of China it has hospitals and a college.

What has been measured. Very little.

Read with the book on the body. The book has nothing on it.

Traditional Persian medicine

Chapter 40 described the Greek medicine of the Islamic world, which in India is called Unani. In Iran the same medicine is called Persian or Iranian. Its great authors, Rhazes, Haly Abbas and Avicenna, were Persians who wrote in Arabic.

It was pushed aside by European medicine in the nineteenth century and has been revived by the state since the 1990s. Faculties of traditional medicine have been opened at Iranian medical universities since 2007. Their teaching rests on the temperament of the patient and

on the six necessary conditions. These are air, food and drink, movement and rest, sleep and waking, what is kept in and let out, and the states of the mind.

Read with the book on the body. Sleep and movement belong to the layer called Phase, and the book has measurements of both.

European herbalism and folk medicine

Origin. Chapter 42 described the leechbooks and the cloister gardens. From them, and from the printed herbals of the sixteenth century, came a household medicine that lasted in Europe until the twentieth century. It was practised by wise women, bone-setters, charmers and midwives.

What it holds. There was no single doctrine. One idea recurs. A plant shows by its shape or colour what it heals. Lungwort has spotted leaves like a lung. The walnut is like a brain. Yellow flowers are for the jaundice. Paracelsus taught it, and writers of the sixteenth and seventeenth centuries made a system of it, which they called the doctrine of signatures.

The English apothecary Nicholas Culpeper joined the herbs to the planets. In 1652 he published a herbal in plain English, against the wish of the physicians, who kept their knowledge in Latin.

What it treats, and how. With teas, poultices and salves of common plants, with charms, and with visits to wells and stones.

What has been measured. Two of the great drugs of the pharmacy came from this medicine. In 1775 the physician William Withering learned of a family recipe for the dropsy from an old woman in Shropshire. It held some twenty herbs. He saw that the foxglove was the one that acted, studied it for ten years, and gave medicine its first drug for the failing heart. In 1763 a clergyman reported that the bark of the willow eased fevers. He had tried it because the willow grows in damp places where fevers are common. The forerunner of aspirin was found in it.

The doctrine of signatures itself has not held. Lungwort does nothing for the lungs.

Harm. Several plants of the old herbals injure the liver or the kidneys. Chapter 75 named the families.

Read with the book on the body. The book has nothing on the doctrine of signatures. A single plant with a single action belongs to the layer that it calls Chain.

A3. Fields, frequencies and information

A note on a word

Most methods of this group describe what they do with the word “energy”. The practitioners mean by it something that moves through the body, can be given and taken, and can be held up. Physics uses the same word for a quantity that can be measured, and the two uses have little in common. This section keeps the practitioners’ word in quotation marks where it is theirs. It does not use the word in its own sentences.

The group has forty-four entries. It begins with the three systems that have the most practitioners.

Homeopathy

Origin. Samuel Hahnemann, a Saxon physician, gave up his practice in the 1780s because he held that the bleeding and the mercury of his colleagues did more harm than good. In 1790 he took cinchona bark, the remedy for intermittent fever, while he was well. He noted that it produced in him the signs of such a fever. He drew a general rule from it. His *Organon* appeared in 1810.

What it holds. The system rests on six doctrines.

1. **Like cures like.** A material that produces a set of symptoms in a healthy person will cure a patient who shows the same set.
2. **Proving.** What each material produces is found by giving it to healthy volunteers and recording every change of body and mind.
3. **The single remedy.** One remedy is given at a time, chosen for the whole of the patient’s symptoms.
4. **The smallest dose.** The remedy is diluted in steps of one to a hundred and shaken hard at each step. Hahnemann held that the shaking sets free a healing power and that a higher dilution acts more deeply. At the twelfth step it is unlikely that one molecule of the starting material remains. The common thirtieth step lies far beyond that.
5. **The life principle.** Illness is a mistuning of the principle that keeps the body alive. Symptoms are its expression. To drive a symptom away is to drive the illness inward.
6. **The deeper taint.** Chronic illness rests on the miasms that section A1 described.

A pupil, Constantine Hering, added a rule for judging a cure. Symptoms should leave from within outward, from above downward, and in the reverse order of their coming.

How it finds the illness. By the longest interview in any medicine. The first sitting takes one to two hours. The homeopath asks for every complaint and for what makes each better or worse: heat, cold, movement, the hour of the day, company. He asks about sleep, dreams, fears, likes and dislikes in food, and the history of the family. The strange and peculiar

symptoms weigh most. He then searches a large index of symptoms for the one remedy that covers the whole.

What it treats, and how. Every kind of illness, with globules or drops of the chosen remedy. The classical school gives one high dilution and waits for weeks. Other schools give low dilutions for named diseases, or mixtures. A first worsening after the remedy is taken as a good sign.

Its history. Homeopathy spread through Europe and America within a generation. In the cholera epidemics of 1831 and 1854 the homeopathic hospitals reported far fewer deaths than the others. The likeliest reason is the one that chapter 41 gave. Their patients were not bled and purged. By 1900 the United States had twenty-two homeopathic medical schools. Most closed after 1910. Today India has more than two hundred thousand registered homeopaths.

What has been measured. No other alternative method has been tested in so many trials.

A pooled analysis of 1997 covered eighty-nine trials. It found the results better than a dummy and added that no single condition was clearly helped (Linde 1997). A larger analysis of 2005 compared 110 trials of homeopathy with 110 matched trials of ordinary drugs. In both sets the small and poorly made trials showed the larger effects. In the large and well-made trials the drugs kept an effect, and the homeopathic remedies did not differ from a dummy (Shang 2005). An Australian government review of 2015 went through the reviews for sixty-one conditions and found no reliable evidence for any (NHMRC 2015).

One English trial separated the interview from the remedy. Patients with inflamed joints were given the homeopathic interview or none, and a remedy or a dummy. Those who had the interview improved, whichever they took. The remedy added nothing (Brien 2011).

Harm. A high dilution contains nothing that could poison. The harm lies in what is not done. Homeopathic preparations have been given in place of vaccines and of protection against malaria. Low dilutions are another matter. Teething tablets with measurable amounts of deadly nightshade were withdrawn in the United States after reports of harm to infants.

Read with the book on the body. The book has nothing on dilution. It holds that only what ends can deliver, and a remedy without a molecule has no carrier in its terms.

Four features of the system can be read with Part I all the same. The reading concerns the method and not the globule.

The interview reads the state first, in more detail than any other medicine, and it asks for hour, season and direction. The smallest dose keeps the second rule of cure: restore, and do not add. The first worsening is the passage through the open of chapter 4, which that chapter names. And Hering's rule says of a cure what chapter 2 says of a knot. It is undone along the way by which it was tied.

The English trial fits this reading. What helped was the reading and the meeting.

Homotoxicology

Origin. The German physician Hans-Heinrich Reckeweg developed it from 1936 and gave it its name in 1952.

What it holds. Illness is the body's defence against poisons, from outside and from its own chemistry. The defence passes through six phases. In the first three the body excretes, inflames and stores. In the last three the poisons enter the cells, which degenerate and at last grow wild. A cure moves the patient back through the phases, and old symptoms may return on the way.

What it treats, and how. With mixtures of several homeopathic preparations in low dilution, sold under trade names for sprains, dizziness, colds and other complaints.

What has been measured. A few trials of single products exist. A small trial found that a mixture eased the sore mouth of children under cancer treatment. A larger trial did not confirm it.

Read with the book on the body. The book has nothing on poisons in six phases. The table of phases states a direction of illness and its reverse, as Hering's rule does.

Anthroposophic medicine

Origin. The Austrian philosopher Rudolf Steiner and the physician Ita Wegman founded it. Wegman, who was born in the Dutch East Indies, opened the first clinic at Arlesheim near Basel in 1921. Their joint book appeared in 1925.

What it holds. A human being has four members. The physical body is shared with the minerals. The body of life is shared with the plants. The body of feeling is shared with the animals. The fourth is the self, which only man has.

The organism has three systems. The system of nerves and senses is centred in the head. It cools, hardens and gives form. The system of metabolism and limbs warms, dissolves and builds. Between them stands the rhythmic system of heart and lungs, which keeps the two in balance.

Illness arises when one pole pushes into the domain of the other. Hardening and tumours come from the forming pole. Inflammation and fever come from the warming pole. A fever is therefore not an enemy. It is the body's own attempt to restore the balance.

How it finds the illness. Every anthroposophic physician is trained in ordinary medicine first and uses its diagnosis. He adds a reading of the four members and the three systems. He notes the distribution of warmth, the rhythms of sleep and breath, the build of the body and the course of the life.

What it treats, and how. With ordinary drugs where they are needed, used sparingly. The school's own means are added.

Means	What it is
Remedies	Minerals, plants and animal products, prepared by special processes and often diluted as in homeopathy. Seven metals are assigned to seven planets and to organs
Mistletoe	An extract injected under the skin of patients with cancer, proposed by Steiner in 1920
Eurythmy	A therapy of movement, in which sounds of speech are expressed by gestures of the whole body
The arts	Painting, modelling, music and speech as treatments
Rhythmical massage and compresses	Given by nurses and therapists trained for the purpose

The school has hospitals in Germany and Switzerland, some of which serve as general hospitals for their districts.

What has been measured. A German study followed nearly nine hundred outpatients with long illnesses who began anthroposophic treatment. Their symptoms and their quality of life improved and stayed better for years (Hamre 2004). There was no comparison group.

Mistletoe has been tested in many trials. A review of twenty-one found weak evidence that it improves how patients feel during cancer treatment and none that it lengthens life (Horneber 2008). A later trial in Serbia, in patients with advanced cancer of the pancreas who could have no other treatment, found a longer survival with mistletoe (Tröger 2013). It has not been repeated.

Swedish researchers compared children of anthroposophic families with other children. The first had allergies about half as often (Alm 1999).

Harm. Many anthroposophic families do not vaccinate their children against measles, and outbreaks have started in their schools.

Read with the book on the body. In the book, body and mind are depths of one net, and no part of the body is assigned to a ring. The four members have no counterpart there.

The three systems can be laid beside chapter 73. They are two opposed poles and a middle that mediates, which is the commonest form of the three in this book. The regard for fever is the rule that the raw must ripen. Eurythmy and the arts belong to the layer called Phase.

Bioresonance

Origin. The German physician Franz Morell and the engineer Erich Rasche built the first device in 1977. It grew out of the skin measurements of Reinhold Voll, which section A11 describes.

What it holds. The method rests on a claim of biophysics. Every cell and organ gives off electromagnetic oscillations of its own. In illness, foreign or distorted oscillations are added. A device can pick up the oscillations of the patient through electrodes on the skin. It separates the sound ones from the distorted ones, turns the distorted ones round so that crest meets trough, and gives them back. The two cancel, and the body's own oscillations are left free. The oscillations of a material to which a patient reacts can be turned round and given in the same way.

How it finds the illness. By the resistance of the skin at points of the hands and feet, measured while test materials are placed in the circuit.

What it treats, and how. Allergies, eczema, lasting pain, the wish to stop smoking, and many other complaints. The patient holds electrodes or lies on a mat for some twenty minutes, for several sittings.

What has been measured. That living tissue oscillates is not in doubt. The heart, the brain and the muscles give signals that every hospital records. The open question is whether the device reads and returns anything that belongs to the illness.

Two careful trials tested it against a sham device, in children with eczema and in people with hay fever. Neither found any effect (Schöni 1997). A Turkish trial in 190 smokers found that more of those treated had stopped after a week and after a year than of those given a sham (Pihtili 2014). It stands alone.

Engineers who examined the devices found circuits that pass a weak signal in the range of audible sound. They found nothing that could sort oscillations into sound and distorted.

Read with the book on the body. The idea of the method is the book's own idea of a cure, in its plainest form. The book computes that one change closes a ring that has an error: the reverse of the error, at the place of the error. An addition anywhere else leaves the ring open. A reversed signal given through the hands is not at the place.

The essay on the senses, from which chapter 5 took its six rules, sets conditions for any wave that is to act on a living structure. The state must be read first. The window offered must be that of the layer. It must be offered whole, and silence must follow. A device that met those conditions would be a new device. The trials so far concern the existing ones.

Rife frequencies

Origin. Royal Rife, an American inventor, claimed in the 1930s to have built a microscope that showed living viruses. He held that each microbe has a rate of oscillation at which it bursts, as a glass bursts at a singer's note.

What it treats, and how. A lamp or a pair of hand electrodes gives the rates that are listed for each illness. Devices of this kind are sold for cancer, infections and much else.

What has been measured. Nothing supports Rife's microscope or his rates. Sellers of the devices have been convicted of fraud in the United States, and patients who relied on them have died.

A treatment of quite another origin shows that alternating electric fields can act on cells. Fields of a set rate, given through pads on the shaved scalp, slow the division of the cells of a brain tumour. In a trial they lengthened life by some months (Stupp 2017).

Read with the book on the body. The book has nothing on a rate at which a microbe breaks.

Radionics

Origin. The San Francisco physician Albert Abrams claimed about 1910 that he could diagnose any illness from a drop of dried blood. He placed the blood in a box of wires and dials and tapped the belly of a healthy helper. He leased sealed boxes to thousands of practitioners.

What it holds. Every illness and every organ has a rate. A sample of the patient, a hair or a spot of blood, keeps a link with him wherever he is. The operator turns the dials while he strokes a rubber pad and feels the finger stick at the right rate. Treatment is sent back by the same link.

What has been measured. A committee of the *Scientific American* tested the boxes in 1924 and found them worthless. Later boxes have fared no better in blind tests. Some work, by their makers' own account, when the circuit is only drawn on paper.

Read with the book on the body. The book has nothing on action at a distance. It holds that only what ends can deliver.

The method has two old features. The operator reads by a sticking of his own finger, which is a reading by the body of the reader. And the sample is what chapter 68 called the bait: a part of the person through which a distant healer or sorcerer reaches him.

Orgone

Origin. Wilhelm Reich, a pupil of Freud, came to hold in the 1930s that the life of the body is carried by a primal "energy", which he named orgone. He claimed to see it as a blue glow.

What it treats, and how. The patient sits in a box whose walls are layered of wood and metal. Reich held that the box gathers orgone from the air.

What has been measured. Albert Einstein examined a box in 1941 and explained the slight warmth inside it by the rise of warm air. No later test has found anything. The American food and drug authority forbade the sale of the boxes in 1954, and Reich died in prison.

Section A4 describes his earlier work on the body, which has lasted.

Read with the book on the body. Nothing.

The memory of water

Origin. The French immunologist Jacques Benveniste published a report in the journal *Nature* in 1988. An antibody, he wrote, still acted on blood cells after it had been diluted until no molecule was left. He proposed that water keeps an imprint of what was dissolved in it.

What has been measured. The journal sent a team to his laboratory. When the samples were coded, so that nobody knew which was which, the effect vanished (Maddox 1988). Later attempts have given mixed and disputed results. Physical measurements show that the bonds between the molecules of water rearrange within a millionth of a millionth of a second.

Read with the book on the body. Nothing.

Global Scaling

Origin. The German Hartmut Müller proposed in the 1980s that the sizes and rates of all natural systems cluster at fixed points of a logarithmic scale.

What it treats, and how. Devices and programmes that claim to bring the body's rhythms to the favoured points.

What has been measured. No independent test supports it.

Read with the book on the body. The book on the body put a claim of this kind to the test for its own ladder. It asked whether the sizes of the body's forms lie near the steps. They did not: 49.5 per cent against 50 by chance. It asked the same of nine bodily rhythms and of seven rates used in treatment, and found nothing. Its conclusion was that the ladder orders and does not select. Chapter 73 reported this.

Scalar waves

Origin. The German engineer Konstantin Meyl teaches that a second kind of electromagnetic wave exists, which runs lengthwise, and that living cells use it.

What has been measured. Physicists do not find such waves in empty space. Pendants and plates sold under this name have no measured effect. In 2021 the Dutch authority for

radiation protection warned against several such pendants, which contained radioactive material.

Read with the book on the body. Nothing.

Millimetre waves

Origin. Soviet physicists under Nikolai Devyatkov found in the 1960s that very weak radio waves of extremely high rate seemed to change the growth of microbes. The effects appeared only at sharply defined rates. Clinics in Russia and Ukraine have used such waves since the 1980s, often at the points of Chinese needling, for ulcers, pain and diseases of the heart.

What has been measured. A German laboratory reported in 1983 that the growth of yeast rose and fell at exact rates of the wave. Western reviews of the Russian work found many reported effects and few that another laboratory had repeated (Pakhomov 1998). The trials in patients are small.

Read with the book on the body. The book has nothing on it. The essay on the senses names one exact rate in this range as the rate of a ring of the theory's ladder. It calls a test at that rate its central prediction (Konstapel 2026e). The test has not been made.

Coherent oscillations

Origin. The physicist Herbert Fröhlich proposed in 1968 that the chemical activity of a living cell could set the molecules of its membranes vibrating in step, as one.

What has been measured. The proposal has been debated for fifty years. A calculation of 2009 found that a weak form of such order is possible in living matter and that the strong form is not. In 2015 a Swedish group reported signs of it in crystals of a protein under radiation.

No treatment rests on it directly. It is cited by the makers of many devices.

Read with the book on the body. The book holds that whatever closes, repeats. Rhythm is its first law of the living body in time.

Biophotons

Origin. The Russian biologist Alexander Gurwitsch made a report in 1923. The tip of an onion root, he found, makes the cells of a second root divide faster, through quartz and not through glass. He concluded that cells emit a weak ultraviolet light. From the 1970s the German physicist Fritz-Albert Popp measured a very weak light from living cells with sensitive counters and named its particles biophotons.

What it holds. Popp held that the light is ordered, that it comes from the hereditary material, and that cells use it to regulate each other.

What has been measured. The weak light is real. Living tissue gives off a few to a few hundred particles of light from each square centimetre in a second. Most biologists ascribe it to chemical reactions with oxygen. That it is ordered, or that cells signal by it, has not been shown. The experiments of Gurwitsch and of later Russian workers gave a result in one laboratory and none in the next.

Chapter 5 reported how the essay on the senses reads that history. If the state of the receiving cells is not read first, results of this kind are to be expected.

Read with the book on the body. The book names light as the carrier between atoms. It makes no claim about a light of cells.

Pulsed electromagnetic fields

Origin. American orthopaedic surgeons found in the 1970s that a pulsed magnetic field, given through a coil laid over a plaster cast, helped broken bones that would not knit.

What it treats, and how. A coil is worn over the place for hours a day, for weeks. Mats and small devices of the same principle are sold for pain, sleep and general well-being.

What has been measured. The American authority approved the coil for bones that fail to knit in 1979. Reviews of the trials find the evidence incomplete and leaning toward benefit. A much stronger pulsed field, given over the scalp in short bursts, relieves depression that has not yielded to drugs, and is approved for that use. For the mats there is little.

Read with the book on the body. The book has nothing on it.

Magnets

Origin. Magnets have been laid on the sick since antiquity. Paracelsus used them, and Mesmer began with them.

What it treats, and how. Bracelets, insoles and mattress pads with fixed magnets are sold for pain.

What has been measured. A pooled analysis of nine trials found that fixed magnets do not relieve pain (Pittler 2007).

Read with the book on the body. Nothing.

Bioelectromagnetics

This is a field of research and not a treatment. It studies what electric and magnetic fields do to living bodies. Its findings are of two kinds.

Some concern harm. The fields of power lines have been linked with a small rise in leukaemia among children, and the international agency for cancer classes them as a possible cause. It classes the radio waves of mobile telephones in the same way.

Some concern use. Coils that help bones to knit, the pulsed field over the scalp, and the alternating fields that slow a brain tumour came out of this research. Several entries of this section belong to it.

Read with the book on the body. Nothing.

The body electric

Origin. Robert Becker was an American orthopaedic surgeon. From the 1950s he studied the salamander, which can grow a new leg.

What it holds. Becker measured a small steady voltage at the stump of a salamander's leg. It reversed its sign as the new leg began to form. A frog, which cannot regrow a leg, showed no such reversal. He concluded that the body has a second system of signals beside the nerve impulse: slow, steady and carried along the sheaths of the nerves. It tells cells where they are and what to become. He held that the points of Chinese needling are stations of it.

What it treats, and how. Becker's work helped to bring the electrical treatment of broken bones into use. He treated infected bone with silver electrodes.

What has been measured. The steady voltages at wounds are real, and they guide the cells that close a wound. The wider system that Becker proposed has not been established. The next entry describes work that has taken his question further.

Read with the book on the body. The book has a law of the tissue. Every unit of a tissue returns to the one word and the one phase of its neighbours. Growth that is steered by a pattern shared across cells fits that law.

Patterns of voltage that store a shape

Origin. The American biologist Michael Levin and his laboratory have studied since about 2000 how a body knows its shape.

What it holds. Every cell keeps a voltage across its membrane. Neighbouring cells are joined by small channels and share their voltages. The pattern of voltage across a tissue is a plan. It tells the cells what shape to build, and it can be rewritten without touching the genes.

What has been measured. The laboratory has shown this in animals. A flatworm that is cut in two regrows a head and a tail. When the pattern of voltage is changed for a short time, it grows two heads. Cut again, in plain water, it grows two heads once more, although its genes are unchanged. A pattern of voltage that marks the place of the eyes in a tadpole can be set elsewhere, and an eye forms on the gut or the tail. A frog that has lost a leg normally grows a stump. After a single day of treatment with a mixture of drugs under a cap, such frogs grew a leg with toes.

None of this is yet a treatment for people. It is orthodox science, published in the leading journals.

Read with the book on the body. The finding is the tissue law of the book in the laboratory. A shape is held by a state that all units of a tissue share, and each unit returns to it. The book has no voltage. It has the rule.

Bioelectronic medicine

Origin. Nerves have been stimulated by implanted devices since the pacemaker of the 1950s. In 2002 the American surgeon Kevin Tracey described a reflex by which the brain restrains inflammation through the vagus nerve.

What it holds. Many illnesses can be treated by a small device that gives the right pulses to the right nerve, in place of a drug that reaches every cell.

What has been measured. A good deal.

Device	Use	Finding
A stimulator of the vagus nerve in the neck	Epilepsy; depression	Approved for both
The same, for inflamed joints	A study in Amsterdam found less inflammation in patients whom drugs had not helped (Koopman 2016)	Approved in the United States in 2025
Electrodes deep in the brain	The tremor and stiffness of Parkinson’s disease	Firm benefit
A stimulator on the spinal cord	Lasting pain	In wide use
The implant in the inner ear	Deafness	Restores hearing
An electric shock under anaesthesia	Severe depression	Clearly better than a sham in six trials

Chapter 51 reported the path, traced in mice, from a needle below the knee through the vagus nerve to inflammation in the body. The old needle and the new device meet at that nerve.

Read with the book on the body. The book reads the nerve impulse as an opening that moves. It has the result for the electric shock in depression. It reads such treatments as acting on rhythm, at the layer called Phase.

Nerve stimulators for the skin

Origin. A theory of pain published in 1965 proposed that signals of touch close a gate in the spinal cord against signals of pain. Small battery devices that tingle the skin through pads

followed. A Russian device of the 1980s, built for the space programme by its makers' account, adjusts its pulses to the changing resistance of the skin.

What has been measured. Reviews of the many trials of the tingling devices for lasting pain have not reached a clear result. For the Russian device there are only small studies.

Read with the book on the body. Nothing.

Neural therapy

Origin. The German physicians Ferdinand and Walter Huneke found in 1925 that an injection of a local anaesthetic ended their sister's migraine. In 1940 Ferdinand injected the scar of an old bone infection in a patient's leg. A pain in her shoulder, which had resisted all treatment, vanished within seconds.

What it holds. A scar, a dead tooth or a chronically inflamed tonsil can trouble a distant part of the body by way of the nerves that govern the organs. The practitioner calls such a place an interference field. A local anaesthetic resets the nerves there.

How it finds the illness. By the history, by pressing on scars and teeth, and by trial. If an injection at a suspected place lifts the distant complaint within seconds, the place has been found.

What it treats, and how. Lasting pain above all. Small amounts of anaesthetic are injected into the skin over the painful part, or into scars and near nerve centres.

What has been measured. Few trials. The method is widely used in Germany, Switzerland and Latin America. Rare serious harm has followed injections near the lung and the great vessels.

Read with the book on the body. A scar is the plainest case of the first form of failure: what is fixed, lodged in what lives. The test of the method is an offering and a watching, as chapter 43 described.

Auriculotherapy

Origin. The Lyon physician Paul Nogier noticed in the 1950s that several of his patients had a small burn on the ear. A lay healer had made it to treat their sciatica, with success. Nogier mapped the ear and found, as he held, the whole body on it in the form of a child curled head down. Chinese physicians took up his map within a year and enlarged it to some two hundred points.

How it finds the illness. By tender points on the ear, and by points of lowered skin resistance.

What it treats, and how. Pain, and dependence on drugs and tobacco. Fine needles, small seeds taped to the skin, or weak electric pulses are used. A set of five points was developed in

a New York hospital in the 1970s for people withdrawing from heroin and is used in many countries.

What has been measured. A pooled analysis of seventeen trials found that it lowers pain (Asher 2010). A large American trial for dependence on cocaine found the five points no better than needles at other places or than relaxation (Margolin 2002).

One part of the map has a base in anatomy. A branch of the vagus nerve reaches the skin in the hollow of the ear, and nowhere else on the surface of the body. Devices that stimulate it there are approved in Europe for epilepsy.

Read with the book on the body. The book computes that a small ring fits into a larger one at a whole number of places. A small reader therefore meets the large form once as a whole. Chapter 67 used this for the wrist, the tongue and the ear, each of which the Eastern physicians read as a small body.

Paired magnets

Origin. The Mexican physician Isaac Goiz developed the method in 1988.

What it holds. Viruses settle where the body is too acid, and bacteria where it is too alkaline, at paired places. Two strong magnets of opposite pole, laid on the pair, bring both back to neutral, and the microbes die.

How it finds the illness. By a shortening of one leg as the magnet is moved over the body.

What has been measured. Nothing supports it. The method claims to cure grave infections and cancer, and patients who trusted it have died.

Read with the book on the body. Nothing.

Light therapy

Origin. In 1984 American psychiatrists described a depression that returns each winter and showed that bright light lifts it.

What it treats, and how. The patient sits before a bright lamp for half an hour soon after waking, every day of the dark season. The lamp gives about a tenth of the light of a clear day, which is twenty times that of a lit room.

What has been measured. A pooled analysis found a large effect in winter depression and a moderate one in depression that is not seasonal (Golden 2005). In a Canadian trial of 122 patients with depression that was not seasonal, light did better than a dummy device, and light with a standard drug did best. The drug alone did not beat a dummy pill (Lam 2016).

Blue light on the skin of a newborn breaks down the pigment of jaundice. A nurse in an English hospital noticed in the 1950s that jaundiced infants who lay near the window recovered sooner, and the treatment is now standard.

Read with the book on the body. The book has both results. It reads light as a coupling of the body's rhythm to the day, at the layer called Phase. Coupling holds a rhythm that is closed. The book does not claim that it closes an open one.

Photobiomodulation

Origin. The Hungarian surgeon Endre Mester found in 1967 that weak red laser light made hair grow back faster on shaved mice and helped their wounds to close.

What it treats, and how. Red or near-infrared light of low power is shone on a joint, a wound or the lining of the mouth, for some minutes.

What has been measured. A pooled analysis of sixteen trials found less neck pain after treatment (Chow 2009). Cancer centres use it to prevent the sore mouth that follows some treatments, on the advice of their professional bodies. For many other uses the trials conflict. Too little light does nothing, and too much does less than the right amount.

Read with the book on the body. The book has nothing beyond the laser in diseases of the eye.

Chromotherapy

Origin. Healing by coloured light and coloured cloth is old. Avicenna wrote on it. An American, Edwin Babbitt, published a system in 1878. In the 1920s Dinshah Ghadiali sold a lamp with coloured glass filters for every illness.

What it holds. Each colour acts on an organ or a state: red rouses, blue calms, yellow strengthens the nerves.

What has been measured. Nothing supports the systems. The makers of the lamp were convicted of fraud. Two effects of colour are real, and both concern blue light. It breaks down the pigment of jaundice in the skin, and through the eye it sets the body's clock.

Read with the book on the body. Nothing.

Sound and music therapy

Origin. Chapter 72 found sound among the means of healing in twenty traditions. As a profession, music therapy began in the hospitals for wounded soldiers of the two world wars.

What it treats, and how. A trained therapist plays and sings with the patient, or the patient listens. It is used for low spirits, for pain, in dementia, for premature infants, and to help people walk and speak again after a stroke.

What has been measured. A review of the trials found that music therapy added to usual care eases depression (Aalbers 2017). A pooled analysis of seventy-three trials found that music around an operation lowers pain, fear and the need for painkillers (Hole 2015). People

who cannot speak after a stroke can sometimes sing, and a method of regaining speech is built on that.

Read with the book on the body. An outside rhythm can hold a rhythm of the body that is closed. It cannot close an open one. The lock of heart and breath is measured.

Cymatics

Origin. Ernst Chladni showed in 1787 that sand on a plate arranges itself in figures when the plate is made to sound. The Swiss physician Hans Jenny photographed such figures in powders and liquids in the 1960s and gave the study its name.

What it treats, and how. An English osteopath built a device that applies a set of audible tones to the skin over an organ. He held that each organ has tones of its own.

What has been measured. The figures are real and are well understood. No trial supports the device.

Read with the book on the body. Nothing.

Singing bowls and sound baths

Origin. Metal bowls that ring when rubbed come from the Himalaya. Their use for healing, with gongs, in sittings for groups, began in the West in the 1970s.

What has been measured. Small studies without comparison groups report less tension and a better mood after a sitting.

Read with the book on the body. The sittings bring deep rest. The book found that heart and breath lock most firmly in deep sleep, less in light sleep, and not at all in dreaming sleep and waking.

Crystal healing

Origin. Stones have been worn against illness in every age. The present practice, in which stones are laid on the body at the centres of the yogic body, dates from the 1980s.

What has been measured. British psychologists gave eighty volunteers a quartz crystal or a piece of glass cut to look like one. They told half of them what sensations to expect. Those who held glass reported the same warmth and tingling as those who held quartz. Those who had been told what to expect reported more.

Read with the book on the body. Nothing.

Reiki

Origin. The Japanese Mikao Usui founded it in 1922, after a retreat of fasting on a mountain near Kyoto. A Hawaiian woman of Japanese descent, Hawayo Takata, brought it to the West.

What it holds. A universal "life energy" can pass through a practitioner into a patient. The ability is not learned. It is opened in the pupil by a master, in a short rite. Usui gave five rules of conduct: for today, do not anger, do not worry, be grateful, work hard, be kind.

What it treats, and how. The patient lies clothed. The practitioner lays his hands lightly on a series of places, or holds them just above, for a few minutes each. An hour passes mostly in silence.

What has been measured. Reviews find the trials few and small (Lee 2008). Where reiki was compared with the same laying on of hands by an actor who had no training, the two did equally well. Patients report calm and ease.

Read with the book on the body. The book has nothing on it. Chapter 5 gave what is measured of two people who attend to each other in silence: they fall into step, and pain eases. That is what a sitting provides, and the trials suggest that the rite of opening adds nothing to it.

Therapeutic touch

Origin. Dolores Krieger, a professor of nursing in New York, and Dora Kunz developed it in 1972. Tens of thousands of nurses were taught it.

What it treats, and how. The practitioner does not touch. She moves her hands a few centimetres above the patient, feels for unevenness in what she takes to be his field, and smooths it.

What has been measured. In 1998 a schoolgirl of nine tested twenty-one practitioners for a science fair. Each put her hands through a screen. The girl held her own hand over one of them, chosen by the toss of a coin, and asked which. The practitioners were right in 44 per cent of 280 trials, which is no better than guessing (Rosa 1998).

Read with the book on the body. Nothing.

Healing Touch, pranic healing, polarity therapy and aura healing

These four are relatives of the last two entries.

Healing Touch was founded by an American nurse in 1989. It joins a light touch with work at the centres of the yogic body.

Pranic healing was founded in the Philippines in 1987. The healer does not touch. He sweeps what he calls used *prana* away from the patient with his hands and directs fresh *prana* in.

Polarity therapy was devised by Randolph Stone, who was trained in three schools of manipulation and had studied Indian medicine. He held that the "energy" of the body moves between a positive pole at the head and a negative pole at the feet. He treated with touch, stretching and diet.

Aura healing works on a coloured field that the healer sees round the patient.

None has been tested in a way that separates it from attentive touch and rest.

Read with the book on the body. Nothing.

Aura reading and colour bottles

A reader of auras describes the colours that she sees round a person and what they mean. In a system founded in England in 1983 the client chooses four from a hundred bottles of two-coloured liquid, and the choice is read.

Tests in which readers were asked to find a person hidden behind a screen by the aura that should show above it have failed.

Read with the book on the body. Nothing. The choice of bottles is a reading by lot and by liking, of the kind that chapter 76 listed among the open questions.

Distant healing

What it holds. A healer can help a patient whom he does not see and who may not know of it, by intention or prayer.

What has been measured. A review covered twenty-three trials of prayer, mental healing and touch without contact. Somewhat more than half reported an effect, and the quality was uneven (Astin 2000). The best-known positive trial was later shown to have changed its measure of success after the results were known. Section A9 gives the largest trial of prayer, which found none.

Read with the book on the body. The book has nothing on distance. It holds that only what ends can deliver, and that carriers decay.

The “biofield” and “energy medicine”

A panel of the American institutes of health proposed the word biofield in the 1990s. It was to name whatever the methods of this section work on, without deciding what that is. “Energy medicine” is the common name for the methods themselves.

The American centre for complementary medicine drew a useful line. Some methods use what can be measured: magnets, light, sound, electric pulses. Others work on what has not been measured: *qi*, *prana*, the field of the healer’s hands. The first kind has given several approved treatments. The second has given none, and has not been shown to differ from attention and touch.

Read with the book on the body. Nothing. The word “energy” is the methods’ own.

Chakras

Chapter 61 described the body of the yogis, with its channels and centres. The seven centres, each with a colour of the rainbow, an organ and a state of mind, are a Western arrangement. It was put together in the twentieth century from one Indian text among many, and the colours were added in the 1970s.

Read with the book on the body. Nothing. Seven centres have no counterpart.

Qi, prana and "life force"

Chapters 46 and 57 describe *qi* and *prana* in their own systems. Section A1 describes vitalism. Chapter 67 gave the conclusion of this book. *Qi* and the winds of India and Tibet are what brings each matter of the body to its place. In the terms of Part I they are carriers. They are not a fourth kind of matter, and they are not a "force".

Read with the book on the body. Nothing under these names.

Morphic resonance

Origin. The English biologist Rupert Sheldrake proposed it in 1981.

What it holds. The forms and habits of living beings are shaped by fields that carry a memory of all earlier beings of the same kind. What one group of animals has learned, others elsewhere learn more easily afterwards.

What has been measured. The tests that Sheldrake and others have made gave results that each side reads in its own favour. Most biologists reject the proposal. Section A7 describes a therapy of families that appeals to it.

Read with the book on the body. The book has copying only through a unique partner. The third axiom of the theory says that the net carries its history as its shape. It gives memory to each place. It does not say that a habit passes from place to place without a path.

Quantum healing

Origin. The Indian-American physician Deepak Chopra published a book of this title in 1989.

What it holds. Mind and body are one at the level of the smallest events of physics, and a shift of awareness can therefore change the body at once.

What has been measured. The claim has no experiment behind it. Physicists object that the word is borrowed without its meaning.

Read with the book on the body. Nothing.

What the group shows

The forty-four entries divide cleanly.

Methods that use a measurable agent have given treatments. They stand on trials. Among them are bright light for winter depression, blue light for jaundice, and pulsed fields for bones that will not knit and for depression. Others are alternating fields for a brain tumour, stimulators of nerves, red light for a sore mouth and music after an operation.

Methods that claim a field of the healer have given none. Reiki, therapeutic touch and their relatives do as well as an untrained person who lays on hands with attention. That is not nothing. Chapter 75 graded the effect of attention as firm.

Methods that claim to read and correct oscillations have not shown that they read anything. This holds for the dial boxes and for the present devices of bioresonance.

The laboratory has moved toward some of the claims. Cells do share patterns of voltage that hold a shape. Tissue does give off a weak light. Fields of exact rate do change dividing cells. None of this vindicates a device on the market. It does mean that the question behind this group, whether the body can be read and treated by waves, is a question of biophysics and is open.

The three large systems are of another kind. Homeopathy and anthroposophic medicine are whole medicines, with a reading, a course and a close. What has been measured in them is the reading and the meeting.

A4. Structure and touch

What the group holds

The twenty-two methods of this group work on the body with the hands. Chapters 53, 65, 68 and 70 described the hand treatments of China, Japan, Hawai‘i and the islands. The methods of this section are mostly younger, and most arose in Europe and America after 1870.

They rest on two different ideas. The first is that illness comes from a part that is out of place or cannot move, and that the practitioner puts it right. The second is that a person has learned to hold and move himself wrongly, and can learn otherwise. The section takes them in that order.

Chiropractic

Origin. Daniel David Palmer, a grocer and magnetic healer of Davenport in Iowa, founded it in 1895. He reported that he had restored the hearing of a deaf man by pushing a bone of his back into place.

What it holds. Palmer taught that an inborn intelligence governs the body through the nerves. A vertebra that is slightly out of line presses on a nerve and hinders it. He held this to be the cause of nearly all disease. Many chiropractors today have given up that claim and treat the back and the neck only. Others keep it.

How it finds the illness. By feeling the spine, by comparing the length of the legs, and often by X-ray.

What it treats, and how. By a short, quick thrust on a joint of the spine, which often gives a cracking sound.

What has been measured. For pain in the lower back, a review of twenty-six trials found a small benefit that lasts some weeks. It was no larger than that of exercise or of a physician’s usual care (Rubinstein 2011). Nothing supports its use for asthma, colic or other illnesses outside the back. The displaced vertebra of Palmer has never been shown on an image.

Harm. Soreness for a day or two is common. A thrust on the neck has in rare cases been followed by a tear of an artery and a stroke.

Read with the book on the body. To bring a part into position belongs to the layer that the book calls Phase. The book has no trial of a thrust on the spine. Its atlas has one manoeuvre of this kind that cures: the turning of the head in a set order of positions for a common form of dizziness.

Osteopathy

Origin. Andrew Taylor Still was a country physician of Missouri. In 1864 he lost three of his children to an infection, and with them his trust in the drugs of his time. He announced his new method in 1874 and opened a school in 1892.

What it holds. The body is one unit. Its structure governs its working. It has the means to heal itself, and it does so when blood and nerve signals can reach every part. The practitioner finds where movement is held and frees it.

How it finds the illness. By the hands. The osteopath feels for changes in the texture of the tissues, for unevenness between the two sides, for joints that move too little, and for tender places.

What it treats, and how. By many kinds of handling, from soft kneading and slow stretching to a quick thrust. In the United States osteopaths are trained as full physicians and prescribe drugs. Elsewhere they work with the hands only.

What has been measured. In an American trial of 455 people with long-standing pain in the lower back, six sittings gave clearly more relief than a sham handling (Licciardone 2013). For illnesses outside the frame of muscles and joints the trials are few.

Read with the book on the body. The fourth rule of cure prefers what moves with the body to what is fixed. A structure that has lost its movement is the first form of failure, and the osteopath works to reverse it.

Craniosacral therapy

Origin. The osteopath William Sutherland taught from the 1930s that the bones of the skull move slightly against each other, in a slow rhythm of their own. John Upledger made a separate method of it in the 1970s.

What it holds. The fluid round the brain and the spinal cord rises and falls some six to twelve times a minute. The skull and the sacrum move with it. Where the movement is held, illness follows.

What it treats, and how. The practitioner rests his hands on the skull or the sacrum, with a pressure of a few grams, and follows the movement until it eases. A sitting is quiet and takes most of an hour.

What has been measured. Two practitioners who feel the same head at the same moment do not report the same rhythm. A pooled analysis of ten trials found that the treatment eases lasting pain, with effects that held for six months.

One measurement deserves a note. An osteopathic study recorded the slow waves of the blood pressure, which run at about six a minute, while a practitioner called out the rhythm

that he felt. The two coincided. Chapter 61 described that wave as the rhythm with which the slow breath of the yogis locks.

Read with the book on the body. The book has nothing on it. If the practitioners feel the wave of the blood pressure, they feel a rhythm that is real, at a place where they did not expect it.

Naprapathy

Origin. Oakley Smith, an early pupil of Palmer, broke with him in 1907.

What it holds. The trouble does not lie in the bones. It lies in shortened and scarred connective tissue, which hinders nerves and vessels.

What it treats, and how. By stretching and kneading the soft tissues, with gentle movement of joints. The profession is licensed in two American states and is large in Sweden and Finland.

What has been measured. In a Swedish trial of 409 people with pain in the back or neck, naprapathic treatment gave more recovery than advice and care from a physician.

Read with the book on the body. A nerve or a vessel that is hindered is a carrier that does not arrive.

The Dorn method and Breuss massage

Dieter Dorn, a Bavarian sawmill owner, taught from the 1970s a way of pressing lightly on vertebrae and joints while the patient swings a leg or an arm. It is widely practised by lay healers in Germany. It is often joined with a gentle massage of the spine with oil of St John’s wort, named after the Austrian healer Rudolf Breuss.

Neither has been tested. Breuss also taught a juice fast of forty-two days as a cure for cancer, which is dangerous.

Read with the book on the body. Nothing.

Zero balancing

An American physician trained in osteopathy and in Chinese needling devised it in 1973. The practitioner holds a bone or a joint with a light lifting pressure for some seconds, at a series of places. There are no trials of note.

Read with the book on the body. Nothing.

Massage

Origin. Every people kneads its sick. The form that Europe calls Swedish goes back to the gymnastics of Per Henrik Ling. The Amsterdam physician Johan Mezger gave its strokes their French names in the 1860s.

What it treats, and how. Stroking, kneading, rubbing and tapping of the muscles, for pain, stiffness, tension and rest.

What has been measured. A review of twenty-five trials found that massage eases pain in the lower back for some weeks (Furlan 2015). A pooled analysis found that it lowers anxiety about as much as a talking treatment does.

The clearest result concerns infants. In an American trial, babies born too early were stroked and had their limbs moved for fifteen minutes three times a day. They gained weight nearly half again as fast as the others on the same feeds, and went home six days sooner (Field 1986).

Read with the book on the body. The atlas of the book has two uses of massage as a simple means. One is of the eyelids, and one of the womb after a birth.

The stroking of the lymph

Origin. The Danish couple Emil and Estrid Vodder developed it in the 1930s.

What it treats, and how. Very light, slow, rhythmic strokes of the skin toward the nearest lymph nodes. It is given for an arm or a leg that swells after an operation for cancer, together with tight bandaging.

What has been measured. A review covered six trials in women with a swollen arm after treatment for breast cancer. The strokes added a modest benefit to bandaging (Ezzo 2015).

Read with the book on the body. Lymph that does not move on is a carrier that fails.

Release of the fascia, and Rolfing

Origin. The American biochemist Ida Rolf taught from the 1950s that the sheets of connective tissue which wrap the muscles shorten and thicken, and pull the body out of line. She gave a course of ten sittings of deep, slow pressure. The physiotherapist John Barnes taught a gentler form in the 1970s.

What has been measured. Reviews find the trials small and of mixed quality, with results that lean toward benefit in pain. Chapter 47 reported that the charts of the Chinese vessels agree with the planes of this tissue.

Read with the book on the body. Tissue that has stiffened and holds a posture is the first form of failure. The book has no measurement of it.

Trigger points

Origin. The American physicians Janet Travell and David Simons published their manual in 1983.

What it holds. A tight band in a muscle may contain a small tender knot. Pressed, it gives pain at a distance, in a pattern that is the same in everyone. A knot in the shoulder gives a headache. The pain is treated at the knot and not where it is felt.

What it treats, and how. By pressing on the knot, by stretching the muscle, by an injection or by a dry needle.

What has been measured. Chapter 51 cited the finding that most of these points lie at points of Chinese needling. Needling a knot eases pain for some weeks. What the knot is remains in dispute.

Read with the book on the body. The book distinguishes a window, which shows only that something nearby is open, from a reader that meets and finds the place. The place of the pain is a window. The knot is the place.

Shiatsu and acupressure

Origin. Chapter 65 described the old Japanese kneading. In the early twentieth century Japanese practitioners gave it a new form under the name shiatsu, which means finger pressure. The state recognised it in 1955. One school explains it by the anatomy of the hospital. Another, founded by Shizuto Masunaga, works along the vessels of Chinese medicine and reads the belly first.

What it treats, and how. The practitioner leans the weight of his body through thumbs, palms and elbows on a clothed patient who lies on a mat. Acupressure is the pressing of the points of Chinese needling with the fingers.

What has been measured. For shiatsu the trials are few. For the pressing of single points there is more. Chapter 51 gave the point on the wrist that stops nausea.

Read with the book on the body. Nothing.

Tui na

Chapter 53 describes the Chinese treatment by hand.

Read with the book on the body. Nothing.

Reflexology

Origin. The American physician William Fitzgerald proposed in 1913 that the body is divided into ten lengthwise zones, each of which ends in a finger and a toe. A physiotherapist, Eunice Ingham, drew maps of the sole in the 1930s on which every organ has its place.

How it finds the illness. A tender or gritty spot on the sole is taken as a sign of trouble in the organ that belongs to it.

What it treats, and how. By pressing and working the spot with the thumb.

What has been measured. A review of eighteen trials found no condition for which it does more than a plain foot massage (Ernst 2009). When practitioners were asked to name the illnesses of patients from their feet, they did not succeed.

Read with the book on the body. A map of the whole on a part is the same matter as the map on the ear in section A3. The book allows that a small reader meets a large form as a whole. It does not say that the sole is such a reader.

The metamorphic technique

A British healer taught in the 1960s that the inner edge of the foot carries the record of the nine months before birth, from the toe to the heel. A light stroking along it is said to loosen patterns that were laid down then. It has not been tested.

Read with the book on the body. A pattern laid down before birth is the form that the book calls frame. The book has nothing on reaching it through the foot.

The Bowen technique

Origin. Tom Bowen, an Australian without formal training, treated many thousands of patients a year in the 1970s.

What it treats, and how. The practitioner makes a few rolling moves with thumbs and fingers across a muscle or a tendon. He then leaves the room for two minutes or more. He returns, makes another few moves, and leaves again.

What has been measured. Very little.

Read with the book on the body. The pauses are the sixth of the six rules made into a method: silence after each offering. The book holds that a return must be left to run.

The Trager approach

The American physician Milton Trager taught a handling by light rocking and shaking of the limbs and the trunk. He laid weight on the state of the practitioner, who is to work in a calm and wakeful ease and to pass that ease on through his hands. It has not been tested.

Read with the book on the body. Nothing. The demand on the practitioner’s own state is the one that chapter 72 found in the classics of the East.

The Alexander technique

Origin. Frederick Matthias Alexander was an Australian reciter who kept losing his voice. About 1890 he watched himself in mirrors as he spoke. He saw that he pulled his head back and down at the first word, and with it shortened his whole back. He could not simply stop. He had to learn to refuse the old habit at the moment before it began.

What it holds. The way a person uses himself shapes how he works. Most habits of use go unnoticed, since what is habitual feels right. The relation of the head to the neck and the back governs the rest.

What it treats, and how. It is taught and not given. In single lessons the teacher guides the pupil with the hands through sitting, standing and walking. The pupil learns to pause before he acts, and to think a set of directions. Let the neck be free, so that the head goes forward and up and the back lengthens and widens.

What has been measured. A British trial enrolled 579 people with long-standing back pain. A year after twenty-four lessons they had pain on three days a month, against twenty-one days in those with usual care (Little 2008). Six lessons followed by exercise did nearly as well. A second trial found lasting relief of neck pain.

Read with the book on the body. To stop a habit is to restore and not to add. A learned pattern belongs to the layer called Phase. Alexander's own word for what the pupil gives himself is a direction.

The Feldenkrais method

Origin. Moshe Feldenkrais was a physicist and a teacher of judo. He developed the method in the 1940s, after an injury to his knee.

What it treats, and how. In group lessons the pupils lie on the floor and make small, slow movements in unfamiliar orders, with attention to how each is done. In single lessons the teacher moves the pupil's limbs. The aim is to find easier ways of moving, which the body then keeps.

What has been measured. A review of the trials found better balance in old people who took the lessons (Hillier 2015).

Read with the book on the body. A new pattern learned by slow movement belongs to Phase.

Body psychotherapy and bioenergetics

Origin. Section A3 named Wilhelm Reich. In the 1930s, before his theory of orgone, he observed that his patients held back feeling by holding the body: a tight jaw, a raised chest, a pulled-in belly. He called it armour. His pupil Alexander Lowen made a method of it in the 1950s.

What it holds. A feeling that may not be shown is held in the muscles, and the holding becomes lasting. Body and character are then one stance.

What it treats, and how. By breathing, by postures that tire the held muscles, by movement and voice, together with talk.

What has been measured. A small trial found that a therapy of movement in groups lessened the withdrawal of people with long-standing schizophrenia. A larger trial did not confirm it.

Read with the book on the body. A tension that is held for years is a closed and wrong state. Chapter 4 called that the most treacherous of the eight forms, since nothing in it feels open.

What the group shows

The methods that teach have the best trials. The Alexander technique, the Feldenkrais method and the slow exercises of chapter 53 do not treat the patient. They change how he uses himself. Their results last a year, where those of a thrust or a kneading last weeks.

The methods that put a part in place do about equally well. A thrust, a stretch and a kneading all ease back pain a little for a while. None has shown that it corrects what its founder said it corrects.

The hand as a reader is uncertain. Two practitioners who feel the same spine or the same skull seldom agree on what they find. The finding is the same as for the pulse in chapter 8, and the same question follows. Either the hand reads nothing, or each pair of hands and body is a different pair.

Touch itself is measured. Infants who are stroked grow faster. Chapter 5 gave the easing of pain under the hand of a person who is in step with the patient.

The pause returns. One method of this group is built on leaving the room. Several others end in stillness.

A5. Nutrition, terrain, cleansing and natural cure

What the group holds

The forty-one methods of this group share one conviction. Illness comes from how a person lives, and above all from what he eats and fails to excrete. Health returns when food, water, air, light and rest are put right and the body is cleared.

The conviction is as old as medicine. Chapter 38 gave the regimen of the Hippocratic physicians, chapter 40 the six necessary conditions, and chapter 57 the daily and seasonal conduct of the Indian texts. The methods of this section are their modern descendants. Most arose in the German-speaking countries and in the United States between 1820 and 1950.

Nature cure

Origin. In 1826 a Silesian farmer's son, Vincenz Priessnitz, opened a house in the mountains where he treated the sick with cold water. He used sponging, wet sheets, plunges and showers, with plain food, walks and mountain air. He had no training. Within fifteen years he was receiving more than a thousand patients a year, among them much of the nobility of Europe. Others followed: a carter who taught a dry diet, a Swiss who prescribed baths of air and sunlight, and a pastor who used clay.

What it holds. There is one disease and one cure. The disease is a body burdened with waste through wrong living. The cure is to stop the wrong living and to rouse the body's own power of healing by water, air, light, movement, simple food and fasting. Drugs only hide the signs.

What became of it. The movement became a way of life in Germany, with its own colonies, schools and dress. Gandhi read its authors and founded a clinic on their lines. India teaches it today in state colleges.

What has been measured. The parts have been tested one by one, and the following entries and section A8 give the results. One finding belongs here. The most effective remedy of the twentieth century was a mixture of clean water, salt and sugar, drunk by children with diarrhoea. It has saved tens of millions of lives.

Read with the book on the body. Air, sun, water, simple food and fasting act at the layers that the book calls Surround and Phase. The book has the mixture of water, salt and sugar. It calls it the whole treatment for the great majority of those with diarrhoea.

Naturopathy

Origin. Benedict Lust, a German who had been cured at Kneipp's house, brought the nature cure to New York in 1892. He added American methods to it, gave it the name naturopathy, and opened a school in 1901.

What it holds. The profession states six principles. They are the healing power of nature, finding and treating the cause, doing no harm, treating the whole person, the physician as teacher, and prevention.

It adds an order of treatment. The naturopath first sets right the conditions of health: food, sleep, movement, air. He then rouses the body's own healing, with water and fasting. He then supports weak organs, corrects the frame of the body, and gives plant remedies. Drugs and surgery come last.

Chapter 40 gave the same order from the Unani physicians: regimen first, then food, then drugs, and the knife last.

How it finds the illness. By a long interview, an examination, and laboratory tests, some of which are not accepted by hospital medicine.

What it treats, and how. With diet, fasting, water, plants, manipulation and counsel, and in many practices with homeopathy. Naturopaths are licensed in about half of the American states. The German lay healers, who have been licensed since 1939, practise in a similar way.

What has been measured. A Canadian trial tested the whole practice. Postal workers with a raised risk of heart disease received a year of naturopathic care in addition to that of their own doctors, or the latter alone. The first group ended the year with a lower risk and less of the cluster of signs that goes before diabetes (Seely 2013).

Harm. Some naturopaths advise against vaccines, and some have treated grave illness without sending the patient on.

Read with the book on the body. The book computes that a form returns by itself while fewer than a third of its places are wrong. That is the healing power of nature with its limit stated. Wrong living acts at Phase and Surround, and the book puts prevention first.

The Kneipp cure

Origin. Sebastian Kneipp was a Bavarian priest. As a student he had consumption, and he treated himself by brief plunges into the winter Danube. His book on the water cure of 1886 sold in millions.

What it holds. Health rests on five pillars: water, plants, movement, food and order. By order Kneipp meant a regular day, with fixed hours for work, rest and sleep, and a settled mind.

What it treats, and how. With some hundred and twenty uses of water. Most are brief and cold: a stream poured over the knees, an arm bath, treading in a trough, walking barefoot in the dew. Warm and cold are alternated. The cure is given at spas over three weeks.

What has been measured. The trials are small. They lean toward benefit for blood pressure and for heavy legs. Chapter 53 and section A8 give the firmer findings for movement and for cold.

Read with the book on the body. Kneipp's fifth pillar is rhythm. The book holds that the day is imposed on the body from outside and that the body must place its sleep in it.

Hydrotherapy

Origin. Chapter 37 described the baths of the Greek sanctuaries. Vienna had a university clinic for treatment by water from the 1860s.

What it treats, and how. Baths, showers, wraps, steam and exercise in warm water.

What has been measured. Exercise in warm water eases worn knees and hips a little. A warm bath in labour lowers the need for an anaesthetic. A Dutch trial asked three thousand adults to end their daily shower with half a minute or more of cold water for a month. They reported sick from work nearly a third less often than the others. They were ill on as many days (Buijze 2016).

Read with the book on the body. The book has heat for period pain. In small trials a hot bottle or a warm bath did as well as painkillers.

Therapeutic fasting

Origin. Every religion fasts, and chapter 38 gave the Hippocratic rule that a fever should be starved. The German navy physician Otto Buchinger, crippled by inflamed joints, recovered after a fast of nineteen days in 1919 and opened a clinic.

What it treats, and how. The patient takes vegetable broth, juice and a little honey, some two hundred and fifty calories a day, for one to three weeks. The bowel is emptied at the start. There is daily walking, rest and quiet. The fast is broken with an apple, and food is built up over several days.

What has been measured. One study followed 1,422 people who fasted in this way for four to twenty-one days. Weight and blood pressure fell, and mood improved. Fewer than one in a hundred had an unwanted effect (Wilhelmi de Toledo 2019). A Norwegian trial gave patients with inflamed joints a fast of a week followed by a year without meat. They had less pain, less stiffness and lower signs of inflammation than the comparison group, for the whole year (Kjeldsen-Kragh 1991).

Harm. Fasting is not for the underweight, for pregnant women, or for people who take insulin. Long fasts on water alone, without a physician, have killed.

Read with the book on the body. The book holds that a return must come within a bound that is set by the size of the form. A fast gives a return its time. The book has no trial of it.

Short fasts and eating by the clock

Origin. Experiments on animals since the 1930s have shown that those fed less live longer. Since 2000 researchers have asked whether the hours of eating matter as well as the amount.

What it treats, and how. Food is taken within eight or ten hours of the day. Or it is cut sharply on two days of the week, or for five days of the month.

What has been measured. Mice that eat only in their active hours stay lean on a diet that makes others fat. In people the results are modest. Two large trials found that eating within a set span of hours took off no more weight than eating the same amount at any hour. A small trial found that eating early in the day improved the handling of sugar and lowered blood pressure with no loss of weight.

Read with the book on the body. Hours without food are hours in which the return can run. The book computes how often it must do so for forms of different size.

The Mayr cure and the Schroth cure

Two Central European cures are still given at spas.

Franz Xaver Mayr, an Austrian physician, held that most illness begins in a tired bowel. He read the state of the bowel from the shape of the belly and the bearing of the body. His patients rest the bowel on stale rolls and spoonfuls of milk, each mouthful chewed thirty times or more. They take a bitter salt each morning, and the physician kneads the belly daily.

Johann Schroth, a Silesian carter, gave days of dry rolls with nothing to drink, in turn with days of wine. He wrapped his patients in wet sheets each night to make them sweat.

Neither has been tested in a proper trial.

Read with the book on the body. Nothing.

Raw food

Origin. The Zürich physician Maximilian Bircher-Benner cured his own jaundice with raw apples. He opened a sanatorium in 1904 and held that uncooked plants carry the order of sunlight into the body. His dish of grated apple, oats and nuts has outlived his theory. An American, Ann Wigmore, taught from the 1950s a diet of sprouts and the juice of young wheat.

What it holds. Cooking destroys what is alive in food. Raw plants cleanse and rebuild.

What has been measured. People who eat much fruit and many vegetables live longer, in studies of millions. A wholly raw diet is another matter. A German study of people who had eaten raw for years found that many were underweight and that a third of the women had stopped menstruating.

One finding concerns the green pigment of leaves. In a Chinese region where mouldy grain causes cancer of the liver, a compound made from it halved the trace that the mould poison leaves in the body (Egner 2001).

Harm. Wigmore claimed that wheat juice cures cancer and was twice taken to court for it.

Read with the book on the body. Nothing.

Macrobiotics

Origin. A Japanese army physician of the 1890s taught that health depends on the balance of two minerals in food. George Ohsawa made a philosophy of it in the 1920s and carried it to Europe and America. His pupil Michio Kushi settled in Boston in the 1960s.

What it holds. Every food is more yin or more yang. Whole grains, and brown rice above all, stand near the middle. A diet that keeps to the middle keeps the person there. Sugar, tropical fruit and alcohol lie far to one side. Meat, eggs and salt lie far to the other.

What it treats, and how. The standard diet is half whole grains, with vegetables, beans, seaweed and soup of fermented soya. Food is chosen by season and place and is chewed long.

What has been measured. Adults who eat in this way have low blood pressure and low blood fats. Dutch researchers examined the infants of macrobiotic families in the 1980s. Many grew slowly. They had rickets and a lack of iron and of one vitamin (Dagnelie 1994). The families changed the diet when they were told.

No trial supports the diet as a treatment of cancer, for which it has been promoted.

Harm. Ohsawa's strictest diet was of grain alone. Young followers died of it in the 1960s.

Read with the book on the body. Ordered eating belongs to the layer called Phase. The book has nothing on the diet.

Food combining

Origin. The American physician William Hay taught from 1911 that starch and protein must not be eaten at one meal, since each needs a different state of the stomach.

What has been measured. A Swiss trial gave two groups the same number of calories, combined or separated. They lost the same weight. The stomach and the bowel digest a mixed meal without difficulty.

Read with the book on the body. Nothing. The book has two diets that act by leaving out what a person cannot bear: one without gluten, and one without certain sugars for the irritable bowel.

The alkaline diet and acid and base

Origin. Section A1 gave the acid and alkali of the seventeenth century. About 1910 a Swedish chemist sorted foods by the ash that they leave: meat, grain and cheese leave an acid ash, and fruit and vegetables an alkaline one. Diets were built on the tables. They are widely followed in Germany.

What it holds. Modern food makes the body acid. An acid body is tired and loses bone, and cancer thrives in it. The acid is measured in the morning urine and corrected by diet and by mineral powders.

What has been measured. The blood is held within a very narrow range whatever is eaten. The kidneys excrete the surplus, which is why the urine changes. Reviews have found no evidence that the diet prevents cancer or the thinning of bone (Fenton 2016).

One narrow case is real. In people whose kidneys are failing, acid does build up, and giving them alkali or much fruit and vegetables slows the decline.

Harm. The best-known American promoter of the theory treated patients with cancer by infusions of baking soda and was convicted.

Read with the book on the body. Nothing.

The blood type diet

Origin. An American naturopath published it in 1996.

What it holds. The four blood groups arose at four stages of human history. Each calls for the food of its stage: meat for one, plants for another, milk for a third.

What has been measured. A study of 1,455 people found that the diets did improve some signs of health. They did so in everyone who followed them, whatever the blood group (Wang 2014).

Read with the book on the body. Nothing.

Metabolic typing

Origin. An American dentist taught in the 1960s that people differ in how they burn food and must eat by their type. He also treated cancer with large doses of digestive enzymes.

What has been measured. The enzyme regimen was tested against standard drugs in cancer of the pancreas. The patients on the regimen lived a third as long.

The idea of the type has returned in another form. An Israeli study gave eight hundred people identical meals and measured their blood sugar. The same food raised it sharply in one person and hardly in another. A reckoning that used the bacteria of each person's bowel predicted the response (Zeevi 2015).

Read with the book on the body. That each person answers differently is the first rule of cure: read the state first.

Eating by the season

Chapter 53 gave the Chinese teaching that foods warm or cool, and chapter 57 the Indian rules for each season. The macrobiotic diet has the same teaching. Nobody has tested whether

a person who eats by the season is healthier. That the body changes with the season is established.

Read with the book on the body. The seasons are part of the body's rhythm. The book has the winter depression and its treatment by light.

The ancestral diet

Origin. Weston Price was an American dentist. In the 1930s he travelled to peoples who still ate as their ancestors had. Among them were Swiss mountain farmers, islanders of the Hebrides, Inuit, Polynesians, Africans and Australians. He photographed their teeth and jaws.

What it holds. Those who ate the old food had broad jaws, straight teeth and almost no decay. Their relatives who had moved to white flour and sugar had rotten teeth, and their children had narrow faces. Price concluded that modern food starves the body of what it needs to build itself.

What has been measured. On sugar and tooth decay Price was right. Two studies of native peoples bear out the wider claim. Chapter 68 gave the Hawaiians who ate the food of their ancestors for three weeks. In Australia ten Aboriginal people with diabetes went back to the bush for seven weeks and lived by hunting and gathering. Their blood sugar returned almost to normal (O'Dea 1984).

Harm. The foundation that bears Price's name recommends raw milk, which carries infections.

Read with the book on the body. Nothing. A change of food for a whole people is a change of the surround.

Evolutionary mismatch

What it holds. The body was shaped by a life of walking, daylight, seasonal food and small bands. It now lives seated, indoors, lit at night and fed without limit. Many common illnesses are the result.

What has been measured. Several cases are established. Children who spend more time outdoors become short-sighted less often, and a Chinese trial that added forty minutes of outdoor play to the school day lowered the rate (He 2015). Work at night is classed as a probable cause of cancer. Section A10 gives the related frameworks.

Read with the book on the body. The book has both findings. It reads them as a body whose rhythm no longer fits the day.

The Gerson therapy

Origin. Max Gerson, a German physician, devised a diet for his own migraine and found that it healed tuberculosis of the skin. In the United States from 1938 he applied it to cancer.

What it holds. Cancer is an illness of the whole body, which is poisoned and has lost its balance of minerals. The tumour will go when the body is restored.

What it treats, and how. A glass of fresh juice every hour, thirteen a day. A diet of plants without salt. Several enemas of coffee a day, which are held to clear the liver.

What has been measured. The American cancer institute examined Gerson's records twice and found no proof of benefit. No trial has been done.

Harm. Patients have died of the loss of salts through the enemas, and of infection from a raw liver juice that was once part of the regimen.

Read with the book on the body. Nothing.

The Budwig protocol

The German chemist Johanna Budwig, who had done sound work on fats, taught from the 1950s that cancer comes from a lack of certain fats in the cells. She prescribed a mixture of curd cheese and linseed oil. It has not been tested.

Read with the book on the body. Nothing.

The metabolic theory of cancer

Origin. Otto Warburg found in 1924 that cancer cells take up sugar greedily and ferment it, even when oxygen is plentiful. He concluded that cancer is at root a failure of the cell's breathing.

What it holds. In its present form the theory says that the damage to the cell's breathing comes first and the changes in the genes follow. A tumour should therefore be starved of sugar, by fasting or by a diet of fat without starch.

What has been measured. Warburg's observation is true, and hospitals use it to find tumours with a scan that shows where sugar is taken up. Most researchers hold that the changed genes come first. Small trials of the fat diet in brain tumours showed that patients can keep to it and did not show that it lengthens life.

Read with the book on the body. Nothing.

Orthomolecular medicine and megavitamins

Origin. The chemist Linus Pauling, who had won two Nobel prizes, coined the word in 1968. It means the right molecules in the right amounts. Two Canadian psychiatrists had treated schizophrenia with large doses of a vitamin since the 1950s. In 1970 Pauling published his book on vitamin C and the common cold.

What it holds. Many illnesses come from a shortage of compounds that the body normally contains. People differ greatly in how much they need. The amounts in food are often too small, and health requires doses ten to a thousand times larger.

What it treats, and how. With vitamins, minerals and other compounds of the body in large doses, by mouth or into a vein.

What has been measured. The history of the vitamins is the strongest case for the idea. Scurvy, beriberi, pellagra and rickets were each cured by a single missing compound, in the amounts that good food contains. A Dutch physician in the East Indies found the cause of beriberi in polished rice. One vitamin, given to women before they conceive in a dose above that of ordinary food, prevents most cases of an open spine in the child.

The large doses have fared otherwise. Vitamin C does not prevent colds in the general population. It shortens them slightly (Hemilä 2013). In advanced cancer it did nothing in two careful trials (Moertel 1985). A pooled analysis of forty-seven sound trials found that supplements of three vitamins, taken to prevent disease, slightly raised the death rate (Bjelakovic 2007). A pigment of carrots, given to smokers to prevent cancer of the lung, increased it.

Harm. Large doses of several vitamins injure the liver, the nerves or the unborn child.

Read with the book on the body. To give a missing compound is to act at the layer that the book calls Chain. Where hospital medicine treats first at that layer, the illness is most often held in check and not cured. The book's line is that a treatment which must be continued for life does not cure. It mentions vitamins forty-two times and a large dose never.

Systemic enzyme therapy

Origin. Two physicians in New York developed it in the 1930s. A German firm has sold a mixture since 1960.

What it holds. Enzymes from the pineapple, the papaya and the pancreas of animals, swallowed between meals, pass in part into the blood. There they calm inflammation and speed the healing of injuries.

What has been measured. A pooled analysis of the firm's trials in worn knees found the mixture about equal to a common painkiller. Independent trials are few.

Read with the book on the body. Enzymes belong to the Chain layer. The atlas of the book has the replacement of an enzyme that the body lacks.

Molecular hydrogen

Origin. A Japanese group made a report in 2007. Hydrogen gas, they found, takes up the most harmful of the reactive forms of oxygen. Rats that breathed it suffered less damage from a stroke.

What it treats, and how. Water with dissolved hydrogen is drunk, or the gas is breathed in low concentration.

What has been measured. A small Japanese trial in people who had been revived after the heart had stopped found better survival with the gas. For the bottled water there is little.

Read with the book on the body. Nothing. In the book hydrogen is the atom that sets the unit of length and time.

Ozone therapy

Origin. Ozone was used on infected wounds in the First World War. German physicians built a generator for medical use in 1957.

What it treats, and how. A measure of the patient's blood is drawn, mixed with ozone and oxygen, and returned to the vein. The gas is also blown into the bowel or injected beside a slipped disc of the spine.

What it holds. A small, brief dose of an oxidising gas rouses the body's own defences against oxidation.

What has been measured. Injection beside a slipped disc relieved pain in a number of studies, most without a comparison group. For the treatment of blood there are no sound trials.

Harm. Ozone is a poison to the lungs. Gas injected straight into a vein has killed.

Read with the book on the body. Nothing.

Treatment with one's own blood

Origin. German surgeons introduced it about 1905.

What it treats, and how. A few millilitres of blood are taken from a vein and injected into the patient's own muscle. The lay healers of Germany use it for allergies, eczema and recurring infections. A modern relative is the injection of a concentrate of the patient's own platelets into a tendon or a joint.

What has been measured. For the old form, nothing of weight. A Dutch trial of the platelet concentrate in a painful heel tendon found it no better than salt water.

Read with the book on the body. To rouse the body's defence is to act at the layer called Reading. The book has no measurement of this method.

Isopathy

Origin. A German veterinary surgeon proposed in 1833 that an illness should be treated with its own cause, diluted as in homeopathy. Remedies were made from the discharges of the sick.

What has been measured. A Scottish trial found that a homeopathic dilution of pollen eased hay fever. A larger English trial of diluted house dust mite found nothing. Some homeopaths offer such dilutions in place of vaccines, for which there is no support.

The principle itself is sound when the dose can be measured. Vaccination is its great example. The treatment of an allergy by rising doses of its cause is another.

Read with the book on the body. The book has one such treatment. People who have nearly died of a wasp or bee sting are given the venom in rising doses. The risk of a grave reaction to the next sting falls from about one in two to one in fifteen. It is the cause given as the remedy, in measured amounts, at the Reading layer. Dilution beyond the last molecule is not in the book.

Sanum therapy

The remedies of this name were devised by Günther Enderlein, whose theory section A1 described. They are made from moulds and bacteria in dilution and are meant to lead harmful forms of microbes back to harmless ones. They are much used by the lay healers of Germany and have not been tested.

Read with the book on the body. Nothing.

Chelation

Origin. A compound that binds metals was made in Germany in the 1930s. From the 1950s it has been the treatment of lead poisoning. An American physician noticed that patients treated for lead reported less pain of the heart.

What it holds. The compound takes calcium out of hardened arteries, and it removes metals that are held to cause chronic illness.

What it treats, and how. Thirty or forty infusions into a vein, over months.

What has been measured. The American institutes of health paid for a trial in 1,708 people who had had a heart attack. Those who received the infusions had slightly fewer new events than those who received a dummy, and the gain was larger in people with diabetes (Lamas 2013). A second trial, in people with diabetes only, was run to check this. It found no benefit.

Harm. One form of the compound lowers the calcium of the blood so far that the heart stops. Children treated for autism have died.

Read with the book on the body. The book has the removal of surplus iron in a disorder of the blood, at the Mesh layer. It has nothing on the heart.

Detoxification

What it holds. Poisons from food, air, water and medicines gather in the body and cause tiredness, a dull skin, headache and worse. They are driven out by days of juice or broth, by herbs, by sweating and by special products.

What has been measured. A review found no sound evidence that any commercial cleansing diet removes any poison (Klein 2015). The liver and the kidneys do that work daily. Pads for the feet that turn brown overnight, and foot baths in which the water turns brown, do so by their own chemistry.

Real poisoning by metals and by lasting chemicals exists. It is found by measurement and treated by ending the exposure.

Chapter 72 found the act of clearing in eighteen of the twenty-five old medicines. The modern cleansing cures are its latest form. Chapter 74 gave the caution that belongs to it: a removal that can be seen satisfies, whether or not anything was removed.

Read with the book on the body. The book has nothing on cleansing diets.

Colon cleansing

Origin. Section A1 gave the theory of poisoning from the bowel. The washing of the whole large bowel through a tube, with many litres of water, was popular in American sanatoria about 1900 and returned in the 1980s.

What has been measured. A review found no benefit and listed the harms: cramps, loss of salts, tears of the bowel wall, and infection (Mishori 2011). In one American town in the 1970s an unclean device passed a parasite of the bowel to thirty-six people, of whom several died.

Read with the book on the body. Nothing.

The parasite theory

Origin. Hulda Clark, an American who practised without a licence, published *The Cure for All Cancers* in 1993.

What it holds. All cancer comes from one fluke of the bowel, and all other illness from parasites and pollutants. She found them with an electrical device of her own design. She killed them with a tincture of walnut hulls, wormwood and cloves, and with a small battery device.

What has been measured. Nothing supports it. The fluke that she named does not occur in the countries where most of her patients lived.

A narrow truth lies near it. About one cancer in eight in the world is caused by an infection. Among the causes are two flukes of Asia and Africa, which bring on cancers of the bile passages and the bladder.

Read with the book on the body. The book has nothing on a single cause of all illness. It keeps eight forms.

Functional medicine

Origin. The American biochemist Jeffrey Bland gave it its name in 1990. A large American hospital opened a centre for it in 2014.

What it holds. A named disease is the end of a long chain. The physician should look for the roots: what a person was born with, what set the illness off, and what keeps it going. The roots are sought in a small number of body-wide processes, among them digestion, defence, the handling of poisons, and the signalling of hormones.

How it finds the illness. By a long history drawn as a line of the patient's life, and by many laboratory tests of stool, urine, saliva and blood. Several of these tests have not been shown to mean what is claimed for them.

What it treats, and how. With diets that leave out suspected foods, with supplements, and with changes of sleep, movement and strain.

What has been measured. The American centre compared its patients with similar patients of ordinary family doctors. After six months its own patients rated their health higher. The patients had not been divided by lot.

Read with the book on the body. The search for a root has a counterpart in the book. It names one leading form of failure for each illness, and up to two others.

Candida hypersensitivity

Origin. Two American physicians proposed about 1980 that a yeast of the bowel, grown too strong after antibiotics and sugar, causes tiredness, a clouded mind, aches and low spirits.

What it treats, and how. A diet without sugar and yeast, and a drug against yeasts.

What has been measured. A trial gave the drug or a dummy to women who had been given this diagnosis. Their general complaints improved no more with the drug (Dismukes 1990).

Read with the book on the body. Nothing.

Leaky gut

What it holds. The wall of the bowel lets through what it should keep out. Fragments of food and bacteria reach the blood and set off inflammation everywhere. Allergies, diseases in which the body attacks itself, tiredness and troubles of the mind are laid to it.

What has been measured. The wall of the bowel does let more through in certain states. It can be measured with two sugars that are drunk and recovered in the urine. It is so in coeliac disease, in inflammation of the bowel, after painkillers and alcohol, and in the gravely ill. That this is the cause of the many illnesses named, and not their companion, has not been shown. No treatment is known to seal the wall and cure by doing so.

Read with the book on the body. The book has nothing on a bowel wall that lets through. It has a law of the membrane, whose two sides differ.

Adrenal fatigue

Origin. An American naturopath proposed the name in 1998.

What it holds. Long strain wears out the glands that make the hormones of stress. The person is tired, craves salt and sugar, and cannot rise in the morning.

What has been measured. A review of fifty-eight studies found no support for the diagnosis (Cadegiani 2016). Supplements sold for it were analysed in the United States. Most contained hormones that the label did not declare.

True failure of these glands exists. It is rare and dangerous, and it is found by a blood test.

Read with the book on the body. Wear from repeated strain is the form that the book calls drift: a return that falls behind.

Multiple chemical sensitivity

Origin. The American allergist Theron Randolph described it in the 1950s.

What it holds. Some people fall ill from amounts of perfume, paint, exhaust and cleaning products that others do not notice. They have headache, tiredness, a clouded mind and trouble with breathing.

What it treats, and how. By avoidance. Some patients end by living in bare rooms, far from towns.

What has been measured. A review gathered the studies in which such patients were exposed, without knowing it, to the chemical or to clean air. When the test was truly blind, they could not tell the two apart (Das-Munshi 2006). Their suffering is not in doubt. Avoidance tends to narrow a life step by step.

Read with the book on the body. To heal by avoiding is to act on the surround. A strong reaction to what is harmless can be laid beside the form called over-reading, for which the book admits that its rules hold no object.

Probiotics and the transfer of bowel bacteria

Origin. The Russian biologist Metchnikoff proposed in 1907 that the bacteria of sour milk lengthen life. In 1917 a German physician isolated a strain from a soldier who had stayed well when his comrades had dysentery.

What it treats, and how. Living bacteria are swallowed, as a drink, a capsule or a food. In a newer method the bacteria of a healthy person's stool are given to a patient.

What has been measured. Bacteria taken with an antibiotic lower the risk of the dangerous diarrhoea that can follow it by more than half (Goldenberg 2017). Given to infants born very early, they prevent a deadly inflammation of the bowel. For general claims of health the trials are weak.

The transfer of stool is the most striking result of the whole group. A trial in Amsterdam treated patients with a recurring infection of the bowel that antibiotics had failed to end. Of those who received the stool of a donor, four in five were cured. Of those who received the standard antibiotic, fewer than one in three were (van Nood 2013). The trial was stopped early, since it would have been wrong to withhold the treatment.

A Chinese physician of the fourth century recommended a suspension of stool by mouth for food poisoning.

Read with the book on the body. The book does not have the transfer.

What the group shows

The rule of the group is to restore. Nature cure, fasting, the diets of ancestors and the order of the day all aim to give back a state that was there. Their best results are of that kind: the Hawaiian and Aboriginal diets, the fast for inflamed joints, outdoor light for children's eyes.

Where the group adds, it does worst. Large doses of vitamins raised the death rate. Enzymes, hydrogen, ozone and infusions against calcium have little to show.

Giving back what is missing cures, when what is missing is known. Three cases are among the great successes of medicine. They are the vitamins in their natural amounts, the mixture of water and salt, and the bacteria of a healthy bowel. Each came from an observation of what had been lost.

Clearing is the act of this group that is least supported and most loved. Cleansing diets, washed bowels and foot baths remove nothing that can be measured. Chapter 74 said why such acts survive.

Several diagnoses name a real suffering and a cause that has not been found. The yeast, the tired glands, the leaking bowel and the sensitivity to chemicals belong together. In each, patients who are not helped by their doctors have been given a name. The lesson is the old one. A name can be coherent and wrong.

The order of treatment is the old order. The naturopath begins with the conditions of life and ends with the drug. The Unani physician and the Hippocratic author did the same.

A6. Plants and remedies outside the pharmacy

What the group holds

Every medicine in this book gives plants. Chapters 16, 28, 36, 52, 60, 68 and 70 describe the pharmacies of the traditions, and chapter 75 lists the drugs that hospital medicine has taken from them. This section covers what the list adds. It adds the plant medicine of the modern West, a number of remedies of the nineteenth and twentieth centuries, and the plants that change the mind.

Herbal medicine

Origin. Section A2 described the household herbalism of Europe. In the twentieth century it became a regulated practice in the German-speaking countries, where physicians prescribe plant extracts and a state commission judged some four hundred plants one by one. The European Union has two classes of registered plant medicines. One rests on trials. The other rests on thirty years of safe use.

What it holds. A whole plant extract often acts more gently and more broadly than one compound taken from it. The many compounds of a plant are held to support each other.

What it treats, and how. Mostly complaints of the common kind: colds, coughs, poor sleep, low spirits, an uneasy bowel, aching joints, heavy legs. The plant is taken as a tea, a tincture or a standardised extract in a tablet.

What has been measured. A good many plants have been tested in pooled trials. The table gives the best known.

Plant	Used for	Finding
St John’s wort	Low spirits	As good as the standard drugs in mild and moderate depression, with fewer unwanted effects (Linde 2008)
Peppermint oil	The irritable bowel	Clearly better than a dummy
Psyllium husk	The irritable bowel; a slow bowel	Helps about one patient in seven beyond a dummy
Senna	A slow bowel	A standard laxative
Horse chestnut seed	Heavy, swollen legs	Clearly better than a dummy

Plant	Used for	Finding
Ginger	Nausea	Modest benefit
Cranberry	Recurring infections of the bladder in women	Fewer infections
Hawthorn	A weak heart	Eases symptoms; does not lengthen life
Devil's claw and willow bark	Back pain	Less pain in the short term
Echinacea	Colds	Weak and inconsistent
Valerian	Sleep	Inconsistent
Ginkgo	To prevent the loss of memory	No effect in a trial of three thousand old people (DeKosky 2008)
Saw palmetto	The enlarged prostate	No effect
Black cohosh	The change of life	No effect

Harm. Plants act on drugs. St John's wort makes the body clear many medicines faster. Women have conceived on the pill, and transplants have been rejected, because of it. Chapter 75 named the plants that injure the liver and the kidneys.

Read with the book on the body. A plant with a compound that fits one step of the body's chemistry acts at the layer called Chain. The book has the husk of psyllium for the irritable bowel. It also has the finding that the standard drugs for depression do only moderately better than a dummy, which is the measure against which St John's wort was judged.

Aromatherapy

Origin. A French chemist coined the word in 1937, after he had treated a burn of his own hand with oil of lavender. A French army surgeon used the oils on the wounded. An Austrian-born nurse joined them with massage in England in the 1950s.

What it holds. The fragrant oils of plants act through the nose on mood and through the skin on the body.

What it treats, and how. In Britain a few drops of oil are diluted and rubbed in with massage, or breathed. In France physicians also prescribe the oils to be swallowed.

What has been measured. A capsule of lavender oil, swallowed daily, eased anxiety in a German trial about as well as a standard calming drug (Kasper 2010). Peppermint oil on the temples relieves a tension headache. Chapter 13 cited the trial of Australian tea tree oil for

pimples. For the massage with oils, trials find a short calming effect that cannot be told from that of massage alone.

Harm. Oils irritate the skin of some people. Children have been poisoned by swallowing them.

Read with the book on the body. Nothing.

Bach flower remedies

Origin. Edward Bach was a London physician and bacteriologist who had turned to homeopathy. Between 1928 and 1935 he found thirty-eight remedies in the fields of England and Wales. He chose them by holding his hand over a flower, or tasting the dew on it, and noting the state of mind that it called up in him.

What it holds. Illness of the body follows from a troubled state of mind. Bach named thirty-eight such states in seven groups: fear, uncertainty, lack of interest in the present, loneliness, too much sensitivity to others, despair, and too much care for others. Each has its flower.

What it treats, and how. The flowers are floated on spring water in the sun, or boiled. The water is mixed with brandy and diluted twice. The patient takes a few drops of the remedies that match his state. A mixture of five is sold for emergencies.

What has been measured. A review of seven trials found no difference from a dummy (Ernst 2010). The drops contain almost none of the plant.

Read with the book on the body. Nothing on the drops. The system is a map of thirty-eight states of feeling, and choosing from it is a reading of the patient's state.

Apitherapy

Origin. Chapter 36 gave the honey of the Egyptian wound dressings. The modern practice uses every product of the hive: honey, the resin with which bees seal the hive, the food of the queen, pollen, and the venom of the sting.

What has been measured. Honey heals shallow burns faster than the usual dressings, as chapter 75 reported. A spoonful at bedtime eased the night cough of children better than the common cough syrup (Paul 2007).

Bee stings have long been given for stiff joints and for multiple sclerosis. A Dutch trial tested them in twenty-six patients with that illness, who were stung up to twenty times in a sitting, three times a week. Nothing improved (Wesselius 2005).

Harm. People have died of an allergic shock after stings given as treatment.

Read with the book on the body. Nothing.

Urine therapy

Origin. A text of Indian yogis recommends drinking one's own morning urine. An English writer made the practice known in the West in 1944, and a Dutch author did so again in the 1990s. The urine of cows has an old place in Indian medicine.

What it holds. Urine is a filtrate of the blood and returns to the body what it needs.

What has been measured. Nothing supports the practice.

Several drugs have been taken from urine. The urea of skin creams is one. A drug that dissolves blood clots was another. For decades the hormones used to treat childless women were extracted from the urine of older women, which was collected in Italian convents.

Read with the book on the body. Nothing.

Tissue salts

Origin. The German physician Wilhelm Schüssler published his system in 1873. He had found twelve mineral salts in the ash of the human body.

What it holds. Every illness is a lack of one of the twelve salts in the cells. The salt is given in homeopathic dilution, since Schüssler held that only so fine a form can enter a cell. Later followers read the missing salt from the colour and the lines of the face.

What has been measured. Nothing. The amounts in the tablets are far smaller than those in a glass of water. The salts are widely sold in Germany, the Netherlands and South Africa.

Read with the book on the body. Minerals belong to the Chain layer. The book has nothing on diluted salts.

Gemmotherapy

A Belgian physician proposed in the 1950s that the buds and young shoots of trees, steeped in glycerine and alcohol, carry the whole growing power of the plant. No trial has tested the preparations.

Read with the book on the body. Nothing.

Colloidal silver

Origin. Silver kills bacteria. A drop of a silver salt in the eyes of the newborn prevented blindness from the 1880s, and a silver cream was long the standard dressing of burns.

What it treats, and how. Since the 1990s a suspension of fine silver in water has been sold to be drunk against infections of every kind.

What has been measured. Nothing supports drinking it.

Harm. Silver that is swallowed for months is laid down in the skin, which turns a blue-grey that does not fade.

Read with the book on the body. To kill a microbe is to act at the Mesh layer. The book has nothing on silver.

High-dose vitamin C by vein

Origin. Section A5 gave Pauling's claims and the trials of vitamin C by mouth. Its defenders pointed out that an infusion raises the level in the blood some seventy times higher than any dose that is swallowed. In the laboratory such levels kill tumour cells.

What has been measured. Small trials in cancer suggest fewer unwanted effects of the standard drugs and have not shown longer life. In grave infections of the blood, early results were hopeful. A Canadian trial of 872 patients then found that those given the vitamin did worse (Lamontagne 2022).

Harm. Stones and damage of the kidney.

Read with the book on the body. Nothing.

Ethnomedicine and ethnobotany

These are fields of study and not methods of healing. Ethnomedicine studies how peoples understand and treat illness. Ethnobotany studies the plants that they use. This book rests on both.

Two of their findings matter here.

Most plant drugs were found by asking healers. A survey examined 122 drugs that are made from plants. Four in five are used for the same purpose as in the tradition from which they came (Fabricant 2001). Chapter 75 listed eleven such drugs. A healer's use of a plant is the best guide to its action that pharmacology has.

An illness and a disease are not the same. The psychiatrist and anthropologist Arthur Kleinman made the proposal in the 1970s. Every patient and every healer has a model of what is wrong: its cause, its course and its cure. The physician treats a disease, which is a fault of the body. The patient suffers an illness, which is what the fault means in his life. Healing fails when the two models do not meet (Kleinman 1978).

An international agreement of 2010 requires that those who take knowledge and plants from a people share the gain with them.

Read with the book on the body. Two remedies from old traditions are first treatments in the book's atlas: the Chinese herb for fevers, and arsenic.

Psychedelic therapy

Origin. Chapters 16, 18, 20 and 30 describe the plants that the healers of the Amazon, Mexico, North America and central Africa use to change the mind. A Swiss chemist made a compound of similar effect in 1943. In the 1950s and 1960s psychiatrists gave it to some forty thousand patients, above all for dependence on alcohol. It was forbidden in 1970. Research began again in the 1990s.

What it holds. A single meeting with oneself, in a state in which fixed patterns of thought and feeling are loosened, can do what months of talk do not.

What it treats, and how. The modern trials have rebuilt much of the old rite without saying so. The patient is prepared in several talks. He takes the drug in a quiet room, lying down, with a blindfold and chosen music, and with two guides who stay for the whole day. In the following weeks he talks through what he met.

What has been measured. Chapter 75 gave the results under vision plants. A dose of the mushroom compound lifted depression that had resisted drugs, in a trial of 233 patients (Goodwin 2022). With talks, it halved the days of heavy drinking in people dependent on alcohol (Bogenschutz 2022). A related compound was given, with talks, to people haunted by a past terror. It freed two in three of them from the diagnosis, against one in three with a dummy (Mitchell 2021). The American authority declined to approve that treatment in 2024 and asked for a further trial.

Harm. Chapter 75 gave it. The trials exclude people prone to madness, and they report days of dread and, in a few, thoughts of suicide.

Read with the book on the body. A fixed pattern of mood or of craving is the form that the book calls wrong closure. It is a state that is stable, closed and wrong. Chapter 4 showed that the only way out of it passes through the open. The loosened state under these plants is such a passage, and the guides and the room are there to make it safe.

Ayahuasca and ibogaine

Chapter 16 describes the Amazonian brew and its trials, and chapter 30 the root of central Africa. Clinics outside the law give a compound of that root to people who want to come off heroin. Many report that the craving and the sickness of withdrawal stop within a day. Follow-up studies without comparison groups find that some stay free for months (Noller 2018). The compound changes the rhythm of the heart, and people have died.

Read with the book on the body. Dependence is a wrong closure in the book. It has neither plant.

Medicinal mushrooms

Origin. The Chinese and Japanese pharmacies have long given certain fungi of trees as strengthening remedies. They are now sold across the world as powders and extracts.

What it holds. Large sugar molecules in the walls of the fungi rouse the body's defence.

What has been measured. In Japan an extract of one bracket fungus has been given since the 1970s with the standard drugs after operations for cancer of the stomach. A pooled analysis of eight trials with more than eight thousand patients found a modest gain in survival (Oba 2007). For the other fungi, and for the powders sold in the West, the trials are small.

Read with the book on the body. To rouse the defence is to act at the Reading layer. The book has nothing on fungi.

Chinese and Ayurvedic herbal medicine

Chapter 52 describes the Chinese drugs and formulas, and chapter 60 the Indian ones. The reference lists that follow those chapters give the chief drugs.

Read with the book on the body. Both medicines prescribe for the pattern of the patient and not for the complaint. That keeps the first rule of cure, and the book's finding that a change must be at the place of the error.

Cannabis

Origin. Hemp is an old remedy of China, India and the Islamic world. An Irish physician in Calcutta studied the Indian use in the 1830s and brought it to Europe, where a tincture was prescribed for pain, cramps and sleeplessness until the 1930s. It was then forbidden nearly everywhere. Its chief compound was isolated in Israel in 1964. In the 1990s researchers found that the body makes compounds of the same kind and has receptors for them in the brain and elsewhere.

What it treats, and how. Since the 1990s many countries have allowed it again for the sick. The Netherlands has supplied it through pharmacies since 2003. It is smoked, vaporised or taken as an oil. Two purified products are registered drugs.

What has been measured. A review covered seventy-nine trials. It found moderate evidence that cannabis eases lasting pain and the cramps of multiple sclerosis, and weaker evidence for nausea and sleep (Whiting 2015). One of its compounds, which does not cloud the mind, was tested in children with a severe epilepsy. Their fits fell by half, against hardly any change with a dummy (Devinsky 2017).

Harm. About one user in ten becomes dependent. Daily use of strong cannabis raises the risk of madness in the young.

Read with the book on the body. The book has the dependence, as a wrong closure. It does not have the medicinal use.

Fermented foods

Origin. Every people ferments: milk, cabbage, soya, grain, tea. A sweetened tea soured by a floating mat of yeasts and bacteria came from East Asia by way of Russia and is sold as a health drink.

What has been measured. In an American trial, thirty-six adults ate either many fermented foods or much fibre for ten weeks. Those on the fermented foods gained variety in the bacteria of the bowel, and nineteen signs of inflammation in their blood fell (Wastyk 2021). Soured milk is digested by people who cannot digest fresh milk. For the tea drink there is almost nothing.

Harm. Tea soured at home in glazed pots has taken up lead, and a few drinkers have fallen gravely ill.

Read with the book on the body. Nothing.

What the group shows

Plants act. The best-tested plant extracts do as well as drugs in the common complaints for which they are used, and some of the most popular do nothing. The difference was found by trials and could not have been guessed.

A healer's use is the best guide to a plant. Four in five plant drugs serve the purpose for which a tradition used them.

Three remedies of this group contain almost nothing. They are the flower drops, the tissue salts and the bud extracts. They rest on a system of reading and on the meeting, as homeopathy does.

The plants that change the mind needed their rite. The psychiatrists who took them up again had to add the preparation, the guide, the music and the talk afterwards. Chapter 16 said that the old healers judge a night by whether the patient was properly closed at the end.

The harm is in the concentrate and in the replacement. Chapter 75 said so of the pepper root and of ephedra. It holds for oils that are swallowed, for vitamin C by vein, and for silver.

A7. Mind, feeling and body

What the group holds

The thirty-five entries of this group concern the part that thought and feeling have in illness and in healing. Eight are frameworks, which say how mind and body hang together. The rest are methods.

The old medicines never separated the two. Chapter 48 gave the seven feelings of the Chinese physicians, each of which moves the *qi* in its own direction. Chapter 41 gave the illnesses of black bile and of love. Chapter 69 gave the Hawaiian family meeting. What this section adds is the work of the twentieth century, much of which has been measured.

Psychosomatic medicine

Origin. The word dates from 1818. In the 1930s the Chicago psychoanalyst Franz Alexander proposed that seven bodily diseases each arise from a particular hidden conflict. The stomach ulcer was his chief example.

What became of it. In 1982 two Australians found the bacterium that causes most ulcers, and the theory of seven fell. The wider claim did not. Germany has hospitals and a medical speciality of this name, which treat patients whose bodily complaints have no sufficient bodily cause.

What has been measured. A study of heart attacks covered fifty-two countries. Lasting strain at work and at home, and grave events of life, accounted for about a third of the risk. Chapter 21 cited the heart that fails for some days after a great shock and then recovers.

Read with the book on the body. In the book, body and mind are depths of one net. It places mind in the act of reading.

The biopsychosocial model

Origin. The American physician George Engel proposed it in 1977.

What it holds. An illness has three sides at once: the body, the person's thoughts and feelings, and his dealings with others. A medicine that attends to the first alone will fail many of its patients (Engel 1977).

What became of it. The model is taught in nearly every medical school. Critics say that it is true and too general to guide a decision.

Read with the book on the body. The book allows up to three forms of failure in one illness, and it records the part of the family. In psychosis, work with the family lowers the rate of relapse about as much as some drugs do. In the starving illness of the young, treatment through the family brought recovery to 49 per cent, against 23 with treatment of the patient alone.

Psychoneuroimmunology

Origin. In 1975 an American psychologist gave rats sweetened water together with a drug that weakens the body's defence. Later he gave the sweetened water alone. The defence weakened again, and some rats died (Ader 1975). The brain had learned to turn the defence down.

What it holds. The brain, the hormones and the defence of the body are one system and signal to each other.

What has been measured. Volunteers were given a cold virus in the nose. The more strain they had reported beforehand, the more of them fell ill (Cohen 1991). Chapter 69 gave the wound that heals more slowly after a quarrel. People who nurse a spouse with dementia answer a vaccine more weakly than others.

Read with the book on the body. The body's own test belongs to the layer that the book calls Reading. The book does not treat strain and the defence.

Placebo and the meaning response

Origin. A dummy has been used in trials since those of the commission on mesmerism in 1784, which section A1 described. Since the 1970s it has been studied for its own sake.

What has been measured. Chapters 8, 22 and 74 gave the main findings. A dummy relieves pain by releasing the body's own pain relief, and a drug that blocks it blocks the dummy too. A drug works better when the patient sees it given. A dummy works when the patient knows that it is one. A sham treatment given warmly does more than the same given curtly.

The effect has limits. A pooled comparison of dummy with no treatment found clear effects on pain and nausea, which patients report, and little on what an instrument measures (Hróbjartsson 2010).

It also has a reverse. In an English trial, people who had stopped a heart drug because of its unwanted effects took the drug, a dummy or nothing in turn, month by month. Nine tenths of the complaints that they had on the drug they had on the dummy as well (Wood 2020).

The anthropologist Daniel Moerman proposed another name. What acts is not the inert pill. It is what the treatment means to the patient: the physician, the place, the form and colour of the remedy, its price.

Read with the book on the body. The book notes that in trials of drugs for low spirits most of the improvement also occurs with the dummy. Expectation, setting and the number of visits drive it. Chapter 5 read the meeting of healer and patient as a locking of two persons, which acts on both.

Salutogenesis

Origin. The Israeli sociologist Aaron Antonovsky studied women who had survived the concentration camps. Many were ill. Nearly a third were in good health of mind and body. He turned the usual question round. Medicine asks what makes people ill. He asked what keeps them well.

What it holds. No one is free of strain, and health is not its absence. What protects is a sense that life hangs together. It has three parts. The world is understood. It can be managed with the means at hand. And it is worth the effort (Antonovsky 1987).

What has been measured. Antonovsky made a list of questions to measure the sense. A British study of twenty thousand adults found that those with a strong sense were about a third less likely to die in the following years.

Read with the book on the body. The book defines health in the same way. Health is not the absence of open windows. It is a test that reads them and closes them fast enough.

Allostatic load

Origin. The American researcher Bruce McEwen proposed it in the 1990s.

What it holds. The body meets every demand by changing its settings: blood pressure, sugar, the hormones of strain. That is healthy. When demands follow each other without pause, the settings no longer come back, and the wear adds up (McEwen 1998).

What has been measured. An index of ten measurements of blood, urine and body was made. In older Americans a higher index foretold earlier death and an earlier loss of memory.

Read with the book on the body. This is the form that the book calls drift. The return falls behind. The book's law says that a load is absorbed for ever if the return runs in each cycle, and that small loads add up when it does not.

The polyvagal theory

Origin. The American psychologist Stephen Porges proposed it in 1994.

What it holds. The body has three states, each governed by a part of the nerves of the organs. In safety, a newer branch of the vagus nerve slows the heart and opens the face and voice to others. In danger, the nerves of arousal prepare flight or fight. When there is no escape, an older branch of the vagus shuts the body down. A person who has lived through terror may stay in the second or third state, and cannot be talked out of it. He must first be brought to feel safe.

What has been measured. The theory is widely used by those who treat the after-effects of terror. Anatomists and physiologists have disputed its account of the two branches and of their history. The states themselves are plain to any observer.

Read with the book on the body. The lock of heart and breath is the one test on living bodies in the book that held. The book's register also has three states.

Social prescribing

Origin. A health centre in east London began in the 1980s to send patients to a choir, a garden or an adviser on debts as readily as to a pharmacy. The English health service has paid workers for this purpose since 2019.

What has been measured. A review of fifteen local schemes found that most reported benefit and that none had been tested well (Bickerdike 2017). Chapter 22 gave the finding on which the practice rests: people with strong ties to others live longer.

Read with the book on the body. A referral to an activity acts on the surround and on rhythm. The book has a trial in which getting patients with depression back into their activities did as well as a talking treatment.

Hypnotherapy

Origin. Section A1 told how the sleeping state was found among Mesmer's patients in 1784. A Scottish surgeon gave it the name hypnosis in 1843. The American psychiatrist Milton Erickson shaped the modern practice.

What it holds. In a state of narrowed, absorbed attention a person accepts suggestions that change what he feels and how his body behaves. People differ in how readily they enter it. About one in seven does so easily.

What it treats, and how. The therapist leads the patient into the state by words and then suggests ease, warmth, numbness, or a changed picture of the complaint.

What has been measured. Chapter 22 cited the pooled analysis of eighty-five experiments on pain. Hypnosis lowered pain by two fifths in those who enter the state easily. A Dutch trial tested it for the irritable bowel in 354 patients. Six sittings gave adequate relief to about two in five, against one in six of those who were only taught about their illness (Flik 2019). In Belgium many thousands of operations have been done with hypnosis and a local anaesthetic in place of full anaesthesia.

Read with the book on the body. A talking treatment acts at the layer called Phase. The book has nothing on hypnosis.

The Coué method

The French pharmacist Émile Coué noticed that his customers did better when he praised a remedy. He taught them to say twenty times each morning and evening, on a knotted string, that every day and in every way they were getting better. He held that imagination is stronger than will. His method swept Europe and America in the 1920s. It has not been tested.

Read with the book on the body. Nothing.

Guided imagery and affirmations

What they are. In guided imagery a person at rest is led to picture a calm place, or his own body healing. An affirmation is a sentence of praise or hope that he repeats to himself.

What has been measured. Imagery before an operation lowers fear and pain a little. The repeated sentence has been tested once with care. People who thought poorly of themselves felt worse after they had said that they were lovable (Wood 2009).

Read with the book on the body. Nothing.

Meditation

Origin. Chapters 61 and 64 describe the practices of the yogis and of the Buddhists. Since the 1960s they have been taught in the West without their religious setting.

What it treats, and how. The person sits still and keeps his attention on one object: a word, the breath, the sensations of the body, or good will toward others.

What has been measured. A review of forty-seven trials found moderate evidence that it eases anxiety, low spirits and pain. It did no better than other active treatments (Goyal 2014). Chapter 75 graded two special results as firm. A course of eight weeks lowers the rate of relapse into depression, and the slow breath that many forms share sets heart and blood pressure in one rhythm.

Harm. About one practitioner in twelve reports an unwanted effect, most often fear or low spirits (Farias 2020). Chapter 53 gave the mental illness that follows strained practice.

Read with the book on the body. Phase. The book has no trial of it.

Stress reduction by mindfulness

Origin. Jon Kabat-Zinn began a course at an American university hospital in 1979, for patients with pain whom the hospital could not help further.

What it treats, and how. Eight weekly meetings of two and a half hours, a day of silence, and three quarters of an hour of practice at home each day. The patients learn to attend to the body part by part, to sit, and to do simple postures of yoga.

What has been measured. In an American trial of 342 adults with long-standing back pain, the course and a talking treatment both did clearly better than usual care (Cherkin 2016).

Read with the book on the body. Phase.

Biofeedback

Origin. In the 1960s researchers found that a person can change a function of his body that he does not normally feel, if an instrument shows it to him.

What it treats, and how. A sensor records the tension of a muscle, the warmth of a finger, the rhythm of the heart or the waves of the brain. It shows what it records as a tone or a picture. The patient learns by trial to move it.

What has been measured. It prevents migraine and tension headache about as well as drugs. It teaches the muscles of the pelvic floor to work rightly. Section A8 and chapter 74 gave the training of the heart's rhythm by slow breath. Training of brain waves in restless children did no better than a sham when the trial was blind.

Read with the book on the body. To see one's own signals first is the first rule of cure. The book names the method once, for a disorder of the emptying of the bowel.

Heart coherence

Origin. An American institute has taught it since 1991.

What it holds. When a person breathes slowly and dwells on a feeling of gratitude, the rhythm of his heart becomes a smooth wave. The institute calls that state coherence.

What has been measured. The smooth wave is the one that chapter 61 described: at about six breaths a minute, heart, breath and blood pressure swing together. The institute's wider claims about a field of the heart that reaches other people have not been shown.

Read with the book on the body. The book measures a locking of heartbeats to breaths in whole numbers. That is another measure than this one, and the two should not be confused.

EMDR

Origin. The American psychologist Francine Shapiro noticed in 1987, on a walk, that her troubling thoughts faded as her eyes moved from side to side.

What it treats, and how. The lasting effects of terror. The patient calls up the worst moment of the memory while he follows the therapist's finger with his eyes, in sets of half a minute. After each set he says what has come up. The memory loses its grip, often within a few sittings.

What has been measured. A review of the trials found it as good as the best talking treatment for this illness (Bisson 2013). The World Health Organization recommends both. Dutch experiments suggest why the eyes matter. A memory that is held in mind while the mind is busy with a second task is stored again in a paler form.

Read with the book on the body. The book has the treatment of the after-effects of terror by talking methods that go to the memory itself. It lists the illness as curable when so treated, at the layer called Phase.

Somatic experiencing

Origin. The American Peter Levine developed it from the 1970s.

What it holds. An animal that has escaped a predator trembles and shakes, and then goes on as before. A person often does not complete the response. The readiness for flight stays in the body. The therapist helps him to feel the sensations of it in small doses and to let them run their course.

What has been measured. An Israeli trial in sixty-three people found large gains over those who waited for treatment.

Read with the book on the body. The book has the talking treatments for terror. It has nothing on release through the body.

Tapping

Origin. An American psychologist taught in the 1980s that a fear can be removed by tapping. One taps with the fingers on a set order of points of Chinese needling while one thinks of the fear. A pupil simplified it in 1995 to one order for every complaint, with a sentence of self-acceptance.

What has been measured. A pooled analysis of fourteen trials found a large effect on anxiety (Clond 2016). When the method was taken apart, tapping on other places, or on a doll, did equally well. What acts is probably the calm, repeated return to the feared matter.

Read with the book on the body. Nothing.

Neuro-linguistic programming

Two Americans proposed in 1975 that the skill of gifted therapists can be copied by imitating their language and gestures. They taught that a person's way of thinking can be read from the movements of his eyes. Tests have not borne that out, and a review found little evidence that the method improves health (Sturt 2012).

Read with the book on the body. Nothing.

Logotherapy

Origin. The Viennese psychiatrist Viktor Frankl survived four concentration camps. He observed that those who had a reason to live bore the camp better.

What it holds. The deepest need of a person is for meaning. Much distress comes from its absence, and no technique removes it. The therapist helps the patient to find what life asks of him.

What has been measured. A course built on Frankl's work was tested in 253 Americans with advanced cancer. It improved their sense of meaning and eased despair and the wish for death (Breitbart 2015). People who say that their life has a purpose live longer.

Read with the book on the body. Nothing. Antonovsky's third condition of health is the same as Frankl's.

Art therapy, and dance and movement therapy

Origin. Both began in hospitals in the 1940s. An English painter recovering from consumption taught fellow patients to draw. An American dancer worked with soldiers and with the long-stay patients of a mental hospital.

What it holds. What cannot be said can be drawn or moved, and the making itself steadies a person.

What has been measured. A British trial of group art therapy in 417 people with schizophrenia found no benefit. For dance and movement therapy, chapter 22 cited a pooled analysis of forty-one studies, which found a moderate lift of mood and of the sense of well-being (Koch 2019).

Read with the book on the body. Phase. The book has neither.

Psychodrama and gestalt therapy

Origin. The Viennese physician Jacob Moreno began in the 1920s to have patients act out the scenes of their lives on a stage. Members of a group played the other parts. The German-born Fritz Perls developed gestalt therapy in the 1940s.

What it treats, and how. In psychodrama the patient plays himself, then changes places with the person with whom he is in conflict and speaks as that person. Another member stands behind him and says aloud what he does not say. In gestalt therapy the patient speaks to an empty chair in which he pictures someone, living or dead, and then answers from the chair.

What has been measured. A pooled analysis of twenty-five studies of psychodrama found a large effect, with the change of roles as its strongest part. Work with the chair has done well in small trials for depression.

The method is older than Moreno. Chapter 70 described the Malay healing play, in which a patient is brought to act the figure whose wind he carries, before the village.

Read with the book on the body. Phase.

Laughter yoga

An Indian physician founded the first laughter club in a Bombay park in 1995. A group laughs on purpose, without jokes, with breathing and stretching between. Small trials find a better mood. A British study found that people who had laughed together bore more pain afterwards, as chapter 22 reported of people who sing and move together.

Read with the book on the body. Phase.

Expressive writing

Chapter 21 described it. A person writes for a quarter of an hour on several days about the worst experience of his life, for no reader. A pooled analysis of 146 studies found a small and reliable benefit to health. In one trial, patients with asthma or inflamed joints who wrote in this way were measurably better four months later (Smyth 1999).

Read with the book on the body. Phase. Chapter 72 listed confession among the points on which the old medicines agree.

Family constellations

Origin. Bert Hellinger was a German priest who had spent sixteen years as a missionary among the Zulu. He left the priesthood, trained in several schools of therapy, and developed his method in the 1980s. He said that the Zulu regard for the ancestors had shaped it.

What it holds. A family is a whole that includes its dead. It has an order. Everyone who belongs to it has a right to his place: the child who died young, the first wife, the uncle who was shut out for a disgrace. Those who came earlier stand before those who came later. Giving and taking must balance. When a member has been shut out or forgotten, a later member, often a child, takes up his fate without knowing it and falls ill or fails.

How it finds the illness. A group of strangers meets. The client chooses persons from the group to stand for the members of his family, the dead among them. He places them in the room as he feels them to stand. He then sits down. The persons who stand in the places report what they feel there: a pull toward another, cold, grief, a wish to leave. Hellinger held that they have entered a field that holds the knowledge of the family.

What it treats, and how. The leader moves the persons until each has his place. He has them speak short sentences to each other: I see you; you belong; I leave your fate with you. They may bow. One sitting is given.

What has been measured. A German trial divided 208 adults by lot between a seminar of three days and a waiting list. Those who had attended were in better mental health two weeks and four months later (Weinhold 2013). No study has tested what the stand-ins report.

Harm. Hellinger led with great authority, and some of his rulings on abuse within families did harm. A participant took her life after a seminar in 1997.

Read with the book on the body. The book has work with the living family, for psychosis and for the starving illness of the young. It has nothing on a family across generations.

The teaching can be laid beside chapter 69. The Hawaiian family includes its dead. Everyone concerned must be present, and to be cut from the family is the gravest fate. A fault between two members shows in a third. Hellinger's rules say the same of a German family. The difference is the one that chapter 71 found in the solitary form of the Hawaiian rite. The family itself is not in the room.

Regression therapy and past-life regression

Origin. Therapists have used hypnosis since the nineteenth century to lead patients back to forgotten scenes of childhood. Some lead them back to birth, and some to lives before this one.

What it holds. A present fear or pain is the trace of an old event. When the event is lived through again, the trace is cleared.

What has been measured. Hypnosis does not improve memory. It raises a person's confidence in what he recalls, true or false. In a well-known experiment, a quarter of the subjects came to remember being lost in a shopping centre as a child. Their families had invented the event at the experimenter's request (Loftus 1995). In the 1980s and 1990s therapists who searched for buried memories of abuse found them in many patients. Families were broken, and courts later found that a good part of the memories had been made in the therapy.

Experiments on lives before this one found that their content followed what the hypnotist had led the subject to expect.

Read with the book on the body. Nothing.

The Simonton method

Origin. An American cancer specialist and his wife, a psychologist, taught it from the 1970s.

What it treats, and how. Patients with cancer relax three times a day and picture their white blood cells attacking and removing the tumour.

What has been measured. The Simontons reported that their patients lived twice as long as expected. They had no comparison group. In 1989 a Californian psychiatrist reported that women with advanced cancer of the breast who met weekly in a supportive group lived eighteen months longer than others (Spiegel 1989). A larger Canadian trial, designed to repeat that finding, found that the group eased pain and low spirits and did not lengthen life (Goodwin 2001).

Harm. A patient who is told that the right pictures will shrink the tumour is led to blame himself when it grows.

Read with the book on the body. Nothing.

New Thought and mind cure

Origin. Phineas Quimby, a clockmaker of Maine and a mesmerist, concluded in the 1850s that his patients were cured by what they believed and not by his passes. He taught that disease is a wrong belief. From his pupils came several American churches and the long line of books on positive thinking.

What has been measured. Hopeful people live somewhat longer. That has been found in large studies and may have many causes. The claim of the movement is stronger: that a right belief cures. In a study of more than a thousand patients with cancer of the head and neck, a hopeful mood at the start had no bearing on survival (Coyne 2007).

Read with the book on the body. Nothing.

Metaphysical causes

The American writer Louise Hay published in 1976 a list of illnesses with the thought that causes each and a sentence to cure it. Pain in the back comes from a lack of support. Her books have sold in tens of millions. Nothing supports the list.

Read with the book on the body. Nothing. The list is a dictionary in which every illness has a meaning. Chapter 72 found that the old medicines name an illness by its place in a larger whole. Hay's list does the same, for a whole that is the patient's own thinking.

German New Medicine, and its descendants

Origin. The German physician Ryke Geerd Hamer lost a son to a gunshot in 1978 and shortly afterwards fell ill with cancer. He concluded that the shock had caused it.

What it holds. Every cancer, and nearly every other illness, begins with an unexpected shock of conflict. The kind of conflict decides the organ. The shock leaves a mark in the brain. When the conflict is solved the illness enters a healing phase, in which the patient feels worse, and which must not be treated. Microbes are helpers in that phase.

What has been measured. Nothing supports it. The marks in the brain that Hamer showed are faults of the scanning device.

Harm. Hamer forbade his patients the treatments of the hospital, and many died who could have been cured. He lost his licence in 1986 and was imprisoned in two countries.

Two French and Canadian schools, which call themselves total biology and recall healing, teach a milder form of the same doctrine. They trace illness to conflicts of the parents and grandparents. The French authority that watches over sects has warned against them.

Read with the book on the body. The book has nothing on a shock of conflict that picks an organ.

What the group shows

What passes between people is measured. It is large. The dummy, the warm practitioner, the group and the family have firm effects on pain, on mood and on the course of several illnesses.

Strain reaches the body's defence. Colds, wounds and vaccines show it.

The methods that go to a memory or a fear work. Four stand on trials. They are hypnosis for pain and for the bowel, the treatments of terror, the course against relapse of depression, and the written confession.

No thought has been shown to cure a tumour. The methods that promise it have failed where they were tested. They have done harm, by blame and by keeping patients from treatment.

The old acts return under new names. The psychodrama is the healing play. The constellation is the family with its dead. Expressive writing is confession. Hypnosis is the suggestion of the temple. The laughter club is the dance.

A name can do harm. Lists that give every illness a mental cause are coherent, and nothing supports them. Chapter 74 gave the lesson.

A8. Breath, movement, rhythm and nature

What the group holds

The twenty-eight methods of this group give no remedy. They change what a person does with his breath and his limbs, or what he is exposed to. That may be cold, heat, water, light, the hours of the day, plants, animals, or another person's skin.

Chapter 75 found that the firmest measurements in the whole field lie here. The section can therefore be brief on what earlier chapters have given and fuller on the rest.

Yoga

Chapter 61 describes yoga in its own setting. The list has four entries for it.

Yoga as therapy. Teachers trained for the purpose give postures, breathing and stillness for particular complaints. Chapter 61 gave the trial for back pain, and chapter 53 the review in which yoga eased depression about as much as walking did.

Hatha yoga. This is the yoga of postures. The long sequences of standing and bending postures that the West knows are young. They were largely put together in Indian gymnasia of the 1920s and 1930s, from older seated postures and from the physical training of the time. Injuries occur about as often as in other exercise.

Kundalini yoga. A Sikh teacher brought a form of this name to America in 1969. It joins fast breathing, repeated movements and chanting. Its founder was accused after his death of abusing many of his pupils. Chapter 67 named the master as a shadow of the Eastern system.

The control of breath. Chapter 61 gave the breath of six in a minute and what it does to heart and blood pressure. The yogis have many other ways of breathing: through one nostril at a time, with held breath, in quick bursts. These have been tested far less.

Read with the book on the body. All four act at the layer called Phase. The book has the review of exercise for depression. It also has trials in which slow, controlled breathing lessened attacks of panic.

Tai chi

Chapter 53 describes it and gives the trials. It lowers the rate of falls in old people by about a fifth.

Read with the book on the body. The book names it among the means against falls.

Buteyko breathing

Origin. The Soviet physician Konstantin Buteyko concluded in the 1950s that his patients with asthma breathed too much.

What it holds. Many people over-breathe without knowing it. They wash out a gas that the body needs in a certain amount, and the airways narrow in answer. Asthma, and many other illnesses, follow.

What it treats, and how. The patient learns to breathe through the nose only, to breathe less, and to hold the breath after breathing out. Some tape the mouth shut at night.

What has been measured. In a Canadian trial of 129 people with asthma, those taught the method needed less of their inhaled drug after six months (Cowie 2008). A British trial of 655 patients tested breathing exercises taught by a physiotherapist or by video. The patients' lives were less troubled by their asthma a year later. Their lungs measured the same (Bruton 2018). Buteyko's explanation by the lost gas has not been confirmed.

Read with the book on the body. Phase. The book has slow breathing for panic. It has nothing on over-breathing as a cause.

Breathwork

Origin. The Czech psychiatrist Stanislav Grof had studied the effects of a mind-changing drug in the 1960s. When the drug was forbidden he looked for another way to the same states and found it in the breath.

What it treats, and how. In Grof's form, people lie down in pairs. One breathes fast and deep for two or three hours to loud music, and the other watches over him. Images, strong feelings, cramps and movements arise. Afterwards each draws what he met. Grof held that people relive their birth and reach states beyond their own life.

Gentler forms have multiplied. Most use a slow breath, or a long breath out.

What has been measured. Fast breathing lowers a gas of the blood, and less blood then reaches the brain. That accounts for much of the changed state. A pooled analysis of twelve trials of the gentler forms found a small to moderate fall in stress (Fincham 2023).

Harm. Fast breathing can bring on cramps and, in those prone to them, fits.

Read with the book on the body. Phase. The book has the lock of heart and breath.

Rebirthing

An American taught in the 1970s that a continuous breath without pauses, done in warm water, lets a person relive his birth and release its shock. Nothing supports it.

A harm must be recorded under the name, though the method was another. In Colorado in 2000, therapists who wished to bind a ten-year-old girl to her adoptive mother wrapped her in sheets and pillows to act out a birth. She suffocated.

Read with the book on the body. Nothing.

The Wim Hof method

Origin. The Dutchman Wim Hof became known for sitting in ice and climbing in the snow in shorts. He teaches three practices: exposure to cold, a way of breathing, and steady attention.

What it treats, and how. The breathing consists of thirty or forty deep breaths, then a long hold with empty lungs, repeated three or four times. It is followed by a cold shower or an ice bath.

What has been measured. Researchers at Nijmegen trained twelve young men for ten days. They then injected them, and twelve untrained men, with a dead fragment of a bacterium, which gives some hours of fever and aching. The trained men, who did the breathing during the test, made far more of the hormone of alarm. They made more of a calming signal of the defence and less of three inflaming ones, and they felt less ill (Kox 2014). The textbooks had held that a person cannot influence this response at will.

Harm. People have fainted and drowned while doing the breathing in water.

Read with the book on the body. Phase. The book does not have it.

Tension-releasing exercises

An American who had worked in war zones teaches seven simple exercises that tire the muscles of the legs until they begin to tremble. The trembling is allowed to spread through the body. He holds that it is the body's own way of shaking off a shock. It has hardly been tested.

Chapter 11 described the trembling of the San healer, and chapter 19 the trembling hand of the Navajo diagnostician.

Read with the book on the body. Nothing.

Cold exposure

Origin. Section A5 described the cold water of Priessnitz and Kneipp. Swimming in winter seas and lakes is an old custom of northern Europe.

What it holds. Brief, repeated cold hardens the body against illness and lifts the mood.

What has been measured. Section A5 gave the Dutch trial of cold showers. Researchers at Maastricht showed in 2009 that healthy adults keep a kind of fat that burns to make heat, and that cold switches it on. Trials of regular cold bathing for mood are few and small.

Harm. Sudden cold can stop the breath and upset the rhythm of the heart. People drown in cold water every year.

Read with the book on the body. The book has cold as a harm, when it overwhelms the body's control of its warmth. It has cold as a treatment in two cases: cooled hands and feet

protect the nerves during one cancer treatment, and cool water is the first aid of burns. Hardening by cold is not in the book.

Whole-body cryotherapy

A Japanese physician began in 1978 to place patients with inflamed joints for two or three minutes in a chamber cooled far below the freezing point. Athletes use it after exertion. A review of four small studies found no sound evidence that it eases sore muscles (Costello 2015). A worker died in a chamber that was cooled with nitrogen.

Read with the book on the body. Nothing.

Heat and the sauna

Origin. Chapters 18 and 20 described the steam bath of Mesoamerica and the sweat lodge of the Plains. The Finnish sauna, the Russian bath and the bath house of the Islamic world are of the same family.

What has been measured. Finnish researchers followed 2,315 middle-aged men for twenty years. Those who took a sauna four to seven times a week died suddenly of the heart about a third as often as those who went once a week. They also died of any cause less often (Laukkanen 2015). Men who can sit in a sauna daily may be healthier to begin with, and the study cannot settle that.

An American trial heated the whole body of people with depression once, to a mild fever, and compared them with a sham heating. Their mood was better for six weeks (Janssen 2016).

Lamps and cabins that warm by infrared light are sold for pain and for the heart. Japanese hospitals use such a cabin for patients with a weak heart, with favourable reports.

Read with the book on the body. The book has heat for period pain, as section A5 said. It does not have the sauna.

Balneotherapy and the spa

Origin. Chapter 37 described the springs of the Greek sanctuaries. Europe has taken the waters ever since. Until recently German and French insurers paid for a cure of three weeks.

What it treats, and how. Baths in warm mineral water, mud packs, drinking of the water, with rest, walks and a regular day.

What has been measured. A French trial of 382 people with worn knees compared three weeks at a spa, with exercises, with the exercises alone. Six months later more of the spa patients were clearly better (Forestier 2010). People with a scaly disease of the skin who spend four weeks at the Dead Sea, bathing and lying in the sun, are mostly clear when they leave. For inflamed joints a review found the trials too weak to judge.

Nobody has separated the water from the three weeks away from home.

Read with the book on the body. A spa changes the surround. The book has the warm bath only.

Salt therapy

A Polish physician observed in 1843 that the men who worked in a salt mine had healthy lungs. Clinics were opened in salt mines of Poland, Ukraine and Germany, and rooms lined with salt are now offered in many towns. For the rooms there is no sound evidence.

A related finding is firm. Australian physicians noticed that young people with an inherited disease of thick mucus in the lungs did better if they surfed. A trial showed that breathing a mist of strong salt water twice a day improves their lungs and halves their bad spells (Elkins 2006).

Read with the book on the body. Nothing.

Heliotherapy

Origin. The Danish physician Niels Finsen healed tuberculosis of the skin with concentrated light and received a Nobel prize for it in 1903. In the same year a Swiss physician opened a clinic in the Alps where children with tuberculosis of the bones lay in the sun, a little longer each day.

What has been measured. In 1919 a Berlin physician cured rickets in children with a lamp. Researchers in Vienna showed soon afterwards that sunlight or cod liver oil does the same. Section A3 gave the light that cures the jaundice of the newborn.

Later generations learned that the sun causes cancer of the skin. The balance is still debated. Swedish researchers followed nearly thirty thousand women for twenty years. Those who avoided the sun died about twice as often as those who sought it (Lindqvist 2014).

Read with the book on the body. The book says of rickets that the simple means is the cure: sunlight. It has outdoor light against short sight in children, and morning light for sleep.

Oxygen outside its medical uses

Origin. Oxygen under raised pressure, breathed in a steel chamber, is an established treatment for divers' sickness, for one kind of poisoning and for wounds that will not heal.

What it treats, and how. Private clinics offer the chamber for autism, for children with brain damage from birth, for stroke and for ageing.

What has been measured. A Canadian trial gave 111 children with brain damage from birth forty sittings, in oxygen under pressure or in ordinary air under slight pressure. Both groups improved equally (Collet 2001). Reviews find no benefit in autism.

Harm. Oxygen under pressure burns fiercely. Patients have died in fires in such chambers.

Read with the book on the body. The book places oxygen among the kinds of support for which its layers do not decide.

Earthing

An American proposed in 1998 that bare feet on the ground, or a wired sheet on the bed, let the body take up electrons from the earth. This is said to calm inflammation. The supporting studies are small and come from the proponents.

Read with the book on the body. Nothing.

Nature therapy and forest bathing

Origin. The Japanese forestry agency coined a word in 1982 for a slow walk in a forest taken for the sake of health. It translates as forest bathing.

What has been measured. Japanese researchers sent groups of young men to walk and sit in twenty-four forests and, on other days, in city streets. After the forest their pulse and blood pressure were lower, and so was the hormone of strain in their saliva (Park 2010).

An American study of 1984 is the best known of the field. Patients who had had the same operation lay in rooms that looked out either on trees or on a brick wall. Those with the trees went home a day sooner and needed fewer strong painkillers (Ulrich 1984). People who live among more green die somewhat later, in studies of millions. Such studies cannot wholly separate the trees from the wealth of those who live near them.

Read with the book on the body. The book has outdoor time against short sight in children, from trials. It does not have forests.

Horticultural therapy

Physicians of the eighteenth century noted that mental patients who worked in the garden of the asylum did better than those who did not. Gardening is prescribed in hospitals for soldiers and in homes for the old. A pooled analysis of twenty-two studies found benefit for mood and for the body. Most of the studies had compared people who garden with people who do not, without dividing them by lot.

Read with the book on the body. Phase.

Animal-assisted therapy

Origin. An American child psychologist reported in the 1960s that a withdrawn boy began to speak when the therapist’s dog was in the room.

What has been measured. A pooled analysis of forty-nine studies found moderate gains in mood and conduct, in children and in old people. People who keep a dog live somewhat longer, which may be due to the walking.

Read with the book on the body. Nothing.

Kangaroo care

Origin. In 1978 two physicians at a hospital in Bogotá had too few incubators for the infants born too early. They gave the infants to their mothers to carry upright against the bare skin of the chest, day and night, and to feed at the breast.

What has been measured. A review covered twenty-one trials with more than three thousand infants. Those carried in this way died two fifths less often before they left hospital. They had fewer infections and were less often chilled (Conde-Agudelo 2016). A trial of the World Health Organization in five countries then tested starting at once after birth, before the infant was stable. Deaths in the first month fell by a quarter (WHO 2021). The trial was stopped early. The organisation now recommends the method for all small infants.

Section A4 gave the infants who grew faster when they were stroked.

Read with the book on the body. The book places the method at the layer of the surround. It calls the chapter on the newborn the richest in the book for simple means, and the evidence for this one first-rate.

Chronobiology

Origin. A French astronomer observed in 1729 that a plant kept in the dark went on opening and folding its leaves by the hour. In the 1960s German researchers kept volunteers for weeks in a bunker without clocks or daylight. They went on sleeping and waking in a rhythm of about a day. The genes that keep the rhythm were found in the fruit fly, and the work received a Nobel prize in 2017.

What it holds. Every cell has a clock. A centre in the brain sets them all by the light of the morning. Sleep, temperature, hormones, digestion and the body’s defence each have their hour. A body that lives against its clock falls ill.

What has been measured. People who work at night for years have more diabetes, heart disease and cancer, and such work is classed as a probable cause of cancer.

The old medicines said as much. Chapter 46 gave the twelve double hours of the Chinese body, and chapter 57 the hours of the three Indian faults.

Read with the book on the body. This is the book’s own ground. It holds that the day is imposed on the body from outside and that the body must place its sleep in it. A body that lives against the day opens a window at every waking.

Chronotherapy

What it is. Treatment by the hour. A drug is given at the time of day when it helps most or harms least. Or the rhythm itself is treated, by light, by darkness, or by a change in the hours of sleep.

What has been measured. A night without sleep lifts a deep depression in about half of the patients by the next day. The lift is lost with the next sleep. The book on the body cites a British trial that tried to hold it. The patients stayed awake for thirty-six hours, moved their sleep earlier over four days, and sat in bright light each morning for six months. A third were clearly better after a week, against a sixth of the comparison group, and the difference held for half a year (Konstapel 2026c).

For drugs the results are mixed. A French trial found that a cancer drug given at set hours of the day and night did more and harmed less. A large British trial found that it makes no difference whether blood pressure tablets are taken in the morning or the evening.

Read with the book on the body. Phase. The book counts this among the treatments that restore step.

Walking and pilgrimage

Origin. Every religion has journeys on foot to a holy place. Chapter 37 described the journey to the Greek sanctuary, and chapter 42 the shrines of the saints.

What has been measured. The more a person walks, the later he dies, up to some eight thousand steps a day. In the review of exercise for depression, walking and running did best of all.

A pilgrimage adds to the walking a break with daily life, company, a rhythm kept up for weeks, and an arrival. Nobody has tested it against a walk of the same length.

Read with the book on the body. Walking in step over a distance is Phase.

Exercise as medicine

Origin. In 1953 a London physician compared the drivers of the city's double-decker buses, who sat all day, with the conductors, who climbed the stairs. The conductors had half as many attacks of the heart (Morris 1953).

What has been measured. A Danish review set out the evidence for exercise as a treatment of twenty-six long illnesses. Among them are depression, diabetes, heart disease, worn joints and several cancers (Pedersen 2015). A comparison of trials found that after a heart attack exercise prevents death about as well as the standard drugs, and after a stroke better. Chapters 53 and 61 gave the trials of the slow Eastern forms.

Read with the book on the body. The book has exercise for depression and for the back. Of back pain it says that exercise is the only means that prevents it reliably.

The retreat

The last entry of the group is a combination: a stay of weeks away from home, with rest, simple food or fasting, water, air and a fixed day. The spa, the fasting clinic, the Indian cleansing cure of chapter 60 and the old sanatorium for consumption are of this kind.

The sanatoria were never tested. The first drug against consumption was tried in 1948, in the first modern trial by lot. The patients of both groups lay in bed in hospital, and the drug decided.

Read with the book on the body. To take a person out of the surroundings in which he fell ill is to act on the surround. Rest and simple food are Phase. Chapter 7 called the first step of every meeting a loosening from the day, and the last a return.

What the group shows

The firmest findings of the appendix are here. Six practices have large studies behind them. They are carrying a small infant on the skin, exercise, slow exercise, light in the morning, walking and the sauna. Most of them cost nothing.

They act on rhythm and on the surround. Chapter 4 reported that hospital medicine reaches first for these two layers in 72 of 375 illnesses.

What can be done at will reaches further than was thought. Twelve trained men changed their body’s answer to a bacterial poison by breathing.

The founders’ explanations have mostly failed. The practices have not. Buteyko’s lost gas, the electrons of the earth and the salt of the mine are not needed to account for what was found.

Extremes harm. Breath-holding in water, chambers of extreme cold and oxygen under pressure have killed.

A9. Spiritual and religious healing

What the group holds

The twenty-one entries of this group heal by an appeal to God, to spirits or to the dead. Parts II, III and VI of this book are given to medicines of this kind. Chapters 37 and 42 describe the temple of Asklepios and the shrines of the saints. Several entries are therefore short.

The book on the body is silent on the whole group. It names spiritual support once, in the care of the dying. The line that closes each entry is left out in this section, except where there is something to say.

Faith healing

Origin. The gospels tell of healings by Jesus, and a letter of the New Testament directs the elders to pray over the sick and anoint them with oil. The practice was revived in the nineteenth century by pastors in Germany and Switzerland and by American preachers. It is central to the Pentecostal churches, which began in 1906 and now count several hundred million members.

What it holds. God heals in answer to prayer and faith, now as in the time of the apostles. Some churches add that to use medicine is to lack faith.

What it treats, and how. By prayer, by the laying on of hands, by anointing, and in large meetings by a call to come forward and be healed.

What has been measured. An American surgeon followed twenty-three people who had been declared healed at the meetings of a famous preacher of the 1970s. None had been cured of a disease of the body, and one, who had thrown away her brace, died of the collapse of a cancerous spine (Nolen 1974). The pain and the stiffness that people lose at such meetings are real while the meeting lasts.

Harm. Two American physicians collected the deaths of 172 children whose parents had relied on prayer alone. For 140 of them the usual treatment would have given a chance of survival above nine in ten (Asser 1998).

The laying on of hands

The hand of a person of standing has been laid on the sick in every age. Chapter 42 described the kings of France and England, who touched tens of thousands for a disease of the neck glands. An Irish gentleman of the 1660s stroked the sick of London before the members of the new Royal Society. Section A3 gives the modern forms that explain the hand by a field, and section A4 what is measured of touch.

Christian Science

Origin. Mary Baker Eddy of New England had been a patient of the mind healer Quimby, whom section A7 named. In 1866 she fell on ice, was thought to be dying, and recovered while reading a healing story in the gospel. She published *Science and Health* in 1875 and founded a church in Boston.

What it holds. God is all, and God is good. Matter, sickness and death are therefore not real. They are errors of mortal thought. Healing is the correction of the error by prayer that sees the patient as God made him.

What it treats, and how. Members call a practitioner of the church, who prays for them, often at a distance. They do not take drugs.

What has been measured. A study compared the graduates of a Christian Science college with those of a neighbouring university. The Christian Scientists had died younger, although they neither smoke nor drink (Simpson 1989). Children of members have died of measles, diabetes and infections that are easily treated.

Spiritism

Origin. A French teacher who wrote as Allan Kardec published *The Spirits' Book* in 1857. He taught that the dead live on, return in new bodies, and speak through mediums. The teaching found its largest following in Brazil, where several million people profess it.

What it holds. Illness may come from the body, from the faults of earlier lives, or from a spirit of the dead that clings to a living person.

What it treats, and how. A medium makes passes with the hands over the patient. Water is blessed and drunk. A group speaks with the clinging spirit through a medium and persuades it to leave. Brazilian spiritists run some fifty mental hospitals, in which this is offered beside ordinary psychiatry. Chapter 70 described the mediums of the Philippines.

The shadow. The best-known Brazilian medium of recent times, who was visited by thousands of foreigners, was convicted in 2019 of raping women who had come to be healed. Several hundred had accused him.

Intercessory prayer

What it is. Prayer by others for a sick person, who may not know of it.

What has been measured. No other spiritual practice has been tested in large trials by lot. An American trial of 1988 found that heart patients who were prayed for did somewhat better. A second found the same on one measure and not on others. Two larger trials then found nothing.

The largest enrolled 1,802 patients who were to have an operation on the arteries of the heart. One group was prayed for and one was not, and neither knew which it was. A third group was

prayed for and was told so. Complications were equally common in the first two groups. They were more common in the third (Benson 2006). A review of ten trials with more than seven thousand patients concluded that such prayer has no clear effect and that further trials are not needed (Roberts 2009).

The trials tested prayer by strangers for people whom they did not know. They did not test what the traditions of this book practise: prayer by the patient, by his family, and by a healer who is present.

Charismatic healing

Origin. From the 1960s the Pentecostal practice of healing prayer entered the Catholic and the older Protestant churches.

What it treats, and how. A small group lays hands on the person and prays, often for a long time. One form is aimed at memories. The person is led back in prayer to a scene of old hurt and pictures Christ present in it.

What has been measured. A small American trial gave people with inflamed joints six hours of such prayer in person, with the laying on of hands, over three days. A year later they had fewer swollen joints. Prayer from a distance, added for half of them, did nothing (Matthews 2000).

The anthropologist Thomas Csordas studied these groups for years. He describes the healing as a change in how a person carries himself and attends to his body, which is brought about step by step (Csordas 1983).

Exorcism and deliverance

Origin. Chapters 14, 21, 34 and 59 describe the driving out of spirits among the shamans, in Babylon and in India. The Catholic church has a rite for it, which was revised in 1999. Pentecostal churches practise a freer form. Islam has the recitation of the Qur'an over the afflicted.

What it holds. An evil spirit has entered a person, or presses on him from outside. It is commanded to leave in the name of God.

What has been measured. There are no trials. Anthropologists report relief where patient, family and healer share the belief. Chapter 30 described African rites that do not drive the spirit out. They make a lasting peace with it.

Harm. Chapter 75 listed it. People have been beaten, starved and suffocated to drive a spirit out. A German student died in 1976 after months of exorcisms, and her priests were convicted.

Spiritualism and spirit healing

Origin. The modern movement of speaking with the dead began in the state of New York in 1848. In Britain it produced healers who work, as they hold, as channels for healing spirits. The best known filled the largest halls of London in the 1950s. British hospitals have admitted such healers at the request of patients since 1959.

What has been measured. A British trial enrolled 120 people with lasting pain. It compared a healer in the room, a healer behind a screen, and the same two arrangements with an actor or with nobody. The healer did no better than the imitation (Abbot 2001).

Entries that the chapters describe

Entry of the list	Described in
Ho‘oponopono	Chapter 69
Psychic surgery	Chapter 70, under the Philippines
Ancestral healing in Africa and its diaspora	Chapters 10, 24 and 30
Santería, Candomblé and Vodou	Chapter 30
Buddhist healing in Tibet	Chapters 62 to 64

Soul retrieval

Origin. Chapters 9 to 23 describe the loss of the soul and its fetching among the peoples who have shamans. In the 1980s the American anthropologist Michael Harner taught a form of the shaman’s journey to Western pupils, stripped of any one people’s beliefs (Harner 1980). His pupil Sandra Ingerman made the fetching of the soul the centre of a practice.

What it holds. At a shock, a part of the soul leaves so that the person can bear what is happening. If it does not come back, he lives on with a sense of being absent or incomplete. Psychologists describe the same event in other words and call it a splitting off.

What it treats, and how. The practitioner lies beside the client and travels, to the beat of a drum, to find the part. She brings it back in her cupped hands and blows it into the client’s chest and the crown of the head.

What has been measured. Nothing. Chapter 76 listed the nature of soul loss among the open questions.

Other Buddhist practices

Outside Tibet the Buddhist countries have their own practices for the sick. In Sri Lanka and Southeast Asia monks chant protective verses at the bedside. A blessed thread is tied round

the patient's wrist, as in the soul rites of chapter 70. In East Asia the faithful pray to the Buddha of medicine.

One Japanese text deserves mention. The Zen master Hakuin fell ill from strained meditation as a young monk, with a burning head, cold legs and constant fear. He was cured, he writes, by a hermit. The hermit taught him to draw his attention down into the belly. He also taught him to picture a lump of soft butter that melts from the crown of the head down through the whole body. Chapter 53 gave the Chinese form of the first remedy: the mind collected below the navel.

Mantra and chanting

Chapter 60 describes the recitation of Indian medicine. Chapters 5 and 61 gave the measurement that matters most. Reciting a formula, or a rosary, brings the breath to about six in a minute, at which heart, breath and blood pressure swing as one (Bernardi 2001). Chapters 5 and 22 gave the findings on singing together.

Read with the book on the body. The book holds that a closed strand repeats. It has the lock of heart and breath as a measured fact. It says nothing of recited formulas.

Sufi healing

Origin. The Sufis are the mystics of Islam. Their central practice is remembrance: the names of God are repeated, aloud or in silence, with the breath and often with movement, for hours.

What it treats, and how. The tombs of Sufi saints in South Asia are places of healing, above all for troubles of the mind. Families bring an afflicted relative and stay for weeks. Chapter 30 described the written verse that is washed off and drunk.

What has been measured. Little at the tombs themselves. Chapter 60 gave a study at a Hindu temple of southern India, where the mentally ill stay in the same way. Their symptoms had lessened by about a fifth when they left (Raguram 2002). The temple has no healing rite.

Harm. At one shrine in southern India the mentally ill were kept in chains. In 2001 a fire killed twenty-eight of them.

The better way. At a shrine in western India, psychiatrists have since 2008 held a clinic inside the precinct. The keepers of the shrine send them the patients who need drugs, and the patients take both.

Jewish healing traditions

Chapter 42 described the Jewish physicians of the Middle Ages. The religion itself has practices for the sick.

Visiting. To visit the sick is a commandment. The Talmud says that each visitor takes away a sixtieth part of the illness.

Prayer. A prayer for healing is said in the synagogue, in which the sick person is named as the child of his mother.

The name. A person who is gravely ill may be given a new name, so that a decree against the old one does not find him. Chapter 43 read the name of an illness as an address. Here the patient's own name is treated as one.

The rule above the rules. To save a life overrides nearly every other commandment. Jewish law therefore does not set prayer against medicine.

Kabbalistic healing

The Jewish mystical tradition describes ten emanations through which the divine becomes the world. It draws them as a figure with three columns: a right, a left and a middle that balances them. The figure is also read as a human body. Healers of this tradition used the names of God, written and spoken. A modern American school treats by attention to the ten.

Read with the book on the body. The book has nothing on it. Chapter 73 found that the three so often has this form in the old medicines: two opposed sides and a middle.

Pilgrimage to healing places

Origin. Chapter 37 described the journey to Epidauros, and chapter 42 the shrines of the saints.

What has been measured. Chapter 42 gave the record of Lourdes. Some seven thousand people have reported a cure there. The Church has recognised about seventy as beyond explanation (François 2014).

A British study followed twenty-four sick pilgrims to Lourdes. Their anxiety and low spirits had fallen a month after the journey and were still lower ten months later (Morris 1982).

Read with the book on the body. Section A8 gave the reading of a pilgrimage: a loosening from the day, a rhythm kept up, and a return.

Wicca and neo-pagan healing

A modern religion of witchcraft was founded in England in the 1950s. Its members work with herbs, with the phases of the moon and with rites in a circle. To heal an absent person, a group chants and dances until the feeling in the circle is at its height, and then directs it toward the sick person in thought. Nothing has been measured.

Chapter 42 listed the wise woman among the healers whom the law set outside medicine. Chapter 75 gave the tens of thousands who were executed as witches in Europe.

Accounts of nearness to death

Origin. People who have been close to death and have come back have told what they met in every age. Chapter 68 gave Hawaiian accounts, and chapter 64 the Tibetan teaching on dying. An American student of medicine collected modern accounts in 1975.

What they tell. The accounts have a common course. The person finds himself outside his body and sees it from above. He passes through darkness toward a light. He meets dead relatives, or a figure of light. He sees his life again, and judges it himself. He comes to a border, is told or decides that it is not his time, and returns.

What has been measured. Dutch cardiologists questioned 344 patients in ten hospitals soon after their hearts had been restarted. Sixty-two, or eighteen per cent, reported such an experience. It did not depend on how long the heart had stopped or on the drugs given. Two and eight years later those who had had the experience feared death less and cared more for others than the rest (van Lommel 2001).

Read with chapter 7. The accounts follow the course that chapter 7 set out. The five steps are there: the loosening from the body, the review of the life, the short exchange at the border, the showing, and the return. The fourth figure, the light without form, is rare in the old medicines. Chapter 43 found it in Hildegard, and chapter 67 in the Tibetan teaching on dying. In these accounts it stands at the centre. The lasting effect is the one that chapter 7 named: less fear of death, and a stronger sense of direction.

The Hawaiians told that the ancestors send a person back because it is not yet his time. The Dutch patients said the same.

Unexpected recoveries

A few patients with advanced cancer recover without treatment. The best estimate is one in some tens of thousands. Certain cancers do so more often than others. An American institute collected more than three thousand published reports.

One pattern in them led to a treatment. A New York surgeon noticed in the 1890s that tumours sometimes shrank after a severe infection with high fever. He injected patients with killed bacteria and had some successes. A century later his observation was understood. The body's defence can destroy a tumour when it is roused, and drugs that rouse it are now standard.

Read with the book on the body. The book has a status for illnesses that end by themselves. It gives it to 56 of the 375 illnesses in its atlas.

What the group shows

Prayer by strangers has been tested and does nothing that can be measured. That is the one firm result of the group.

Prayer and touch by people who are present has hardly been tested. The one small trial found an effect.

The harm of this group is the gravest in the appendix. Children have died because their parents prayed and did not go to a physician. People have died under exorcism. A famous healer was a predator.

The safe traditions do not set prayer against medicine. The Jewish rule, the Samoan habit, the Navajo practice and the clinic at the Indian shrine all keep both.

The accounts of nearness to death are the best recorded meeting of modern times. They have been counted in hospitals. Their lasting effect has been followed for eight years. What is met has not been explained.

A10. Scientific frameworks beyond the single compound

What the group holds

The twenty-five entries of this group are not alternative medicine. They are lines of research within science that look past the single disease with its single cause and its single drug. They are listed here because the old medicines say related matters in other words, and because some of these frameworks have measured what the old medicines only claimed.

Chapter 4 reported that hospital medicine reaches first for the removal of a tissue or an organism, or for one step of the body's chemistry, in 257 of 375 illnesses. The frameworks of this section concern the rest: rhythm, the surround, the first state of a person, and the whole.

The hygiene hypothesis and the old friends

Origin. A British researcher found in 1989 that children with more older brothers and sisters had less hay fever (Strachan 1989). He proposed that early infections protect.

What it holds. The body's defence has to be trained in the first years of life by contact with microbes. In its later form the theory names the trainers: the harmless bacteria of soil, animals and unwashed food, with which mankind has always lived. A child raised without them reacts to pollen and food, or to its own tissues.

What has been measured. Children who grow up on farms with animals have far less asthma. Two American farming peoples of the same descent were compared. Among those who farm with horses and keep their children in the barns, one child in twenty had asthma. Among those who farm with tractors, it was one in five. A British trial fed peanut to infants at risk from the first months of life. They developed the allergy one fifth as often as infants who avoided it (Du Toit 2015).

Read with the book on the body. An allergy is the form of failure that the book calls over-reading. The body's test takes a harmless form for a misfit. The book admits that its rules hold no object for this form. It has the early feeding of peanut and egg as a simple means.

The microbiome

What it holds. A human body carries about as many bacterial cells as cells of its own. They digest what the body cannot, make compounds that it needs, train its defence and keep out harmful species. Illness can follow when the community is damaged.

What has been measured. Section A5 gave the cure of a stubborn infection of the bowel by the stool of a healthy donor. Mice raised without bacteria and given the bowel bacteria of fat people grow fat, and those given the bacteria of lean people do not. For most of the other illnesses that are linked to the bacteria of the bowel, cause and effect have not been separated.

Read with the book on the body. Nothing.

The origins of health in the womb

Origin. The English physician David Barker found old birth records of one county and traced what had become of the infants. Those who had been lightest at birth died most often of heart disease sixty years later (Barker 1989).

What it holds. The unborn child sets its body for the world that its mother's state foretells. If she is starved, it prepares for scarcity. In a world of plenty the setting becomes a cause of diabetes and heart disease.

What has been measured. In the winter of 1944 the west of the Netherlands was starved for five months. Children conceived during those months have been followed ever since. As adults they had more obesity and more heart disease than people born just before the famine or conceived after it. Sixty years after the famine, researchers at Leiden compared them with their brothers and sisters. One of their genes carried fewer chemical marks.

The old medicines gave rules for the conduct of a pregnant woman, as chapter 68 reported from Hawai‘i.

Read with the book on the body. A form laid down wrongly in growth is the form called frame.

Epigenetics

What it holds. The hereditary text is the same in every cell of a body. Which parts of it are read differs, and is fixed by chemical marks on the text and on its packing. The marks are set in development and can be changed by experience.

What has been measured. Rat pups that are licked much by their mothers grow into calm adults, and those licked little into fearful ones. The difference lies in marks on one gene of the brain. Pups of a careless mother that are raised by a caring one take the calm pattern. In people the Dutch famine study is the best known case.

Popular books have drawn from this the claim that a person can rewrite his genes by thinking. Nothing supports that.

Read with the book on the body. The book mentions the matter twice. Chapter 72 listed the teaching of seven old medicines that health is judged against a person's own first state.

Evolutionary medicine

Origin. An American psychiatrist and a biologist founded the field in 1991.

What it holds. Many signs of illness are defences that were shaped by selection: fever, cough, vomiting, pain, fear. To suppress them is not always a gain. Other illnesses are the price of an advantage, or the result of a body living in a world for which it was not shaped.

What has been measured. The argument about fever has been tested. In a trial of 700 gravely ill patients with infection, a drug that lowers fever made no difference to survival. The classic case of a price paid for an advantage is an inherited trait of the blood. From one parent it protects against malaria. From both it causes a grave disease.

Chapter 72 found the rule that the raw must ripen in eight old medicines. The Greek physicians held that the illness must be cooked before it is cleared, and that the fever turns on a critical day.

Read with the book on the body. Nothing.

Hormesis

Origin. A German pharmacologist observed in 1888 that a little of a poison made yeast grow faster. The idea was long tied to homeopathy and fell with it. Toxicologists revived it in the 1990s.

What it holds. A small dose of what harms in large doses can strengthen. The body answers a mild challenge by raising its defences above the level that it had before.

What has been measured. The pattern is common in experiments on cells and animals. Exercise, fasting, heat and cold are read as challenges of this kind. One trial is striking. Young men who trained for four weeks gained in their handling of sugar. Those who took vitamins against oxidation during the training did not gain (Ristow 2009). The vitamins had removed the challenge.

Chapter 41 described the antidote of King Mithridates, who took small doses of poisons daily to become proof against them.

Read with the book on the body. The book has a law of load. A load of fewer than a third of the places of a form never ends in a wrong closure, however often it comes, if the return is complete each time. A third is the first load that can.

Inflammaging

What it holds. With age the body’s defence settles into a low, lasting inflammation, without infection. It wears on the vessels, the brain and the muscles, and lies behind many illnesses of old age.

What has been measured. Old people with higher signs of inflammation in the blood become frail and die sooner. A trial of ten thousand people who had had a heart attack tested a drug that blocks one signal of inflammation and does nothing to the fats of the blood. It lowered the rate of new attacks (Ridker 2017).

Read with the book on the body. This is the form called drift: wear, in which the return falls behind. The book lists frailty under it, with a first treatment at the layer of rhythm.

The mitochondrial theory of ageing

An American chemist proposed in 1956 that the body ages because reactive forms of oxygen, made in the small bodies that burn food in every cell, slowly damage it. The theory led to the sale of vitamins against oxidation. Section A5 reported that the supplements slightly raised the death rate. The theory has been weakened, and the training trial under hormesis suggests why.

Read with the book on the body. Nothing.

Dynamical disease

Origin. Two physiologists at Montreal coined the term in 1977 (Mackey 1977).

What it holds. The body is governed by loops of control, each with its rhythm. A loop can pass into another mode of behaviour when one setting changes: a delay grows longer, a response grows steeper. No part need be broken or missing. The breathing that waxes and wanes in heart failure is of this kind. So are a blood count that rises and falls every three weeks and some disorders of the heart's rhythm. The cure is to shift the setting, or to reset the rhythm with one well-timed push.

What has been measured. The shock that restores a fibrillating heart is the plainest case. Nothing is added and nothing is taken out. One pulse at the right moment lets the heart's own rhythm take over. For most other illnesses the framework has given models and few treatments.

Read with the book on the body. This is the framework nearest to the book. An illness as a changed rhythm of a sound system is its forms of direction and drift. Its rule of cure is to place the body in the day again.

Loss of complexity

Origin. Two Boston physicians proposed it in 1992 (Lipsitz 1992).

What it holds. A healthy heart does not beat like a clock. The gaps between beats vary constantly, in a pattern that looks the same at every scale of time. With age and illness the variation is lost. The beat becomes either too regular or merely random.

What has been measured. After a heart attack, patients whose heartbeat varies little die several times as often as the rest. A child in the womb whose heartbeat stops varying is in danger. A Chinese physician of the third century is quoted as writing that a pulse as regular as the tapping of a woodpecker foretells death within days.

Read with the book on the body. The book records that the heartbeat varies less in untreated depression. It also holds that a closed strand repeats. How variation and repetition go together is not worked out there.

Social determinants of health

Origin. Physicians of the nineteenth century mapped death by street and by wage. The modern evidence begins with a study of British civil servants.

What has been measured. Seventeen thousand men in office work were followed for ten years. All had secure posts and free medical care. Those in the lowest grade died three times as often as those in the highest, and the rate rose step by step with each grade (Marmot 1984). Near one Scottish city, men in two districts a few miles apart were found to differ in expectation of life by more than twenty years.

Read with the book on the body. The book has social factors in the illnesses of the mind only. Chapter 72 listed, as the second point on which the old medicines agree, that illness also lies outside the body.

The exposome

A cancer researcher proposed the word in 2005 for everything to which a person is exposed from conception to death: air, water, food, chemicals, noise, infections, strain. He set it beside the genome and argued that it explains more. Studies of twins find that inheritance accounts for the smaller part of the risk of most long illnesses.

Read with the book on the body. Every exposure is the surround. The book's atlas grades more than two thousand measures of prevention.

Network medicine and systems biology

Origin. In 1960 the English physiologist Denis Noble wrote the first model of a heart cell in equations. Its beat arose from the interplay of several channels in the wall of the cell. No single part was the clock (Noble 2006). A physicist of networks and physicians at Boston later gave the name network medicine to a programme of this kind for all illness (Barabási 2011).

What it holds. The genes and proteins of a cell form a web with hundreds of thousands of links. An illness is seldom the failure of one node. It is a change in a neighbourhood of the web. Illnesses whose neighbourhoods lie close together tend to occur in the same patient. A drug acts on a neighbourhood as well. That accounts for its unwanted effects, and it suggests new uses for old drugs.

What has been measured. The maps have been drawn, and they agree with the hospital's records of which illnesses go together. The approach has so far given maps and candidates. It has given few treatments.

Chapter 47 described the Chinese body as a web of warp and net. An illness is named there by the pattern of the whole and not by the part.

Read with the book on the body. The book has laws of this kind for an organ. One of them says that k kinds in one chain leave at least $k - 1$ windows open.

Positive health

Origin. The World Health Organization defined health in 1948 as a state of complete physical, mental and social well-being. The Dutch physician Machteld Huber and an international group argued in 2011 that this definition declares nearly everyone ill (Huber 2011).

What it holds. Health is the ability to adapt and to manage one's own life in the face of bodily, emotional and social challenges. A person with a long illness can be healthy in this sense. Huber later set out six fields that a patient scores for himself. They are the body, the mind, meaning, quality of life, taking part, and daily functioning.

What it treats, and how. Many Dutch family physicians use the six fields to open the consultation. The patient fills them in, and the talk begins from what he wants to change.

What has been measured. Its use has been described often and tested little.

Read with the book on the body. Section A7 gave the book's own definition. Health is a test that reads open windows and closes them fast enough. The two definitions agree.

Lifestyle medicine

Origin. The name is recent. The matter is as old as the Hippocratic books on regimen, which chapter 38 described.

What it holds. Most long illnesses of the rich countries follow from food, sitting, tobacco, drink, short sleep, strain and loneliness. They should be treated there first, and with drugs second.

What has been measured. The evidence is among the best in this appendix.

An American trial enrolled 3,234 people whose blood sugar was raised. One group was coached to lose a little weight and to walk for two and a half hours a week. Over three years they developed diabetes 58 per cent less often than the comparison group. The standard drug achieved 31 per cent (Knowler 2002).

A Spanish trial enrolled 7,447 people at risk of heart disease. Those who were given olive oil or nuts with the diet of the region had about three tenths fewer heart attacks and strokes. The comparison group had been advised to eat less fat (Estruch 2018).

British physicians were followed for fifty years. Those who smoked died ten years sooner than those who did not. Those who stopped at forty won back nine of the ten years (Doll 2004).

Chapter 61 gave the small trial in which narrowed arteries of the heart widened again under a strict regimen (Ornish 1990).

Not every such trial succeeds. A programme of weight loss for five thousand people who already had diabetes did not lower their rate of heart attacks in ten years.

Read with the book on the body. The book puts prevention first. In its atlas the first treatment lies at the layer of rhythm for 13 of the 21 illnesses of the mind. The same holds for 4 of the 10 illnesses of sleep and waking.

One Health

Origin. The pathologist Rudolf Virchow held in the nineteenth century that no line divides the medicine of animals from that of man. The name One Health dates from the first years of this century, when new infections had passed from animals to people.

What it holds. The health of people, of animals and of the land and water that they share is one matter.

What has been measured. About six in ten of the infectious diseases of man come from animals, and three in four of the new ones (Taylor 2001). To vaccinate dogs against rabies prevents more human deaths, at less cost, than to treat the people who are bitten. Much of the world's antibiotics is given to farm animals, and the resistance that is bred there reaches people.

Chapter 19 gave the Navajo list of illnesses that follow a wrong dealing with an animal.

Read with the book on the body. Nothing.

Integrative medicine

Origin. In the 1990s American university physicians began to offer needling, massage, stillness and herbs beside ordinary treatment. The physician Andrew Weil founded a training programme at the University of Arizona in 1994. The American government opened an office for the study of such methods in 1992 and made it a national centre in 1998. Some seventy university hospitals of North America now belong to a consortium for integrative medicine.

What it holds. Use every treatment for which there is good evidence, whatever its origin. Attend to the whole person. Give weight to the bond between physician and patient.

What has been measured. The methods have been tested one by one, and this appendix reports the results. Whether a clinic that combines them does better than one that does not has hardly been tested. Critics hold that the name lets untested methods into the hospital.

Elsewhere the joining is an old fact. Chapter 55 described China, where the two medicines stand side by side in law, in the universities and in the insurance. Chapter 19 described the room in the shape of a hogan in a Navajo hospital.

Read with the book on the body. The book also sets five layers of treatment side by side. It says of them: “The cures are those of the source; the theory found none of them.”

Holistic medicine

Origin. The South African statesman Jan Smuts coined the word holism in 1926 for the tendency of nature to form wholes that are more than their parts. Physicians took it up in the 1970s.

What it holds. The patient is a whole of body, mind, spirit and surroundings, and an illness is an event in that whole. Every old medicine of this book holds this. Chapter 72 counted it as the second and third points of agreement. Illness also lies outside the body, and its name points to a larger whole.

What has been measured. The claim is too wide to test as it stands. Section A7 gave the evidence for the single ties between mind, group and body.

Read with the book on the body. For the book a body is a depth. The unit at each depth is what closed one depth lower. Chapter 3 took its title from this.

Complexity science in medicine

Origin. From the 1980s physicists, biologists and economists studied under one name all systems of many parts that act on one another. Physicians took up their ideas about 2000.

What it holds. A body is such a system. It has more than one stable state. It can pass from one to another suddenly, at a tipping point, after a long time in which little seemed to change. Health is resilience: the ability to come back after a push. Near a tipping point a system comes back ever more slowly from small pushes. That slowing can be measured, and it warns (Scheffer 2009).

What has been measured. Dutch researchers analysed the moods that some six hundred people had recorded several times a day. In those who were about to become depressed, a mood lingered longer from one moment to the next. Their moods were also more tightly bound to one another (van de Leemput 2014). One man recorded his mood ten times a day while he tapered his drug. The warning signs rose weeks before he relapsed.

Chapter 44 gave the Chinese rule that the best physician treats what is not yet ill.

Read with the book on the body. The book has a law of return, which chapter 4 gave. A closed form that is changed in fewer than a third of its places comes back by itself.

Whole-plant pharmacology and the entourage

Origin. Israeli chemists reported in 1998 that one of the body’s own cannabis-like compounds acts more strongly in the company of related compounds that do nothing alone.

They called this the entourage effect. The word was soon applied to the cannabis plant and to herbal medicine in general.

What it holds. A plant is not a dilute drug with impurities. Its many compounds act together. One helps another into the body, slows its clearing, or tempers its harm. An extract of the whole plant therefore differs from its chief compound alone.

What has been measured. There are cases on both sides.

Section A6 gave St John's wort. The extract works in depression, and no single compound of it accounts for the effect.

Indian medicine often gives pepper together with other drugs. In volunteers, a compound of pepper raised twentyfold the amount of the yellow compound of turmeric that reached the blood (Shoba 1998).

Chapter 52 described the Chinese rule that a formula has a ruler, a minister, an assistant and an envoy. It also gave a formula of three drugs for a leukaemia. In the laboratory each of the three does a part, and the three together do the most (Wang 2008).

On the other side, the single compound from sweet wormwood cures malaria, and the single compound from cannabis lowers the number of fits in two grave epilepsies of childhood. For cannabis itself, laboratory tests of the entourage effect have given mixed results.

Read with the book on the body. Nothing.

Biosemiotics

Origin. The Baltic German biologist Jakob von Uexküll wrote from 1909 on the worlds of animals. Each animal, he held, lives in a world of its own, made of the few signs that it can read and answer. His son Thure, a physician, built a theory of the illnesses of body and mind upon it. The field took its name later in the century.

What it holds. Life is the reading of signs, at every level. A cell reads a hormone by a receptor that is made to fit it. What a sign means depends on the reader. The same messenger quickens one tissue and quiets another. An illness can then be a misreading. A sign is not read. A sign is read where none was sent. Or the body's own tissue is read as foreign.

What has been measured. It is a way of describing and has no trials of its own. Cases from ordinary medicine fit it well. In the common form of diabetes the messenger is present, and the cells no longer read it. In an allergy a harmless form is read as an attack.

Read with the book on the body. This is the book's own language. Two of its eight forms are the unread and the over-read. It adds that a carrier passes on what a reader has read. Chapter 5 took perceiving itself as a seam that closes.

Quantum biology and information medicine

Origin. Physicists have asked since the 1930s whether living matter uses the laws of the very small in ways that dead matter does not.

What has been measured. A few cases are well supported. Enzymes pass hydrogen through barriers that it could not cross by the laws of large bodies. Migrating birds appear to sense the magnetic field of the earth by a reaction of paired electrons in the eye. A similar claim for the capture of light in leaves has been weakened by later work.

The speculative strand. A mathematical physicist and an anaesthetist proposed in the 1990s that consciousness arises from quantum events in the fine tubes inside nerve cells. A calculation of 2000 found that such states would last far too short a time in the warm, wet brain (Tegmark 2000). Popular books speak of quantum healing. Devices are sold that claim to read or to correct the "information" of the body. Section A3 described them, and section A11 describes one that is sold for diagnosis.

Read with the book on the body. The word coherence appears three times in the book.

Traditional knowledge as science

Origin. The French anthropologist Claude Lévi-Strauss argued in 1962 that peoples without writing observe and classify nature as exactly as a naturalist does. He called it a science of the concrete (Lévi-Strauss 1962). Since the 1990s international agreements have recognised such knowledge and the rights of those who hold it.

What it holds. The old medicines are bodies of knowledge, gathered and tried over many generations by methods of their own. They are not failed attempts at modern science.

What has been measured. Chapter 22 gave the survey of 122 drugs that are single compounds from plants. Four in five are used for the same purpose as in the tradition from which they came (Fabricant 2001). Chapter 52 told how the remedy against malaria was found again in a handbook of the fourth century. Chapter 12 told how the San won a share in a plant that they had always used.

Chapter 74 gave the other side. Bloodletting was kept for two thousand years. The old medicines observed well, and they had no way to discard an error.

Read with the book on the body. The book takes its facts from one source and marks that it did not check them.

Deprescribing

Origin. The word dates from 2003 and comes from Australia.

What it holds. Each drug is prescribed for one illness, by the rule for that illness. An old person with five illnesses ends with ten or fifteen drugs, which act on one another. Some

were meant for a short time and were never stopped. Some treat the unwanted effects of others. To take drugs away, slowly, one at a time and under watch, is then a treatment.

What has been measured. In two English hospitals, about one admission in fifteen was caused by harm from a drug (Pirmohamed 2004).

An Israeli physician for the old examined seventy people who lived at home and took nearly eight drugs each. He advised them to stop more than half. Four in five of those drugs were stopped for good. Only one in fifty had to be started again. Nearly nine in ten of the patients said that they felt better (Garfinkel 2010).

Later trials by lot have shown that the method is safe. They have not shown that it lengthens life.

Chapter 38 gave the Hippocratic rule: to help, or at least to do no harm.

Read with the book on the body. Two of the book's four rules of cure apply. The second is to restore and not to add. The fourth is to taper slowly. The book cites a pooled analysis of people who stopped a drug against depression. A slow taper with support halved the risk of relapse, against stopping at once. That is as much as staying on the drug achieves (Konstapel 2026c).

What the group shows

Science is moving toward the layers of the old medicines. It now studies rhythm, the surround, the first state of a person, the reading of signs, and the whole.

It has measured more than it has cured. The firm treatments of this group are few and plain. They are a programme of food and walking, peanut in the first year of life, and fewer drugs in old age.

Several findings repeat an old teaching in numbers. The raw must ripen: vitamins cancel the gain of training. The state of the mother shapes the child: the Dutch famine. A living pulse varies. A person's place among others is part of his health: the British officials.

Two frameworks stand nearest to the theory of this book. One reads illness as a changed rhythm of a sound body. The other reads it as a misreading.

None has a place for the meeting. Parts II, III and VI put the meeting with the other half at the centre of healing. Not one of the twenty-five frameworks has a word for it.

A11. Other ways of diagnosis

What the group holds

The eighteen entries of this group are ways of finding out what is wrong. Ten are methods of the last century and a half, most of them with a device or a laboratory. Eight are old readings by a trained person: the tongue, the pulse, the face, the type, the inner sight, the dream and the cast.

Three questions for a diagnosis

A treatment is tested by asking whether the patients get better. A way of diagnosis needs three questions.

1. Do two readers agree? Does one reader agree with himself on another day?
2. Does the reading agree with what is found by other means?
3. Does a patient who is treated by the reading fare better than one who is treated without it?

Chapter 74 named the third question as the one that matters most for the old medicines. It gave the two trials that have asked it (Bensoussan 1998; Furst 2011). The modern methods of this section have mostly been put to the first two questions. Most of them fail there.

Electroacupuncture according to Voll

Origin. The German physician Reinhold Voll began in 1953 to measure the electrical resistance of the skin at the points of Chinese needling. The patient holds a metal rod in one hand. The practitioner presses a blunt probe on a point of the other hand or of a foot, and reads a dial.

What it holds. Each point stands for an organ. A healthy point gives a steady reading near the middle of the scale. A reading that climbs and then falls back shows a troubled organ. An ampoule of a remedy is then placed in the circuit. If the reading steadies, the remedy suits the patient.

What has been measured. The reading depends on how hard the probe is pressed and on how moist the skin is. The practitioner controls the pressure. Blind tests are given under the next entry.

Section A3 described the treatment devices that grew out of the method.

Read with the book on the body. The book has nothing on the method. It has a law for every test. A test either misses a misfit or reads a fit as a misfit, and the one fault is lowered only at the cost of the other.

The Vega test

Origin. A German practitioner simplified Voll's method in the 1970s to one point and one reading. Shops and clinics offer it as a test for intolerance of foods.

What has been measured. British researchers took thirty volunteers. Half were allergic to house dust or to cats by the ordinary skin test, and half were not. Three trained operators made more than fifteen hundred tests with the device, without knowing who was who or what was in the ampoule. The device could not tell the allergic from the others. It could not tell the allergen from water (Lewith 2001).

Harm. People give up foods without cause. Children have been put on narrow diets on the strength of such a test.

Read with the book on the body. Nothing.

Kirlian photography

Origin. Semyon Kirlian was an electrician in the south of Russia. He found in 1939 that an object laid on photographic film over a plate at high voltage leaves an image with a glowing fringe. A fingertip, a leaf and a coin all do so. The method became known in the West in 1970.

What it holds. The fringe is said to show the life field of the body, and its gaps and flares the state of the organs.

What has been measured. The fringe is a discharge in the air round the object. American researchers showed in 1976 that the moisture of the skin accounts for nearly all of its changes (Pehek 1976). Pressure, voltage and the time of exposure do the rest. A dry finger and a damp one of the same person give different pictures.

Read with the book on the body. Nothing.

Applied kinesiology

Origin. The Detroit chiropractor George Goodheart taught from 1964 that the strength of a muscle shows the state of the body.

How it finds the illness. The patient holds out an arm, and the practitioner presses it down. The patient then holds a food or a remedy, or puts it under the tongue, or touches a place on the body. If the arm now gives way more easily, the food harms, or the place is troubled. If it holds better, the remedy helps.

What has been measured. Three experienced practitioners examined eleven people for a lack of four nutrients. They did not agree with one another, with the laboratory, or with a device that measured the strength of the muscle (Kenney 1988). In a later trial, practitioners had to tell a vial of poison from a vial of salt water by the muscle test. They did no better than a guess (Schwartz 2014).

Why it seems to work. Both the tester and the patient know what is being tested. The tester presses a little harder or a little sooner, and the patient resists a little less, without either of them intending it. When neither knows what is in the vial, the effect is gone.

Read with the book on the body. Nothing.

Iridology

Origin. The Hungarian physician Ignaz von Peczely published a map of the iris in 1881. The story goes that as a boy he broke the leg of an owl by accident and saw a dark mark appear in its eye. An American chiropractor drew the chart that is most used today.

What it holds. The iris is a map of the body. The right eye shows the right half and the left eye the left. Each organ has its sector, and a fleck or a ring in a sector shows a weakness of that organ.

What has been measured. Three leading iridologists were shown photographs of the eyes of 143 people, of whom 48 had diseased kidneys. They did no better than chance. One of them found kidney disease in 88 per cent of the healthy (Simon 1979).

A Dutch researcher showed the eyes of 78 people to five leading iridologists of his country. Half of the 78 were to have the gall bladder removed the next day, and half were healthy. The five were right in about half of the cases, and they did not agree with one another (Knipschild 1988).

The pattern of the iris is fixed in the first year of life and does not change afterwards. It is used for that reason to identify people at borders.

Read with the book on the body. Chapter 3 gave the book's law that a small closed form can meet a large one as a whole. The law does not say that any map of the body is true. This map has been tested, and it is not.

Hair mineral analysis

Origin. Hair grows about a centimetre a month and keeps a record of what was in the blood. Courts use it to prove a poisoning or the use of drugs. Researchers use it to follow mercury from fish.

What it holds. Commercial laboratories analyse a lock of hair for twenty or thirty minerals. They report which are too low and which too high, and they advise supplements.

What has been measured. Californian researchers cut one lock from one healthy volunteer, divided it, and sent it to six laboratories. For twelve minerals the highest result was more than ten times the lowest. The advice of the laboratories conflicted (Seidel 2001). A study of 1985 with thirteen laboratories had found the same.

Shampoo, dye, sweat and dust change the mineral content of hair more than food does.

Read with the book on the body. Nothing.

Live blood analysis

Section A1 described this method with the teaching of Enderlein, from which it comes. A drop of fresh blood is shown to the client on a screen, under dark-field lighting. The practitioner reads the shapes as signs of acidity, parasites or a weak defence.

What has been measured. Two German studies tested it. Readers did not agree with one another on the same blood (Teut 2006). In the other study a reader could not tell the blood of patients with cancer that had spread from the blood of the rest.

The shapes that are read come from the drying of the drop, from the pressure of the cover glass and from the clumping of platelets.

Read with the book on the body. Nothing.

Thermography

Origin. An infrared camera makes a picture of the warmth of the skin. A Canadian surgeon reported in 1956 that the skin over a cancer of the breast is warmer than the skin beside it.

What it holds. Private clinics offer the camera as a safe way of finding cancer of the breast early, without X-rays and without pressure on the breast.

What has been measured. The method was tried beside the X-ray in a large American screening project of the 1970s. It was dropped because it missed too many cancers. Later studies of its accuracy vary widely. Health authorities warn that it is no substitute for the X-ray.

Harm. A woman who is told that her picture is clean may leave a lump alone.

Read with the book on the body. Nothing.

Quantum resonance analysers

The client holds a metal rod for a minute. A program then prints several dozen pages of values: vitamins, minerals, the state of each organ, the age of the skin. The boxes are cheap and are sold to shops and salons.

No test of them has been published. Nothing known to physics would let a rod in the hand read the vitamins of the blood.

Read with the book on the body. Nothing.

The pendulum and radionic diagnosis

Origin. The forked rod of the water finder is known from the mines of Germany in the sixteenth century. French and Swiss priests made the medical use of the pendulum popular

about 1930. Section A1 described the dowsing of houses, and section A3 the boxes of radionics.

How it finds the illness. The practitioner holds a small weight on a thread over the patient. A photograph, a lock of hair or a list of remedies will also serve. He asks a question in thought. The pendulum swings one way for yes and another for no.

What has been measured. The French chemist Chevreul showed in 1833 why a pendulum swings. He held one over a dish of mercury, and it swung. When his eyes were bound, it stopped. The hand moves, by an amount too small to feel, in the way that its owner expects.

Six British homeopaths who used the pendulum were given 156 pairs of bottles. One of each pair held a homeopathic remedy and the other held none. They chose the right bottle in 48 per cent of the pairs (McCarney 2002).

Read with the book on the body. Nothing.

Tongue diagnosis

Chapter 49 described the Chinese reading of the tongue: the colour of its body, its shape, its coat and its moisture. Chapters 58 and 63 gave the Indian and the Tibetan readings.

What has been measured. Chapter 49 gave a study of seventeen clinicians. Each agreed well with himself on another day. Between them, agreement was moderate for the coat and only fair for the body of the tongue (Wang 2020). Whether a treatment chosen by the tongue helps more than one chosen without it has not been tested.

The hospital reads the tongue as well. It is pale when the blood is thin, and smooth and red when iron or one of the vitamins is lacking. It is dry in thirst, and blue when the blood carries too little oxygen.

Read with the book on the body. The book has nothing on the tongue.

Pulse diagnosis

Chapter 50 described the Chinese pulse at three places and three depths on each wrist. It also gave what has been measured. Where readers use the classical images as each has learned them, they agree poorly. Where a group first settles what each word means, agreement is acceptable (Bilton 2016).

Read with the book on the body. Chapter 3 gave the book's two kinds of reading. A window shows only that a matter nearby is open. A reader that meets finds the place. The physician with three fingers on the artery attempts the second kind. The book also has, as a measured fact, the lock of heart and breath that such a reader may feel.

The Ayurvedic pulse

Chapter 58 described it. Three fingers lie on the artery of the wrist, and each reads one of the three faults. Wind moves like a snake, bile leaps like a frog, and phlegm glides like a swan. The same chapter gave a study in which fifteen physicians felt the pulse of twenty people twice. The agreement of a physician with himself was low (Kurande 2013).

Read with the book on the body. The book computes where a reader that meets can find an error. It does not compute the three faults.

Facial diagnosis

Origin. Chapter 49 described the Chinese looking, which begins with the face: its spirit, its colour and its lustre. A popular Chinese art also reads character and fortune from the face. Europe had the same art, which lost its standing in the nineteenth century.

What it holds. Each zone of the face stands for an organ. A colour, a line or a swelling in a zone shows the state of that organ.

What has been measured. Nothing supports the maps of zones. That a face shows illness is beyond doubt. A physician knows the still face of the shaking palsy, the round face of too much adrenal hormone and the yellow of the liver. Many inherited syndromes shape the face. A program that was trained on seventeen thousand photographs names the right syndrome among its first ten guesses in nine cases out of ten (Gurovich 2019).

Read with the book on the body. Nothing.

Constitutional typing

Origin. Typing is old. Chapter 39 described the nine temperaments of Galen, and chapter 55 the nine constitutions of modern Chinese medicine. Chapter 57 gave the three faults of India, and chapter 65 the four kinds of Korea. Section A3 gave the types of homeopathy. European psychiatrists of the twentieth century proposed types of body build, which have been given up.

What it holds. People differ from birth in a few lasting ways. The type decides which illnesses a person tends toward, which food suits him and which treatment he bears.

What has been measured. Chapter 57 gave the finding that the three Indian types differ in the activity of many genes (Prasher 2008). Chapter 58 gave the weak point: two physicians often assign different types to one person. Whether treatment by type does better than treatment without it has hardly been tested.

Hospital medicine has come to a typing of its own. People differ by inheritance in how fast they clear a drug, and the dose of some drugs is now set by a test of the genes.

Read with the book on the body. To type a person is to follow the book’s first rule of cure: read the state before acting.

Medical intuition

Origin. The healer who sees into the body is the oldest reader in this book. Chapter 11 described the San healer who sees into the bodies of the people round the fire and sees where the sickness sits. In the modern West the best known was Edgar Cayce of Kentucky, who died in 1945. He lay down, was given the name and address of an absent person, and spoke a diagnosis and a prescription. More than fourteen thousand of his readings were taken down, and about two thirds concern health.

What has been measured. The few blind tests of people who claim such sight have not confirmed it.

A more modest form has been measured in ordinary practice. Belgian family physicians recorded, for nearly four thousand sick children, whether they had a feeling that something was wrong although the examination was reassuring. That feeling raised the odds of a grave infection twenty-fivefold (Van den Bruel 2012). The feeling arose most often from the worry of the parents and from the look of the child.

Read with the book on the body. The book says that its laws of reading give no number for a mind.

Dream diagnosis

Origin. Chapter 37 described the dream in the Greek sanctuary. Chapter 38 gave the Hippocratic book that reads dreams as signs of the body, and chapter 39 the dreams by which Galen was guided. Chapter 72 counted sleep and dream as the eighth point on which the old medicines agree.

What has been measured. One finding stands out. In healthy sleep the muscles are slack while a person dreams. Some people lose this in later life. They shout, strike and kick in their dreams, which are often of being attacked. Sleep physicians of several countries followed 1,280 such people. Within twelve years nearly three quarters had developed the shaking palsy or a related disease of the brain (Postuma 2019).

A change in dreaming can thus announce a disease more than ten years before the hospital can find it.

Read with the book on the body. The word dream appears once in the book.

Diagnosis by divination

Origin. This is the diagnosis of most of mankind for most of its history. Chapter 19 described the Navajo diviner whose hand trembles. Chapters 25 to 28 described the cast of Ifá. Chapter 30 described the four tablets, the basket and the poison oracle. Chapter 32 described the Babylonian reading of the liver, chapter 44 the oracle bones of the Shang, and chapter 70 the

knots of the Caroline Islands. In Europe, playing cards have been used for the same purpose since the eighteenth century.

What it finds. Chapter 30 noted what the diviner's reading shows: a set of relations. It is a picture of a household, and it names where in the wider order a matter lies open. It does not name a part of the body. Chapter 73 observed that the great oracles count on the ladder of two: 2, 16, 64 and 256.

What has been measured. Nothing on whether the reading is right. Chapter 74 listed two tests that fit any reader. Does he agree with himself an hour later? Does a remedy chosen by his reading do more than one chosen by lot?

Read with the book on the body. Nothing.

What the group shows

The devices fail the first two questions. The skin probe, the iris chart, the muscle test, the hair laboratory, the dark-field screen and the pendulum have all been tested blind. None did better than chance, or agreed with itself.

They are a person's readings, presented as an instrument's. In the probe, the muscle test and the pendulum, the hand of the operator makes the result. He does not know that he does so.

The moving hand is an old reader. The Navajo diviner does not claim to measure a vitamin. He names a cause in the wider order, and the family acts on it. The modern muscle test uses the same movement and claims to read chemistry. That claim can be tested, and it fails.

The harm is of two kinds. A false alarm sells a treatment. A false all-clear lets an illness grow.

The old readings have been tested less, and less fairly. Readers of pulse, tongue and type agree poorly where each uses his own images. They agree better where a school has fixed its terms. The third question has been asked twice.

The hospital's own best instrument is old. British physicians recorded how they reached the diagnosis of eighty new patients. In sixty-six the patient's account alone gave it. The examination added seven and the laboratory seven (Hampton 1975). Asking is the third of the four Chinese examinations.

What Appendix A shows

The eleven sections have set out three hundred theories and methods. A few findings hold across them.

The firm results are plain. Six practices have the best evidence. They are exercise, slow movement with the breath, carrying a newborn on the skin, light in the morning, a

programme of food, and fewer drugs in old age. Most of them are free. Most act on rhythm and on the surround.

Touch and attention do real work. Massage, the hand on the skin of an infant and the long consultation have measured effects. The explanations that their schools give for them have mostly not been confirmed.

The founders' explanations have fared worse than their practices. Slow breathing helps, and the lost gas of its teacher was not the reason. The needle eases pain, and it does so beside the classical points as well as on them.

What claims to act without a carrier has not been confirmed. Three cases stand for many. Remedies diluted past the last molecule, treatment sent to an absent person and prayer by strangers show no clear effect in the larger and stricter trials.

The gravest harm comes from leaving the hospital. Children have died of illnesses that are easily cured, because prayer, a diet or a remedy took the place of treatment. The second harm is poison: heavy metals, liver-toxic plants and hidden drugs in remedies.

The best of the old medicines keep both houses open. Chapters 19, 55 and 70 described peoples who use their own healers and the hospital side by side.

Almost nothing here has been tested as it is practised. The trial takes one remedy for one named illness. The practitioner reads a person and fits the treatment to him. Chapter 74 set out the design that tests that.

B. The three hundred beside the book on the body

What this appendix is

Part I of this book rests on a book that computes a body from the rule of closure (Konstapel 2026c). Before the present book was written, each of the three hundred theories and methods of Appendix A was laid beside that book. Three questions were put to each. Does the book hold a measured fact on the method? Does one of its laws, its four rules of cure or its five layers bear on what the method claims? Or is the book silent?

The answers close the entries of Appendix A in a line or two. This appendix gives them in full, so that a reader can check each against the book on the body. The sign § and the chapter numbers in the last column refer to that book and not to this one.

How to read the table

Layer. The layer of cure at which the method acts. Chapter 4 gave the five layers.

Layer	What falls under it
Mesh	Acting on a tissue or a foreign organism as a whole
Chain	Giving, stopping or correcting one step of the body’s chemistry
Reading	Changing what the body’s own test reads, or how strongly it answers
Phase	Restoring rhythm, timing, use or a learned pattern
Surround	Changing what a person is exposed to

Form. The form of failure that the method addresses. Chapter 4 gave the eight forms and their letters.

Letter	Form	Letter	Form
S	Seam	C	Carrier
D	Direction	W	Wrong closure
U	Unread	F	Frame and copy
O	Over-read	R	Drift

A dash means that the comparison named no layer or no form.

The last column. It says what the book on the body has on the entry. The words “nothing in the book” mean that a search of its text found neither the method nor its claim. They do not mean that the method is without worth. Appendix A gives what has been measured of each.

The outcome in numbers

Section	Entries	The book is silent	A law, rule or layer bears on it	The book holds measured facts	A law limits or opposes it
B1. Historical theories of what causes illness	22	5	12	3	2
B2. Traditional medical systems	26	15	9	0	2
B3. Fields, frequencies and information	44	31	10	3	0
B4. Structure and touch	22	11	10	1	0
B5. Nutrition, terrain, cleansing and natural cure	41	24	13	4	0
B6. Plants and remedies outside the pharmacy	18	11	4	3	0
B7. Mind, feeling and body	35	23	7	5	0
B8. Breath, movement, rhythm and nature	28	11	3	14	0

Section	Entries	The book is silent	A law, rule or layer bears on it	The book holds measured facts	A law limits or opposes it
B9. Spiritual and religious healing	21	19	2	0	0
B10. Scientific frameworks beyond the single compound	25	9	12	4	0
B11. Other ways of diagnosis	18	14	4	0	0
All	300	173	86	37	4

B1. Historical theories of what causes illness

No.	Theory or method	Layer	Form	What the book on the body has
1	Humorism (Hippocrates, Galen)	Phase and Mesh	-	Restoring balance by regimen matches rule 2 (restore, do not add). Bleeding and purging remove. The book holds no measure of humours. Removing blood is in the book as first-line treatment in two blood disorders (phlebotomy, layer Mesh, ch. 25).
2	Miasma theory	Surround	-	Clean air, sewers and sanitation are the book's Surround layer. Surround is the first treatment in only 23 of 375 atlas entries; in infectious entries 0 of 42.
3	Contagion theory (Fracastoro)	-	U	A foreign organism is form U (unread) in the book: 5.9% of 19,683 nine-place strands have no closed window. Passing by contact is not a law in the book.
4	Terrain theory (Béchamp)	-	U, O	The state of the host decides: rule 1 reads the state first, and a form returns by itself while fewer than one third is wrong (§19.0a).
5	Pleomorphism (Enderlein)	-	-	The book holds no law on microbes that change form with the host.
6	Vitalism	-	-	A vital principle has no object in the book. The book uses only closure and direction.
7	Brunonian system (John Brown)	Chain	D	Stimulants and sedatives add from outside. Rule 2: only the closing change restores; any other single change leaves the form open. Antidepressants: relapse after stopping (§53).
8	Animal magnetism (Mesmer)	-	-	Passes of the hands as coupling: coupling keeps a closed rhythm but cannot close an open one (0 of 177,066).
9	Focal infection theory	Mesh	U	Removing the focus is the Mesh layer. Where Mesh is the first treatment, the illness is curable in 96 of 138 entries (70%).
10	Autointoxication	Mesh	U	No measure in the book. Bowel cleansing removes without a named organism, which the book's Mesh definition does not cover.

No.	Theory or method	Layer	Form	What the book on the body has
11	Thomsonian medicine	-	-	The book holds nothing on cold as single cause or on steam and emetics.
12	Eclectic medicine	-	-	The book also takes its cures from medicine as it stands; “the theory found none of them” (§53, preface).
13	Spagyric medicine (Paracelsus)	Chain	-	“The dose makes the poison” matches the book’s dose laws: §52 (cure) and §19.0c (load). Both rest on an assumed rule of return. A prediction drawn from §52 was withdrawn as worded, since therapy spread over months lasts.
14	Iatrochemistry (alchemical medicine)	Chain	-	The book also starts from chemistry. It reads chemistry as the first depth and puts the body in depths above it.
15	Pneuma / vital breath (Stoic & ancient medicine)	Phase	D	Breath with the heart: heart and breath lock in whole numbers above chance (adjusted 7.9% vs 5.0%), strongest in deep sleep (§18.1). “Pneuma” and “tonos” are not in the book.
16	Methodism (ancient school)	-	S, C	“Pores” and their constriction have no object in the book. Nearest: carriers at seams (§16.4).
17	Empiricism (ancient school)	-	-	The book marks every statement as computed, measured or reading, and keeps its misses. It does not take observation as cure.
18	Solidism / pathology of solids	Mesh	S	Lesions and tension of solids are form S: something fixed lodged in something living (plaque, scar, fibrosis).
19	Germ theory (classical form)	Mesh	U	Mesh is first treatment in 138 of 375 entries and in 26 of 42 infectious entries (§51.1).
20	Constitutional / diathesis theory	-	F	Inherited constitution: form F, an error carried into daughter cells (§13). “Strengthen the constitution” has no counterpart.

No.	Theory or method	Layer	Form	What the book on the body has
21	Miasm (Hahnemann's chronic disease theory)	-	F	Inherited and deeper than germs: reading with form F (§21.1). Hahnemann's three miasms are not in the book.
22	Grid / ley-line and place theories	Surround	-	Moving or shielding the sleeper is the Surround layer (change exposure). The book holds no measure of such places.

B2. Traditional medical systems

No.	Theory or method	Layer	Form	What the book on the body has
23	Traditional Chinese medicine	Phase and Chain	-	The book has no object for qi, yin or yang. Nearest: carriers at seams (12 of 72 close) and rhythm. Two drugs from this tradition are in the atlas: artemisinin combination therapy (malaria, Mesh) and arsenic trioxide with retinoic acid (leukaemia, Chain).
24	Five phases (Wu Xing)	-	D	Five phases against the book's period three: every closed strand repeats with period 3 (§16.1). Five tests that looked for three as an amount all missed.
25	Acupuncture	-	U	Needles at set points: the book says only a change at the place of the error closes the ring (0 of 81 open, against 54.0). The book holds no acupuncture trial.
26	Qigong	Phase	D	Slow movement, breath and attention fit the Phase layer; heart–breath locking is measured (§18.1). Qi is not in the book.
27	Ayurveda	Phase and Chain	D, R	Daily rhythm and diet fit the Phase layer and §19. Three doshas: three as an amount did not show in five tests (§18).
28	Siddha medicine	Chain and Phase	-	Nothing in the book on Siddha. Same remark on "three" as for Ayurveda.
29	Unani medicine	Phase	-	Nothing on four humours. Regimen and diet fit Phase.
30	Traditional Tibetan medicine (Sowa Rigpa)	Phase	-	Nothing on Tibetan wind, bile and phlegm.
31	Kampo	Chain	-	Formulas matched to the patient's pattern: rule 1, read the state first.
32	Traditional Korean medicine	-	-	Four constitutions: no book object. Rule 1 reads state, not type.

No.	Theory or method	Layer	Form	What the book on the body has
33	Traditional Mongolian medicine	-	-	Nothing in the book.
34	Traditional African medicine	Phase and Surround	-	Natural, social and spiritual causes at once: the book combines up to three forms per illness (§21.1).
35	Shamanism	-	-	The book says its laws of reading give no number for a mind and do not say what it is like to read (§20.1).
36	Curanderismo	-	-	Fright as cause: nothing in the book.
37	Native American healing (medicine man)	Phase	-	Community, nature and spirit as harmony: nothing in the book.
38	Rongoā Māori	-	-	Nothing in the book.
39	Jamu	Chain	-	Nothing in the book on herbal drinks.
40	Traditional Persian medicine	Phase and Surround	D	Air, food, movement, sleep, excretion, emotion: sleep and movement fit Phase; the book measures sleep and exercise.
41	Hildegard medicine	Phase	-	Nothing in the book.
42	Moxibustion	-	-	Nothing in the book on warming points.
43	Traditional healers of Southern Africa (sangoma / inyanga)	-	-	A diviner who reads and a herbalist who treats: the book says a reader locates but needs carriers to pass on what it read (§20.1, §16).

No.	Theory or method	Layer	Form	What the book on the body has
44	Aboriginal bush medicine (Australia)	-	-	Nothing in the book.
45	European herbalism / folk medicine	Chain	-	Doctrine of signatures: nothing in the book.
46	Hippocratic medicine	Phase	U	Aiding the healing power of nature by rest fits §19.0a: a form returns on its own while fewer than one third is wrong, and rest is needed.
47	Galenic medicine	Chain	D	Drugs of opposite quality add a counter-direction. Opposite directions never join (0 of 18); restoring beats adding.
48	Ayurvedic panchakarma	Mesh	U	Expel, then rebuild: Mesh, then Phase. The dose law (§52) needs the rebuilding to pass half between two returns. A prediction drawn from it was withdrawn as worded, since therapy spread over months lasts.

B3. Fields, frequencies and information

No.	Theory or method	Layer	Form	What the book on the body has
49	Homeopathy (Hahnemann)	-	-	Nothing in the book on dilution. Rule 2 is the only near statement.
50	Homotoxicology (Reckeweg)	Chain	U	Nothing in the book on toxins in six phases.
51	Anthroposophic medicine (Steiner)	-	-	Levels of the human being: in the book body and mind are depths of one net (preface), no body part assigned to a ring (§18).
52	Bioresonance therapy	Phase	-	Giving back the inverse of what is wrong: the one closing change at the place is the inverse (§5.1). Anywhere else it leaves the ring open.
53	Rife frequencies	Mesh	U	Nothing in the book on resonant frequency of microbes.
54	Radionics	-	-	Nothing on distance. The book says only what ends can deliver: carriers decay (§16).
55	Orgone (Reich)	-	-	Nothing in the book.
56	Reiki	-	-	Nothing in the book.
57	Therapeutic touch	-	-	Nothing in the book.
58	Energy medicine	-	-	Nothing in the book. “Energy” is the entry’s word.
59	Biofield	-	-	Nothing in the book.
60	Pulsed electromagnetic field therapy (PEMF)	Phase	-	Nothing in the book; “magnetic” appears twice in the closing chapter only.
61	Magnet therapy	-	-	Nothing in the book.
62	Bioelectromagnetics	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
63	The Body Electric (Robert O. Becker)	-	-	Growth steered by weak electricity in the tissue: tissue law, return each unit to the one word and phase of its neighbours (§14, §50).
64	Bioelectric patterning (Michael Levin)	-	-	A plan of shape stored across cells fits the tissue law: one word, one phase for all units (§14). No voltage in the book.
65	Biophotons (Popp)	-	-	The book names light as carrier between atoms (§16). No biophoton claim in the book.
66	Coherent oscillations (Fröhlich)	-	-	Whatever closes, repeats: rhythm is the first law of the living body in time (§16.1). Metabolic drive is not in the book.
67	Water memory (Benveniste)	-	-	Nothing in the book.
68	Global Scaling (Hartmut Müller)	-	-	The book tests logarithmic ladders: body sizes 49.5% vs 50% chance; rhythms 0.216 vs 0.25 (p=0.24); seven treatment frequencies 0.285 (p=0.74). The ladder orders, it does not select.
69	Scalar waves (Konstantin Meyl)	-	-	Nothing in the book.
70	Millimetre-wave therapy (Russian field medicine, Devyatkov)	Phase	-	Nothing in the book.
71	Sound and music therapy	Phase	D	An outside rhythm can hold a closed rhythm but cannot close an open one (§16.2). Heart–breath locking is measured (§18.1).
72	Cymatics	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
73	Light therapy	Phase	D	Bright light: effect 0.53 non-seasonal (3 studies), 0.84 seasonal (8 studies, Golden 2005); of 122 patients, half responded to light against a third on placebo (Lam 2016). Read as coupling, not as return (§16.2).
74	Photobiomodulation (low-level laser)	Chain	-	Nothing in the book beyond laser in eye disease (ch. 31).
75	Chromotherapy	-	-	Nothing in the book.
76	Crystal healing	-	-	Nothing in the book.
77	Polarity therapy (Randolph Stone)	-	-	Nothing in the book.
78	Chakras	-	-	Nothing in the book. Seven centres: no counterpart.
79	Qi, prana and life force	-	-	Nothing in the book.
80	Morphic resonance (Sheldrake)	-	-	Habit passed on across time and space: book has only copying through a unique partner (§13).
81	Quantum healing (Chopra)	-	-	Nothing in the book.
82	Auriculotherapy (Nogier)	-	-	A map of the whole on the ear: the book computes that a ring of depth 3 fits in a ring of depth 3k in k places; a small reader recognises the whole once (§20.1).
83	Neural therapy (Huneke)	Chain	S	Scars as disturbing areas: scar is a named form S (fixed in living, §21.1).

No.	Theory or method	Layer	Form	What the book on the body has
84	Bioelectronic medicine	Phase	-	Stimulating nerves: the book reads the nerve impulse as an opening that moves in two changes (§16.3). Vagus is not treated. Electroconvulsive therapy: more effective than sham (effect −0.91; 6 trials, 256 patients) (§53).
85	Healing Touch	-	-	Nothing in the book.
86	Pranic healing	-	-	Nothing in the book.
87	Biomagnetism (Goiz)	Mesh	-	Nothing in the book on magnets and pH.
88	Aura healing	-	-	Nothing in the book.
89	Distant healing	-	-	Nothing on distance. The book says only what ends can deliver (§16).
90	Singing bowls and sound baths	Phase	D	Resonance and deep rest: heart–breath locking is strongest in deep sleep (+0.056 deep, +0.011 light, 0.00 REM and wake, §18.1).
91	Scenar / TENS-family devices	Phase	-	Nothing in the book.
92	Aura reading and aura soma	-	-	Nothing in the book.

B4. Structure and touch

No.	Theory or method	Layer	Form	What the book on the body has
93	Chiropractic (Palmer)	Phase	S	Positioning is in the Phase definition. The book holds no trial of spinal adjustment. In the atlas: Epley repositioning manoeuvre for vertigo, layer Phase (ch. 32). “Manipulation” has no hit.
94	Osteopathy (Still)	Phase	S	Rule 4: prefer what moves with the body over fixed inputs. Structure that moves freely is form S turned the other way. Exercise and physiotherapy: trial evidence comparable to amitriptyline, with fewer adverse effects, in a headache entry (ch. 30).
95	Craniosacral therapy	-	-	Nothing in the book.
96	Reflexology	-	-	Zones that map the organs: the same small-reader-of-large-form count as the ear (§20.1).
97	Rolfing (structural integration)	Phase	S	Fascia that holds posture: form S. The book does not mention fascia.
98	Alexander technique	Phase	W	Stop the habit: rule 2, restore rather than add. Phase includes learned patterns.
99	Feldenkrais method	Phase	W	New patterns by slow movement: Phase layer (learned pattern).
100	Body psychotherapy and bioenergetics (Reich, Lowen)	Phase	W	Held tension as chronic closed state is form W (stable wrong closure, chronic pain).
101	Shiatsu	-	-	Nothing in the book.
102	Tui na	Phase	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
103	Myofascial release	Phase	S	Restricted fascia: form S. The book holds no measure.
104	Bowen technique	Phase	-	Pauses so that the body can reset itself: the return must run to completion for the dose law to hold (§52, assumed). A prediction drawn from that law was withdrawn as worded.
105	Trager approach	Phase	-	Nothing in the book.
106	Dorn method	Phase	-	Nothing in the book.
107	Breuss massage	-	-	Nothing in the book.
108	Metamorphic technique	-	F	Patterns laid down before birth: form F is in the book; touch on feet is not.
109	Massage therapy	Phase	C	Massage is a simple means in two atlas entries: warm compresses and lid massage (eye, ch. 31) and uterine massage after birth (ch. 39). Whole-body massage: not in the book.
110	Trigger point therapy (Travell & Simons)	-	U	Treat the trigger point, not the pain site: the book computes that a window shows only that something nearby is open, and that only the change at the place closes (§20.1, §5.1).
111	Acupressure / shiatsu	-	-	Nothing in the book.
112	Lymphatic drainage	-	C	Stagnant lymph as failing carrier fits form C. Pumping strokes are not in the book.

No.	Theory or method	Layer	Form	What the book on the body has
113	Zero balancing	-	-	Nothing in the book.
114	Naprapathy	-	C	A nerve or a vessel that is held up is form C: a carrier that does not arrive (ischaemia, conduction block).

B5. Nutrition, terrain, cleansing and natural cure

No.	Theory or method	Layer	Form	What the book on the body has
115	Naturopathy	Phase and Surround	R	Healing power of its own: §19.0a self-return while fewer than one third is wrong. Living wrongly: Phase and Surround layers; prevention first (§54).
116	Nature cure	Phase and Surround	-	Air, sun, water, simple food, fasting: Surround and Phase layers. Oral rehydration with salt, sugar and clean water is “the whole treatment for the overwhelming majority” in diarrhoeal entries (ch. 23, layer Chain).
117	Kneipp cure	Phase	D	Order of life is rhythm: the book places the day at ladder position 43.50 and says the body must place its sleep in the day.
118	Hydrotherapy	-	-	Nothing in the book on baths.
119	Orthomolecular medicine (Pauling)	Chain	C	Giving a molecular step is the Chain layer. Where Chain is the first treatment, the illness is held in check and not cured in 52 of 118 entries (44%): “a treatment that must be continued for life does not cure.”
120	Megavitamin therapy	Chain	C	Same as 119. The book holds 42 vitamin mentions, none a megadose.
121	Gerson therapy	-	-	Nothing in the book.
122	Budwig protocol	Chain	-	Nothing in the book.
123	Macrobiotics	Phase	-	Nothing in the book. Structured eating is in the Phase definition.
124	Hay diet	Phase	-	Nothing in the book. Diets as Surround in the atlas: low-FODMAP in irritable bowel, strict gluten-free in coeliac disease (ch. 36).

No.	Theory or method	Layer	Form	What the book on the body has
125	Alkaline diet	Chain	-	Nothing in the book. “Acid” there means amino acids.
126	Raw food therapy (Bircher-Benner)	-	-	Nothing in the book.
127	Detoxification	Mesh and Surround	U	Nothing in the book on cleansing diets.
128	Colon cleansing	-	-	Nothing in the book.
129	Chelation therapy (alternative use)	Mesh	-	The book lists iron chelation with transfusion in a blood disorder at the Mesh layer, as a treatment that holds the illness in check (ch. 25). Chelation for heart disease: not in the book.
130	Therapeutic fasting (Buchinger)	Phase	R	Fasting so that the body can restore: the return must come within a bound set by the size of the form (§19.0b). The book holds no fasting trial.
131	Fasting-mimicking and time-restricted eating	Phase	R	Periods without food as periods of return: the book’s bound for drift is every 2, 15 or 72 fast periods for 9, 27 or 81 places (§19.0b).
132	Metabolic theory of cancer (Warburg, Seyfried)	Chain	-	Nothing in the book.
133	Ancestral diet (Weston A. Price)	Surround	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
134	Evolutionary mismatch	Surround and Phase	D	A gap with modern living: the day is imposed from outside; work at night is classed as a probable cause of cancer (§19).
135	Functional medicine	-	-	A changed network and root causes: the book names one primary form per illness and up to two secondary (§21.1).
136	Parasite theory (Hulda Clark)	Mesh	-	Nothing in the book on one cause of all illness. The book keeps eight forms.
137	Candida hypersensitivity	-	-	One mention of Candida in the book.
138	Leaky gut	-	-	Nothing on a permeable gut wall. Membrane law: 8 of 9 bilayers asymmetric (§12).
139	Adrenal fatigue	-	R	Wear from repeated strain is form R: a return that falls behind (§21.1).
140	Multiple chemical sensitivity	Surround	O	Healing by avoidance is Surround. Reactions to harmless outside forms fit form O, the over-read, for which the book's rules hold no object. Avoidance diets as Surround: gluten-free, low-FODMAP (ch. 36).
141	Ozone therapy	-	-	Nothing in the book.
142	Blood type diet	-	-	Nothing in the book.
143	Acid–base medicine	Chain	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
144	Systemic enzyme therapy	Chain	-	Enzymes are in the Chain definition. Enzyme replacement appears in the atlas (ch. 27, 36).
145	Probiotic and microbiome therapy	-	U	Faecal transfer is not in the book. “Faecal-oral” there is a route of infection.
146	Molecular hydrogen therapy	Chain	-	“Hydrogen” in the book is the atom that sets the unit.
147	Autologous blood therapy	Reading	-	Stimulating the immune system is the Reading layer. No measure in the book.
148	Isopathy	Reading	U	Venom immunotherapy lowers the risk of a next general reaction to a sting from roughly 40–60% to 5–10% (ch. 26): the cause itself as remedy, in measured doses, at the Reading layer. Dilution beyond the molecule: not in the book.
149	Sanum therapy (Enderlein)	Reading	-	Nothing in the book.
150	Raw food / living foods (Wigmore)	-	-	Nothing in the book.
151	Metabolic typing	-	-	Each person differently: rule 1, read the state first.
152	Wheatgrass and chlorophyll therapy	-	-	Nothing in the book.
153	F. X. Mayr cure	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
154	Schroth cure	-	-	Nothing in the book.
155	Seasons / food energetics (macro and TCM dietetics)	Phase	D	Eating in and out of season: seasons are part of the rhythm. Book: seasonal depression, 0.84 for light (§53).

B6. Plants and remedies outside the pharmacy

No.	Theory or method	Layer	Form	What the book on the body has
156	Herbal medicine (phytotherapy)	Chain	-	Many modern drugs came from plants: receptor drugs are in the Chain definition. Book: antidepressants beat placebo, odds ratios 1.37–2.13. Soluble fibre (psyllium or oats) works in irritable bowel, number needed to treat about 7; insoluble bran does not (ch. 36).
157	Aromatherapy	-	-	Nothing in the book.
158	Bach flower remedies	-	-	Nothing in the book.
159	Apitherapy	-	-	Nothing in the book.
160	Urine therapy	-	-	Nothing in the book.
161	Ethnomedicine and ethnobotany	-	-	Two medicines from old remedies are first treatments in the atlas: artemisinin combination therapy (malaria, layer Mesh) and arsenic trioxide with retinoic acid (leukaemia, layer Chain).
162	Psychedelic therapy	-	W	Opening rigid patterns: form W is a stable wrong closure; with one third or more wrong, the return can end on the wrong form (§19.0a). The book has no psychedelic trial.
163	Ayahuasca	-	-	Nothing in the book.
164	Ibogaine	Chain	W	Dependence is form W in the book. Ibogaine is not.

No.	Theory or method	Layer	Form	What the book on the body has
165	Medicinal mushrooms	Reading	-	Nothing in the book.
166	Chinese herbal medicine	Chain	-	Address the pattern, not the symptom: rule 1 and §5.1 (the change must be at the place of the error). In the atlas: artemisinin combination therapy (Mesh) and arsenic trioxide (Chain), both from Chinese remedies, both as single molecules.
167	Ayurvedic herbal medicine (dravyaguna)	Chain	-	Formulas matched to constitution and season: rule 1 and §19.
168	Cannabis as medicine	Chain	W	The book treats cannabis use disorder as form W (dependence). The medicinal claim is not in the book.
169	Tissue salts (Schüssler)	Chain	C	Minerals are in the Chain definition. Nothing in the book on potentised salts.
170	Gemmotherapy (plant stem cells)	-	-	Nothing in the book.
171	Colloidal silver and minerals	Mesh	-	Killing micro-organisms is Mesh by definition. Nothing in the book on silver.
172	High-dose vitamin C therapy	Chain	-	Nothing in the book.
173	Kombucha, kefir and fermented foods	Chain and Phase	-	Nothing in the book.

B7. Mind, feeling and body

No.	Theory or method	Layer	Form	What the book on the body has
174	Psychosomatic medicine	-	-	The book sets body and mind as depths of one net; mind is placed in the act of reading (§20.1).
175	Biopsychosocial model (Engel)	-	-	The forms combine (§21.1); mental illnesses carry social factors (ch. 28). Family interventions lower relapse in psychosis by an amount comparable to some drug effects; family-based treatment in adolescent anorexia: remission 49.3% vs 23.2% at twelve months (ch. 28).
176	Psychoneuroimmunology	Reading	-	Reading layer touches the immune test; the book does not treat stress and immunity.
177	Placebo and meaning response	-	-	In antidepressant trials most response also occurs on placebo (placebo dropout 28.7%, 265 trials); expectation, setting and number of visits drive it (§48.1).
178	Salutogenesis (Antonovsky)	-	-	“Sense of coherence” fits the book’s statement: health is a test that reads open windows and closes them fast enough, not the absence of open windows (§21.1).
179	Allostatic load (McEwen)	-	R	The cost of repeated adaptation is form R, a return that falls behind, and §19.0a, the limit of return by itself.
180	Polyvagal theory (Porges)	Phase	D	Autonomic states: heart–breath locking is the book’s one body test that holds (§18.1). Three states: the book’s register has three states (§17).
181	German New Medicine (Hamer)	-	-	Nothing in the book on conflict shock and fixed brain areas.
182	Simonton method	Phase	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
183	Metaphysical causes (Louise Hay)	-	-	Nothing in the book.
184	New Thought and mind cure	-	-	Nothing in the book.
185	Hypnotherapy	Phase	-	“Hypnotic” appears twice in the book, in sleep medicine.
186	Mindfulness-based stress reduction	Phase	-	Psychotherapy and behavioural methods are Phase. The book holds no mindfulness trial.
187	Family constellations (Hellinger)	-	F	Family interventions are in the atlas (psychosis relapse; adolescent anorexia 49.3% vs 23.2%), as work with the living family. Constellations across generations: not in the book.
188	EMDR	Phase	-	Trauma-focused psychotherapies are the first treatment in post-traumatic stress, at the Phase layer, and the illness is curable when treated (ch. 28). The book does not name EMDR.
189	Neuro-linguistic programming	-	-	Nothing in the book.
190	Somatic experiencing (Levine)	Phase	-	Trauma-focused psychotherapy is in the atlas at the Phase layer, curable (ch. 28). Release through the body: not in the book. “Energy” is the entry’s word.
191	Logotherapy (Frankl)	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
192	Social prescribing	Surround and Phase	-	Social factors in mental illness (ch. 28, 14 mentions). Referral to activity fits behavioural activation, non-inferior to CBT in 440 patients (§53). Naloxone in the hands of peers and family: relative risk 0.54 for overdose death (ch. 28).
193	Biofeedback	Phase	-	Seeing one's own signals first: rule 1. The book names biofeedback once, for dyssynergic defaecation (ch. 36).
194	Heart coherence (HeartMath)	Phase	D	Heart–breath locking above chance at rest (7.9% vs 5.0%, adjusted) and strongest in deep sleep (§18.1). The book's measure is n:1 locking, not HeartMath coherence. Heart-rate variability is lower in unmedicated depression (g −0.32 and −0.46, Koch 2019).
195	Art therapy	Phase	-	Nothing in the book.
196	Dance and movement therapy	Phase	-	Nothing in the book.
197	Laughter yoga	Phase	-	Nothing in the book.
198	Guided imagery and visualisation	Phase	-	Nothing in the book.
199	Positive affirmations	-	-	Nothing in the book.
200	Recall Healing and Total Biology	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
201	Regression therapy	-	-	Nothing in the book.
202	Past life regression	-	-	Nothing in the book.
203	Meditation	Phase	-	Nothing in the book.
204	Coué method	-	-	Nothing in the book.
205	Emotional Freedom Techniques (EFT / tapping)	-	-	Nothing in the book.
206	TFT (Thought Field Therapy)	-	-	Nothing in the book.
207	Psychodrama and gestalt therapy	Phase	-	Nothing in the book.
208	Journaling / expressive writing	Phase	-	Nothing in the book.

B8. Breath, movement, rhythm and nature

No.	Theory or method	Layer	Form	What the book on the body has
209	Yoga as therapy	Phase	-	Yoga g = −0.55 for depression (Noetel 2024), next to walking or jogging −0.62 and strength −0.49 (§53).
210	Tai chi	Phase	-	Osteoporosis entries (ch. 27, 37): exercise and Tai Chi against falls; Cochrane review of 59 trials, about 23% fewer falls; Tai Chi rate ratio about 0.81 (dagger: source figure not opened by the book).
211	Buteyko breathing	Phase	-	Controlled slow breathing reduces panic symptom frequency in trials; the book notes it is debated whether it is a coping aid or a subtle avoidance (ch. 28). Chronic over-breathing as cause: not in the book.
212	Breathwork (holotropic and others)	Phase	-	Same as 211: controlled slow breathing in panic (ch. 28). Heart–breath locking is measured (§18.1).
213	Wim Hof method	Phase	-	Nothing in the book.
214	Cold exposure	Phase	C, R	The book has cold as harm (hypothermia: cold overwhelms the control of temperature, “none of the eight forms”) and as treatment (cooling of the limbs during one cancer drug lowers nerve damage; cool water on burns). Hardening by cold: not in the book.
215	Heat therapy and sauna	Phase	-	Heat from a hot-water bottle or warm bath is comparable to NSAIDs for dysmenorrhoea pain in small randomised trials (ch. 37). Sauna: not in the book.
216	Balneotherapy and spa therapy	Surround	-	A warm bath as simple means for dysmenorrhoea pain (see 215). Mineral springs and spa cures: not in the book.

No.	Theory or method	Layer	Form	What the book on the body has
217	Heliotherapy (sunlight)	Phase	D	Rickets: “the simple means is the cure: sunlight” (ch. 27). Short sight: time outdoors is the best-supported factor that can be changed (ch. 31). Morning light outdoors: part of the treatment in the sleep-wake entries (ch. 29); bright light 0.53 and 0.84 (§53).
218	Nature therapy and forest bathing	Surround	-	Outdoor time lowers the incidence of myopia (ch. 31.1, direct trial evidence). Forests and green space: not in the book.
219	Earthing (grounding)	-	-	Nothing in the book.
220	Horticultural therapy	Phase	-	Nothing in the book.
221	Animal-assisted therapy	-	-	Nothing in the book.
222	Kangaroo care	Surround	C	Kangaroo mother care is classed Surround in the atlas (ch. 40: “the richest in the book for simple means”, evidence “first-rate”).
223	Chronobiology	Phase	D, R	The body must place its sleep in the day; the day sits at ladder position 43.50; a body against the day opens at least 1 window per waking (§19, §19.0).
224	Chronotherapy	Phase	D	Triple chronotherapy (36 hours awake, four days advancing the sleep phase, six months of morning light): 82 randomised, 60 completed; response 33% vs 16% at one week, 36% vs 14% at 26 weeks (Veale 2021, as the book on the body cites it). “For chronotherapy no such [relapse] figure exists” (§49). Test T4 (92-minute first cycle) withdrawn.

No.	Theory or method	Layer	Form	What the book on the body has
225	Infrared therapy	-	-	Nothing in the book.
226	Salt therapy (halotherapy)	-	-	Nothing in the book.
227	Oxygen therapy outside medical indications	-	-	The book's judges class supportive care such as oxygen as the class where the layer definitions do not decide (§51.1).
228	Whole-body cryotherapy	-	-	Nothing in the book.
229	Hatha yoga	Phase	-	Same as 209: yoga g = −0.55 (Noetel 2024).
230	Kundalini yoga	-	-	Nothing in the book.
231	Pranayama	Phase	D	Controlled slow breathing in panic trials (ch. 28); heart–breath locking above chance, strongest in deep sleep (§18.1).
232	Tension and trauma releasing exercises (TRE)	Phase	-	Nothing in the book.
233	Transformational breath / rebirthing	-	-	Nothing in the book.
234	Walking / pilgrimage	Phase	D	Walking or jogging g = −0.62 for depression (§53). Walking in rhythm over distance: Phase.

No.	Theory or method	Layer	Form	What the book on the body has
235	Exercise as medicine (movement deficiency)	Phase	-	Exercise in depression: g −0.62 (walking, jogging), −0.49 (strength) (§53). Low back pain: exercise is “the only consistently effective prevention” (ch. 37).
236	Fasting retreats and nature cures (combined)	Surround and Phase	-	Removing the person from the sick environment is Surround; rest and simple food are Phase.

B9. Spiritual and religious healing

No.	Theory or method	Layer	Form	What the book on the body has
237	Faith healing	-	-	Nothing in the book.
238	Laying on of hands	-	-	Nothing in the book.
239	Christian Science (Eddy)	-	-	Nothing in the book.
240	Spiritism (Kardec)	-	-	Nothing in the book.
241	Intercessory prayer	-	-	Nothing in the book.
242	Ho‘oponopono	Phase	-	Nothing in the book. The book mentions ritual once.
243	Psychic surgery	-	-	Nothing in the book.
244	Charismatic healing	-	-	Nothing in the book.
245	Exorcism and deliverance	-	-	Nothing in the book.
246	Spiritualism / spirit healing	-	-	Nothing in the book.
247	Soul retrieval	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
248	Ancestral healing (African and diaspora)	-	F	Nothing in the book beyond copying errors carried to descendants (§13).
249	Santería / Candomblé / Vodou healing	-	-	Nothing in the book.
250	Buddhist healing practices	Phase	-	Nothing in the book. The book names spiritual support once, in palliative care (ch. 44).
251	Mantra and chanting	Phase	D	Repetition of syllables: closed strands repeat; heart–breath locking (§16.1, §18.1). No mantra in the book.
252	Sufi healing and dhikr	Phase	-	Nothing in the book on dhikr.
253	Jewish healing traditions	-	-	Nothing in the book.
254	Pilgrimage to healing places (Lourdes, Santiago)	Phase and Surround	-	Nothing in the book.
255	Kabbalistic healing	-	-	Nothing in the book. The book's "word" is a word of three places.
256	Wicca and neo-pagan healing	-	-	Nothing in the book.
257	Near-death and spontaneous remission accounts	-	-	The book has a status for conditions that end without treatment: 56 of 375 first statuses (§51.2).

B10. Scientific frameworks beyond the single compound

No.	Theory or method	Layer	Form	What the book on the body has
258	Hygiene hypothesis and ‘old friends’	-	O	Allergy and autoimmunity are form O: the test reads a fit form or a harmless outside form as misfit. The rules hold no object for it. Simple means in the atlas: early introduction of allergenic foods in infancy (peanut, egg) from four to six months (ch. 26).
259	Microbiome	-	-	Nothing in the book.
260	Developmental origins of health and disease (Barker)	-	F	Conditions in the womb: form F, error laid down in development.
261	Epigenetics	-	-	Epigenetic appears twice in the book (ch. 24).
262	Evolutionary medicine	-	-	Nothing in the book.
263	Hormesis	Phase	R	A small dose of a stressor: §19.0c says that a load of at most N/3 − 1 per cycle never ends in a wrong closure when the return is complete; N/3 is the first load that can.
264	Inflammaging	-	R	Low lasting inflammation that grows with age: form R, wear and ageing as a return that falls behind. Frailty is form R with first treatment at the Phase layer (ch. 44).
265	Mitochondrial theory of ageing	-	R	Nothing in the book beyond a note that the ion carriers of the cell wall take a fifth to a quarter of the body’s turnover at rest.
266	Dynamical disease (Glass and Mackey)	Phase	D, R	Illness as a change in the rhythm of a control system: forms D and R; cure rule: re-place the body in the day (§50).

No.	Theory or method	Layer	Form	What the book on the body has
267	Loss of complexity (heart rate variability)	-	-	Heart-rate variability is lower in unmedicated depression: HF-HRV g = −0.32, RMSSD g = −0.46, 21 studies, 2,250 patients (Koch 2019, §48). The book also says a closed strand repeats with period 3 (§16.1); how variety and repetition go together is not worked out there.
268	Social determinants of health	Surround	-	Nothing in the book beyond social factors in mental illness.
269	Exposome	Surround	-	All exposures: Surround layer; the atlas grades 2,197 prevention measures (§54).
270	Network medicine	-	-	A change in a network, not in a single molecule: the book's organ laws (k kinds in one chain leave at least k − 1 open windows).
271	Positive health (Machteld Huber)	-	-	Ability to adapt: health is a test that closes open windows fast enough (§21.1).
272	Lifestyle medicine	Phase and Surround	-	Prevention first (§54); Phase is first treatment in 13 of 21 mental and 4 of 10 sleep-wake entries.
273	One Health	Surround	-	Nothing in the book.
274	Integrative medicine	-	-	The book also puts five layers side by side; none of its cures was found by the theory.
275	Systems biology	-	-	Same as 270.
276	Holistic / whole-person medicine	-	-	The person as unit: in the book a body is a depth and the unit at each depth is what closed one depth lower (preface).

No.	Theory or method	Layer	Form	What the book on the body has
277	Complexity science in medicine	Phase	R	Restore resilience: §19.0a. Variety against period 3: see 267.
278	Whole-plant / entourage pharmacology	Chain	-	Nothing in the book.
279	Biosemiotics	-	U, O	Illness as miscommunication between levels: unread or over-read forms (§17, §21.1); carriers pass on what a reader read.
280	Information medicine / quantum biology (speculative strand)	-	-	“Coherence” appears three times in the book.
281	Traditional knowledge systems as science	-	-	The book takes its facts as given from one source and marks that it did not check them.
282	Polypharmacy reversal / deprescribing	Surround	-	Slow taper with support: relapse risk 0.52, against 0.51 for continuing, each against stopping abruptly (Zaccoletti 2026, §53).

B11. Other ways of diagnosis

No.	Theory or method	Layer	Form	What the book on the body has
283	Electroacupuncture according to Voll (EAV)	-	-	Nothing in the book. Any test misses a misfit or reads a fit as misfit, with a trade-off (§21.2).
284	Kirlian photography	-	-	Nothing in the book.
285	Applied kinesiology	-	-	Nothing in the book.
286	Iridology	-	-	A small map of the whole: same count as the ear (§20.1). Nothing on the iris.
287	Vega test	-	-	Nothing in the book.
288	Tongue diagnosis	-	-	Nothing in the book on the tongue.
289	Pulse diagnosis	-	D	A reader that meets finds the error at one place (§20.1); heart–breath locking is measured (§18.1).
290	Hair mineral analysis	-	-	Nothing in the book beyond minerals in atlas entries.
291	Live blood analysis	-	-	Nothing in the book.
292	Thermography as alternative diagnosis	-	-	Nothing in the book.
293	Quantum resonance analysis	-	-	Nothing in the book.

No.	Theory or method	Layer	Form	What the book on the body has
294	Ayurvedic pulse (nadi pariksha)	-	D	As 289: three fingers read three positions; the reader that meets finds the place. The book computes locating, not the dosha.
295	Pendulum dowsing / radionic diagnosis	-	-	Nothing in the book.
296	Medical intuition / psychic diagnosis	-	-	The book says its laws of reading give no number for a mind (§20.1).
297	Facial diagnosis (mien shang, constitutional)	-	-	Nothing in the book.
298	Constitutional typing (Sasang, dosha, homoeopathic)	-	-	Diagnosis of the person: rule 1, read the state first.
299	Dream and symbolic diagnosis	-	-	“Dream” appears once in the book.
300	Divination-based diagnosis (Ifá, bones, cards)	-	-	Nothing in the book.

What the table shows

The book on the body is silent on more than half. It has nothing on 173 of the 300. The silence is greatest for spiritual healing, with 19 of 21. It is nearly as great for the other ways of diagnosis, with 14 of 18, and for fields and frequencies, with 31 of 44.

Where a layer could be named, it is mostly rhythm. A layer was named for 138 entries. For 85 of them it is Phase, alone or with another layer. Chapter 4 reported that hospital medicine reaches first for that layer in 49 of 375 illnesses.

The book holds measured facts on 37 methods. Fourteen of them stand in section B8: breath, movement, warmth, light and the hour. These are the methods that the hospital has tested and has in part taken over.

Three claims meet a limit in a law of the book. To add a stimulant or a sedative is not to restore. Passes of the hands can keep a closed rhythm and cannot close an open one. A drug of the opposite quality adds a counter-direction, and opposite directions never join.

One teaching stands against a law. The five phases of China do not agree with the book's period of three. Chapter 73 examined how the five arises in each tradition.

The comparison runs one way. It says what the book on the body has on each method. It does not say whether the method heals.

C. VALIS and the complementary universe on constable.blog

What this appendix is

The author’s blog, constable.blog, is the general place of reference for the matters of this book. Chapters 6 and 7 rest on a few of its pages. Much more is there. This appendix lists four groups of sources.

Section	What it lists
C1	The pages on which chapters 6 and 7 rest
C2	The thirty-nine posts that were read in full for this book, with a note on each
C3	All posts in which a search found the word VALIS
C4	All posts in which a search found the complementary universe by name

How to read the posts

They span sixteen years. The oldest post that was read dates from 2010 and the newest from October 2026. Some are in Dutch and some in English. Several say that they were written with the help of language models.

They speak the languages of several frames. Nearly all were written before the Ninth Edition of the Vacuum.Net theory, which is dated 27 October 2026. They use earlier frames: coherence among coupled oscillators, and the dual space of the physicist Peter Rowlands. One uses a scheme of nineteen layers that belongs to another theory. Part I of this book follows the Ninth Edition.

They differ on what VALIS is. A post of December 2025 presents it “not as mysticism, but as physics”. A post of July 2026 uses the name for a possible coherent structure of information. The VALIS page of the author says that VALIS is not physics. It is the question of what a person meets when he meets what is not himself, and how much of it proves to be himself. Chapter 7 follows the page.

This book used the posts for the reports and the sources that they bring together. It took over no number from a post without its source.

Where to begin. A reader who wants to go on can take five texts in this order. The first is the VALIS page. The second is the origin post of 11 October 2025. The third is the post of 1

December 2025, for its links to books and papers. The fourth is the cartography of 15 December 2025. The fifth is the short post of 2 June 2026 on the body in two spaces.

C1. The pages on which chapters 6 and 7 rest

Source	Used for	Cited as
The VALIS page, maze.swarp.nl/valis	The four figures, each also read as a mirror; the five steps; what is said; the shadow; the three frames	Konstapel 2025
The origin post of 11 October 2025	The four forms of contact and their parallels in myth	Konstapel 2025
A Cartography of Incorporeal Intelligence, 15 December 2025	The map of the field	Konstapel 2025c
Het Lichaam Leeft in Twee Ruimtes, 2 June 2026	The body in two spaces	Konstapel 2026f
The Impact of Dual-Space on our Daily Life, 21 April 2026	The reports of Monroe as demands on physics	Konstapel 2026g
De Lijn van het Duale Domein, 21 July 2026	The history of the dual domain	Konstapel 2026h

C2. The thirty-nine posts read in full

The posts stand in order of date. A title in Dutch is followed by a translation in brackets. The address of the post closes each note.

26 August 2010. *About Entrainment*. English; about 2,400 words. Starts from the two pendulum clocks of Christiaan Huygens, which came to swing together in 1665. It lists the same coming into step in fireflies, heart cells, walking, dancing and talk. An early statement of what chapter 5 calls locking. constable.blog/2010/08/26/about-copying/

8 October 2010. *About Entrainment*. English; about 1,100 words. On crowds. People who talk fall into step within seconds. A crowd is a group in full step that acts from a shared feeling. The post sets this against the wisdom of many independent minds. constable.blog/2010/10/08/about-crowds/

18 June 2019. *About the Foundations of Medicine*. English; about 14,500 words. A long essay on what medicine rests on. It argues that a medicine built on biochemistry alone holds long illnesses in check and seldom cures them, and it looks for other foundations. constable.blog/2019/06/18/11804/

3 October 2021. *Behind the Wall of the Aether lies Another Universe*. English; about 4,000 words. Tells the life of James Clerk Maxwell and his theory built on the aether. It argues that behind the vacuum lies a second, mirrored universe that is hidden by the polarisation of the vacuum. An early statement of the complementary universe of chapter 6. constable.blog/2021/10/03/behind-the-wall-of-the-eaether/

20 January 2023. *What is The New Spirituality?*. English; about 2,000 words. A short history of spirituality in western Europe from the Bronze Age, by way of the Gnostic texts that were found at Nag Hammadi in 1945. constable.blog/2023/01/20/new-spirituality/

4 April 2025. *Verkenning van de Innerlijke Ruimten* [Exploring the inner spaces]. Dutch; about 3,300 words. A sequel to a post on a map of consciousness. On the two halves of the brain and on coming into step. The post states that a language model wrote most of the text. constable.blog/2025/04/04/verkenning-innerlijke-ruimte/

22 August 2025. *Over Emergentie en Coherentie:* [On emergence and coherence]. Dutch; about 2,600 words. Proposes one equation of coupled oscillators as a common description for old wisdom, phenomenology, physics and the study of consciousness. Its example is an audience whose applause falls into waves. constable.blog/2025/08/22/de-vier-theorie-fusie-een-complete-gids-voor-het-ayya-framework/

5 October 2025. *Wat zit er achter de Spiegel?* [What lies behind the mirror?]. Dutch; about 1,300 words. A sequel to the post of 2021. It sets the dual-space formalisms of present physics beside the mirrored structures in psychology and in reports of unusual states of consciousness. constable.blog/2025/10/05/altered-or-non-ordinary-states-of-consciousness/

11 October 2025. *Wat is het Vast Active Living Intelligence System? en hoe toont het Zich?* [What is the Vast Active Living Intelligence System, and how does it show itself?]. Dutch, with English appendices; about 7,200 words. The origin post. It starts from Philip K. Dick and sets out four forms of contact: the small beings, the spiritual teacher, the light and the mantis. Long appendices give the same four in myth and legend, the formless light, and evil as the Black Iron Prison. Chapter 7 rests on it (Konstapel 2025). constable.blog/2025/10/11/valis/

14 October 2025. *Het Eeuwige Licht* [The eternal light]. Dutch; about 1,400 words. A sequel to the origin post, on light as a principle in the traditions. It is written in a lyrical manner. constable.blog/2025/10/14/achter-het-licht/

22 October 2025. *Over het Herstellen van de Breuk tussen Geest en Materie.* [On healing the break between mind and matter]. Dutch; about 2,900 words. Starts from the division of body and mind by Descartes. It reads the cathedral of Chartres as a cosmos that can be read: the

rose windows, the labyrinth, the zodiac and the labours of the months. constable.blog/2025/10/22/over-het-herstellen-van-de-breuk-tussen-geest-en-materie/

30 October 2025. *Van Foton tot Bewustzijn tot Ufo en Alien* [From photon to consciousness to UFO and alien]. Dutch; about 2,600 words. On coherence between people and on the reports of unidentified craft. It names the VALIS of Dick as an intelligence of an information field and not of biology. The post states that language models made the text. constable.blog/2025/10/30/van-oton-tot-bewustzijn/

4 November 2025. *De Vele Mogelijkheden van het Licht* [The many possibilities of light]. Dutch; about 6,500 words. Presents a universe of spiralling light as a ground for new technology in power, medicine and transport. The post states that language models made the text. constable.blog/2025/11/04/de-vele-mogelijkheden-van-het-licht/

1 December 2025. *Understanding VALIS: Exploring Non-Biological Consciousness*. English; about 7,000 words. Part two of the origin post. It proposes a new field of study of non-biological intelligences. It holds links to many books and papers on the matter, ordered by history, philosophy and theory. The best place to begin further reading. constable.blog/2025/12/01/understanding-valis-exploring-non-biological-consciousness/

2 December 2025. *VALIS: A Living Universe*. English; about 2,500 words. A short part of the foregoing. It takes consciousness as the coherence that arises when coupled oscillators come into step. It presents VALIS “not as mysticism, but as physics”. constable.blog/2025/12/02/valis-a-living-universe/

4 December 2025. *VALIS Reimagined: Agency, Communion & Consciousness*. English; about 2,300 words. Joins VALIS to the interpersonal theory of psychology, with its two axes of agency and communion. A spirit is thereby given a character. constable.blog/2025/12/04/valis-reimagined-agency-communion-consciousness/

15 December 2025. *A Meta-Model of Anomalous and Incorporeal Intelligence*. English; about 5,000 words. Observes that the encounters stay the same through history while the explanations change: religious, philosophical, psychological, scientific and technical. It proposes a model that stands above these explanations. constable.blog/2025/12/15/a-meta-model-of-anomalous-and-incorporeal-intelligence/

15 December 2025. *A Cartography of Incorporeal intelligence*. English; about 10,100 words. A map of the whole field. It does not test claims. It defines boundaries, names structures and traces patterns. Chapter 7 uses it (Konstapel 2025c). constable.blog/2025/12/15/the-cartography-of-incorporeal-intelligence/

15 December 2025. *VALIS: Epistemology of Non-Embodied Agency*. English; about 3,400 words. Asks how such a study can be a science. It rejects the axiom that only what instruments measure is real. It states that the claims must be open to refutation, and it proposes tests. constable.blog/2025/12/15/valis-epistemology-of-non-embodied-agency/

18 December 2025. *Theurgy: Divine Work from Antiquity to Modern Scholarship*. English; about 1,100 words. On the ritual practice of late antiquity that sought communion with the divine. It treats that practice as an old interface with higher orders. Short, with the scholarly literature. constable.blog/2025/12/18/theurgy-divine-work-from-antiquity-to-modern-scholarship/

29 December 2025. *Van Biochemie naar Coherentie* [From biochemistry to coherence]. Dutch; about 5,600 words. Holds that the future of medicine lies in coherence and not in biochemistry. Health is coherence, and illness is its loss. An earlier statement, in other terms, of the theme of chapter 4. constable.blog/2025/12/29/toekomst-van-de-geneeskunde-van-biochemie-naar-coherentie/

2 January 2026. *Beyond the Wild Pendulum Lies the End of Separation*. English, with a Dutch summary; about 5,200 words. Announces a change of the research theme. It holds that a period of some 2,300 years of divided thinking is ending. It uses a scheme of nineteen layers of existence, which is another theory than that of Part I. constable.blog/2026/01/02/beyond-the-wild-pendulum-lies-the-end-of-separation/

11 February 2026. *De Oude Geneeskunst (Ayurveda,TCM) is nu Wetenschap* [The old medicine (Ayurveda, TCM) is now science]. Dutch, with an English summary; about 3,800 words. Holds that Indian medicine and present biophysics describe the same territory by two valid ways of knowing: long clinical observation, and measurement by instruments. It reads the three faults as measurable profiles. Chapter 57 gives what has been measured. constable.blog/2026/02/11/de-convergentie-tussen-ayurveda-en-wetenschap/

15 February 2026. *The Relationship Between SWARP and VALIS: From Theoretical Coherence to Implemented Collective Intelligence, and a Path Toward Cultural Continuity*. English; about 3,400 words. Sets the VALIS framework beside a platform for working together that the author has built. It presents the platform as an application of the framework. constable.blog/2026/02/15/valis-and-swarp/

21 March 2026. *From Prehistoric Chants to VALIS: A 40,000-Year Odyssey Through Music, Cognition, and the Future of Consciousness*. English, with a Dutch version; about 14,100 words. A history of music from the bone flutes to the present, read with a model of learning that has three operators. Breakthroughs come as reversals after a failed expectation. VALIS stands at the far end, as a collective intelligence. constable.blog/2026/03/21/from-prehistoric-chants-to-valis-a-40000-year-odysseythrough-music-cognition-and-the-future-of-consciousness/

5 April 2026. *Why The Vacuum Knows*. English, with a Dutch translation; about 9,800 words. On the structure of the vacuum after the physicist Peter Rowlands, in which every form brings forth its own negation. It reads the recurring failures of a person as stable patterns of that structure. constable.blog/2026/04/05/why-the-vacuum-knows/

14 April 2026. *The impact of the Biofield on Psychology, Pedagogy, Education and Filosophy*. English, with a Dutch translation; about 5,100 words. Presents the composite chart of the Human Design system as an instrument for studying the pair of parent and child. constable.blog/2026/04/14/the-impact-of-the-biofield-on-psychology-pedagogy-education-and-filosophy/

18 April 2026. *Toward a Unified Field Theory of Mind*. English, with a Dutch summary; about 6,600 words. Proposes a frame for the mind in four layers. The first is a cosmological field of coherence, which is called VALIS. The others are a physical theory of feeling as resonance, a model of the illnesses of the mind, and a layer of bodily regulation. It criticises the categories of the psychiatric handbook. constable.blog/2026/04/18/toward-a-unified-field-theory-of-mind/

21 April 2026. *the Impact of Dual-Space on our Daily Life*. Dutch and English; about 4,000 words. Takes the reports of Robert Monroe on leaving the body as data for physics, and reads them with the dual-space model. Chapter 6 uses it (Konstapel 2026g). constable.blog/2026/04/21/the-impact-of-dual-space-on-our-life/

8 May 2026. *wij zijn de kinderen van het licht* [We are the children of light]. Dutch; about 6,600 words. Sums up science as the insight that the universe alternates between −1, 0 and 1. It applies this structure to the development of a person from birth. The three values return in chapter 1 as with, against and neither. constable.blog/2026/05/08/nilpotency-as-natal-structure-the-birthencoded-failure-operator-in-humandevelopment/

9 May 2026. *The Coherence Mirror and the Magic Chamber*. Dutch; about 10,800 words. Describes two new functions of the author's platform. It starts from Hermes Trismegistus and the saying "as above, so below", which it reads as self-reference. constable.blog/2026/05/09/the-coherence-mirror-and-the-magic-chamber/

10 May 2026. *Licht voordat licht gemaakt werd* [Light before light was made]. Dutch; about 12,600 words. Argues at length that recent physics is prefigured in the Kabbalah and in related traditions. It asks whether coherent structures without a body could meet a present measure of consciousness. constable.blog/2026/05/10/light-before-lightwas-made/

23 May 2026. *Understanding Language and Evolution Through the Sphenoid*. English, with a Dutch translation; about 14,000 words. Starts from a documentary on the sphenoid bone of the skull and its part in speech and in human evolution. It includes an account of the experience of Dick in February 1974. constable.blog/2026/05/23/understanding-language-and-evolution-through-the-sphenoid/

26 May 2026. *Betekenis als fysische Resonantie* [Meaning as physical resonance]. Dutch; about 2,900 words. A reply to a newspaper article on artificial intelligence. It takes meaning as a physical resonance and holds that such systems do not make people wiser. constable.blog/2026/05/26/betekenis-als-fysische-resonantie/

2 June 2026. *Het Lichaam Leeft in Twee Ruimtes* [The body lives in two spaces]. Dutch, with an English paper; about 1,900 words. The short statement of the body in two spaces. The body that medicine describes is the half that can be measured. Chapter 6 rests on it (Konstapel 2026f). constable.blog/2026/06/02/the-dual-space-body-antispace-phaseoniumand-the-physical-basis-of-consciousness/

2 July 2026. *de Zoektocht naar Grootschalige Intelligentie* [The search for large-scale intelligence]. Dutch; about 700 words. Short. Human perception filters all but a fraction of what is there. A large coherent intelligence could therefore be unseen and still measurable, as systematic deviations from what is expected. The post uses VALIS as a working name for a possible coherent structure of information. constable.blog/2026/07/02/de-menselijke-waarneming-en-uaps/

21 July 2026. *De Lijn van het Duale Domein: van Sahu tot Monroe* [The line of the dual domain: from Sahu to Monroe]. Dutch; about 2,700 words. The history of the dual domain as one observation that was made again and again, from Egypt and the Orphic mysteries to Monroe. Chapter 6 uses it (Konstapel 2026h). constable.blog/2026/07/21/derveni-papyrus/

1 September 2026. *De Wachters op de Grens tussen Leven en Dood zijn er nog Steeds* [The Watchers on the border between life and death are still there]. Dutch, with an English essay; about 4,200 words. Reads the Watchers of the Book of Enoch as intelligences without a body that stay on the threshold between the two mirrored universes and never sleep. It adds a second axis to the earlier VALIS texts, which worked with high and low coherence only. constable.blog/2026/09/01/the-wakeful-ones-enoch-monroe/

27 October 2026. *Van de oudste spirituele tradities tot de Kabbalah en de duale spiegelruimte* [From the oldest spiritual traditions to the Kabbalah and the dual mirror space]. Dutch; about 4,300 words. A world history of attempts to join the visible world to a deeper order, with the Kabbalah at its centre and the dual-space model as a present frame. constable.blog/2026/10/27/van-de-oudste-spirituele-tradities-tot-de-kabbalah-en-de-duale-spiegelruimte/

C3. All posts in which the word VALIS was found

The blog was searched in November 2026. The word VALIS was found on fifty-five pages: one of 2012, one of 2023, two of 2024, twenty of 2025 and thirty-one of 2026. A page may hold the word only in a link to another post. The address of a post is constable.blog, followed by its date and its name.

Date	Title	Read in full
11 October 2012	About Autarky	

Date	Title	Read in full
18 May 2023	The Spiritual Innovation of the New Renaissance	
14 May 2024	TriOdos: Drie Krachten in Balans	
17 October 2024	Koepels, Waar Steden en Sterren Samenkomen	
25 January 2025	Wat gebeurt er in de Wereld Nadat de Storm van Trump tot Rust komt?	
11 October 2025	Wat is het Vast Active Living Intelligence System? en hoe toont het Zich?	yes
14 October 2025	Het Eeuwige Licht	yes
14 October 2025	Hoe We Nederland Samen Weer aan de Praat Krijgen	
18 October 2025	Over Psychologische Oorlogsvoering en Effectieve Defensie	
22 October 2025	Over het Herstellen van de Breuk tussen Geest en Materie.	yes
30 October 2025	Van Foton tot Bewustzijn tot Ufo en Alien	yes
1 December 2025	Understanding VALIS: Exploring Non-Biological Consciousness	yes
2 December 2025	VALIS: A Living Universe	yes
4 December 2025	VALIS Reimagined: Agency, Communion & Consciousness	yes
4 December 2025	Waarom ons Onderwijs al Meer Dan 70 Jaar de Verkeerde Mensen Opleidt	
12 December 2025	Waarom Peter Wennink het Licht Niet Ziet	
14 December 2025	Advanced Systematic Inventive Thinking Toegepast op het Rapport wennink	
15 December 2025	A Meta-Model of Anomalous and Incorporeal Intelligence	yes

Date	Title	Read in full
15 December 2025	VALIS: Epistemology of Non-Embodied Agency	yes
18 December 2025	Re-engineering Effective Magic: From Occult Symbolism to Oscillatory Engineering	
18 December 2025	The Resonant Stack: Hermetic Cosmology Meets Oscillatory Computing	
18 December 2025	Theurgy: Divine Work from Antiquity to Modern Scholarship	yes
27 December 2025	la Réalité de Luc Boltanski	
29 December 2025	Van Biochemie naar Coherentie	yes
2 January 2026	Beyond the Wild Pendulum Lies the End of Separation	yes
3 January 2026	Exploring 50 Years of Strategic Thinking	
5 January 2026	Is the Super Cascade Coming? en Wat Kun je er als Consument/Burger tegen doen?	
7 January 2026	About the Techno-Diversities of Yuk Hui and Universal Heuristics	
8 January 2026	Applied Magic and Octonion-Oscillation as Post-AI Paradigms	
16 January 2026	TRAZE and More Alternative Scenarios of the Future	
20 January 2026	Kingsley L. Dennis Search for the Philosopher’s Stone	
26 January 2026	Finding Your Path in The Labyrinth of Our Time	
28 January 2026	Swarm Intelligence and the Spatial Web	
10 February 2026	Human Design in Swarp	

Date	Title	Read in full
12 February 2026	Hoe Bewijzen de Waarheid Vernietigt	
15 February 2026	The Relationship Between SWARP and VALIS: From Theoretical Coherence to Implemented Collective Intelligence, and a Path Toward Cultural Continuity	yes
16 February 2026	Quantum Vacuum Manipulation: The Future of Free Energy and Anti-Gravity Propulsion	
18 February 2026	The Architecture of Coherence: From Nilpotent Octonions to a Post-Scarcity Civilization	
11 March 2026	Understanding Personality Through Quaternion Dynamics	
21 March 2026	From Prehistoric Chants to VALIS: A 40,000-Year Odyssey Through Music, Cognition, and the Future of Consciousness	yes
18 April 2026	Toward a Unified Field Theory of Mind	yes
8 May 2026	Het Universum is een Weefgetouw	
8 May 2026	Understanding the PURSUE UAP Disclosure	
10 May 2026	Licht voordat licht gemaakt werd	yes
21 May 2026	Beyond the Clockwork Universe	
23 May 2026	Understanding Language and Evolution Through the Sphenoid	yes
5 June 2026	De Bibliotheek van Evert van Uitert	
30 June 2026	Van UFO naar UAP	
2 July 2026	de Zoektocht naar Grootschalige Intelligentie	yes
1 August 2026	Het Weer in het Universum Beinvloedt de Aardse Politiek	
1 September 2026	De Wachters op de Grens tussen Leven en Dood zijn er nog Steeds	yes
14 September 2026	AI-Oproep Leidt Tot Miljardenverliezen op de Beurs	

Date	Title	Read in full
2 October 2026	Wakeful Machines and Watchers: How Future War Will Really Be Fought	
4 October 2026	De gewelddadige kant van het Huis Oranje-Nassau	
1 November 2026	the History of Computing and the Vacuum.Net Theory	

C4. Posts that name the complementary universe

The same search found the complementary universe by name, in English or in Dutch, on ninety-two pages. They go back to 2007. A page may hold the term only in a link. The term mirror universe was found on 172 pages, which are not listed here.

Date	Title	Read in full
29 June 2007	Why Good programmers have to be Good Listeners	
22 September 2007	InterPersonal Theory	
9 November 2007	About the Conduit and the Toolmaker Metaphor	
10 December 2008	About Alchemy	
27 January 2009	About Dark Matter	
9 February 2009	About the Mathematics of the E-Motions	
3 March 2009	How to Restore The Balance in A Material World	
21 December 2009	About Old Fashioned Thinking	
8 May 2010	About Darwin’s Superorganism	
5 July 2010	About the Good, the Bad and the Nothing	
26 August 2010	About Entrainment	yes

Date	Title	Read in full
29 October 2010	About the Law of KLeiber	
19 December 2011	About the Vedic Square	
2 February 2012	About Perspective and Projective Geometry	
14 August 2012	Over de Paradoxen van het Leven (in Dutch)	
17 April 2014	The Next Stage of the Kondratiev Cycle, the Golden Age is coming!	
4 May 2014	About the Next Steps of the Future Center Smart Systems and the Leiden Center of Data Science	
28 April 2016	About Alchemy and Logic	
18 June 2019	About the Foundations of Medicine	yes
29 June 2019	Rethinking Engineering: Solutions to Wicked Problems	
3 September 2020	Is the State an Ecology?	
7 December 2020	The Simple Geometry of the Big Transformation	
3 October 2021	Behind the Wall of the Aether lies Another Universe	yes
1 December 2021	Heuristics and The Geometry behind Ecological Rationality	
20 December 2021	The Chemical Origin of Semantic Intelligence	
7 June 2022	Hoe Sport weer een Middel wordt om de Mens te Vormen	
2 August 2022	van SamenLeving naar SamenSpeling	
27 December 2022	Objectief Ontwerpen: Slim Navigeren in de Oplossings Ruimte	

Date	Title	Read in full
20 January 2023	What is The New Spirituality?	yes
4 February 2023	Exploring the Wheels and Mirrors of the Universe: From E8 to 8tonions	
15 March 2023	Composable System Architectures	
24 July 2023	Why AnticiPating Systems will Save the World	
12 January 2024	De Praktijk van het Praktische Netwerk	
7 February 2024	The Psychology of the Electro-Magnetic Field	
17 October 2024	Koepels, Waar Steden en Sterren Samenkomen	
18 December 2024	de Fractale Computer staat Klaar	
29 December 2024	de BewegingsRuimte van Dewey Larson	
28 January 2025	SuperAgency vs Super Communion.	
25 March 2025	de 4! en de 5,6,7, van de Tarot	
4 April 2025	Verkenning van de Innerlijke Ruimten	yes
6 May 2025	Wat Registreren onze Zintuigen en Hoe Merken We Dat?	
13 July 2025	🔁 Ten Ways to Understand KAYS: A Multifaceted Introduction	
23 July 2025	The Oscillatory Revolution: Humanity’s Next Evolutionary Leap	
2 September 2025	het Hopf Principe	
18 September 2025	Het Jaar 2027 is Uniek in de Wereldgeschiedenis.	

Date	Title	Read in full
30 September 2025	Beyond the Linear Horizon: Towards Cyclical Computation	
5 October 2025	Wat zit er achter de Spiegel?	yes
6 October 2025	a Framework for Integrating Wisdom Traditions	
25 October 2025	A Foundation for Nova Spivack'sFantastic Theory of Consciousness	
4 November 2025	De Vele Mogelijkheden van het Licht	yes
18 November 2025	Spinoza's Labyrinth	
20 November 2025	the Mathematics and Physics of Psychology and the Resonant Universe	
23 November 2025	Applying Right Brain AI (RAI)	
23 November 2025	Left and Right Brain AI	
4 December 2025	VALIS Reimagined: Agency, Communion & Consciousness	yes
15 December 2025	A Cartography of Incorporeal intelligence	yes
16 December 2025	The Architecture of Reversible Fractal Compression: Preserving the Path to the Origin in Cognition, Mathematics, and Cosmology	
18 December 2025	The Resonant Stack: Hermetic Cosmology Meets Oscillatory Computing	
22 December 2025	CoP= KAYS + COLLIN	
12 January 2026	Strategic Insights into Unified Field Theory	

Date	Title	Read in full
13 January 2026	Louis H. Kauffman: A Complete Vision of Reality	
14 January 2026	Why Is Our Left Brain Leading Us to Destruction? All you want to konow about Chirality	
15 January 2026	The Future of Privacy	
19 January 2026	Resonante Fase Ontologie (RFO): Een Integrale Architectuur voor Realiteit, Bewustzijn en Systemische Emergentie	
23 January 2026	Building Coherent Geopolitics from the Quantum Vacuum	
6 February 2026	Bounded Heterogeneity: A Universal Principle for Resilient Complex Systems	
10 February 2026	Human Design in Swarp	
11 February 2026	De Oude Geneeskunst (Ayurveda,TCM) is nu Wetenschap	yes
20 February 2026	Creativity Is Orbiting Tiferet: The TOA-Triade, the Omega Point, and What Artificial Art Actually Requires	
24 February 2026	The History and Future of the Universe of Discourse	
14 March 2026	Gemeente Monitor	
25 March 2026	De Levende Spiraal	
26 March 2026	De Spiraal-Foton Triade: Wanneer Kabbalah, Rowlands, Categorie-Theorie en Kosmische Helices Samenkomen	
5 April 2026	Why The Vacuum Knows	yes
14 April 2026	The impact of the Biofield on Psychology, Pedagogy, Education and Filosophy	yes

Date	Title	Read in full
21 April 2026	the Impact of Dual-Space on our Daily Life	yes
8 May 2026	wij zijn de kinderen van het licht	yes
9 May 2026	The Coherence Mirror and the Magic Chamber	yes
10 May 2026	Licht voordat licht gemaakt werd	yes
12 May 2026	Onderwijs zonder Curriculum: Een Nieuwe Benadering	
13 May 2026	De Menselijke Blauwdruk	
26 May 2026	Betekenis als fysische Resonantie	yes
29 May 2026	De Verborgen Structuur van de Ethica	
2 June 2026	Het Lichaam Leeft in Twee Ruimtes	yes
16 July 2026	The Principle of Intentional Coherence	
18 July 2026	Van Ziekenhuis naarMonitor	
21 July 2026	De Lijn van het Duale Domein: van Sahu tot Monroe	yes
8 September 2026	Van Plato tot de Bon: een essay voor bouwers van de Maze-Bank	
20 September 2026	Vacuum.Net Theory en Maxwell’s Erfenis	
23 September 2026	Progress Report: The MAZE Project	
2 October 2026	Wakeful Machines and Watchers: How Future War Will Really Be Fought	
8 November 2026	One Rule at Every Scale: Knots, Ternary Closure and the Lo Shu	

D. Glossary

How to use the glossary

The glossary has two lists. The first holds the words of the Vacuum.Net theory and of the book on the body, with the meaning that this book gives them. The second holds the words of the old medicines that the chapters leave in their own language. Each entry names the chapter in which the word is explained.

A word of a tradition is not translated by a word of the theory. Chapter 8 gave the reason. None of these words means exactly what another means, and the differences are part of what each medicine knows.

The click sounds of the San languages are written with the signs /, // and !, as in chapter 11. They are passed over in the order of the list.

D1. Words of the theory

Word	Meaning in this book	Chapter
Carrier	The fifth form of failure. What should arrive does not arrive, or is not read: a closed artery, a missing hormone	4
Chain	The layer of cure that gives, stops or corrects one step of the body's chemistry	4
Closes	Said of a window whose three passages fully agree or fully differ	1
Complementary universe	The second domain that the old medicines describe beside the visible one. In the language of the Net: the same strand taken in the other direction	6
Depth	The length of a word; the place of a winding in the stacking of scales. A body is a depth	1, 3
Direction	What a passage has against the first passage: with it, against it, or neither. Also the second form of failure: rhythms that run against each other or against the day	1, 4
Drift	The eighth form of failure. The return falls behind: wear, ageing, slow loss of rhythm	4
Five steps	The course of a meeting: loosening, examination, exchange, showing, return	7
Form of failure	One of eight ways in which a window stays open: seam, direction, unread, over-read, carrier, wrong closure, frame and copy, drift	4
Four figures	What is met: the one who acts on the body without speech, the teacher, the watcher who judges, and the light without form	7
Frame and copy	The seventh form of failure. An inherited or acquired error in the text of the cell; a form laid down wrongly in growth	4
Knot, the first	The loop of three crossings, the first form that holds. "A knot stays until it is cut or untied along the way it was tied"	2
Ladder of two, ladder of three	The series made by doubling and the series made by tripling. They never meet. They come close at 12, 41 and 53	2
Layer of cure	One of five kinds of treatment, ordered by what they do: Mesh, Chain, Reading, Phase, Surround	4

Word	Meaning in this book	Chapter
Locking	Two rhythms that hold a fixed relation in whole numbers, such as four heartbeats to a breath	5
Meeting	First, the elementary closure of two opposite passages. Second, a reading in which the reader touches the form at its place. Third, the event of chapter 7, in which a person meets what is not himself	1, 3, 7
Mesh	The layer of cure that acts on a tissue or a foreign organism as a whole: to remove, rebuild or kill	4
Mirror	The same word with every direction reversed	1
Mixed	Closed with three different states: the living form, which has a direction of turning	1
Over-read	The fourth form of failure. The body’s test attacks its own forms or harmless outside forms. The rules of the theory hold no object for it	4
Passage	One visit of the strand to a node	1
Phase	Where in its turning a mixed form is. Also the layer of cure that restores rhythm, timing, use or a learned pattern	1, 4
Reading	Meeting a form at a place and finding whether it fits. Also the layer of cure that changes what the body’s own test reads	1, 4
Return	The coming back of a closed form after a change. It succeeds while fewer than a third of the places are wrong	4
Ring	The elementary closure of three equal passages in turn; a strand closed on itself	1
Rules for acting, six	Read the state first. Use the layer’s own window. Offer the nested three. Decide between local and carried. Give the whole window at once. Keep silence after	5
Rules of cure, four	Read before you act. Restore, do not add. Match direction and phase. Living with living, and taper slowly	4
Seam	The place where two stretches touch. Also the first form of failure: a fixed matter lodged in a living one, such as a stone or a scar	1, 4
Standing	The elementary closure of a passage that goes neither way	1

Word	Meaning in this book	Chapter
Stays open	Said of a window in which two passages agree and one does not	1
Strand	The one path that the light goes	1
Surround	The layer of cure that changes what a person is exposed to	4
Tension	An open window, seen from what lies next to it. “What does not close passes on as tension”	1
Trit	One place of a word, with one of three values: with, against or neither	1
Uniform	Closed with three equal states: the fixed form	1
Unread	The third form of failure. A misfit that the body’s test does not see or has not yet removed: a foreign organism, a changed cell	4
VALIS	Vast Active Living Intelligence System. A name taken from the writer Philip K. Dick for what a person meets when he meets what is not himself	7
Window	Three passages in a row	1
Word	A row of trits. Its length is its depth	1
Wrong closure	The sixth form of failure. A stable, closed, wrong state that the body reads as healthy: fixed moods, dependence, lasting pain	4

D2. Words of the old medicines

Word	Tradition	Meaning	Chapter
abaton	Greece	The hall of a sanctuary of Asklepios in which the sick slept	37
abiku	Yoruba	A child that is born, sickens, dies and is born again to the same mother. It is held to belong to companions in the other world	24
agni	India	Fire: whatever in the body cooks and transforms	57
!aia	Ju/’hoansi San	The changed state of the healer in the dance	11
ajogun	Yoruba	The hostile powers on the left side of the world. The word means warriors, and the first of them is Death	24
alafia	Yoruba	Health: peace and well-being together	24
ama	India	The raw: food that a weak fire leaves uncooked, and that stops up the channels	57
amchi	Tibet and the Himalaya	A healer of a family line	62
amok	Malay world	The frenzy of a man who has brooded on an insult	70
angakkuq	Inuit	The shaman	9
archeus	Paracelsus	The power that works in the stomach as an alchemist and separates what nourishes from what poisons	42
ashe	Yoruba	The power to bring about what is said, present in words, persons, plants and the signs of Ifá	8, 24
āšipu	Mesopotamia	The scholar-healer of the temple, who read the cause and performed the rites. Often translated as exorcist	32
asû	Mesopotamia	The healer who worked with his hands and prepared the remedies. Translated as physician	32
‘aumakua	Hawai‘i	An ancestor who has become a guardian of the family	68

Word	Tradition	Meaning	Chapter
ʻawa	Hawaiʻi	The pepper plant from whose root a calming drink is made; kava	68, 70
ayahuasca	Upper Amazon	In Quechua, vine of the souls or of the dead: the vine, and the brew that is made from it	9, 16
ayajo	Yoruba	A formula that tells what happened the first time	28
aye, *orun*	Yoruba	The visible world and the world of the unseen: the two halves of one closed gourd	6
Ayurveda	India	Knowledge of the span of life	56
ba, *ka*, *sahu*	Egypt	Three of the nine parts of a person: the free-moving part in the shape of a bird, the double, and the shining body	6
babalawo	Yoruba	The priest of Ifá: a scholar of an oral library, trained for ten to twelve years	24, 25
bad kan	Tibet	Phlegm, the cold fault, which arises from dullness	62
balian, *belian*, *babaylan*	Bali, Borneo, Philippines	A healer who deals with spirits	70
bardo	Tibet	The state between two lives	6
baul	Unani	The urine, as it is examined in a glass flask	40
bhasma	India	A fine ash of a metal or mineral, burnt many times	56
bidan	Malay world	The village midwife	70
bimaristan	Islamic world	House of the sick: the hospital	40
bla	Tibet	The life principle, which moves round the body with the moon and can be frightened out or stolen	62
bomoh	Malay world	The healer	70
Bwiti	Gabon	The rite of the iboga plant	30

Word	Tradition	Meaning	Chapter
Cold damage	China	Illness from cold that passes inward through six stages; the subject of the classic of formulas	44
Critical day	Greece	The day on which a fever turns	38
curandero, *vegetalista*	Peru	A healer; one who works with plants	16
daño	Peru	Harm that a sorcerer has sent	16
despacho	Andes	The table of offerings that is laid for the powers	17
diaita	Greece	Regimen: a whole way of living	38
doctores	Peruvian Amazon	The spirits of the plants, who come in the night and operate	7
dosha	India	Fault. The three are wind, bile and phlegm	1, 57
Dreaming, the	Aboriginal Australia	The English word for the ground of Aboriginal life	13
dukun	Java	The healer	70
ebo	Yoruba	Sacrifice	28
egungun	Yoruba	The cloth-covered masks in which the ancestors return once a year	24
Eight principles	China	The first step of Chinese diagnosis, and the part on which two physicians agree best	49
empacho	Mexico	The stuck bolus: badly digested food that clings to the wall of the gut	18
ese	Yoruba	A verse of Ifá. The word means a foot or a step	28
Field of the elixir	China	The place three finger-breadths below the navel on which the mind is collected	53
fofō	Samoa	The healer who kneads, and her treatment	70

Word	Tradition	Meaning	Chapter
fyofyo	Suriname	An illness that arises from an unsettled quarrel in the household	30
// gauwasi	Ju/'hoansi San	The dead, who come at night and stand beyond the light of the fire	11
!gi:xa	/Xam San	A healer: a person full of *!gi*	9, 12
h-men	Yucatec Maya	The healer: one who knows or does	9
hakim	Unani	The practitioner. The word means a wise man	40
han	Korea	A knot of grief and resentment that has had no outlet	15
Hand-trembler	Navajo	The commonest kind of diviner, whose hand moves over the patient	19
hau	Māori	The breath or essence of a person; what in a gift must return to the giver	70
ho'opono pono	Hawai'i	To set right; the family meeting	68, 69
houngan, *mambo*	Haiti	The priest and the priestess	30
hózhó	Navajo	The state in which all is in its place and in good relation: beauty, order, health	8, 19
Humour	Greece	One of the four fluids of the body: blood, phlegm, yellow bile and black bile	38
iatromantis	Greece	Physician-seer	37
iboga	Gabon	A forest shrub whose root bark is eaten in the Bwiti rite	30
icaros	Amazon	The songs that the healer receives from the plants	9, 16
ihiyotl	Aztec	The breath or vapour that is seated in the liver; passion	18

Word	Tradition	Meaning	Chapter
ilaj bil tadbir	Unani	Treatment by regimen	40
ilm al-raml	Arab world	Divination by rows of dots in the sand	26
isangoma	Southern Africa	The diviner	10
iwa pele	Yoruba	Gentle character, the aim of life and its best protection	24
jamu	Java	The daily herbal drink	70
jhankri	Nepal	The shaman	15
jing	China	Essence, the densest of the three treasures, received from the parents	46
kahuna	Hawai‘i	An expert. A *kahuna lapa‘au* is an expert in healing	68
kairos	Greece	The right moment	38
kapu, *tapu*	Polynesia	Set apart, forbidden	68, 70
khwan	Thai and Lao	A soul of thirty-two parts, which leaves in fright and is called back and tied in	15, 70
kra	Suriname	The soul in the Winti view	30
krasis	Greece	The mixture of the fluids. Health is their right mixture	38
krisis	Greece	The judgment: the day on which an illness is decided	38
kurunpa	Western Desert, Australia	The spirit: a person’s life, will and awareness	13
læce	Old English	A physician; a leech	42
latah	Malay world	A state in which a sudden noise makes the person start violently	70

Word	Tradition	Meaning	Chapter
limpia	Mexico	The cleansing, in which the healer sweeps the whole body	18
lomilomi	Hawai‘i	Treatment by hand. The word means to knead	68
lwa	Haiti	The spirits	30
machi	Mapuche	The healer	10
mana	Polynesia	The standing and efficacy of a person, a line or a place	8, 68
mancharisqa, *susto*	Andes and Mexico	Fright: the soul has jumped out at a shock	6, 17
Maqlû	Mesopotamia	The Burning: the great rite against witchcraft	34
mara’akame	Wixárika	The healer and singer	18
marma	India	One of 107 places where a wound is especially dangerous	61
mauri	Māori	The principle of life in a person, a forest, a river or a house	70
metu	Egypt	The channels that run from the heart to every part of the body	35
mizaj	Unani	The temperament: the mixture of the qualities in a person or an organ	40
mkhris pa	Tibet	Bile, the hot fault, which arises from hatred	62
Moxa	China and Japan	The leaf of mugwort, rubbed to a soft wool, which is burnt in cones on the skin or as a stick above it	51
mudang, *mansin*	Korea	The shaman	9, 10
nabz	Unani	The pulse	40
namburbi	Mesopotamia	“Its loosening”: a rite that answers a bad sign	34

Word	Tradition	Meaning	Chapter
ngangkari	Western Desert, Australia	The healer	9, 13
nílch'i	Navajo	Wind: what gives life	19
noaidi	Sámi	The shaman	14
n/om	Ju/'hoansi San	What lies in the belly of the healers, is heated by the dance, rises up the spine and "boils"	8, 11
odu	Yoruba	A sign of Ifá. Sixteen are great, and 240 are mixed	25
ofo	Yoruba	The spoken formula that goes with a remedy	28
'ohana	Hawai'i	The family: the living, the dead and the unborn	68
ojas	India	Vigour: the finest part that is left when the seven tissues have been formed	57
ongon	Mongols	Small figures that are made for the ancestors and fed with milk and fat	15
oogun	Yoruba	Medicine, from a remedy for a cough to a charm	28
ori	Yoruba	The head. The inner head is a person's destiny	24
orisha	Yoruba	The divine beings	7, 24
payé	Amazon	The shaman	9
pepsis	Greece	Cooking: the ripening of an illness by the inborn heat	38
physis	Greece	Nature, the healer of disease	38
pneuma	Greece	Breath: what is drawn in with the air and spread through the body	3, 39
prakriti	India	The constitution, fixed at conception	57
prana	India	Breath	3
qi	China	What moves between the parts of the body and holds them together	3, 46
rasa	India	The juice of food, the first of the seven tissues	57

Word	Tradition	Meaning	Chapter
rlung	Tibet	Wind: the mount on which awareness rides	8, 62
rongoā	Māori	The plant medicine	70
ruqya	Islamic world	Recitation of the Qur'an over the patient, or over water that he drinks	42
sáiva	Sámi	The people who live inside holy mountains and under lakes	14
Sakikkū	Mesopotamia	"Symptoms": the Diagnostic Handbook in forty tablets	33
semangat	Malay world	The soul or vigour of a living being	70
shen	China	Spirit, the finest of the three treasures, which lodges in the heart	46
Šurpu	Mesopotamia	A rite of burning for a cause that lies in the patient himself	34
swnw	Egypt	The physician	35
tabiat	Unani	Nature: the body's own ruler and healer	40
takman	Vedic India	Fever	56
taulāsea	Samoa	The healer who works with plants	70
temazcal	Mesoamerica	The low domed bath house	18
Theriac	Greece and Rome	The compound antidote of sixty-four ingredients	41
Three treasures	China	Essence, *qi* and spirit	46
tohunga	Māori	An expert	70
tonalli	Aztec	The warmth and vigour that is seated in the head	18
Triple burner	China	An organ that is said to have a name and no form	47
txiv neeb	Hmong	The shaman: master of the helping spirits	15

Word	Tradition	Meaning	Chapter
ukuthwasa	Southern Africa	The call of a diviner. The word means to come out, to become visible	10
ʻunihipili	Hawaiʻi	The spirit of a dead person, kept and fed by a keeper	68
vata	India	Wind	3, 57
viriditas	Hildegard of Bingen	Greenness: the fresh, moist, growing life	42
wairua	Māori	The spirit, which travels in dreams and survives death	70
wakȟáŋ	Lakota	Holy; hard to understand	20
Warm illness	China	A fever that passes inward through four levels	44
wedjat	Egypt	The restored eye: the sound or whole one	36
wekhedu	Egypt	A harmful matter that arises from rot in the bowel	35
Winti	Suriname	A religion made by the enslaved from Africa. The word means wind, and also spirit	30
xapiri	Yanomami	The images of the first animal ancestors, seen as tiny bright beings	16
yatiri	Aymara	The healer: one who knows	9
Yin and yang	China	The two principles	2, 46
yuwipi	Lakota	The man who works with spirits in the dark	20
zar	Ethiopia, Sudan, Egypt	A spirit that afflicts, and the society of those whom it has afflicted	21

D3. Names of illnesses in the old medicines

The atlas of Part VIII gives the names that the old medicines used for each illness. This list sets the names in the order of the alphabet. The last column gives the entry of the atlas. A name is given as the atlas spells it, without marks of length.

Name	Tradition	What it names	Entry
Amavata	India	Raw matter and wind	25
Apasmara	India	The going away of memory, in four kinds	39
Arshas	India	The enemy. A dry and a bleeding kind	22
Ashmari	India	Stone, in four kinds	21
Asthma	Greece and Unani	Panting	10
Atisara	India	Running through. Six kinds, two of them from fear and from grief	6
Diabetes	Greece	A siphon	18
Hemicrania	Greece and Unani	Half the skull, from which the word migraine comes	23
Hernia	Greece and Rome	Rupture	73
Hridroga	India	Illness of the heart, in five kinds	11
Ischias	Greece	Pain of the hip that runs down the leg	24
Ishq	The Arabic books	Passionate love, among the illnesses of the head	87
Jiaoqi	China	The qi of the legs. A dry kind that wastes and a wet kind that swells	58
Jie	China	The itching sores	67
Jvara	India	Heat. Eight kinds	1
Kakke	Japan	The same word. Also the affliction of Edo	58
Kamala	India	Of the channels and of the trunk	17
Karkinos	Greece	The crab, for the swollen veins that reach out from the growth like legs	49
Kasa	India	Cough, in five kinds	9
Kirsos	Greece	The swollen vein. The sores of the shin go with it	76
Krimi	India	In twenty kinds, outer and inner	8
kushtha	India	The gravest of the eighteen kinds of kushtha, that which disfigures	7, 29

Name	Tradition	What it names	Entry
Laqwa	Persia and the Arabic books	Crooked face	79
lepra	Greece	The scaly	29
Lin	China	The dribbling illness, in six kinds: of heat, of stone, of knotted qi, of blood, of cloudy urine and of exhaustion	71
mal aria	Europe	Bad air, mal aria	2
Pandu	India	The pale illness, in five kinds. One comes from eating earth	61
Pellagra	Northern Italy, from 1771	Illness of maize	59
Phthisis	Greece	Wasting	3
Podagra	Greece	The trap of the foot	20
Prameha	India	In twenty kinds	18
Psora	Greece	The itch	29, 67
qi	China	The stout have much phlegm and a weak qi	19, 58, 71, 73, 85
Rajayakshma	India	The king’s wasting	3
scabies	Greece and Rome	From the word for scratching	67
Shan	China	The mounting qi	73
Shotha	India	Swelling	12
Shvasa	India	Breath, in five kinds	10
Shvitra	India	The white	30
Sthaulya	India	Stoutness	19
Tetanos	Greece	The stretching. The saying is that a spasm after a wound is deadly	66

Name	Tradition	What it names	Entry
Trachoma	Greece	The roughness of the lid	32
udara	India	The belly, in eight kinds	12
Unmada	India	The wandering of the mind, in five kinds	34
Vatarakta	India	Wind and blood	20
Vishama jvara	India	The uneven fever: daily, third-day, fourth-day	2
zar	Ethiopia, Sudan, Egypt	A spirit of the zar kind, which takes women above all	37
Ziabetes	Unani	Sweet urine	18

E. Chronology

How to read the chronology

The tables set the dated events of the chapters on one line. Three warnings apply.

A date is often the date of a book. The knowledge in the book is older, and nobody can say by how much.

Peoples without writing enter late. They appear when a visitor wrote about them. The date is that of the visitor and not that of the medicine.

Early dates are rounded. The chapters give the grounds for each.

E1. Before writing

Date	Where	What	Chapter
About 65,000 years ago	Arnhem Land, Australia	A rock shelter is in use. People have reached the continent	13
About 40,000 years ago	Southern Germany	The Lion Man is carved from mammoth ivory: the oldest known figure that joins man and animal	9
About 12,000 years ago	Hilazon Tachtit, Israel	The burial of a woman of about 45, whom the excavators called a shaman	9
About 11,000 years ago	Star Carr, England	More than twenty masks of deer skull and antler are left at a lake shore	9
About 9,000 years ago	Bad Dürrenberg, Germany	A woman is buried with a head-dress of deer antler and hangings of animal teeth	9
About 8,000 years ago	Northern Peru	Coca leaves are chewed with lime	17
About 5,000 years ago	Taiwan	The ancestors of the island peoples of the Pacific set out	70
About 3,000 years ago	Tonga, Samoa, Vanuatu	The western Pacific is settled. The kava plant is bred	70

Date	Where	What	Chapter
About 3,000 years ago	Chavín, Peru	A stone carving shows a fanged being that holds a stalk of the San Pedro cactus	17

E2. The first texts

Date	Where	What	Chapter
Before 3000 BCE	Sumer	Writing is invented	32
About 2650 BCE	Egypt	Hesy-Ra is chief of dentists and physicians under King Djoser	35
About 2100 BCE	Nippur	A tablet lists fifteen remedies: the oldest collection of prescriptions	32
About 1770 BCE	Mari	A letter of the king gives the earliest statement that an illness passes from one person to another	32
About 1754 BCE	Babylon	The law code of Hammurabi has nine clauses on the healer	32
About 1400 BCE	Egypt	A carved stone shows a doorkeeper with a thin, shortened leg	36
About 1275 BCE	Egypt	A papyrus holds a book of dreams	36
About 1050 BCE	Babylon	Esagil-kin-apli edits the Diagnostic Handbook in forty tablets	32, 33
Until about 1050 BCE	North China	The kings of the Shang consult their ancestors on illness	44

Date	Where	What	Chapter
By about 1000 BCE	India	The *Atharvaveda* is complete, with its hymns against fever	56
About 700 BCE	Greece	The poems of Homer show skilled healers of wounds	37
Before 700 BCE	Egypt	A wooden toe with a leather strap is worn by a woman near Luxor	36
581 BCE	China	The duke of Jin sends for a physician from another state	44
About 519 BCE	Egypt	The House of Life at Sais is restored	35
About 500 BCE	Southern Italy	Alcmaeon of Croton: health is the equal standing of the powers in the body	37

E3. The classical books

Date	Where	What	Chapter
About 460 BCE	Kos	Hippocrates is born	38
430 to 330 BCE	Greece	Most of the Hippocratic writings	38
4th century BCE	Epidaurus	The cures of the god are cut in stone	37
4th century BCE and after	India	The monks' rule of the Buddhists gives the oldest account of drugs, cases and nursing	56
331 BCE	Egypt	Alexandria is founded and becomes the centre of Greek medicine	36, 39
About 257 BCE	India	The edict of Ashoka: medical care for people and for animals	56
217 BCE	China	Bamboo texts in a tomb list the demons and the countermeasures	44
168 BCE	Mawangdui, China	A tomb is closed with medical manuscripts: eleven vessels, recipes for fifty-two ailments	44
About 167 BCE	China	The physician Chunyu Yi reports twenty-five cases to the emperor	44

Date	Where	What	Chapter
113 BCE	China	A prince is buried with nine needles of gold and silver	51
About 90 BCE	China	Sima Qian writes the life of Bian Que	44
37 BCE	China	Death of Jing Fang, who found that the fifty-third note nearly returns to the first	2, 46
1st century BCE to 1st century CE	China	The *Inner Classic of the Yellow Emperor*	44, 45
1st to 5th century	India	The collections of Caraka and of Sushruta	56
129	Pergamon	Galen is born	39
About 200	China	The *Treatise on Cold Damage* of Zhang Zhongjing	44
About 260	China	The *Systematic Classic of Needling and Burning*: 349 points	44
About 280	China	The *Pulse Classic*: twenty-four pulses, three places at the wrist	44
About 340	China	The handbook of Ge Hong, with the line on sweet wormwood	44, 52

E4. From 600 to 1800

Date	Where	What	Chapter
About 600	India	Vagbhata puts the whole of medicine in verse	56
610	China	*Origins and Signs of All Illnesses*: more than 1,700 conditions	44
652	China	Sun Simiao: the whole of medicine and the ethics of the physician	44
659	China	The first official drug book	44
About 700	India	The *Diagnosis* of Madhava	56
About 865	Persia	Al-Razi is born	40
About 950	England	Bald’s Leechbook	42
10th century	Italy	Physicians gather at Salerno, the first school of medicine in Europe	42
980 to 1037	Bukhara and Persia	Ibn Sina, the author of the *Canon of Medicine*	40
984	Japan	*Prescriptions at the Heart of Medicine*, in thirty scrolls	65
1027	China	The classic of the bronze figure: 354 points	44
1098 to 1179	Rhineland	Hildegard of Bingen	42

Date	Where	What	Chapter
1126 to 1202	Tibet	Yuthok the Younger gives the Four Tantras their present form	62
1138	Cordoba	Maimonides is born	42
1247	China	*The Washing Away of Wrongs*: the examination of the dead	44
About 1300	India	The collection of Sharngadhara: pharmacy, and the pulse	56
1341	China	The first book on the tongue, with thirty-six drawings	49
14th century	Vietnam	The monk Tue Tinh, honoured as founder of the southern medicine	65
1348	Paris	The plague arrives, and the faculty lays it to the planets and to corrupted air	41
1493 to 1541	Central Europe	Paracelsus	42
1543	Padua	Vesalius draws human anatomy from human bodies	42
1596	China	The *Systematic Materia Medica* of Li Shizhen: 1,892 drugs	44

Date	Where	What	Chapter
1601	China	The *Great Compendium of Needling and Burning*	44
1610 to 1613	Korea	The compendium of Heo Jun is finished and printed	65
1628	London	Harvey: the blood goes round the body in a circle	42
1642	China	*On Pestilence*: epidemics from a particular *qi*	44
1672	Siberia	The exiled priest Avvakum describes a Tungus shaman	9
1696	Lhasa	A college of medicine is founded on the hill opposite the palace	62
1761	Padua	Morgagni: each illness has a seat in an organ	42
1774	Japan	A Dutch book of anatomy appears in Japanese	65
1778	Hawai‘i	The ships of James Cook arrive	68
1798	China	*Systematic Differentiation of Warm Illnesses*	44

E5. From 1800 to the present

Date	Where	What	Chapter
1800	Paris	Bichat: the seat of illness is in the tissues	42
1804	Japan	Hanaoka removes a cancer of the breast from a woman who sleeps through the operation	65
1810	Germany	The *Organon* of Hahnemann	A3
1816	Paris	Laennec: the stethoscope	42
1820	Hawai‘i	American missionaries arrive	68
1822	China	The emperor closes the department of needling and burning in the imperial academy	44
1822	Calcutta	A college teaches Indian, Greek and European medicine side by side	56
1830	China	Wang Qingren corrects the anatomy of the books from bodies	44
1835	Paris	Louis: treatments are judged by counting	42
1835	India	The government decides to support European learning only	56

Date	Where	What	Chapter
1858	Berlin	Virchow: the seat of illness is in the cell	42
1858	Lourdes	A girl of fourteen sees a lady in a cave	42
1860 to 1885	France and Germany	Pasteur and Koch: many illnesses have a living cause from outside	42
1870	Cape Town	Wilhelm Bleek learns of /Xam prisoners and begins to take down their words	12
1874	Japan	Every physician must pass an examination in Western medicine	65
1874	United States	Still announces osteopathy	A4
1883	Lourdes	A medical office begins to examine reported cures	42
1894	Korea	Lee Je-ma teaches that people are born in four kinds	65
1895	Japan	Parliament rejects a petition to keep a licence for the old medicine	65
1895	United States	Palmer founds chiropractic	A4
1907	New Zealand	A law suppresses the Māori experts	70

Date	Where	What	Chapter
1911	London	A selection of the / Xam testimony is published	12
1916	Lhasa	A second college, for medicine and the reckoning of the stars	62
1929	Nanjing	A government conference adopts a proposal to abolish the old medicine	44
1948	Britain	The first modern trial by lot, of a drug against consumption	A8
1951	Paris	Eliade publishes his survey of shamanism	9
1956	China	Colleges of Chinese medicine open in four cities	44
1961	Dharamsala	The Tibetan college of medicine is founded again in exile	62
1962	New Zealand	The law of 1907 is repealed	70
1967	Japan	The health insurance begins to pay for some of the old formulas	65
1971	Suriname	The ban on Winti ends	30

Date	Where	What	Chapter
1971	Beijing	An extract of sweet wormwood clears the malaria parasite from every infected mouse	52
1978	United States	Native religion receives full protection in law	9
1988	United States	Congress passes a law for the health of native Hawaiians	68
2005	Nigeria	The United Nations declare Ifá a masterpiece of the heritage of mankind	24
2014	India	The old systems receive a ministry of their own	56
2015	Stockholm	Tu Youyou receives the Nobel Prize	52
2024	United States	The federal health insurer allows four states to pay for traditional healing in tribal clinics	9

What the line shows

The oldest healer in the record is far older than the oldest text. Some thirty-six thousand years lie between the Lion Man and the tablet of Nippur.

The three great systems took their written form in the same few centuries. The Hippocratic writings date from 430 to 330 before our era. The *Inner Classic* was written about the beginning of our era. The collections of Caraka and Sushruta followed within five centuries.

In Europe the seat of illness moved inward. Between 1761 and 1858 it went from the organ to the tissue and from the tissue to the cell. No other medicine of this book took this road.

The old medicines were closed by their own governments, and came back. China closed its department of needling in 1822 and voted to abolish the old medicine in 1929. Japan required a Western examination in 1874. New Zealand outlawed its experts in 1907. The return began in the 1950s. China opened colleges in 1956. The Tibetan college was founded again in exile in 1961. New Zealand repealed its law in 1962, and Japan began to pay for the old formulas in 1967.

Annotated references

The list is ordered by the part of the book in which a source is first used, and then by author. Each entry says why the source is worth reading. A reader who wants to go on can start with the entries marked as a first book.

General and front matter

Konstapel, J. (2025). Wat is het Vast Active Living Intelligence System? en hoe toont het Zich? constable.blog, 11 October 2025. See also maze.swarp.nl/valis.

> The source of the four figures and the five steps of an encounter used in this book. In Dutch, with long English appendices on the ancient parallels.

Konstapel, J. (2026a). Theories of Illness and Healing Beyond the Pharmaceutical Model. constable.blog, 12 November 2026.

> The list of three hundred methods from which this book started. Each entry has a name, a short description and a link. Appendix A follows its eleven groups.

Konstapel, J. (2026b). *The Vacuum.Net Theory: Foundations* and *The Vacuum.Net Theory: Physics*. Ninth Edition. Constable Research, Leiden, 27 October 2026. constable.blog.

> The formal statement of the theory: five axioms, the window of three, the three elementary closures, the two ladders and the first knot. Every statement can be checked with pencil and paper. Read the Foundations before the Physics.

Konstapel, J. (2026c). *From Chemistry to Body and Mind: How it works, why it fails, and how to cure*. Third edition. Constable Research, Leiden, 12 November 2026.

> Computes what the rule of closure gives above chemistry: chain, fold, membrane, cell, tissue, organ, rhythm, illness and cure, with an atlas of 375 illnesses. Part I of the present book leans on it.

World Health Organization (2019). *WHO Global Report on Traditional and Complementary Medicine 2019*. Geneva: WHO.

> The only worldwide count of use, regulation and practice, country by country. Use it for numbers of member states and for the legal standing of each medicine.

Part I — The Ground

Bensoussan, A., Talley, N. J., Hing, M., et al. (1998). Treatment of irritable bowel syndrome with Chinese herbal medicine: a randomized controlled trial. *JAMA* 280(18), 1585–1589.

> Standard formula, personal formula and placebo. Both formulas work; only the personal one lasts after stopping. The best trial on whether individual prescribing matters.

Bernardi, L., Sleight, P., Bandinelli, G., et al. (2001). Effect of rosary prayer and yoga mantras on autonomic cardiovascular rhythms: comparative study. *BMJ* 323, 1446–1449.

> The rosary and a yoga mantra both slow the breath to six in the minute and strengthen the body's own slow rhythms. Short and often cited; read it for the idea that two traditions found one tempo.

Buckner, W. (2022). A deceptive curing practice in hunter-gatherer societies. *Humans* 2(3), 95–103.

> Counts the "sucking cure", in which a healer removes an object from the patient's body, in 62 of 89 hunter-gatherer societies in the eHRAF files, on every inhabited continent. The author calls the practice deceptive; the count stands apart from that judgment.

Clements, F. E. (1932). Primitive concepts of disease. *University of California Publications in American Archaeology and Ethnology* 32(2), 185–252.

> The first world survey of the causes that peoples give for illness: sorcery, breach of taboo, object intrusion, spirit intrusion, soul loss. The language is of its time; the five headings have lasted.

Crick, F. H. C., Griffith, J. S. and Orgel, L. E. (1957). Codes without commas. *Proceedings of the National Academy of Sciences* 43, 416–421.

> The count of twenty readable words from four letters. A beautiful idea that the cell turned out not to use. Read it as a lesson in what a frame is.

Csordas, T. J. (1983). The rhetoric of transformation in ritual healing. *Culture, Medicine and Psychiatry* 7(4), 333–375.

> How a healing rite persuades: disposition, empowerment, transformation. Based on Catholic healing services in America.

Dick, P. K. (1981). *VALIS*. New York: Bantam.

> The novel in which the name appears. Half autobiography, half fiction; the reader sees a sharp mind trying to place an experience that will not be placed.

Dick, P. K. (2011). *The Exegesis of Philip K. Dick*. Edited by P. Jackson and J. Lethem. Boston: Houghton Mifflin Harcourt.

A selection from the eight thousand pages of journal that Dick wrote after 1974. Not to be read through; to be dipped into for the range of explanations he tried.

Dow, J. (1986). Universal aspects of symbolic healing: a theoretical synthesis. *American Anthropologist* 88(1), 56–69.

Four steps that every healing by symbol is said to share. The best short statement of the view that healing works through shared meaning.

Eisenberg, L. (1977). Disease and illness: distinctions between professional and popular ideas of sickness. *Culture, Medicine and Psychiatry* 1(1), 9–23.

The paper that separated what the patient suffers from what the doctor treats. Short and still fresh.

Eliade, M. (1964). *Shamanism: Archaic Techniques of Ecstasy*. Translated by W. R. Trask. Princeton University Press. (French original 1951.)

Still the widest survey of the shaman's journey, initiation and cosmos, people by people. Dated in its theory and too fond of Siberia as the model, but unmatched as a collection.

Ellingsen, D.-M., Isenburg, K., Jung, C., et al. (2020). Dynamic brain-to-brain concordance and behavioral mirroring as a mechanism of the patient–clinician interaction. *Science Advances* 6(43), eabc1304.

Clinician and patient were scanned at the same time during treatment of pain. Their brain activity came to match, more so after they had met. The strongest study of its kind.

Goldstein, P., Losin, E. A. R., Anderson, S. R., Schelkun, V. R. and Wager, T. D. (2020). Clinician–patient movement synchrony mediates social group effects on interpersonal trust and perceived pain. *Journal of Pain* 21(11–12), 1160–1174.

In staged medical visits, shared movement between clinician and patient goes with more trust and less pain.

Govindaraj, P., Nizamuddin, S., Sharath, A., et al. (2015). Genome-wide analysis correlates Ayurveda Prakriti. *Scientific Reports* 5, 15786.

Fifty-two hereditary markers differ between the three constitutions in 262 men sorted by Ayurvedic physicians. The first hard sign that the types are more than a manner of speaking.

Haake, M., Müller, H.-H., Schade-Brittinger, C., et al. (2007). German Acupuncture Trials (GERAC) for chronic low back pain. *Archives of Internal Medicine* 167(17), 1892–1898.

Real acupuncture 47.6 per cent, sham 44.2, standard care 27.4. The trial that made German insurers pay for acupuncture.

Hultkrantz, Å. (1953). *Conceptions of the Soul among North American Indians: A Study in Religious Ethnology*. Stockholm: Ethnographical Museum of Sweden.

The classic study of the body soul and the free soul. Long and detailed; the introduction and the chapter on soul loss are enough to see the pattern.

Jung, C. G. (1959). *Flying Saucers: A Modern Myth of Things Seen in the Skies*. Translated by R. F. C. Hull. London: Routledge and Kegan Paul. (German original 1958.)

Asks what people see in the lights in the sky, and finds the old figures of wholeness and of the visitor. The model for looking at reports without first deciding what they are.

Kaptchuk, T. J. (2011). Placebo studies and ritual theory: a comparative analysis of Navajo, acupuncture and biomedical healing. *Philosophical Transactions of the Royal Society B* 366, 1849–1858.

Sets a Navajo chant, an acupuncture session and a hospital visit side by side as rituals. Written by a man who has practised one and studied all three.

Kaptchuk, T. J., Kelley, J. M., Conboy, L. A., et al. (2008). Components of placebo effect: randomised controlled trial in patients with irritable bowel syndrome. *BMJ* 336, 999–1003.

Waiting list, silent sham, and sham with a warm practitioner: 28, 44 and 62 per cent relief. The clearest proof that the meeting itself treats.

Kauffman, L. H. (2001). *Knots and Physics*. Third edition. Singapore: World Scientific.

The standard work on the bracket, the three-colouring of knots and their link with physics. Background for the first knot in chapter 2.

Kessler, C. S., Dhiman, K. S., Kumar, A., et al. (2018). Effectiveness of an Ayurveda treatment approach in knee osteoarthritis: a randomized controlled trial. *Osteoarthritis and Cartilage* 26(5), 620–630.

Ayurveda given as a whole against good conventional care: 61 against 32 points of improvement, lasting a year. The model for testing a system instead of a fragment.

Kessler, C. S., Morandi, A., Kumar, S., et al. (2019). Reliability of Ayurvedic diagnosis for knee osteoarthritis patients: a nested diagnostic study within a randomized controlled trial. *Journal of Alternative and Complementary Medicine* 25(9), 910–919.

Ayurvedic physicians agree poorly on constitution and digestive fire and well on the final diagnosis. Read with Kessler 2018.

Kleinman, A., Eisenberg, L. and Good, B. (1978). Culture, illness, and care: clinical lessons from anthropologic and cross-cultural research. *Annals of Internal Medicine* 88(2), 251–258.

Introduces the explanatory model and the questions by which a doctor can ask for it. For the full argument see Kleinman's *Patients and Healers in the Context of Culture* (1980).

Knuth, D. E. (1997). *The Art of Computer Programming*, volume 2: *Seminumerical Algorithms*. Third edition. Reading, Mass.: Addison-Wesley.

Section 4.1 treats balanced ternary and calls it perhaps the prettiest number system of all. Read it for the arithmetic behind the trit.

Konstapel, J. (2025c). A Cartography of Incorporeal Intelligence. constable.blog, 15 December 2025.

A map in eight regions of the bodiless intelligences that people report, with the sources for each. Long; use the table of contents.

Konstapel, J. (2026d). *Where Illness Comes From, Completed*. Constable Research, Leiden. constable.blog.

The reference work of 375 illnesses, with measured facts, prevention and simple means for each, from which the book on the body took its atlas, its eight forms and its five layers of cure.

Konstapel, J. (2026e). The Senses on the Ladder: The Vacuum.Net Theory and the investigation and restoration of human perception. Constable Research, Leiden, 4 November 2026. DOI 10.13140/RG.2.2.32195.36647.

Perceiving as a seam that closes; the senses as places on a ladder; six rules for acting on a living structure; drift against a jump of class. The source of this chapter.

Konstapel, J. (2026f). Het Lichaam Leeft in Twee Ruimtes [The body lives in two spaces]. constable.blog, 2 June 2026.

The short statement of the dual-space body: space and antispace as two projections, the threshold of experience, and the illnesses of the coupling. In Dutch, with the English paper *The Dual-Space Body* attached.

Konstapel, J. (2026g). The Impact of Dual-Space on our Daily Life. constable.blog, 21 April 2026.

Monroe's reports taken as five demands on physics, and Rowlands' model extended to meet them. In Dutch and English.

Konstapel, J. (2026h). De Lijn van het Duale Domein: van Sahu tot Monroe [The line of the dual domain]. constable.blog, 21 July 2026.

The history of the complementary domain as one observation found again and again, from the shaman to present physics. The table in this chapter follows it.

Lewis-Williams, D. (2002). *The Mind in the Cave: Consciousness and the Origins of Art*. London: Thames and Hudson.

Reads the painted caves of Europe with the help of the San trance dance and the stages of altered awareness. Disputed in parts, and the most serious attempt to connect the oldest art with the oldest healing.

Lo-Coco, F., Avvisati, G., Vignetti, M., et al. (2013). Retinoic acid and arsenic trioxide for acute promyelocytic leukemia. *New England Journal of Medicine* 369(2), 111–121.

The trial in which an old Chinese poison, with one partner, beat chemotherapy.

Luna, L. E. (1986). *Vegetalismo: Shamanism among the Mestizo Population of the Peruvian Amazon*. Stockholm: Almqvist and Wiksell.

The basic study of the plant healers of the upper Amazon: the diet, the plant teachers, the songs, the darts. Every later work on ayahuasca healing builds on it.

Mack, J. E. (1994). *Abduction: Human Encounters with Aliens*. New York: Scribner.

A Harvard psychiatrist's case studies of people who report being taken. He found no illness that explained the reports, and lasting change in those who made them.

McClain, E. G. (1976). *The Myth of Invariance: The Origin of the Gods, Mathematics and Music from the Rg Veda to Plato*. New York: Nicolas Hays.

Argues that the number lore of the old texts is tuning theory: powers of two and three and their near-meetings. Speculative in places, but it shows how far the two ladders reach into old thought.

Moerman, D. E. and Jonas, W. B. (2002). Deconstructing the placebo effect and finding the meaning response. *Annals of Internal Medicine* 136(6), 471–476.

Proposes the term "meaning response" for what trials call placebo. A good first paper on the subject.

Monroe, R. A. (1971). *Journeys Out of the Body*. New York: Doubleday. See also *Far Journeys* (1985) and *Ultimate Journey* (1994).

A businessman's plain record of leaving his body, kept over decades. The three books together give the map of Focus levels used by the author.

Murdock, G. P. (1980). *Theories of Illness: A World Survey*. University of Pittsburgh Press.

Codes the theories of illness of 139 societies. Useful for its counts; its division into natural and supernatural causes has been rightly criticised.

Needham, J., with Wang Ling and K. G. Robinson (1962). *Science and Civilisation in China*, volume 4, part 1: *Physics*. Cambridge University Press.

The section on sound gives the Chinese pitch pipes, the method of adding and taking away a third, and Jing Fang's series of sixty notes. The best single source for the ladders of two and three in China.

Nortje, G., Oladeji, B., Gureje, O. and Seedat, S. (2016). Effectiveness of traditional healers in treating mental disorders: a systematic review. *Lancet Psychiatry* 3(2), 154–170.

Thirty-two studies from twenty countries. Help for common distress; none shown for severe illness. The fairest summary available.

O'Brien, K. A. and Birch, S. (2009). A review of the reliability of traditional East Asian medicine diagnoses. *Journal of Alternative and Complementary Medicine* 15(4), 353–366.

Gathers the earlier studies of agreement on pulse, tongue and pattern. Shows that agreement rises when terms are defined in advance.

O'Brien, K. A., Varigos, G. A., Black, C. and Komesaroff, P. A. (2013). Study of a traditional Japanese acupuncture method (Toyohari). PubMed 23611083.

Sixty-two people; the pulse was used both to choose the treatment and to decide when it was complete. One of the few studies that leave the loop of reading and treating whole.

Palhano-Fontes, F., Barreto, D., Onias, H., et al. (2019). Rapid antidepressant effects of the psychedelic ayahuasca in treatment-resistant depression: a randomized placebo-controlled trial. *Psychological Medicine* 49(4), 655–663.

One session, twenty-nine patients, a large difference from placebo at seven days. The only controlled trial of the brew so far.

Popplewell, M., Reizes, J. and Zaslawski, C. (2019). Consensus in traditional Chinese medical diagnosis in open populations. *Journal of Alternative and Complementary Medicine*. PubMed 29493255.

Thirty-five members of the public, several practitioners, a list of 56 patterns: 23 per cent agreement. The plainest figures on how far Chinese pattern diagnosis repeats.

Prasher, B., Varma, B., Kumar, A., et al. (2017). Ayurgenomics for stratified medicine: TRISUTRA consortium initiative across ethnically and geographically diverse Indian populations. *Journal of Ethnopharmacology* 197, 274–293.

The Indian national programme that links constitution to genes and bodily measures. Use it to see how far this line of work has gone.

Rasmussen, K. (1929). *Intellectual Culture of the Iglulik Eskimos*. Report of the Fifth Thule Expedition 1921–24, volume 7, part 1. Copenhagen: Gyldendal.

The Inuit shamans speak for themselves here, on the light that makes a shaman, on the helping spirits and on the causes of illness. One of the best first-hand records of any shamanism.

Reddan, M. C., Young, H., Falkner, J., López-Solà, M. and Wager, T. D. (2020). Touch and social support influence interpersonal synchrony and pain. *Social Cognitive and Affective Neuroscience* 15(10), 1064–1075.

Holding the hand of a partner in pain brings the two bodies into step and lowers the pain. Simple design, clear result.

Reddy, B. and Fan, A. Y. (2022). Incorporation of complementary and traditional medicine in ICD-11. *BMC Medical Informatics and Decision Making* 21 (Suppl. 6), 381.

Explains the chapter on traditional medicine in the World Health Organization's classification: 150 disorders, 196 patterns, and the rule of double coding.

Rowlands, P. (2007). *Zero to Infinity: The Foundations of Physics*. Singapore: World Scientific.

The nilpotent rewriting of the Dirac equation from which the theory was derived, and the source of the dual space used in chapter 6. Hard reading; the first and last chapters give the idea.

Saper, R. B., Phillips, R. S., Sehgal, A., et al. (2008). Lead, mercury, and arsenic in US- and Indian-manufactured Ayurvedic medicines sold via the Internet. *JAMA* 300(8), 915–923.

A fifth of the remedies contained toxic metals. Required reading before taking any remedy of this kind.

Schäfer, C., Rosenblum, M. G., Kurths, J. and Abel, H.-H. (1998). Heartbeat synchronized with ventilation. *Nature* 392, 239–240.

The first clear demonstration that the heart can lock to the breath in whole-number ratios in resting people. Two pages; the starting point for phase locking in the body.

Spencer-Brown, G. (1969). *Laws of Form*. London: Allen and Unwin.

Begins with one instruction: draw a distinction. The Foundations name it as the ground of the first axiom. Short, strange and worth the effort.

Strassman, R. (2001). *DMT: The Spirit Molecule*. Rochester, Vermont: Park Street Press.

The record of a hospital study in which volunteers were given DMT. Many reported beings that examined them; the researcher had not expected it and says so.

Tschacher, W. and Meier, D. (2020). Physiological synchrony in psychotherapy sessions. *Psychotherapy Research* 30(5), 558–573.

Heart and breath of therapist and patient come into step during sessions, and the step is linked to the quality of the bond.

Tsomo and colleagues (2024). A self-assessment tool for Tibetan constitution types. PubMed 38637264.

A questionnaire for the Tibetan constitution, tested on 973 people and checked against expert physicians: agreement 80 to 93 per cent.

Tu, Y. (2011). The discovery of artemisinin (qinghaosu) and gifts from Chinese medicine. *Nature Medicine* 17(10), 1217–1220.

The discoverer's own account, including the old text that told her not to boil the herb.

Utts, J. (1996). An assessment of the evidence for psychic functioning. *Journal of Scientific Exploration* 10(1), 3–30. With the reply by R. Hyman in the same issue.

The two official reviews of the American remote-viewing programme, one concluding that the effect is real, one that it is unproven. Read both; together they show exactly where the dispute lies.

Vallée, J. (1969). *Passport to Magonia: From Folklore to Flying Saucers*. Chicago: Henry Regnery.

Lays the modern reports beside the fairy lore of Europe and shows that they are the same stories. The first book to treat the matter as one phenomenon across the centuries.

Vickers, A. J., Vertosick, E. A., Lewith, G., et al. (2018). Acupuncture for chronic pain: update of an individual patient data meta-analysis. *Journal of Pain* 19(5), 455–474.

Pooled records of 20,827 patients from 39 trials. Real needles beat sham by a little and no needles by a lot. The reference point for every discussion of acupuncture.

Vickhoff, B., Malmgren, H., Åström, R., et al. (2013). Music structure determines heart rate variability of singers. *Frontiers in Psychology* 4, 334.

Choir singers' hearts speed up and slow down together, most with slow phrases of ten seconds. Small study; the figures show the effect plainly.

Wang, C. X., Hilburn, I. A., Wu, D.-A., et al. (2019). Transduction of the geomagnetic field as evidenced from alpha-band activity in the human brain. *eNeuro* 6(2).

Thirty-six adults; turning an earth-strength magnetic field changed their brain waves while they noticed nothing. The cleanest measured case of a human response without awareness.

Xygalatas, D., Konvalinka, I., Bulbulia, J. and Roepstorff, A. (2011). Quantifying collective effervescence: heart-rate dynamics at a fire-walking ritual. *Communicative and Integrative Biology* 4(6), 735–738.

> Heart rates of fire-walkers and their relatives in the crowd move together; those of unrelated onlookers do not. A rare measurement made inside a living rite.

Part II — The Oldest Medicine: The Shaman

Aalbers, S., Fusar-Poli, L., Freeman, R. E., et al. (2017). Music therapy for depression. *Cochrane Database of Systematic Reviews* (11), CD004517.

The standard review. Music therapy added to usual care does better than usual care alone, at least in the short term.

Ader, R. and Cohen, N. (1975). Behaviorally conditioned immunosuppression. *Psychosomatic Medicine* 37(4), 333–340.

Rats learn to suppress their immune response to a sweet taste. The founding experiment of a whole field.

Adhikari, M. (2010). *The Anatomy of a South African Genocide: The Extermination of the Cape San Peoples*. UCT Press.

A short history of how the San of the Cape were destroyed between 1700 and 1880. Needed to understand under what conditions the /Xam testimony was given.

Adler, S. R. (2011). *Sleep Paralysis: Night-mares, Nocebos, and the Mind-Body Connection*. Rutgers University Press.

Connects the sudden deaths of Hmong refugees to the nightmare of the pressing spirit and to the loss of protective rites. A serious argument that belief can kill.

Albaugh, B. J. and Anderson, P. O. (1974). Peyote in the treatment of alcoholism among American Indians. *American Journal of Psychiatry* 131(11), 1247–1250.

Hospital doctors report on peyote meetings as part of a treatment programme for alcoholism. An early clinical view from inside the health service.

Albrecht, G., Sartore, G.-M., Connor, L., et al. (2007). Solastalgia: the distress caused by environmental change. *Australasian Psychiatry* 15 (Suppl. 1), S95–S98.

Introduces the word for the distress of people whose home ground is being changed around them, from studies of mining and drought in New South Wales.

Anisimov, A. F. (1963). The shaman's tent of the Evenks and the origin of the shamanistic rite. In H. N. Michael (ed.), *Studies in Siberian Shamanism*. University of Toronto Press, 84–123.

Describes the wooden model of the world that an Evenki clan built for a great session, and a full session inside it. Nowhere else is the shaman's cosmos so exactly recorded.

Aubert, M., Lebe, R., Oktaviana, A. A., et al. (2019). Earliest hunting scene in prehistoric art. *Nature* 576, 442–445.

The Sulawesi scene with figures that are part human and part animal, at least 43,900 years old. A later paper by the same group (Oktaviana and others, *Nature* 2024) gives still older dates.

Bacigalupo, A. M. (2007). *Shamans of the Foye Tree: Gender, Power, and Healing among Chilean Mapuche*. University of Texas Press.

On the Mapuche healers, their call, their tree and drum, and the crossing of male and female in their work.

Bahr, D. M., Gregorio, J., Lopez, D. I. and Alvarez, A. (1974). *Piman Shamanism and Staying Sickness (Ká:cim Múmkidag)*. University of Arizona Press.

A shaman explains his own theory, in his own language with translation, to a team that includes two native speakers. No other book lets a healer reason so fully about what he does.

Balzer, M. M. (ed.) (1997). *Shamanic Worlds: Rituals and Lore of Siberia and Central Asia*. North Castle Books.

Translations of key studies by Russian and native scholars, among them Anisimov, Popov and Alekseev, with an account of the revival after 1990. The best way into the Russian literature.

Basedow, H. (1925). *The Australian Aboriginal*. F. W. Preece.

By a physician and explorer. Contains the much-quoted description of a man at whom the bone has been pointed.

Bassett, I. B., Pannowitz, D. L. and Barnetson, R. S. (1990). A comparative study of tea-tree oil versus benzoylperoxide in the treatment of acne. *Medical Journal of Australia* 153(8), 455–458.

A trial in 124 patients. Both treatments worked; the oil acted more slowly and irritated less.

Bastien, J. W. (1978). *Mountain of the Condor: Metaphor and Ritual in an Andean Ayllu*. West Publishing.

The Kallawaya of Mount Kaata, who see their mountain as a body and feed it at its shrines. The classic study of the Andean link between land, community and health.

Bastien, J. W. (1985). Qollahuaya-Andean body concepts: a topographical-hydraulic model of physiology. *American Anthropologist* 87(3), 595–611.

Sets out how the Kallawaya understand the body: air, blood and fat moving inward and outward. Contrasts this with the Greek balance of humours. The terms in the title are the author’s.

Benedetti, F., Amanzio, M., Vighetti, S. and Asteggiano, G. (2006). The biochemical and neuroendocrine bases of the hyperalgesic nocebo effect. *Journal of Neuroscience* 26(46), 12014–12022.

Shows in volunteers that the expectation of pain raises pain by a specific chemical route, and that a blocking drug prevents it.

Berglund, A.-I. (1976). *Zulu Thought-Patterns and Symbolism*. C. Hurst.

By a man who grew up speaking Zulu. Explains the brooding of the shades, the meaning of white, and the training of diviners in the diviners' own terms.

Bergman, R. L. (1973). A school for medicine men. *American Journal of Psychiatry* 130(6), 663–666.

The Rough Rock programme in which singers taught apprentices on a government grant, described by the psychiatrist who worked with them.

Beyer, S. V. (2009). *Singing to the Plants: A Guide to Mestizo Shamanism in the Upper Amazon*. University of New Mexico Press.

The most complete and most readable account of the mestizo healers, by a scholar who trained with two of them. Covers phlegm, darts, songs, sorcery, plants and the tourist trade, with full references.

Biesele, M. (1993). *Women Like Meat: The Folklore and Foraging Ideology of the Kalahari Ju/'hoan*. Witwatersrand University Press.

The stories of the Ju/'hoansi and what they say about men, women, hunting and n/om, by the scholar who knows the language best.

Bird-David, N. (1999). "Animism" revisited: personhood, environment, and relational epistemology. *Current Anthropology* 40 (Suppl.), S67–S91.

Shows, from the Nayaka of South India, that animism is a way of knowing by relating. With comments by other scholars.

Bittman, B. B., Berk, L. S., Felten, D. L., et al. (2001). Composite effects of group drumming music therapy on modulation of neuroendocrine-immune parameters in normal subjects. *Alternative Therapies in Health and Medicine* 7(1), 38–47.

An hour of group drumming raised the activity of certain immune cells compared with rest and listening.

Bleek, D. F. (1935). Beliefs and customs of the /Xam Bushmen. Part VII: Sorcerors. *Bantu Studies* 9(1), 1–47.

Diä!kwain's and /Han≠kass'o's accounts of the healers: the sniffing out of harm, the nasal blood, the lion's hair, the buchu. The word "sorcerors" in the title is the editor's.

Bleek, D. F. (1936). Beliefs and customs of the /Xam Bushmen. Part VIII: More about sorcerors and charms. *Bantu Studies* 10(2), 131–162.

Continues the accounts, with the healers of the rain and of the game.

Bleek, W. H. I. and Lloyd, L. C. (1911). *Specimens of Bushman Folklore*. George Allen.

The first published selection from the notebooks, with the /Xam text facing the English. Holds the stories of the Mantis and the eland and //Kabbo's words on stories and the wind.

Boas, F. (1930). *The Religion of the Kwakiutl Indians* (2 vols). Columbia University Press.

Contains, in the original language and in translation, the account "I desired to learn the ways of the shaman" on which the story of Quesalid rests.

Boddy, J. (1989). *Wombs and Alien Spirits: Women, Men, and the Zar Cult in Northern Sudan*. University of Wisconsin Press.

The zar spirits and the women they possess in a Sudanese village. A model study of possession as a lasting relation and not a disease to be removed.

Bogenschutz, M. P., Ross, S., Bhatt, S., et al. (2022). Percentage of heavy drinking days following psilocybin-assisted psychotherapy vs placebo in the treatment of adult patients with alcohol use disorder. *JAMA Psychiatry* 79(10), 953–962.

Two sessions within a course of psychotherapy more than halved heavy drinking over eight months.

Bogoras, W. (1904–1909). *The Chukchee*. Memoirs of the American Museum of Natural History, vol. 11. Brill and Stechert.

The fullest account of a Siberian people before the Soviet period, by a man who lived with them for years. The chapters on shamanism describe the call, the sessions and the "separate voices".

Bouso, J. C., Andión, Ó., Sarris, J. J., et al. (2022). Adverse effects of ayahuasca: results from the Global Ayahuasca Survey. *PLOS Global Public Health* 2(11), e0000438.

More than ten thousand drinkers report what went wrong, in the body and afterwards in the mind. The best available figures on harm.

Brabec de Mori, B. and Mori Silvano de Brabec, L. (2009). Shipibo-Konibo art and healing concepts: a critical view on the "aesthetic therapy". *Viennese Ethnomedicine Newsletter* 11(2–3), 18–26.

A correction by a musicologist who lived among the Shipibo and his Shipibo wife. The designs are not written songs, and much of what tourists are told is recent.

Brown, J. E. (1953). *The Sacred Pipe: Black Elk's Account of the Seven Rites of the Oglala Sioux*. University of Oklahoma Press.

Black Elk explains the sweat lodge, the vision quest, the Sun Dance and four other rites, step by step, with their meaning.

Burgess, C. P., Johnston, F. H., Berry, H. L., et al. (2009). Healthy country, healthy people: the relationship between Indigenous health status and "caring for country". *Medical Journal of Australia* 190(10), 567–572.

Links taking part in the care of country to lower body fat, blood pressure and diabetes in one Arnhem Land community.

Bussmann, R. W. and Sharon, D. (2006). Traditional medicinal plant use in Northern Peru: tracking two thousand years of healing culture. *Journal of Ethnobiology and Ethnomedicine* 2, 47.

An inventory of about five hundred healing plants sold and used in northern Peru today, compared with what the old pottery shows.

Buyandelger, M. (2013). *Tragic Spirits: Shamanism, Memory, and Gender in Contemporary Mongolia*. University of Chicago Press.

Why shamans multiplied among the Buryats of Mongolia after 1990: the forgotten dead came back as misfortune. Shows illness as a matter of the family's past.

Bäckman, L. and Hultkrantz, Å. (1978). *Studies in Lapp Shamanism*. Almqvist and Wiksell.

The standard account of the noaidi from the old sources: his helpers, his drum, his journey, and how he compares with the shamans of Siberia.

Callaway, H. (1870). *The Religious System of the Amazulu*. Springvale, Natal: J. A. Blair.

Zulu texts with English translation, taken down in the 1860s. The section on diviners gives the oldest full description of the calling illness in the words of Zulu speakers.

Cannon, W. B. (1942). "Voodoo" death. *American Anthropologist* 44(2), 169–181.

The physiologist who discovered the alarm reaction asks whether fear can kill, and gathers the reports. The starting point of all later work on the question.

Carey, I. M., Shah, S. M., DeWilde, S., et al. (2014). Increased risk of acute cardiovascular events after partner bereavement: a matched cohort study. *JAMA Internal Medicine* 174(4), 598–605.

More than thirty thousand bereaved older people compared with matched others. Twice the rate of heart attack and stroke in the first month.

Carson, C. F., Hammer, K. A. and Riley, T. V. (2006). Melaleuca alternifolia (tea tree) oil: a review of antimicrobial and other medicinal properties. *Clinical Microbiology Reviews* 19(1), 50–62.

Sums up the laboratory and clinical evidence on tea tree oil, with its limits and its risks to the skin.

Carvalho, C., Caetano, J. M., Cunha, L., et al. (2016). Open-label placebo treatment in chronic low back pain: a randomized controlled trial. *Pain* 157(12), 2766–2772.

Repeats the finding for back pain: openly inert pills, added to usual care, reduced pain and disability.

Cawte, J. (1974). *Medicine Is the Law: Studies in Psychiatric Anthropology of Australian Tribal Societies*. University Press of Hawaii.

A psychiatrist's field studies in the north, with the illness malgri and many case histories. The title states the main finding: medicine and Law are one.

Chandler, M. J. and Lalonde, C. (1998). Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcultural Psychiatry* 35(2), 191–219.

Youth suicide in nearly two hundred communities, set against six markers of control over their own affairs. Where all six were present, no young person died by suicide.

Clarke, P. A. (2008). Aboriginal healing practices and Australian bush medicine. *Journal of the Anthropological Society of South Australia* 33, 3–38.

A survey of the records of healers and remedies from the whole continent, by a museum ethnobotanist. The best single overview of bush medicine.

Clarkson, C., Jacobs, Z., Marwick, B., et al. (2017). Human occupation of northern Australia by 65,000 years ago. *Nature* 547, 306–310.

The dating of the Madjedbebe rock shelter. Some archaeologists prefer a later date; none puts the first arrival much after 50,000 years.

Colloca, L., Lopiano, L., Lanotte, M. and Benedetti, F. (2004). Overt versus covert treatment for pain, anxiety, and Parkinson's disease. *Lancet Neurology* 3(11), 679–684.

The same dose works better when the patient sees it given than when a hidden pump gives it. Measures what the visible act of treating adds.

Coulehan, J. L. (1980). Navajo Indian medicine: implications for healing. *Journal of Family Practice* 10(1), 55–61.

A reservation physician describes the diagnosticians, the singers and three cases, and asks what Western doctors can learn about the difference between curing and healing.

Csordas, T. J. (2000). The Navajo Healing Project. *Medical Anthropology Quarterly* 14(4), 463–475.

Introduces a set of studies of traditional, peyote and Christian healing among the Navajo, carried out with Navajo researchers. The other papers in the same issue report the findings.

Czaplicka, M. A. (1914). *Aboriginal Siberia: A Study in Social Anthropology*. Clarendon Press.

Gathers the Russian reports of the nineteenth century for English readers. The source of the idea of arctic hysteria; read it for the facts it collects and not for that idea.

d'Errico, F., Backwell, L., Villa, P., et al. (2012). Early evidence of San material culture represented by organic artifacts from Border Cave, South Africa. *Proceedings of the National Academy of Sciences* 109(33), 13214–13219.

Digging sticks, bone points, beads and a poison applicator, about 44,000 years old, matching San objects of recent times.

Davidson, J. R. and Ortiz de Montellano, B. R. (1983). The antibacterial properties of an Aztec wound remedy. *Journal of Ethnopharmacology* 8(2), 149–161.

Tests maguey sap and salt against the bacteria of wounds and finds that the mixture works. A model of how to test an old remedy as it was actually used.

de la Fuente-Fernández, R., Ruth, T. J., Sossi, V., et al. (2001). Expectation and dopamine release: mechanism of the placebo effect in Parkinson's disease. *Science* 293(5532), 1164–1166.

Brain scans show that a dummy injection releases dopamine in patients with Parkinson's disease.

Desjarlais, R. R. (1992). *Body and Emotions: The Aesthetics of Illness and Healing in the Nepal Himalayas*. University of Pennsylvania Press.

An anthropologist becomes a shaman's pupil among the Yolmo and describes soul loss and soul calling from within. The best account anywhere of what losing one's soul feels like.

Dillehay, T. D., Rossen, J., Ugent, D., et al. (2010). Early Holocene coca chewing in northern Peru. *Antiquity* 84(326), 939–953.

Chewed coca leaves and lime from house floors about eight thousand years old. Shows that coca is among the oldest cultivated plants of the continent.

Eastwell, H. D. (1982). Voodoo death and the mechanism for dispatch of the dying in East Arnhem, Australia. *American Anthropologist* 84(1), 5–18.

Argues from observed cases that the marked person dies of thirst after the kin withdraw. Sobering, and disputed.

Elkin, A. P. (1945). *Aboriginal Men of High Degree*. Australasian Publishing. 2nd ed. University of Queensland Press, 1977.

Gathers what was known of the healers from every part of the continent: their making, their powers, their standing. Written to counter the view that they were impostors.

Estrada, Á. (1981). *María Sabina: Her Life and Chants*. Ross-Erikson.

The life of the Mazatec healer in her own words, taken down in Mazatec by a neighbour, with her chants. The source for the Book of Wisdom and for her verdict on what the visitors did to the mushrooms.

Evans-Pritchard, E. E. (1937). *Witchcraft, Oracles and Magic among the Azande*. Clarendon Press.

The book that showed witchcraft to be a reasoned answer to the question "why me, why now". Contains the example of the collapsing granary. The foundation of all later study of sorcery.

Fabrega, H. and Silver, D. B. (1973). *Illness and Shamanistic Curing in Zinacantan: An Ethnomedical Analysis*. Stanford University Press.

A psychiatrist and an anthropologist study the seers: who they are, how they pulse, how far they agree. Shows that illness names sort causes and not symptoms.

Fabricant, D. S. and Farnsworth, N. R. (2001). The value of plants used in traditional medicine for drug discovery. *Environmental Health Perspectives* 109 (Suppl. 1), 69–75.

Counts 122 plant compounds in medical use and finds that four fifths are used as traditional healers used the plant. The strongest single argument that the old pharmacies were based on observation.

Fadiman, A. (1997). *The Spirit Catches You and You Fall Down: A Hmong Child, Her American Doctors, and the Collision of Two Cultures*. Farrar, Straus and Giroux.

The case of Lia Lee. A model of how to describe two medicines without taking sides, and required reading in many medical schools.

Fancourt, D., Perkins, R., Ascenso, S., et al. (2016). Effects of group drumming interventions on anxiety, depression, social resilience and inflammatory immune response among mental health service users. *PLoS ONE* 11(3), e0151136.

Ten weeks of weekly drumming lowered depression and anxiety and shifted blood markers of inflammation; a social comparison group did not change.

Finkler, K. (1985). *Spiritualist Healers in Mexico: Successes and Failures of Alternative Therapeutics*. Praeger.

Two years in a healing temple, with follow-up of patients. Unusually honest about who was helped, who was not, and who became a healer.

Flückiger, C., Del Re, A. C., Wampold, B. E. and Horvath, A. O. (2018). The alliance in adult psychotherapy: a meta-analytic synthesis. *Psychotherapy* 55(4), 316–340.

Pools 295 studies. The bond between therapist and client predicts the result of treatment in every method.

Foster, G. M. (1965). Peasant society and the image of limited good. *American Anthropologist* 67(2), 293–315.

Explains envy, the fear of envy and much of folk illness from the assumption that all good exists in fixed amounts. A short and much-debated classic.

Frattaroli, J. (2006). Experimental disclosure and its moderators: a meta-analysis. *Psychological Bulletin* 132(6), 823–865.

Pools 146 experiments on writing or talking about hidden experiences. A small, reliable benefit for health and well-being.

Gebhart-Sayer, A. (1986). Una terapia estética: los diseños visionarios del ayahuasca entre los Shipibo-Conibo. *América Indígena* 46(1), 189–218.

The Shipibo healers' own account of illness as a spoiled design on the body and of healing as singing a new design onto it. One of the most exact descriptions of a healing theory in all ethnography.

Gingras, B., Pohler, G. and Fitch, W. T. (2014). Exploring shamanic journeying: repetitive drumming with shamanic instructions induces specific subjective experiences but no larger cortisol decrease than instrumental meditation music. *PLoS ONE* 9(7), e102103.

A careful experiment that separates the effect of the drum from the effect of the instruction. The instruction, not the drum alone, shapes the experience.

Girault, L. (1987). *Kallawaya: curanderos itinerantes de los Andes*. UNICEF, OPS and OMS, La Paz.

An inventory of some nine hundred plants and other remedies of the Kallawaya, with their uses, gathered over many years. The reference work on their pharmacy.

Goebel, M. U., Trebst, A. E., Steiner, J., et al. (2002). Behavioral conditioning of immunosuppression is possible in humans. *FASEB Journal* 16(14), 1869–1873.

The same in people: a distinctive drink, once paired with a drug, later lowers immune activity by itself.

Goodwin, G. M., Aaronson, S. T., Alvarez, O., et al. (2022). Single-dose psilocybin for a treatment-resistant episode of major depression. *New England Journal of Medicine* 387(18), 1637–1648.

The largest trial so far: 233 patients, three doses. The highest dose did better than the lowest at three weeks; the effect faded in many by twelve weeks.

Griffiths, R. R., Johnson, M. W., Carducci, M. A., et al. (2016). Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: a randomized double-blind trial. *Journal of Psychopharmacology* 30(12), 1181–1197.

Fifty-one patients; relief in about four out of five at six months after one high dose given with careful support.

Grosman, L., Munro, N. D. and Belfer-Cohen, A. (2008). A 12,000-year-old shaman burial from the southern Levant (Israel). *Proceedings of the National Academy of Sciences* 105(46), 17665–17669.

The grave at Hilazon Tachtit, with its tortoise shells, eagle wing and leopard pelvis. The best-described early burial of a person set apart.

Guenther, M. (1999). *Tricksters and Trancers: Bushman Religion and Society*. Indiana University Press.

Compares the beliefs and dances of all San groups, north and south, living and extinct. Shows how much they share and how loosely it is all held.

Haeberlin, H. K. (1918). Sbetetda'q, a shamanistic performance of the Coast Salish. *American Anthropologist* 20(3), 249–257.

An eyewitness description of the "spirit canoe" rite, in which a crew of shamans travels to the land of the dead to bring back a soul. Short and exact.

Hallowell, A. I. (1955). *Culture and Experience*. University of Pennsylvania Press.

Collected essays on the northern Ojibwe, among them the studies of the shaking tent and of illness as the result of bad conduct, cured by public confession.

Hallowell, A. I. (1960). Ojibwa ontology, behavior, and world view. In S. Diamond (ed.), *Culture in History: Essays in Honor of Paul Radin*. Columbia University Press, 19–52.

The essay that introduced "other-than-human persons". Short, concrete, and the starting point of the modern study of animism.

Halpern, J. H., Sherwood, A. R., Hudson, J. I., Yurgelun-Todd, D. and Pope, H. G. (2005). Psychological and cognitive effects of long-term peyote use among Native Americans. *Biological Psychiatry* 58(8), 624–631.

Compares Navajo church members who had used peyote for years with Navajos who had not. No deficits, and better scores on several measures of mental health.

Harner, M. (1980). *The Way of the Shaman: A Guide to Power and Healing*. Harper and Row.

The handbook of Western "core shamanism", by an anthropologist who had worked in the Amazon. Read it to understand the modern movement, and the criticism it drew.

Harner, M. J. (1972). *The Jívaro: People of the Sacred Waterfalls*. Natural History Press.

The Shuar of Ecuador in the 1950s and 1960s: darts, bewitching and curing shamans, feuds, and the search for a vision at the waterfall.

Harner, M. J. (ed.) (1973). *Hallucinogens and Shamanism*. Oxford University Press.

Field reports from the Amazon and elsewhere. Harner's own chapter, "The Sound of Rushing Water", describes how a Shuar shaman acquires his darts and chooses between healing and bewitching.

Hemmilä, H. M., Keinänen-Kiukaanniemi, S. M., Levoska, S. and Puska, P. (2002). Long-term effectiveness of bone-setting, light exercise therapy, and physiotherapy for prolonged back pain: a randomized controlled trial. *Journal of Manipulative and Physiological Therapeutics* 25(2), 99–104.

One of very few trials of a European folk treatment. Traditional Finnish bone-setting held its own against two standard treatments over a year.

Hewitt, R. L. (1986). *Structure, Meaning and Ritual in the Narratives of the Southern San*. Helmut Buske Verlag.

The first study of the whole collection. Sets out the cycle of /Kaggen stories and what is known of /Xam healers and rites.

Hoffman, W. J. (1891). The Midē'wiwin or "Grand Medicine Society" of the Ojibwa. *Seventh Annual Report of the Bureau of Ethnology*, 143–300. Smithsonian Institution.

The four degrees of the society, its birchbark records and the shooting of the shell, described from observation and from the priests' own explanations.

Holt-Lunstad, J., Smith, T. B. and Layton, J. B. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Medicine* 7(7), e1000316.

Pools 148 long-term studies with more than 300,000 people. Strong social ties go with a fifty per cent better chance of survival.

Hove, M. J., Stelzer, J., Nierhaus, T., et al. (2016). Brain network reconfiguration and perceptual decoupling during an absorptive state of consciousness. *Cerebral Cortex* 26(7), 3116–3124.

Brain scans of fifteen practitioners in trance during drumming. Shows a stable inner-directed network and a loosening of the link with the sense of hearing.

How, M. W. (1962). *The Mountain Bushmen of Basutoland*. J. L. van Schaik.

Contains the account of Mapote, who painted for the author in 1930 and asked for eland blood to mix his red. The only eyewitness record of how San paint was made.

Howitt, A. W. (1904). *The Native Tribes of South-East Australia*. Macmillan.

Records, from men who had lived the old life, how healers were made in the south-east: the crystals, the thread to the sky, the camp of Baiame.

Huels, E. R., Kim, H., Lee, U., et al. (2021). Neural correlates of the shamanic state of consciousness. *Frontiers in Human Neuroscience* 15, 610466.

Brain-wave recordings of trained practitioners compared with controls and with data from psychedelic states. A first attempt to place the shamanic state among other changed states.

Hultkrantz, Å. (1973). A definition of shamanism. *Temenos* 9, 25–37.

A short and careful definition that includes the helpers and the group. A good place to begin on the question of what the word should mean.

Janzen, J. M. (1992). *Ngoma: Discourses of Healing in Central and Southern Africa*. University of California Press.

Traces one institution, the "drum of affliction", from Congo to South Africa. Shows how sufferers become healers within societies of the afflicted.

Jilek, W. G. (1982). *Indian Healing: Shamanic Ceremonialism in the Pacific Northwest Today*. Hancock House.

A psychiatrist describes the revived Salish spirit dance as a treatment for the despair and drinking of young people, and compares its results with those of his clinic.

Jiménez-Garrido, D. F., Gómez-Sousa, M., Ona, G., et al. (2020). Effects of ayahuasca on mental health and quality of life in naïve users: a longitudinal and cross-sectional study combination. *Scientific Reports* 10, 4075.

Follows first-time drinkers for six months. Large improvements among those who were unwell at the start; no control group.

Joralemon, D. and Sharon, D. (1993). *Sorcery and Shamanism: Curanderos and Clients in Northern Peru*. University of Utah Press.

The lives of twelve healers, and more than a hundred patients of four of them, with the patients' own view of what was wrong and whether they were helped. One of very few books that follow the clients.

Kaptchuk, T. J., Friedlander, E., Kelley, J. M., et al. (2010). Placebos without deception: a randomized controlled trial in irritable bowel syndrome. *PLoS ONE* 5(12), e15591.

Patients who knew that their pills were inert improved more than untreated patients. Shows that a healing ritual does not depend on a lie.

Katz, R. (1982). *Boiling Energy: Community Healing among the Kalahari Kung*. Harvard University Press.

The healers describe in their own words what they feel, see and do. No other book brings a reader so close to the experience of a healer in a hunting society.

Katz, R., Biesele, M. and St. Denis, V. (1997). *Healing Makes Our Hearts Happy: Spirituality and Cultural Transformation among the Kalahari Ju/'hoansi*. Inner Traditions.

The same community twenty years later: settlement, hunger, drink, and a dance that went on. Honest about loss and about what lasted.

Keeney, B. (ed.) (2003). *Ropes to God: Experiencing the Bushman Spiritual Universe*. Ringing Rocks Press.

San healers speak about the ropes of light, with their own drawings. Valuable as testimony; the editor's method and his own part in the dances have been questioned by anthropologists.

Kendall, L. (1985). *Shamans, Housewives, and Other Restless Spirits: Women in Korean Ritual Life*. University of Hawaii Press.

A year with a Korean shaman and her clients. Shows the spirit sickness, the household rites and the place of women's ritual beside men's ancestor worship.

Kim, C. and Kwok, Y. S. (1998). Navajo use of native healers. *Archives of Internal Medicine* 158(20), 2245–2249.

Three hundred patients at an Indian Health Service hospital. Most had used native healers; cost was the main barrier; conflict with medical advice was rare.

Kleinman, A. and Sung, L. H. (1979). Why do indigenous practitioners successfully heal? *Social Science and Medicine* 13B(1), 7–26.

Follows the clients of a Taiwanese spirit medium and asks what exactly was cured. The source of the finding that healers treat illness well and disease hardly at all.

Kluckhohn, C. (1944). *Navaho Witchcraft*. Peabody Museum, Harvard University.

What Navajos say about witches, gathered with great tact, and an analysis of what the belief does in the life of the people. The classic study of the dark side of a healing system.

Kluckhohn, C. and Leighton, D. (1946). *The Navaho*. Harvard University Press.

The standard general account of the people in the 1940s. With its companion volume *Children of the People* it remains the best introduction.

Koch, S. C., Riege, R. F. F., Tisborn, K., et al. (2019). Effects of dance movement therapy and dance on health-related psychological outcomes: a meta-analysis update. *Frontiers in Psychology* 10, 1806.

Pools 41 controlled trials. Moderate benefits for mood, well-being and relations with others.

Kopenawa, D. and Albert, B. (2013). *The Falling Sky: Words of a Yanomami Shaman*. Harvard University Press.

A Yanomami shaman tells his life, his initiation and his view of the white people's world. The longest account of shamanism ever given by a shaman.

Kristoffersen, A. E., Stub, T., Melhus, M. and Broderstad, A. R. (2017). Prevalence and associations for use of a traditional medicine provider in the SAMINOR 1 Survey: a population-based study on health and living conditions in regions with Sami and Norwegian populations. *BMC Complementary and Alternative Medicine* 17, 530.

A population survey in northern Norway. Sámi background was the strongest predictor of having used a traditional healer.

Kroeber, A. L. (1925). *Handbook of the Indians of California*. Bureau of American Ethnology Bulletin 78.

The basic survey of all California peoples. The chapters on the Yurok describe the women doctors, their "pains", their fees and the confession of old wrongs.

Ksenofontov, G. V. (1930). *Legendy i rasskazy o shamanakh u yakutov, buryat i tungusov* [Legends and stories about shamans among the Yakuts, Buryats and Tungus]. Moscow. German translation in A. Friedrich and G. Buddruss, *Schamanengeschichten aus Sibirien* (1955).

The first-hand accounts of dismemberment and remaking, collected by a Sakha scholar who was shot in 1938. Eliade's chapter on initiation rests on this book.

Kushner, D. S., Verano, J. W. and Titelbaum, A. R. (2018). Trepanation procedures/outcomes: comparison of prehistoric Peru with other ancient, medieval, and American Civil War cranial surgery. *World Neurosurgery* 114, 245–251.

Counts survival from the healing of the bone in more than eight hundred Peruvian skulls. Inca surgeons did markedly better than army surgeons of the 1860s.

Laderman, C. (1991). *Taming the Wind of Desire: Psychology, Medicine, and Aesthetics in Malay Shamanistic Performance*. University of California Press.

The Malay theory of inner winds and the rite that sets them moving, with full texts of a healing performance.

Laukkanen, T., Khan, H., Zaccardi, F. and Laukkanen, J. A. (2015). Association between sauna bathing and fatal cardiovascular and all-cause mortality events. *JAMA Internal Medicine* 175(4), 542–548.

Twenty years of follow-up of 2,315 Finnish men. Frequent sauna went with fewer deaths from the heart and from all causes.

Lee, R. B. (1968). The sociology of !Kung Bushman trance performances. In R. Prince (ed.), *Trance and Possession States*. R. M. Bucke Memorial Society, Montreal, 35–54.

Who dances, who heals, how often, and how a person learns. The numbers behind the descriptions.

Lee, R. B. (1979). *The !Kung San: Men, Women, and Work in a Foraging Society*. Cambridge University Press.

The standard study of how the Ju/'hoansi lived in the 1960s: food, work, sharing, conflict. The background against which the dance must be seen.

Levine, J. D., Gordon, N. C. and Fields, H. L. (1978). The mechanism of placebo analgesia. *Lancet* 312(8091), 654–657.

The experiment that tied relief from a dummy treatment to the body's own opioids. The title's key word is the authors'.

Lewis-Williams, J. D. (1981). *Believing and Seeing: Symbolic Meanings in Southern San Rock Paintings*. Academic Press.

The book that read the paintings with the help of what the San had said. Shows the eland as the animal of potency in rites and in the art.

Lewis-Williams, J. D. and Dowson, T. A. (1988). The signs of all times: entoptic phenomena in Upper Palaeolithic art. *Current Anthropology* 29(2), 201–245.

The paper that carried the San reading to Ice Age Europe by way of the nervous system. Printed with the objections of other scholars and the authors' reply.

Lewis-Williams, J. D. and Dowson, T. A. (1990). Through the veil: San rock paintings and the rock face. *South African Archaeological Bulletin* 45, 5–16.

Argues from the placing of images at cracks and steps that the rock wall was treated as the boundary of the other world.

Lewis-Williams, J. D., Blundell, G., Challis, W. and Hampson, J. (2000). Threads of light: re-examining a motif in southern African San rock art. *South African Archaeological Bulletin* 55, 123–136.

On the thin red lines fringed with white dots that link figures and enter the rock, read with what Kalahari healers say about threads to the sky.

Lewton, E. L. and Bydone, V. (2000). Identity and healing in three Navajo religious traditions: sa'ah naagháí bik'eh hózhó. *Medical Anthropology Quarterly* 14(4), 476–497.

Shows how the central phrase and the terms of kinship carry healing in traditional, peyote and Christian settings alike.

Low, C. H. (2008). *Khoisan Medicine in History and Practice*. Rüdiger Köppe Verlag.

The only broad study of the everyday medicine of San and Khoekhoe groups: massage, plants, smell, wind and potency. Corrects the impression that San healing is the dance alone.

Luna, L. E. (1984). The concept of plants as teachers among four mestizo shamans of Iquitos, northeastern Peru. *Journal of Ethnopharmacology* 11(2), 135–156.

Four healers explain that the plants taught them, and how: the diet, the dreams, the songs. The paper that brought the "plant teachers" to the notice of science.

Luna, L. E. and Amaringo, P. (1991). *Ayahuasca Visions: The Religious Iconography of a Peruvian Shaman*. North Atlantic Books.

Forty-nine paintings by a former healer of what he saw, each explained by him. Shows the spirit world of the mestizo healers in full colour and detail.

Lévi-Strauss, C. (1963). *Structural Anthropology*. Basic Books.

Holds the two essays of 1949 that shaped all later thinking on symbolic healing: "The Sorcerer and His Magic" (Quesalid) and "The Effectiveness of Symbols" (a Cuna chant for a hard birth).

López Austin, A. (1988). *The Human Body and Ideology: Concepts of the Ancient Nahuas* (2 vols). University of Utah Press.

Reconstructs the Aztec doctrine of the body, the three centres of the person, and the link between body and cosmos. The foundation of all later work on Mesoamerican medicine.

Manker, E. (1938–1950). *Die lappische Zaubertrommel* (2 vols). Bokförlags Aktiebolaget Thule.

Describes and pictures every surviving Sámi drum and reads its figures. The basis of all later study of the drums.

Marshall, L. (1969). The medicine dance of the !Kung Bushmen. *Africa* 39(4), 347–381.

The first full description of the dance, from fieldwork in the 1950s. Exact, sober and still the place to start.

Marshall, L. (1999). *Nyae Nyae !Kung Beliefs and Rites*. Peabody Museum, Harvard University.

Lorna Marshall's collected account of the gods, the dead, n/om and the rites, written late in a long life. The fullest statement of the ground on which the healing stands.

Matthews, W. (1902). *The Night Chant, a Navaho Ceremony*. Memoirs of the American Museum of Natural History, vol. 6.

The first full record of a nine-night chant: every song, prayer, painting and act, with translations. Contains the prayer that begins "House made of dawn".

McNeley, J. K. (1981). *Holy Wind in Navajo Philosophy*. University of Arizona Press.

What Navajo teachers say about the wind that gives life, thought and speech. A short book that changes how one reads everything else about the Navajo.

Miller, B. H. (2007). *Connecting and Correcting: A Case Study of Sami Healers in Porsanger*. CNWS Publications, Leiden.

A close study of present-day Sámi healers in one Norwegian district: how the gift is passed on, why there is no payment and no thanks.

Miller, M. J., Albarracin-Jordan, J., Moore, C. and Capriles, J. M. (2019). Chemical evidence for the use of multiple psychotropic plants in a 1,000-year-old ritual bundle from South America. *Proceedings of the National Academy of Sciences* 116(23), 11207–11212.

A leather pouch from Bolivia with traces of the compounds of the vine and the leaf, of coca and of a snuff. The oldest chemical evidence for the combination.

Miller, V., Carruthers, H. R., Morris, J., et al. (2015). Hypnotherapy for irritable bowel syndrome: an audit of one thousand adult patients. *Alimentary Pharmacology and Therapeutics* 41(9), 844–855.

A hospital's own figures for a thousand patients treated by hypnosis directed at the gut. Three quarters improved.

Moerman, D. E. (1998). *Native American Ethnobotany*. Timber Press.

Every recorded use of plants by the native peoples north of Mexico, from hundreds of sources, in one volume and one database. The reference work on the subject.

Mooney, J. (1891). The sacred formulas of the Cherokees. *Seventh Annual Report of the Bureau of Ethnology*, 301–397. Smithsonian Institution.

The first publication of the healers' written formulas, with the theory of disease, the colours of the directions and the rite of going to water.

Mooney, J. (1900). Myths of the Cherokee. *Nineteenth Annual Report of the Bureau of American Ethnology*, 3–548. Smithsonian Institution.

Contains the story of how the animals invented diseases and the plants offered the remedies, as Swimmer told it.

Mooney, J. and Olbrechts, F. M. (1932). *The Swimmer Manuscript: Cherokee Sacred Formulas and Medicinal Prescriptions*. Bureau of American Ethnology Bulletin 99.

The full notebook of the healer Swimmer, in Cherokee and English, with a detailed study of Cherokee ideas of illness, diagnosis and treatment.

Morales, E. (1995). *The Guinea Pig: Healing, Food, and Ritual in the Andes*. University of Arizona Press.

Everything about the animal that is food, offering and diagnostic instrument, with detailed accounts of rubbings and readings.

Myerhoff, B. G. (1974). *Peyote Hunt: The Sacred Journey of the Huichol Indians*. Cornell University Press.

The pilgrimage to the peyote desert and the unity of deer, maize and cactus, by an anthropologist who went along.

National Aboriginal Health Strategy Working Party (1989). *A National Aboriginal Health Strategy*. Canberra.

The report that gave the definition of health as the well-being of the whole community over the whole cycle of life. Written by Aboriginal health organisations and still the basis of policy.

Neher, A. (1962). A physiological explanation of unusual behavior in ceremonies involving drums. *Human Biology* 34(2), 151–160.

The source of the claim that drumming drives brain rhythms into trance. Often cited and seldom read; see Rouget for the reply.

Neihardt, J. G. (1932). *Black Elk Speaks: Being the Life Story of a Holy Man of the Oglala Sioux*. William Morrow.

The great vision, its public performance and the first cure, as told by Black Elk and shaped by a poet. Read it with R. J. DeMallie, *The Sixth Grandfather* (1984), which prints the interview notes and shows what Neihardt added.

Ngaanyatjarra Pitjantjatjara Yankunytjatjara Women's Council (2013). *Traditional Healers of Central Australia: Ngangkari*. Magabala Books.

The healers of the desert describe their own training and work, in their own languages and in English, with portraits. The first book in which Aboriginal healers speak at length for themselves.

Ngubane, H. (1977). *Body and Mind in Zulu Medicine*. Academic Press.

A Zulu anthropologist on the ideas of illness and cure among her own people: balance with the surroundings, pollution, sorcery, and why diviners are women. The best single book on Zulu medicine.

Noll, R. (1983). Shamanism and schizophrenia: a state-specific approach to the "schizophrenia metaphor" of shamanic states. *American Ethnologist* 10(3), 443–459.

Compares the two states point by point and finds them different in control, memory and return. Ended the old equation for most readers.

Nowak, M. and Durrant, S. (1977). *The Tale of the Nišan Shamaness: A Manchu Folk Epic*. University of Washington Press.

The Manchu story of a woman shaman's journey to the land of the dead, in translation with commentary. The fullest native narrative of a soul retrieval from anywhere in Asia.

Oliver, S. J. (2013). The role of traditional medicine practice in primary health care within Aboriginal Australia: a review of the literature. *Journal of Ethnobiology and Ethnomedicine* 9, 46.

Finds that healers and bush medicine are widely used and hardly evaluated. A fair statement of how little is measured.

Oltean, H., Robbins, C., van Tulder, M. W., et al. (2014). Herbal medicine for low-back pain. *Cochrane Database of Systematic Reviews* (12), CD004504.

Reviews the trials of devil's claw, willow bark and cayenne. Finds that devil's claw probably eases pain in the short term; long-term use and safety are not well studied.

Orpen, J. M. (1874). A glimpse into the mythology of the Maluti Bushmen. *Cape Monthly Magazine* 9(49), 1–13.

Qing's words on Cagn, the eland, the dance and the paintings, with Bleek's remarks. Thirteen pages on which a great deal of later research rests.

Ortiz de Montellano, B. (1975). Empirical Aztec medicine. *Science* 188(4185), 215–220.

Judges twenty-five Aztec plant remedies by the Aztecs' own aims and finds that most would do what was asked of them. Followed by his book *Aztec Medicine, Health, and Nutrition* (Rutgers University Press, 1990), the best single work on the subject.

Pané, R. (1999). *An Account of the Antiquities of the Indians* (ed. J. J. Arrom, trans. S. C. Griswold). Duke University Press. Written about 1498.

The first book written in the Americas by a European. Chapters 15 to 18 describe the Taíno healer at work, with the purge, the snuff, the sucking and the showing of the object.

Peile, A. R. (1997). *Body and Soul: An Aboriginal View*. Hesperian Press.

How the Kukatja of the Western Desert speak of the body, breath, blood and spirit, in their own terms, by a priest who lived with them for years. Unique of its kind.

Pennebaker, J. W., Kiecolt-Glaser, J. K. and Glaser, R. (1988). Disclosure of traumas and immune function: health implications for psychotherapy. *Journal of Consulting and Clinical Psychology* 56(2), 239–245.

Students who wrote about undisclosed traumas for four days showed a stronger immune response and fewer visits to the health centre than those who wrote about trivial matters.

Peoples, H. C., Duda, P. and Marlowe, F. W. (2016). Hunter-gatherers and the origins of religion. *Human Nature* 27(3), 261–282.

Maps seven religious traits on the family tree of 33 hunting peoples. Concludes that animism is oldest and that shamanism was probably present in their common ancestors.

Phillips, D. P., Liu, G. C., Kwok, K., et al. (2001). The Hound of the Baskervilles effect: natural experiment on the influence of psychological stress on timing of death. *BMJ* 323, 1443–1446.

Cardiac deaths among Chinese and Japanese Americans peak on the fourth of the month, the day whose number sounds like “death”.

Politi, M., Tresca, G., Menghini, L. and Ferrante, C. (2022). Beyond the psychoactive effects of ayahuasca: cultural and pharmacological relevance of its emetic and purging properties. *Planta Medica* 88(14), 1275–1286.

Argues from the healers’ practice and from pharmacology that vomiting and purging are part of how the brew is meant to work, and not an unwanted effect.

Powers, W. K. (1982). *Yuwipi: Vision and Experience in Oglala Ritual*. University of Nebraska Press.

A sweat, a vision quest and a yuwipi meeting, told as one continuous story from the inside. The best description of the rite of binding and release.

Rasmussen, K. (1930). *Observations on the Intellectual Culture of the Caribou Eskimos*. Report of the Fifth Thule Expedition 1921–24, vol. 7(2). Gyldendal.

Contains Igjugarjuk’s account of his thirty days in the snow hut and his words on solitude and suffering.

Reichard, G. A. (1950). *Navaho Religion: A Study of Symbolism*. Bollingen Foundation and Pantheon.

The fullest account of Navajo doctrine, by a scholar who learned the language and was herself sung over. Explains power, control, order and the meaning of every ritual act.

Reichel-Dolmatoff, G. (1975). *The Shaman and the Jaguar: A Study of Narcotic Drugs among the Indians of Colombia*. Temple University Press.

The Tukano healer, his snuffs and vine, the Master of Animals and the debt of souls. A classic; the author's habit of translating native ideas into the language of energy should be read as his own.

Reid, J. (1983). *Sorcerers and Healing Spirits: Continuity and Change in an Aboriginal Medical System*. Australian National University Press.

The clearest study of how an Aboriginal people reasons about illness, at the level of how and at the level of why, and how it uses healer and clinic together.

Reid, J. and Williams, N. (1984). "Voodoo death" in Arnhem Land: whose reality? *American Anthropologist* 86(1), 121–133.

The reply to Eastwell, written with a Yolngu view of the same events. Read the two papers together.

Riba, J., Valle, M., Urbano, G., et al. (2003). Human pharmacology of ayahuasca: subjective and cardiovascular effects, monoamine metabolite excretion, and pharmacokinetics. *Journal of Pharmacology and Experimental Therapeutics* 306(1), 73–83.

The basic laboratory study of what the brew does in healthy volunteers and for how long.

Roberts, J. M. (1976). Belief in the evil eye in world perspective. In C. Maloney (ed.), *The Evil Eye*. Columbia University Press, 223–278.

Counts the belief in 186 societies and finds it in about a third, mostly in a belt from Europe and North Africa to India and in the lands they influenced.

Roseman, M. (1991). *Healing Sounds from the Malaysian Rainforest: Temiar Music and Medicine*. University of California Press.

How the Temiar receive healing songs in dreams and sing them as paths. One of the best books on song as medicine.

Rouget, G. (1985). *Music and Trance: A Theory of the Relations between Music and Possession*. University of Chicago Press.

The standard work on music and trance. Separates the shaman's journey from possession and shows that no rhythm produces trance by itself.

Rowley, K. G., O'Dea, K., Anderson, I., et al. (2008). Lower than expected morbidity and mortality for an Australian Aboriginal population: 10-year follow-up in a decentralised community. *Medical Journal of Australia* 188(5), 283–287.

Ten years of records from the Utopia homelands, where people live on their own country. Lower death rates than elsewhere in the Territory.

Roys, R. L. (1965). *Ritual of the Bacabs*. University of Oklahoma Press.

Translation of the Yucatec Maya book of healing chants. The illnesses are addressed as persons and questioned about their parentage.

Rubel, A. J., O'Nell, C. W. and Collado-Ardón, R. (1984). *Susto: A Folk Illness*. University of California Press.

The controlled study of fright in three Oaxacan communities, with medical examination and a seven-year follow-up. The most careful test ever made of an illness category of the old medicine.

Ruiz de Alarcón, H. (1984). *Treatise on the Heathen Superstitions That Today Live among the Indians Native to This New Spain, 1629* (trans. J. R. Andrews and R. Hassig). University of Oklahoma Press.

The spells of Aztec healers a century after the conquest, in Nahuatl and English, with the priest's hostile comments. The only source that gives the healers' actual words.

Rydving, H. (1993). *The End of Drum-Time: Religious Change among the Lule Saami, 1670s–1740s*. Almqvist and Wiksell.

How the old religion was broken in one Sámi region, from the court records and mission reports. Shows what the drum meant in ordinary households.

Sahagún, B. de (1950–1982). *Florentine Codex: General History of the Things of New Spain* (trans. A. J. O. Anderson and C. E. Dibble, 13 vols). School of American Research and University of Utah. Compiled about 1545–1577.

The great record of Aztec life in the Aztecs' own language. Book 10 describes physicians and lists ailments and remedies; Book 11 describes the plants; Books 4 and 5 give the calendar and its omens.

Samuels, M. A. (2007). The brain–heart connection. *Circulation* 116(1), 77–84.

A neurologist reviews a century of evidence, from Cannon onward, that the nervous system can injure or stop the heart. Clear and well documented.

Schlebusch, C. M., Skoglund, P., Sjödin, P., et al. (2012). Genomic variation in seven Khoe-San groups reveals adaptation and complex African history. *Science* 338, 374–379.

Shows that the Khoe-San lineages are the earliest to branch off among living people. Later work by the same group pushes the date further back.

Schroeder, D., Chatfield, K., Singh, M., Chennells, R. and Herissone-Kelly, P. (2019). The San Code of Research Ethics. In *Equitable Research Partnerships*. Springer, 73–87.

Prints the code of 2017 and explains how it came about. Any researcher who approaches a traditional community should read it first.

Sexton, R. and Sørlie, T. (2008). Use of traditional healing among Sámi psychiatric patients in the north of Norway. *International Journal of Circumpolar Health* 67(1), 135–146.

Sámi patients in psychiatric care used traditional helpers much more than Norwegian patients and wanted them included in the service.

Sharon, D. (1978). *Wizard of the Four Winds: A Shaman's Story*. Free Press.

The healer Eduardo Calderón explains his table, his cactus and his cures. The basic account of north Peruvian healing.

Shirokogoroff, S. M. (1935). *Psychomental Complex of the Tungus*. Kegan Paul, Trench, Trubner.

Based on five years among the Evenki and Manchu. The first full account by someone who lived with shamans, and still the deepest. Long and hard to find; worth the effort.

Silberbauer, G. B. (1981). *Hunter and Habitat in the Central Kalahari Desert*. Cambridge University Press.

The G/ui of the central Kalahari, by the government officer who lived with them. Includes their own account of where sickness comes from and how the dance removes it.

Silverman, J. (1967). Shamans and acute schizophrenia. *American Anthropologist* 69(1), 21–31.

The clearest statement of the view that the shaman is a patient. Useful as the position that later work answered.

Singh, M. (2018). The cultural evolution of shamanism. *Behavioral and Brain Sciences* 41, e66.

Explains the shaman as the outcome of a contest to convince clients. Printed with thirty commentaries by other scholars, which make it a survey of present opinion.

Slepian, M. L., Chun, J. S. and Mason, M. F. (2017). The experience of secrecy. *Journal of Personality and Social Psychology* 113(1), 1–33.

Shows that the burden of a secret lies less in hiding it from others than in the mind's own return to it.

Solomon, A. (1997). The myth of ritual origins? Ethnography, mythology and interpretation of San rock art. *South African Archaeological Bulletin* 52, 3–13.

The main dissent from within: the painted figures as the dead and as beings of myth. Read it to see where the evidence is thin.

Spencer, B. and Gillen, F. J. (1899). *The Native Tribes of Central Australia*. Macmillan.

The classic record of the Arrernte. Chapter 16 describes the three ways in which a medicine man is made, with the lance through the tongue and the new organs.

Stanner, W. E. H. (1979). *White Man Got No Dreaming: Essays 1938–1973*. Australian National University Press.

Contains “The Dreaming” (1953), still the best short account of the ground of Aboriginal life by an outsider, and the source of the word “everywhen”.

Tarr, B., Launay, J., Cohen, E. and Dunbar, R. (2015). Synchrony and exertion during dance independently raise pain threshold and encourage social bonding. *Biology Letters* 11(10), 20150767.

Separates the effect of moving in time from the effect of moving hard. Both raise the tolerance of pain and the sense of closeness, and they add up.

Tedlock, B. (1982). *Time and the Highland Maya*. University of New Mexico Press.

The 260-day count as it is kept today, the casting of seeds, and the “lightning in the blood”, by an anthropologist who was trained as a daykeeper. The best inside account of a method of reading.

Thompson, T., Terhune, D. B., Oram, C., et al. (2019). The effectiveness of hypnosis for pain relief: a systematic review and meta-analysis of 85 controlled experimental trials. *Neuroscience and Biobehavioral Reviews* 99, 298–310.

Hypnosis reduces experimental pain substantially in most people; the size of the effect depends on how readily a person responds to suggestion.

Townsley, G. (1993). Song paths: the ways and means of Yaminahua shamanic knowledge. *L’Homme* 33(126–128), 449–468.

On the “twisted language” of Amazonian healing songs and why the healers say it lets them see. One of the sharpest papers on how a shaman knows.

Trotter, R. T. and Chavira, J. A. (1997). *Curanderismo: Mexican American Folk Healing* (2nd ed.). University of Georgia Press.

A clear account of the healers of the Texas border: the illnesses they name, the three levels on which they work, and how they are trained.

Turner, E. (1992). *Experiencing Ritual: A New Interpretation of African Healing*. University of Pennsylvania Press.

The author takes part in the tooth rite in 1985 and reports what she saw leave the patient’s body. A rare case of an anthropologist who records such an observation plainly.

Turner, V. (1967). *The Forest of Symbols: Aspects of Ndembu Ritual*. Cornell University Press.

Contains “A Ndembu Doctor in Practice”, the account of the biting tooth and the confessions of the village. One of the most influential case studies in the anthropology of healing.

van Ommeren, M., Komproe, I., Cardeña, E., et al. (2004). Mental illness among Bhutanese shamans in Nepal. *Journal of Nervous and Mental Disease* 192(4), 313–317.

One of the very few studies that examine shamans and their neighbours with the same psychiatric interview. No excess of disorder among the shamans.

Vinnicombe, P. (1976). *People of the Eland: Rock Paintings of the Drakensberg Bushmen as a Reflection of Their Life and Thought*. University of Natal Press.

The first count of what the painters chose to paint, with superb copies. Showed that the eland was painted for its meaning and not as food.

Vitebsky, P. (1995). *The Shaman: Voyages of the Soul, Trance, Ecstasy and Healing from Siberia to the Amazon*. Macmillan.

A short, sober and well-illustrated survey by an anthropologist of Siberia and India. The best first book on the whole subject of this part.

Viveiros de Castro, E. (1998). Cosmological deixis and Amerindian perspectivism. *Journal of the Royal Anthropological Institute* 4(3), 469–488.

The classic statement of the Amazonian view that every kind of being sees itself as human. Hard reading; essential for chapters 16 and 17.

Vogel, V. J. (1970). *American Indian Medicine*. University of Oklahoma Press.

The history of native healing as outsiders recorded it, with an appendix of the native drugs that entered the official pharmacopoeia. Still the standard survey.

Vogt, E. Z. (1969). *Zinacantan: A Maya Community in the Highlands of Chiapas*. Harvard University Press.

The full description of a Tzotzil town: souls, animal companions, ancestral gods, seers and curing ceremonies. A shorter version is *Tortillas for the Gods* (1976).

Vuckovic, N. H., Gullion, C. M., Williams, L. A., Ramirez, M. and Schneider, J. (2007). Feasibility and short-term outcomes of a shamanic treatment for temporomandibular joint disorders. *Alternative Therapies in Health and Medicine* 13(6), 18–29.

Twenty-three women with jaw-joint pain treated by shamanic practitioners within a large health organisation. Large improvements; no comparison group.

Vågene, Å. J., Herbig, A., Campana, M. G., et al. (2018). Salmonella enterica genomes from victims of a major sixteenth-century epidemic in Mexico. *Nature Ecology and Evolution* 2, 520–528.

Finds the DNA of a typhoid-like bacterium in people buried during the pestilence of 1545. The first physical evidence for the cause of one of the great epidemics.

Wahbeh, H., Shainsky, L., Weaver, A. and Engels-Smith, J. (2017). Shamanic healing for veterans with PTSD: a case series. *Explore* 13(3), 207–217.

A few veterans treated by a shamanic practitioner, with symptom scores before and after. A first look, not a test.

Walker, J. R. (1980). *Lakota Belief and Ritual* (ed. R. J. DeMallie and E. A. Jahner). University of Nebraska Press.

What the Oglala holy men George Sword, Finger, Tyon and others taught an agency physician between 1896 and 1914. The fullest statement of Lakota doctrine in the words of those who held it.

Wallace, A. F. C. (1958). Dreams and the wishes of the soul: a type of psychoanalytic theory among the seventeenth century Iroquois. *American Anthropologist* 60(2), 234–248.

Shows from the Jesuit reports that the Iroquois held a theory of hidden wishes, expressed in dreams and causing illness, two and a half centuries before Freud.

Wampold, B. E. and Imel, Z. E. (2015). *The Great Psychotherapy Debate: The Evidence for What Makes Psychotherapy Work* (2nd ed.). Routledge.

Argues from the whole body of trials that methods matter little and therapists, bond and shared expectation matter much. The best case from within science for the healer as the instrument.

Warner, W. L. (1937). *A Black Civilization: A Social Study of an Australian Tribe*. Harper.

The Yolngu of north-east Arnhem Land in the 1920s: the two souls, sorcery, the healers, and the social side of a death by magic.

Wassén, S. H. (1972). *A Medicine-Man's Implements and Plants in a Tiahuanacoid Tomb in Highland Bolivia*. Göteborgs Etnografiska Museum.

Describes the healer's kit from the grave at Niño Korin, about a thousand years old. Shows how far back the Kallawaya craft reaches.

Weinstein, D., Launay, J., Pearce, E., Dunbar, R. I. M. and Stewart, L. (2016). Singing and social bonding: changes in connectivity and pain threshold as a function of group size. *Evolution and Human Behavior* 37(2), 152–158.

Members of a choir feel closer and bear more pain after singing, more so in a large group than in a small one.

Weller, S. C., Baer, R. D., Garcia de Alba Garcia, J. and Salcedo Rocha, A. L. (2008). Susto and nervios: expressions for stress and depression. *Culture, Medicine and Psychiatry* 32(3), 406–420.

Shows in a Mexican sample that fright and "nerves" go together with measured depression and stress.

Whitehead, H. (2000). The hunt for Quesalid: tracking Lévi-Strauss' shaman. *Anthropology and Medicine* 7(2), 149–168.

Shows that Quesalid was George Hunt and that his own relation to shamanism was far from simple scepticism. A needed correction to a much-told story.

Whitehead, N. L. (2002). *Dark Shamans: Kanaimà and the Poetics of Violent Death*. Duke University Press.

A study of ritual killing in the Guyana highlands. Disturbing, and a counterweight to every rosy picture of the shaman.

Wilbert, J. (1987). *Tobacco and Shamanism in South America*. Yale University Press.

Every recorded use of tobacco among nearly three hundred peoples, with its pharmacology. Shows that tobacco, not the vine, is the first sacred plant of the continent.

Winkelman, M. (1990). Shamans and other "magico-religious" healers: a cross-cultural study of their origins, nature, and social transformations. *Ethos* 18(3), 308–352.

Compares healers in 47 societies and ties each kind to a kind of society. The basis for speaking of the shaman as the healer of hunting peoples.

Winkelman, M. (2010). *Shamanism: A Biopsychosocial Paradigm of Consciousness and Healing* (2nd ed.). Praeger.

The fullest attempt to explain shamanism from the build of the brain. Speculative in places; rich in references.

Witherspoon, G. (1977). *Language and Art in the Navajo Universe*. University of Michigan Press.

On the power of thought and speech to make order, and on beauty as the aim of life. Written by an anthropologist who married into a Navajo family.

Wittstein, I. S., Thiemann, D. R., Lima, J. A. C., et al. (2005). Neurohumoral features of myocardial stunning due to sudden emotional stress. *New England Journal of Medicine* 352(6), 539–548.

Nineteen patients whose hearts were stunned by an emotional shock, with very high levels of stress hormones and open arteries. The paper that made "broken heart" a diagnosis.

Wood, F. A., Howard, J. P., Finegold, J. A., et al. (2020). N-of-1 trial of a statin, placebo, or no treatment to assess side effects. *New England Journal of Medicine* 383(22), 2182–2184.

Patients who had stopped a drug because of side effects had nine tenths of the same symptoms on dummy tablets. The clearest demonstration of harm from expectation.

Wyman, L. C. (1936). Navaho diagnosticians. *American Anthropologist* 38(2), 236–246.

The basic description of hand-trembling, star-gazing and listening, from the accounts of those who practise them.

Wyman, L. C. (1970). *Blessingway*. University of Arizona Press.

Three full versions of the rite on which all others rest, recorded by Father Berard Haile, with Wyman's introduction to the whole system of ceremonials.

Wynberg, R., Schroeder, D. and Chennells, R. (eds) (2009). *Indigenous Peoples, Consent and Benefit Sharing: Lessons from the San-Hoodia Case*. Springer.

The full story of the Hoodia patent and the agreement of 2003, by people who took part in it. The reference case for the rights of traditional healers' knowledge.

Part III — Yoruba and Ifá

Abimbola, W. (1975). *Sixteen Great Poems of Ifá*. UNESCO.

One long verse for each of the sixteen great signs, in Yoruba and English, with notes. The best way to see what a verse of Ifá is like in full.

Abimbola, W. (1976). *Ifá: An Exposition of Ifá Literary Corpus*. Oxford University Press Nigeria.

Ifá explained by a scholar who is himself a trained priest: the training, the structure of the verses, the two sides of the Yoruba world, the doctrine of the head. With many verses in translation.

Abimbola, W. (1977). *Ifá Divination Poetry*. NOK Publishers.

Sixty-four verses, four for each of the sixteen great signs, with an introduction on their form and their place in the training of a priest.

Ascher, M. (1997). Malagasy sikidy: a case in ethnomathematics. *Historia Mathematica* 24(4), 376–395.

A mathematician analyses the seed divination of Madagascar and shows that its practitioners use tests of evenness and identity to check their layouts. The clearest study of the logic inside an African divination system.

Awolalu, J. O. (1979). *Yoruba Beliefs and Sacrificial Rites*. Longman.

A Yoruba scholar’s account of the powers, the priests and the kinds of sacrifice, with their purposes and procedures. Contains the description of the substitute offering for one who is about to die.

Bascom, W. (1969). *Ifa Divination: Communication between Gods and Men in West Africa*. Indiana University Press.

The standard description of the system, from fieldwork with the diviners of Ife and other towns from 1937: instruments, casting, the order of the signs, sacrifice, and 186 verses in Yoruba and English.

Bascom, W. (1980). *Sixteen Cowries: Yoruba Divination from Africa to the New World*. Indiana University Press.

The cowrie system of the orisha priests, with the complete verses of one master diviner. The companion to the same author’s book on Ifá.

Brodwin, P. (1996). *Medicine and Morality in Haiti: The Contest for Healing Power*. Cambridge University Press.

How villagers in Haiti sort illness into what merely happens and what was sent, and how they choose among doctor, herbalist, priest and pastor.

Buckley, A. D. (1985). *Yoruba Medicine*. Clarendon Press.

What Yoruba herbalists taught the author about the body: the hidden red and white, the small beings in their bags, heat and coolness. Shows a reasoned account of illness that stands beside the account from the powers.

Cabrera, L. (1954). *El Monte*. Ediciones C.R., Havana.

What old Afro-Cuban priests and healers told the author about the forest, its powers and its plants, with an alphabetical herbal. The foundation of all later work on Afro-Cuban medicine.

Cherian, K. N., Keynan, J. N., Anker, L., et al. (2024). Magnesium–ibogaine therapy in veterans with traumatic brain injuries. *Nature Medicine* 30, 373–381.

Thirty veterans with blast injuries treated once in Mexico. Very large falls in disability and in symptoms of trauma, depression and anxiety at one month; no comparison group.

Drewal, H. J., Pemberton, J. and Abiodun, R. (1989). *Yoruba: Nine Centuries of African Art and Thought*. Center for African Art and Harry N. Abrams.

The standard work on Yoruba art, by an American, an American-trained historian of religion and a Yoruba art historian. Its chapter on Ifá describes the tray, its named sections, the tapper and the bowls.

Eglash, R. (1999). *African Fractals: Modern Computing and Indigenous Design*. Rutgers University Press.

Finds self-repeating patterns and two-state codes in African architecture, art and divination. Proposes an African origin for geomancy and a line from it to Leibniz; that part is a thesis and is presented as one.

El-Tom, A. O. (1985). Drinking the Koran: the meaning of Koranic verses in Berti erasure. *Africa* 55(4), 414–431.

How the Berti of Sudan choose verses for each trouble, write them, wash them off and drink them. The best study of a practice found across Muslim Africa.

Epega, A. A. and Neimark, P. J. (1995). *The Sacred Ifa Oracle*. HarperSanFrancisco.

Short summaries of all 256 signs with a verse or two for each, from the notebooks of a Yoruba family of priests. Uneven, and the only attempt in English to cover the whole set.

Fernandez, J. W. (1982). *Bwiti: An Ethnography of the Religious Imagination in Africa*. Princeton University Press.

The fullest study of the Fang rite of the iboga root: its history, its temple, its music, and what initiates report from their journey to the dead.

Gureje, O., Appiah-Poku, J., Bello, T., et al. (2020). Effect of collaborative care between traditional and faith healers and primary health-care workers on psychosis outcomes in Nigeria and Ghana (COSIMPO): a cluster randomised controlled trial. *Lancet* 396(10251), 612–622.

The first randomised trial of shared care between healers and clinics for severe mental illness. Fewer symptoms, less chaining, low cost.

Hallen, B. and Sodipo, J. O. (1986). *Knowledge, Belief, and Witchcraft: Analytic Experiments in African Philosophy*. Ethnographica.

Two philosophers question Yoruba herbalists about what it is to know. Shows that the healers demand first-hand seeing for knowledge and class everything else as accepted report.

Huffman, M. A., Page, J. E., Sukhdeo, M. V. K., et al. (1996). Leaf-swallowing by chimpanzees: a behavioral adaptation for the control of strongyle nematode infections. *International Journal of Primatology* 17(4), 475–503.

With the author's earlier reports on bitter-pith chewing, the basic evidence that apes medicate themselves with plants that local healers use for the same troubles.

Lambo, T. A. (1964). Patterns of psychiatric care in developing African countries. In A. Kiev (ed.), *Magic, Faith, and Healing: Studies in Primitive Psychiatry Today*. Free Press, 443–453.

The founder of the Aro village scheme describes it: patients lodged with relatives in ordinary villages, with traditional healers taking part.

Longe, O. (1983). *Ifa Divination and Computer Science*. Inaugural lecture, University of Ibadan.

A professor of computer science sets the 256 signs beside the eight-bit byte and the casting procedure beside random number generation. The first technical comparison by a Yoruba scholar.

Maclean, U. (1971). *Magical Medicine: A Nigerian Case-Study*. Allen Lane.

How the households of Ibadan used hospital, herbalist and diviner side by side in the 1960s, with lists of home remedies. Sober and well observed.

Mercier, J. (1979). *Ethiopian Magic Scrolls*. George Braziller.

The healing scrolls of Ethiopia, cut to the patient's height and covered with prayers, names and staring eyes, with fine plates and an account of how they are made.

Noller, G. E., Frampton, C. M. and Yazar-Klosinski, B. (2018). Ibogaine treatment outcomes for opioid dependence from a twelve-month follow-up observational study. *American Journal of Drug and Alcohol Abuse* 44(1), 37–46.

Follows patients of two New Zealand providers for a year. A single treatment reduced withdrawal and, for many, use; one patient died during treatment.

Onuminya, J. E. (2004). The role of the traditional bonesetter in primary fracture care in Nigeria. *South African Medical Journal* 94(8), 652–658.

A surgeon reviews what bonesetters do, why patients prefer them, and what goes wrong. Argues for training and referral in place of prohibition.

Onwubalili, J. K. (1983). Sickle-cell anaemia: an explanation for the ancient myth of reincarnation in Nigeria. *Lancet* 322(8348), 503–505.

A Nigerian physician links the belief in children who are born, die and return to the same mother with the inheritance of sickle cell disease.

Oyebola, D. D. O. (1981). Professional associations, ethics and discipline among Yoruba traditional healers of Nigeria. *Social Science and Medicine* 15B(2), 87–92.

A physician's survey of how Yoruba healers organise and police themselves. Shows a profession with rules, long before the state registered it.

Peek, P. M. (ed.) (1991). *African Divination Systems: Ways of Knowing*. Indiana University Press.

Studies of divination from all parts of the continent, with an introduction that treats it as a system of knowledge and not as superstition. The standard survey.

Peel, J. D. Y. (1968). *Aladura: A Religious Movement among the Yoruba*. Oxford University Press.

The founding and the practice of the Yoruba churches of prayer and healing, and how they carried the old account of illness into a Christian form.

Prince, R. (1960). The "brain fag" syndrome in Nigerian students. *Journal of Mental Science* 106, 559–570.

The first description of the students' complaint, under the students' own name for it.

Prince, R. (1960). The use of Rauwolfia for the treatment of psychoses by Nigerian native doctors. *American Journal of Psychiatry* 117(2), 147–149.

Reports that Yoruba healers treated psychosis with a plant containing the compound that Western psychiatry had just adopted. A classic case of a traditional remedy confirmed.

Prince, R. (1964). Indigenous Yoruba psychiatry. In A. Kiev (ed.), *Magic, Faith, and Healing: Studies in Primitive Psychiatry Today*. Free Press, 84–120.

A psychiatrist's study of forty-six Yoruba healers of the mentally ill: their categories, their drug, their compounds and the rite of discharge at the river. Careful and fair.

Rainey, E. (2024). *Divining for the Doctor*. Center for the Study of World Religions, Harvard Divinity School.

A report on how Yoruba and Lucumí diviners in the United States deal with illness: what they read, what they prescribe, and when they send a client to a physician.

Turner, V. (1975). *Revelation and Divination in Ndembu Ritual*. Cornell University Press.

Describes the basket of the Ndembu diviner, every object in it, and how a consultation proceeds. Shows divination as the diagnosis of a social body.

van Andel, T., Ruysschaert, S., Van de Putte, K. and Groenendijk, S. (2012). What makes a plant magical? Symbolism and sacred herbs in Afro-Surinamese Winti rituals. In R. Voeks and J. Rashford (eds), *African Ethnobotany in the Americas*. Springer, 247–284.

A Leiden botanist and colleagues on the plants of Winti baths and rites, how they are chosen, and the trade that carries them to the Netherlands.

van Binsbergen, W. M. J. (1996). Regional and historical connections of four-tablet divination in Southern Africa. *Journal of Religion in Africa* 26(1), 2–29.

Describes the four tablets and their sixteen falls and argues that they descend from the Arab science of the sand by way of the Indian Ocean coast.

Verger, P. (1965). Grandeur et décadence du culte de Ìyámi Òṣòròngà (ma mère la sorcière) chez les Yoruba. *Journal de la Société des Africanistes* 35(1), 141–243.

The verses of Ifá on the mothers of the night, in Yoruba and French, with the story of their arrival as birds. The basic source on a power that the Yoruba seldom name.

Verger, P. F. (1995). *Ewé: The Use of Plants in Yoruba Society*. Odebrecht.

Several thousand Yoruba plant names and more than two thousand recipes with their spoken formulas, each filed under a sign of Ifá. Shows that the name of a plant carries the verb of its action. The fullest record of an African pharmacy in its own terms.

Wambebe, C., Khamofu, H., Momoh, J. A., et al. (2001). Double-blind, placebo-controlled, randomised cross-over clinical trial of NIPRISAN in patients with sickle cell disorder. *Phytomedicine* 8(4), 252–261.

The trial of a medicine developed from a Yoruba family recipe. Fewer painful crises on the mixture than on the dummy, without serious harm.

Wooding, C. J. (1972). *Winti: een Afroamerikaanse godsdienst in Suriname*. Krips Repro, Meppel.

The first full study of Winti, by a Surinamese scholar, with its doctrine of the soul, its spirits, its illnesses and its cures. In Dutch; an English version appeared in 1981 as *Evolving Culture*.

World Health Organization (1979). *Schizophrenia: An International Follow-up Study*. John Wiley.

The two-year follow-up of patients in nine countries. Better outcomes in Ibadan, Agra and Cali than in the centres of the rich countries. The source of a finding that is still argued over.

Part IV — Temple and Text: From Mesopotamia to Unani

Abusch, T. (2002). *Mesopotamian Witchcraft: Toward a History and Understanding of Babylonian Witchcraft Beliefs and Literature*. Brill.

Collected studies by the editor of the Burning. Explains the night-long rite, its three parts and its place in the calendar.

Bakhtiar, L. (ed.) (1999). *The Canon of Medicine (al-Qānūn fī'l-ṭibb)*, vol. 1. Great Books of the Islamic World.

An English version of the first book of Ibn Sina's Canon, adapted from older translations, with the full chapters on the natural matters, the pulse, the urine and the regimen of health.

Barrett, D. (1993). The "committee of sleep": a study of dream incubation for problem solving. *Dreaming* 3(2), 115–122.

Students who dwelt on a problem before sleep dreamed of it, and often dreamed a solution. The modern test of the ancient practice.

Behr, C. A. (1968). *Aelius Aristides and the Sacred Tales*. Hakkert.

A translation of the six books in which a patient of the second century records his dreams of the god and the treatments they ordered, with a full study of the man and of the sanctuary at Pergamon.

Bloch, M. (1973). *The Royal Touch: Sacred Monarchy and Scrofula in England and France* (J. E. Anderson, trans.). Routledge and Kegan Paul.

The classic history of healing by the king's hand over seven centuries, first published in French in 1924. Asks how a whole society could see cures.

Breasted, J. H. (1930). *The Edwin Smith Surgical Papyrus* (2 vols). University of Chicago Press.

The first edition, with a facsimile, a translation of every case and a commentary that is still worth reading. A newer translation is J. P. Allen, *The Art of Medicine in Ancient Egypt* (2005).

Cameron, M. L. (1993). *Anglo-Saxon Medicine*. Cambridge University Press.

Shows that the Old English leechbooks are rational compilations with good knowledge of plants, and examines which of their remedies could have worked.

Dodds, E. R. (1951). *The Greeks and the Irrational*. University of California Press.

A classical scholar shows how much of Greek culture lay outside reason: dreams, possession, purification. The chapter on "the Greek shamans" introduced Aristeas, Hermotimus and Epimenides to modern readers.

Edelstein, E. J. and Edelstein, L. (1945). *Asclepius: A Collection and Interpretation of the Testimonies* (2 vols). Johns Hopkins Press.

Every ancient text and inscription on the god, in the original and in English, with a study of the cult. The foundation of all later work.

Estes, J. W. (1989). *The Medical Skills of Ancient Egypt*. Science History Publications.

A pharmacologist assesses what the Egyptian drugs and procedures could and could not have done. Balanced, well documented and free of both scorn and wishful thinking.

Farhadi, K., Schwebel, D. C., Saeb, M., et al. (2009). The effectiveness of wet-cupping for nonspecific low back pain in Iran: a randomized controlled trial. *Complementary Therapies in Medicine* 17(1), 9–15.

Wet cupping added to usual care reduced pain and disability at three months. One of the better trials of a regimenal method.

Finch, J. (2011). The ancient origins of prosthetic medicine. *Lancet* 377(9765), 548–549.

Reports the trial of replicas of two Egyptian false toes on volunteers. The toes worked.

Finkel, I. L. (1988). Adad-apla-iddina, Esagil-kin-apli, and the series SA.GIG. In E. Leichty et al. (eds), *A Scientific Humanist: Studies in Memory of Abraham Sachs*. University Museum, Philadelphia, 143–159.

Publishes the catalogue and the editor's note in which Esagil-kin-apli describes how he untangled the old diagnostic texts and arranged them from head to foot.

Flanagan, S. (1989). *Hildegard of Bingen, 1098–1179: A Visionary Life*. Routledge.

The standard life in English. Covers the visions, the illnesses, the medical and musical works, and the modern explanations.

François, B., Sternberg, E. M., and Fee, E. (2014). The Lourdes medical cures revisited. *Journal of the History of Medicine and Allied Sciences* 69(1), 135–162.

Physicians review the files of the cures at Lourdes. They find the recognised cases well documented and unexplained, and they describe how the standards of proof changed.

Geller, M. J. (2010). *Ancient Babylonian Medicine: Theory and Practice*. Wiley-Blackwell.

A readable account of the healers, their texts and their reasoning, and of how Babylonian medicine relates to Greek. The best first book on the subject.

Ghalioungui, P. (1983). *The Physicians of Pharaonic Egypt*. Al-Ahram Center for Scientific Translations.

A list of every physician known by name, with titles and dates, by an Egyptian professor of medicine. Shows the profession, its ranks and its specialities.

Ghalioungui, P., Khalil, S. and Ammar, A. R. (1963). On an ancient Egyptian method of diagnosing pregnancy and determining foetal sex. *Medical History* 7(3), 241–246.

A test of the grain method of the Berlin papyrus. It detects pregnancy in most cases and does not predict the sex of the child.

Green, M. H. (ed.) (2001). *The Trotula: A Medieval Compendium of Women's Medicine*. University of Pennsylvania Press.

Edition and translation of the three Salernitan texts on women's medicine, with the evidence for the historical Trota.

Gruner, O. C. (1930). *A Treatise on the Canon of Medicine of Avicenna, Incorporating a Translation of the First Book*. Luzac.

The first book of the Canon in English, with the chapters on temperaments, humours, pulse, urine and regimen. Old-fashioned in its comments and still the most accessible version.

Haar Horowitz, A., Cunningham, T. J., Maes, P. and Stickgold, R. (2020). Dormio: a targeted dream incubation device. *Consciousness and Cognition* 83, 102938.

A device that prompts a person with a word at the onset of sleep. The word enters the dreams of most users.

Harrison, F., Roberts, A. E. L., Gabrilska, R., et al. (2015). A 1,000-year-old antimicrobial remedy with antistaphylococcal activity. *mBio* 6(4), e01129-15.

The eye salve of Bald's Leechbook, made as written, killed resistant bacteria in the laboratory and in mouse wounds. The whole recipe was needed, and so was the waiting time.

Heeßel, N. P. (2000). *Babylonisch-assyrische Diagnostik*. Ugarit-Verlag.

The standard edition and study of the later tablets of the Diagnostic Handbook, with a full account of its plan, its logic and its place in Babylonian scholarship. In German.

Hippocrates (1923–2012). *Works* (ed. and trans. W. H. S. Jones, E. T. Withington, P. Potter and W. D. Smith, 11 vols). Loeb Classical Library, Harvard University Press.

The Greek text with facing English translation. The passages quoted in this chapter are from the volumes translated by Jones.

Houschyar, K. S., Lüdtke, R., Dobos, G. J., et al. (2012). Effects of phlebotomy-induced reduction of body iron stores on metabolic syndrome: results from a randomized clinical trial. *BMC Medicine* 10, 54.

Sixty-four patients. Two sessions of bloodletting lowered blood pressure markedly at six weeks against no treatment. The only modern trial of the old spring bleeding.

Ibn Qayyim al-Jawziyya (1998). *Medicine of the Prophet* (P. Johnstone, trans.). Islamic Texts Society.

The chief work of prophetic medicine in English: the sayings on illness and cure, the simple remedies, recitation, and the illnesses of the heart.

Jackson, S. W. (1986). *Melancholia and Depression: From Hippocratic Times to Modern Times*. Yale University Press.

Follows one illness through twenty-five centuries of medical writing. Shows how stable the description stayed while the explanations changed.

Jouanna, J. (1999). *Hippocrates* (trans. M. B. DeBevoise). Johns Hopkins University Press.

The standard modern study of the man, the school and the writings, by the leading editor of the texts. With a summary of every treatise in the collection.

Jull, A. B., Cullum, N., Dumville, J. C., et al. (2015). Honey as a topical treatment for wounds. *Cochrane Database of Systematic Reviews* (3), CD005083.

Reviews the trials of honey dressings. Clear benefit for burns of moderate depth and for infected wounds after surgery; uncertain for other wounds.

King, H. (1998). *Hippocrates' Woman: Reading the Female Body in Ancient Greece*. Routledge.

The standard study of Hippocratic medicine for women, including the moving womb and the later history of the idea.

Kingsley, P. (1999). *In the Dark Places of Wisdom*. Golden Sufi Center.

Argues from the inscriptions of Velia that Parmenides belonged to a line of healer-priests who practised incubation. Vividly written; the reading goes beyond what the stones prove, and the stones are real.

Kinnier Wilson, J. V. and Reynolds, E. H. (1990). Translation and analysis of a cuneiform text forming part of a Babylonian treatise on epilepsy. *Medical History* 34(2), 185–198.

An Assyriologist and a neurologist translate the tablet on seizures and compare its descriptions with modern classification. Short, exact and convincing.

Krakow, B., Hollifield, M., Johnston, L., et al. (2001). Imagery rehearsal therapy for chronic nightmares in sexual assault survivors with posttraumatic stress disorder: a randomized controlled trial. *JAMA* 286(5), 537–545.

Rewriting a nightmare while awake and rehearsing the new version reduced nightmares and the daytime symptoms of trauma.

LiDonnici, L. R. (1995). *The Epidaurian Miracle Inscriptions: Text, Translation and Commentary*. Scholars Press.

The Greek text of the stones of Epidaurus with a facing English translation and notes on each cure. The edition to use.

Linde, K., Berner, M. M., and Kriston, L. (2008). St John's wort for major depression. *Cochrane Database of Systematic Reviews* (4), CD000448.

Twenty-nine trials with 5,489 patients. The extracts were better than placebo and similar to standard antidepressants, with fewer side effects.

Majno, G. (1975). *The Healing Hand: Man and Wound in the Ancient World*. Harvard University Press.

A pathologist follows the treatment of wounds from Mesopotamia and Egypt to Greece, India and China, and tests the old dressings in his laboratory. Learned, practical and a pleasure to read.

Mattern, S. P. (2013). *The Prince of Medicine: Galen in the Roman Empire*. Oxford University Press.

A life of Galen built from his own case histories. Shows him at the bedside, in the lecture hall and in his quarrels.

Maul, S. M. (1994). *Zukunftsbewältigung: Eine Untersuchung altorientalischen Denkens anhand der babylonisch-assyrischen Löserituale (Namburbi)*. Philipp von Zabern.

The edition and study of the rites of undoing. Shows their fixed plan, their legal form before the sun god, and the handing on of the evil to clay and river. In German.

Michalsen, A., Klotz, S., Lüdtke, R., et al. (2003). Effectiveness of leech therapy in osteoarthritis of the knee: a randomized, controlled trial. *Annals of Internal Medicine* 139(9), 724–730.

One treatment with leeches against four weeks of a standard gel. Much greater relief of pain after a week, and better function for three months.

Morabia, A. (2006). Pierre-Charles-Alexandre Louis and the evaluation of bloodletting. *Journal of the Royal Society of Medicine* 99(3), 158–160.

A short, exact account of the first numerical test of bloodletting: seventy-seven patients, the two groups, the deaths, and the weakness of the comparison.

Morens, D. M. (1999). Death of a president. *New England Journal of Medicine* 341(24), 1845–1849.

Reconstructs the last illness of George Washington from the physicians' own reports, including the amounts of blood taken.

Nunn, J. F. (1996). *Ancient Egyptian Medicine*. British Museum Press.

By a physician who learned to read hieroglyphs. Covers the papyri, the healers, the doctrine of the body, the drugs and the diseases found in mummies. The best single book on the subject.

Nutton, V. (2013). *Ancient Medicine* (2nd ed.). Routledge.

The standard history of Greek and Roman medicine from Homer to late antiquity, by the leading historian of Galen. Clear on what is known and what is legend.

Pagel, W. (1958). *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance*. Karger.

Still the fullest account of the doctrine: the three principles, the archeus, the five origins of illness, the two bodies, and the sources in older thought.

Parpola, S. (1993). *Letters from Assyrian and Babylonian Scholars*. State Archives of Assyria, vol. 10. Helsinki University Press.

The letters of the king's exorcists, physicians, diviners and astrologers to Esarhaddon and Ashurbanipal. Shows the healers at work, day by day, on a single famous patient.

Paul, I. M., Beiler, J., McMonagle, A., et al. (2007). Effect of honey, dextromethorphan, and no treatment on nocturnal cough and sleep quality for coughing children and their parents. *Archives of Pediatrics and Adolescent Medicine* 161(12), 1140–1146.

A trial in 105 children. Honey before bed was better than no treatment for cough and sleep. The standard cough medicine was not.

Pormann, P. E. and Savage-Smith, E. (2007). *Medieval Islamic Medicine*. Edinburgh University Press.

The best short history: the translators, al-Razi, Ibn Sina, the hospitals, practice and popular medicine. Corrects many legends.

Reiner, E. (1958). *Šurpu: A Collection of Sumerian and Akkadian Incantations*. Archiv für Orientforschung, Beiheft 11.

The edition and translation of the rite of the broken oath, with its long list of possible wrongs and the peeling of the onion.

Riddle, J. M. (1985). *Dioscorides on Pharmacy and Medicine*. University of Texas Press.

Explains how the great book on drugs was built and why it lasted. Argues that Dioscorides grouped drugs by their action and that much of what he reports is accurate.

Rijo-Ferreira, F., Acosta-Rodriguez, V. A., Abel, J. H., et al. (2020). The malaria parasite has an intrinsic clock. *Science* 368(6492), 746–753.

Shows that the parasite keeps its own daily rhythm and sets it by the rhythm of its host. The ground under the old count of fevers by days.

Rosner, F. (1998). *The Medical Legacy of Moses Maimonides*. KTAV Publishing House.

Summaries of all ten medical works of Maimonides by their translator, with the regimen for the soul and the letter on his working day.

Scurlock, J. (2006). *Magico-Medical Means of Treating Ghost-Induced Illnesses in Ancient Mesopotamia*. Brill.

Every known prescription and rite for the “hand of a ghost”, translated, with a study of what the Babylonians believed the dead to need.

Scurlock, J. (2014). *Sourcebook for Ancient Mesopotamian Medicine*. SBL Press.

Full translations of the main diagnostic and therapeutic tablets, with the original text. The reference work for anyone who wants to read the sources.

Scurlock, J. and Andersen, B. R. (2005). *Diagnoses in Assyrian and Babylonian Medicine: Ancient Sources, Translations, and Modern Medical Analyses*. University of Illinois Press.

An Assyriologist and a physician go through the diagnostic texts sign by sign and propose modern equivalents. The identifications are debated; the translations make the material available as nothing else does.

Siraisi, N. G. (1990). *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice*. University of Chicago Press.

The standard introduction to the medicine of the universities: its texts, its teaching, its practitioners and its patients.

Steuer, R. O. and Saunders, J. B. de C. M. (1959). *Ancient Egyptian and Cnidian Medicine: The Relationship of Their Aetiological Concepts of Disease*. University of California Press.

Sets out the Egyptian doctrine of the harmful matter that rises from the bowel and argues that the Greek school of Knidos took its theory of residues from it.

Stol, M. (1993). *Epilepsy in Babylonia*. Styx.

A Dutch Assyriologist assembles everything that the tablets say about the falling sickness: its names, its demons, the exact description of seizures, and its treatment. A model of how to read an ancient illness in its own terms.

Stol, M. (2000). *Birth in Babylonia and the Bible: Its Mediterranean Setting*. Styx.

Everything the tablets say on conception, pregnancy, birth, midwives, Lamashtu and the newborn, set beside the biblical and Greek evidence.

Tapsoba, I., Arbault, S., Walter, P. and Amatore, C. (2010). Finding out Egyptian gods' secret using analytical chemistry: biomedical properties of Egyptian black makeup revealed by amperometry at single cells. *Analytical Chemistry* 82(2), 457–460.

Shows that the man-made lead compounds in Egyptian eye paint, at very low doses, make skin cells release a messenger of the immune defence.

Thompson, R. C., Allam, A. H., Lombardi, G. P., et al. (2013). Atherosclerosis across 4000 years of human history: the Horus study of four ancient populations. *Lancet* 381(9873), 1211–1222.

Scans of 137 mummies from Egypt, Peru, the American Southwest and the Aleutian Islands. Hardened arteries in about a third, in every population.

Throop, P. (trans.) (1998). *Hildegard von Bingen's Physica: The Complete English Translation of Her Classic Work on Health and Healing*. Healing Arts Press.

The nine books on plants, elements, trees, stones and animals in full. The source for her remedies.

von Staden, H. (1989). *Herophilus: The Art of Medicine in Early Alexandria*. Cambridge University Press.

Every surviving fragment of the first anatomist, with translation and commentary. Shows his study of the pulse, its measurement by a water clock and its description in the terms of music.

Wootton, D. (2006). *Bad Medicine: Doctors Doing Harm Since Hippocrates*. Oxford University Press.

Argues that for most of its history learned medicine did more harm than good, and asks why physicians did not notice. Essential for anyone who wants to judge an old medicine fairly.

Part V — The Eastern System: China, India, Tibet

Aggarwal, S., Negi, S., Jha, P., et al. (2010). EGLN1 involvement in high-altitude adaptation revealed through genetic analysis of extreme constitution types defined in Ayurveda. *Proceedings of the National Academy of Sciences* 107(44), 18961–18966.

A gene found by comparing constitutions proved to be linked to mountain sickness and to adaptation to height.

Antonio, R. L., Kozasa, E. H., Galduróz, J. C. F., et al. (2013). Formulas used by Tibetan doctors at Men-Tsee-Khang in India for the treatment of neuropsychiatric disorders and their correlation with pharmacological data. *Phytotherapy Research* 27(4), 552–563.

The ten formulas most used for illnesses of wind, their plants, and what laboratory work says about each plant.

Beckwith, C. I. (1979). The introduction of Greek medicine into Tibet in the seventh and eighth centuries. *Journal of the American Oriental Society* 99(2), 297–313.

Sifts the Tibetan histories and shows that physicians of the Greek tradition did reach the Tibetan court.

Bensky, D., Clavey, S., and Stöger, E. (2004). *Chinese Herbal Medicine: Materia Medica* (3rd ed.). Eastland Press.

The standard English reference for the single drugs: nature, flavour, vessels entered, actions, preparation, cautions and the old sources for each.

Benson, H., Lehmann, J. W., Malhotra, M. S., et al. (1982). Body temperature changes during the practice of g Tum-mo yoga. *Nature* 295(5846), 234–236.

Three Tibetan monks raised the temperature of fingers and toes by up to 8.3 degrees during meditation.

Bhargav, H., Chikkanna, U., Holla, B., et al. (2026). The Brief Prakriti Inventory: latent structure, reliability, and validity. *Wellcome Open Research* 10, 669.

A short questionnaire for the constitution with good repeatability and good agreement with physicians' judgment.

Bilton, K. and Zaslawski, C. (2016). Reliability of manual pulse diagnosis methods in traditional East Asian medicine: a systematic narrative literature review. *Journal of Alternative and Complementary Medicine* 22(8), 599–609.

Twelve studies. Agreement is acceptable where the qualities are defined in operational terms and poor where the classical images are used as each reader learned them.

Birkeflet, O., Laake, P., and Vøllestad, N. (2011). Low inter-rater reliability in traditional Chinese medicine for female infertility. *Acupuncture in Medicine* 29(1), 51–57.

Two needlers, fifty-four women. Poor agreement on points, fair to moderate on fullness and emptiness, good on the vessel once the pattern is given.

Cardini, F. and Weixin, H. (1998). Moxibustion for correction of breech presentation: a randomized controlled trial. *JAMA* 280(18), 1580–1584.

Burning mugwort at one point on the little toe turned the child in 75 per cent of women, against 48 per cent of untreated controls.

Cheang, I., Yao, W., Zhou, Y., et al. (2024). The traditional Chinese medicine Qiliqiangxin in heart failure with reduced ejection fraction: a randomized, double-blind, placebo-controlled trial. *Nature Medicine* 30(8), 2295–2302.

A trial in 3,110 patients. A fixed formula added to full modern treatment reduced deaths from heart disease and admissions for heart failure.

Cho, N. H., Kim, J. Y., Kim, S. S., Lee, S. K., and Shin, C. (2014). Predicting type 2 diabetes using Sasang constitutional medicine. *Journal of Diabetes Investigation* 5(5), 525–532.

A Korean study that followed healthy adults for years. People of the greater yin kind developed diabetes clearly more often than the other kinds.

Chopra, A., Saluja, M., Tillu, G., et al. (2013). Ayurvedic medicine offers a good alternative to glucosamine and celecoxib in the treatment of symptomatic knee osteoarthritis: a randomized, double-blind, controlled equivalence drug trial. *Rheumatology* 52(8), 1408–1417.

Two fixed Indian formulas did as well as two standard remedies in 440 patients.

Dai, J., Fang, J., Sun, S., et al. (2013). ZHENG-omics application in ZHENG classification and treatment: Chinese personalized medicine. *Evidence-Based Complementary and Alternative Medicine* 2013, 235969.

Reviews Chinese work that seeks the counterpart of hot and cold patterns in genes, proteins and small molecules.

Deadman, P., Al-Khafaji, M., and Baker, K. (1998). *A Manual of Acupuncture*. Journal of Chinese Medicine Publications.

The standard English reference for the points: place, name, classical uses and combinations, with the sources given for each.

Deane, S. (2019). rLung, mind, and mental health: the notion of “wind” in Tibetan conceptions of mind and mental illness. *Journal of Religion and Health* 58(3), 708–724.

Fieldwork among Tibetans in India on how the illness of wind is understood, caused and treated, by physicians, monks and patients.

Furst, D. E., Venkatraman, M. M., McGann, M., et al. (2011). Double-blind, randomized, controlled, pilot study comparing classic ayurvedic medicine, methotrexate, and their combination in rheumatoid arthritis. *Journal of Clinical Rheumatology* 17(4), 185–192.

Individually prescribed Indian drugs, each with its own matching dummy, tested blind against the standard drug. The model for testing a fitted treatment.

Goldman, N., Chen, M., Fujita, T., et al. (2010). Adenosine A1 receptors mediate local anti-nociceptive effects of acupuncture. *Nature Neuroscience* 13(7), 883–888.

In mice, turning a needle raises adenosine in the tissue twenty-four-fold, and the relief of pain depends on its receptor.

Gyatso, J. (2015). *Being Human in a Buddhist World: An Intellectual History of Medicine in Early Modern Tibet*. Columbia University Press.

How Tibetan physicians weighed scripture against observation, in the debate on the origin of the Four Tantras and in the question whether the channels of the yogis can be seen in a body.

Han, J.-S. (2003). Acupuncture: neuropeptide release produced by electrical stimulation of different frequencies. *Trends in Neurosciences* 26(1), 17–22.

Summary of three decades of work showing that needling releases the body's own opiates and that the rhythm of stimulation decides which.

Harper, D. (1998). *Early Chinese Medical Literature: The Mawangdui Medical Manuscripts*. Kegan Paul International.

Full translation and study of the medical texts from the tomb closed in 168 before our era. The best view of Chinese medicine before the classics.

Iwasaki, K., Satoh-Nakagawa, T., Maruyama, M., et al. (2005). A randomized, observer-blind, controlled trial of the traditional Chinese medicine Yi-Gan San for improvement of behavioral and psychological symptoms and activities of daily living in dementia patients. *Journal of Clinical Psychiatry* 66(2), 248–252.

Fifty-two patients. A seven-plant formula halved the score for agitation and aggression in four weeks without sedation.

Jiang, B., Liang, X., Chen, Y., et al. (2012). Integrating next-generation sequencing and traditional tongue diagnosis to determine tongue coating microbiome. *Scientific Reports* 2, 936.

Patients with a hot and a cold pattern of the same stomach illness carry different bacteria in the coat of the tongue.

Johnson, C. and Eccles, R. (2005). Acute cooling of the feet and the onset of common cold symptoms. *Family Practice* 22(6), 608–613.

An experiment with 180 volunteers. Chilling the feet for twenty minutes tripled the share who developed a cold in the next days.

Kaptchuk, T. J. (2000). *The Web That Has No Weaver: Understanding Chinese Medicine* (2nd ed.). Contemporary Books.

The best introduction for a general reader. Explains how a pattern differs from a disease and why the Chinese physician asks other questions.

Katzenschlager, R., Evans, A., Manson, A., et al. (2004). *Mucuna pruriens* in Parkinson's disease: a double blind clinical and pharmacological study. *Journal of Neurology, Neurosurgery and Psychiatry* 75(12), 1672–1677.

In eight patients a powder of velvet bean seeds acted faster and longer than the standard drug.

Kleinman, A. (1982). Neurasthenia and depression: a study of somatization and culture in China. *Culture, Medicine and Psychiatry* 6(2), 117–190.

A hundred Chinese patients with the diagnosis of weak nerves; eighty-seven had a major depression by American criteria. The founding study of how culture shapes the form of suffering.

Kurande, V., Waagepetersen, R., Toft, E., and Prasad, R. (2013). Reliability studies of diagnostic methods in Indian traditional Ayurveda medicine: an overview. *Journal of Ayurveda and Integrative Medicine* 4(2), 67–76.

Reviews the few studies of how far Indian physicians agree with each other and with themselves, including the authors' own study of the pulse.

Kuriyama, S. (1999). *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine*. Zone Books.

Asks why Greek and Chinese physicians, with their fingers on the same artery, felt different things. The best book on how a people learns to perceive a body.

Kuyken, W., Warren, F. C., Taylor, R. S., et al. (2016). Efficacy of mindfulness-based cognitive therapy in prevention of depressive relapse: an individual patient data meta-analysis from randomized trials. *JAMA Psychiatry* 73(6), 565–574.

Pooled data of nine trials. A course of attention training reduced relapse into depression by about a third.

Langevin, H. M. and Yandow, J. A. (2002). Relationship of acupuncture points and meridians to connective tissue planes. *The Anatomical Record* 269(6), 257–265.

Maps the points of the arm on sections of the body and finds more than eighty per cent at planes of connective tissue. The leading anatomical proposal for what a vessel follows.

Lee, A., Chan, S. K. C., and Fan, L. T. Y. (2015). Stimulation of the wrist acupuncture point PC6 for preventing postoperative nausea and vomiting. *Cochrane Database of Systematic Reviews* (11), CD003281.

Fifty-nine trials with 7,667 patients. Stimulation of one point prevents sickness after operations about as well as the standard drugs.

Lee, B.-O., Kirmayer, L. J., and Groleau, D. (2010). Therapeutic processes and perceived helpfulness of dang-ki (Chinese shamanism) from the symbolic healing perspective. *Culture, Medicine and Psychiatry* 34(1), 56–105.

Twenty-one patients of a Singapore medium, with their own accounts of what helped and what did not.

Lei, S. H. (2014). *Neither Donkey nor Horse: Medicine in the Struggle over China's Modernity*. University of Chicago Press.

How Chinese medicine survived the attempt to abolish it in 1929 by organising, standardising and allying itself with the state.

Li, F., Harmer, P., Fitzgerald, K., et al. (2012). Tai chi and postural stability in patients with Parkinson's disease. *New England Journal of Medicine* 366(6), 511–519.

In 195 patients, taiji improved balance more than strength training or stretching and reduced falls.

Liang, X., Wang, Q., Jiang, Z., et al. (2020). Clinical research linking traditional Chinese medicine constitution types with diseases: a literature review of 1639 observational studies. *Journal of Traditional Chinese Medicine* 40(4), 690–702.

Shows which constitutions go with which illnesses, and that nearly nine in ten of the studies are cross-sectional.

Linde, K., Allais, G., Brinkhaus, B., et al. (2016). Acupuncture for the prevention of episodic migraine. *Cochrane Database of Systematic Reviews* (6), CD001218.

Twenty-two trials. Needling reduces the frequency of attacks, slightly more than sham and at least as well as preventive drugs.

Liu, S., Wang, Z., Su, Y., et al. (2021). A neuroanatomical basis for electroacupuncture to drive the vagal–adrenal axis. *Nature* 598(7882), 641–645.

Identifies the nerve fibres through which needling at a point on the hind limb damps inflammation, and shows why the same stimulus elsewhere does not.

Liu, Z., Liu, Y., Xu, H., et al. (2017). Effect of electroacupuncture on urinary leakage among women with stress urinary incontinence: a randomized clinical trial. *JAMA* 317(24), 2493–2501.

In 504 women, electric needling over the sacrum reduced leakage far more than a sham procedure.

Lock, M. M. (1980). *East Asian Medicine in Urban Japan: Varieties of Medical Experience*. University of California Press.

An anthropologist's account of herbal physicians, needlers, masseurs and their patients in Kyoto, with the history of the old medicine in Japan.

Lott, D. T., Yeshi, T., Norchung, N., et al. (2021). No detectable electroencephalographic activity after clinical declaration of death among Tibetan Buddhist meditators in apparent tukdam, a putative postmortem meditation state. *Frontiers in Psychology* 11, 599190.

The first recordings from the bodies of meditators said to remain in meditation after death. No brain activity was found.

Lund, I. and Lundeberg, T. (2006). Are minimal, superficial or sham acupuncture procedures acceptable as inert placebo controls? *Acupuncture in Medicine* 24(1), 13–15.

Argues from the physiology of touch that shallow and non-point needling are active treatments and not inert controls.

Lutz, A., Greischar, L. L., Rawlings, N. B., Ricard, M., and Davidson, R. J. (2004). Long-term meditators self-induce high-amplitude gamma synchrony during mental practice. *Proceedings of the National Academy of Sciences* 101(46), 16369–16373.

In monks with tens of thousands of hours of practice, distant parts of the brain lock into a common fast rhythm, during meditation and at rest.

Lv, Q.-W., Zhang, W., Shi, Q., et al. (2015). Comparison of *Tripterygium wilfordii* Hook F with methotrexate in the treatment of active rheumatoid arthritis (TRIFRA): a randomised, controlled clinical trial. *Annals of the Rheumatic Diseases* 74(6), 1078–1086.

In 207 patients an extract of the thunder god vine matched the standard drug, and the two together did better than either.

Maciocia, G. (2015). *The Foundations of Chinese Medicine: A Comprehensive Text* (3rd ed.). Elsevier.

The textbook most used in Western schools. Sets out the organs, the causes, the patterns with their signs, tongues and pulses, and the principles of treatment.

MacPherson, H., Vertosick, E., Lewith, G., et al. (2014). Influence of control group on effect size in trials of acupuncture for chronic pain: a secondary analysis of an individual patient data meta-analysis. *PLoS ONE* 9(4), e93739.

Shows that the gap between real and sham needling shrinks when the sham needle pierces the skin.

Melzack, R., Stillwell, D. M., and Fox, E. J. (1977). Trigger points and acupuncture points for pain: correlations and implications. *Pain* 3(1), 3–23.

Compares Western maps of tender muscle points with Chinese charts and finds seventy-one per cent agreement in place and in the kind of pain treated.

Mitchell, C., Feng, Y., and Wiseman, N. (1999). *Shāng Hán Lùn: On Cold Damage. Translation and Commentaries*. Paradigm Publications.

The standard English edition of the treatise, clause by clause, with the Chinese text and explanations of every formula.

Noetel, M., Sanders, T., Gallardo-Gómez, D., et al. (2024). Effect of exercise for depression: systematic review and network meta-analysis of randomised controlled trials. *BMJ* 384, e075847.

Compares the kinds of exercise in 218 trials. Walking or jogging, yoga and strength training had the largest effects, and taiji and qigong were effective as well.

Nortier, J. L., Martinez, M.-C. M., Schmeiser, H. H., et al. (2000). Urothelial carcinoma associated with the use of a Chinese herb (*Aristolochia fangchi*). *New England Journal of Medicine* 342(23), 1686–1692.

The follow-up of the Belgian women with kidney failure from a substituted plant: cancer of the urinary passages in nearly half of those examined.

Ornish, D., Brown, S. E., Scherwitz, L. W., et al. (1990). Can lifestyle changes reverse coronary heart disease? The Lifestyle Heart Trial. *Lancet* 336(8708), 129–133.

A programme of yoga, diet, walking and group support reversed narrowing of the heart’s arteries in a small trial.

Parfionovitch, Y., Dorje, G., and Meyer, F. (eds.) (1992). *Tibetan Medical Paintings: Illustrations to the Blue Beryl Treatise of Sangye Gyamtso (1653–1705)* (2 vols.). Serindia.

All seventy-nine paintings reproduced, with every caption translated. The best single source for what Tibetan medicine teaches.

Prabhakaran, D., Chandrasekaran, A. M., Singh, K., et al. (2020). Yoga-based cardiac rehabilitation after acute myocardial infarction: a randomized trial. *Journal of the American College of Cardiology* 75(13), 1551–1561.

Nearly four thousand patients in India. No clear difference in grave events; better self-rated health and return to activity with yoga.

Prasher, B., Negi, S., Aggarwal, S., et al. (2008). Whole genome expression and biochemical correlates of extreme constitutional types defined in Ayurveda. *Journal of Translational Medicine* 6, 48.

The first study to compare healthy people of the three pure constitutions in gene activity and blood chemistry.

Pupysheva, N. V. and Boronoev, V. V. (2022). Tibetan pulse diagnostics and attempts to computerize it. *Explore* 18(1), 51–56.

Describes the six places and twelve organs of the Tibetan pulse and the limits of recording it by instrument.

Raguram, R., Venkateswaran, A., Ramakrishna, J., and Weiss, M. G. (2002). Traditional community resources for mental health: a report of temple healing from India. *BMJ* 325(7354), 38–40.

Thirty-one people with severe mental illness stayed at a temple without any healing ritual. Their symptom scores fell by nearly a fifth.

Rapgay, L. (1986). A guide to Tibetan medical urinalysis. *Acupuncture and Electro-Therapeutics Research* 11(1), 25–43.

A Tibetan physician's account of the examination of urine, including its use for forecast and for the finding of spirit causes.

Sallon, S., Dory, Y., Barghouthy, Y., et al. (2017). Is mercury in Tibetan medicine toxic? Clinical, neurocognitive and biochemical results of an initial cross-sectional study. *Experimental Biology and Medicine* 242(3), 316–332.

A first comparison of long-term users of mercury-containing Tibetan pills with non-users. No clear harm was found; the study was small.

Scheid, V. (2002). *Chinese Medicine in Contemporary China: Plurality and Synthesis*. Duke University Press.

A physician and anthropologist shows how many medicines live inside the one that is called traditional, and how pattern differentiation became its core.

Scheid, V., Bensky, D., Ellis, A., and Barolet, R. (2009). *Chinese Herbal Medicine: Formulas and Strategies* (2nd ed.). Eastland Press.

The standard English reference for the formulas: source, ingredients, the reasoning behind each, the classical commentaries and the usual changes.

Scholkmann, F. and Wolf, U. (2019). The pulse-respiration quotient: a powerful but untapped parameter for modern studies about human physiology and pathophysiology. *Frontiers in Physiology* 10, 371.

Reviews a century of work on the ratio of heartbeats to breaths. In healthy adults at rest it lies near four, and it tends to whole numbers in sleep.

Schäfer, C., Rosenblum, M. G., Kurths, J., and Abel, H.-H. (1998). Heartbeat synchronized with ventilation. *Nature* 392(6673), 239–240.

The first clear demonstration that heartbeat and breath lock to each other in whole-number ratios for long stretches in resting people.

Sharma, P. V. (ed. and trans.) (1981–1994). *Caraka-Saṃhitā: Agniveśa's Treatise Refined and Annotated by Caraka and Redacted by Dṛḍhabala* (4 vols.). Chaukhambha Orientalia.

Sanskrit text with a plain English translation. The standard scholarly edition for readers without Sanskrit.

Sherman, K. J., Cherkin, D. C., and Hogeboom, C. J. (2001). The diagnosis and treatment of patients with chronic low-back pain by traditional Chinese medical acupuncturists. *Journal of Alternative and Complementary Medicine* 7(6), 641–650.

What needlers actually diagnose and do for back pain: one dominant pattern, many different points, two points shared.

Sherrington, C., Fairhall, N. J., Wallbank, G. K., et al. (2019). Exercise for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews* (1), CD012424.

The standard review. Among the kinds of exercise, taiji reduces the rate of falls by about nineteen per cent.

Shukla, N. K., Narang, R., Nair, N. G. K., et al. (1991). Multicentric randomized controlled clinical trial of Kshaarasootra (Ayurvedic medicated thread) in the management of fistula-in-ano. *Indian Journal of Medical Research* 94, 177–185.

The medicated thread against surgery in about five hundred patients: slower healing, fewer recurrences, no stay in hospital.

Stewart, M., Morling, J. R., and Maxwell, H. (2016). Padma 28 for intermittent claudication. *Cochrane Database of Systematic Reviews* (3), CD007371.

Five trials with 365 patients. A Tibetan formula increased the distance that patients with narrowed leg arteries could walk; the evidence is of low certainty.

Taylor, K. (2005). *Chinese Medicine in Early Communist China, 1945–63: A Medicine of Revolution*. RoutledgeCurzon.

Documents how the textbooks, colleges and the name of Traditional Chinese Medicine were created in a few years.

Tilbrook, H. E., Cox, H., Hewitt, C. E., et al. (2011). Yoga for chronic low back pain: a randomized trial. *Annals of Internal Medicine* 155(9), 569–578.

In 313 adults a twelve-week course of yoga improved the use of the back for at least a year.

Tomooka, K., Saito, I., Furukawa, S., et al. (2018). Yellow tongue coating is associated with diabetes mellitus among Japanese non-smoking men and women: the Toon Health Study. *Journal of Epidemiology* 28(6), 287–291.

A population survey that links a yellow coat of the tongue to diabetes.

Unschuld, P. U. (1985). *Medicine in China: A History of Ideas*. University of California Press.

The standard history. Shows that Chinese medicine was never one system: ancestor medicine, demon medicine, drug lore, the medicine of systematic correspondence, Buddhist and modern medicine lived side by side.

Unschuld, P. U. (1986). *Nan-Ching: The Classic of Difficult Issues*. University of California Press.

Translation of the eighty-one questions with twenty Chinese and Japanese commentaries. The source for the pulse at the wrist, the three places and the weights in beans.

Unschuld, P. U. and Tessenow, H. (2011). *Huang Di nei jing su wen: An Annotated Translation of Huang Di's Inner Classic – Basic Questions* (2 vols.). University of California Press.

The scholarly English translation of the first book of the Inner Classic, with the Chinese commentaries. Renders the two characters of chapter 13 as "to invoke the origin".

Venkatesh, A., Johansson, L., Sivanandan, P. V., et al. (2025). Prakriti (constitutional typology) in Ayurveda: a critical review of Prakriti assessment tools and their scientific validity. *Frontiers in Medicine* 12, 1656249.

Counts sixty-four instruments for assessing the constitution and shows how few have been properly tested.

Vickers, A., Goyal, N., Harland, R., and Rees, R. (1998). Do certain countries produce only positive results? A systematic review of controlled trials. *Controlled Clinical Trials* 19(2), 159–166.

Found that trials of needling from China, and from some other countries, were positive without exception.

Wang, C., Cao, B., Liu, Q.-Q., et al. (2011). Oseltamivir compared with the Chinese traditional therapy maxingshigan–yinqiaosan in the treatment of H1N1 influenza: a randomized trial. *Annals of Internal Medicine* 155(4), 217–225.

In 410 patients a decoction of two classical formulas ended the fever as fast as the standard antiviral drug.

Wang, C., Schmid, C. H., Rones, R., et al. (2010). A randomized trial of tai chi for fibromyalgia. *New England Journal of Medicine* 363(8), 743–754.

Sixty-six patients. Symptom scores fell far more with taiji than with stretching and education, and the difference lasted.

Wang, L., Zhou, G.-B., Liu, P., et al. (2008). Dissection of mechanisms of Chinese medicinal formula Realgar-Indigo naturalis as an effective treatment for promyelocytic leukemia. *Proceedings of the National Academy of Sciences* 105(12), 4826–4831.

Tests the active compound of each ingredient of a three-part formula alone and together. The mineral is the principal agent, and the two plants raise its uptake and add effects of their own.

Wang, Q. (2012). Individualized medicine, health medicine, and constitutional theory in Chinese medicine. *Frontiers of Medicine* 6(1), 1–7.

The author of the nine constitutions sets out the doctrine, its questionnaire and the national survey.

Wang, Z. C., Zhang, S. P., Yuen, P. C., et al. (2020). Intra-rater and inter-rater reliability of tongue coating diagnosis in traditional Chinese medicine using smartphones: quasi-Delphi study. *JMIR mHealth and uHealth* 8(7), e16018.

Clinicians agree well with themselves and moderately with each other on the coat of the tongue; poorly on the colour of its body.

White, P., Bishop, F. L., Prescott, P., et al. (2012). Practice, practitioner, or placebo? A multifactorial, mixed-methods randomized controlled trial of acupuncture. *Pain* 153(2), 455–462.

Real and placebo needles did equally well. The identity of the practitioner made a significant difference.

Witt, C. M., Pach, D., Brinkhaus, B., et al. (2009). Safety of acupuncture: results of a prospective observational study with 229,230 patients and introduction of a medical information and consent form. *Forschende Komplementärmedizin* 16(2), 91–97.

The largest survey of unwanted effects. Minor effects in 8.6 per cent of patients; serious harm very rare.

Wu, T., Li, Y., Bian, Z., Liu, G., and Moher, D. (2009). Randomized trials published in some Chinese journals: how many are randomized? *Trials* 10, 46.

Interviews with the authors of trials labelled randomised in Chinese journals; fewer than seven per cent met the description.

Wujastyk, D. (2003). *The Roots of Ayurveda: Selections from Sanskrit Medical Writings* (rev. ed.). Penguin.

The best introduction to the classical texts, with long translated passages from Caraka, Sushruta, Vagbhata and others and a careful account of their dates.

Yang, Y., Li, X., Chen, G., et al. (2023). Traditional Chinese medicine compound (Tongxinluo) and clinical outcomes of patients with acute myocardial infarction: the CTS-AMI randomized clinical trial. *JAMA* 330(16), 1534–1545.

A trial in 3,777 patients. A fixed formula added to standard care reduced grave events in the first month after a heart attack.

Zhao, L., Li, D., Zheng, H., et al. (2019). Acupuncture as adjunctive therapy for chronic stable angina: a randomized clinical trial. *JAMA Internal Medicine* 179(10), 1388–1397.

A four-arm trial in 404 patients. Needling on the vessels assigned to the heart reduced attacks more than needling on another vessel, sham needling or waiting.

Zhou, Y. and Xu, B. (2021). New insights into molecular mechanisms of "cold or hot" nature of food: when East meets West. *Food Research International* 144, 110361.

Reviews attempts to find what the old division of foods into hot and cold answers to in their composition and in the receptors of the body.

Zysk, K. G. (1991). *Asceticism and Healing in Ancient India: Medicine in the Buddhist Monastery*. Oxford University Press.

Shows that classical Indian medicine grew among the wandering ascetics and in the Buddhist monastery, and not from the priestly healing of the Vedic hymns. With the medical chapters of the monks' rule.

Part VI — Hawai‘i and the Pacific

Abbott, I. A. (1992). *Lā‘au Hawai‘i: Traditional Hawaiian Uses of Plants*. Bishop Museum Press.

> A Hawaiian botanist on the plants of food, cloth, building and medicine. A sober chapter on remedies.

Angel, C. M., Sherman, L. W., Strang, H., et al. (2014). Short-term effects of restorative justice conferences on post-traumatic stress symptoms among robbery and burglary victims: a randomized controlled trial. *Journal of Experimental Criminology* 10(3), 291–307.

> Victims in London who met the offender had fewer symptoms of lasting stress than those who did not.

Belo, J. (1960). *Trance in Bali*. Columbia University Press.

> Observations of the 1930s of mediums, dagger dancers and the drama of the witch and the Barong.

Best, E. (1924). *The Maori* (2 vols.). Memoirs of the Polynesian Society 5.

> A long record from Māori elders of the Tūhoe people and others: the spirit, the life principle, *tapu*, birth, sickness, sorcery and death.

Bloch, M. (1971). *Placing the Dead: Tombs, Ancestral Villages and Kinship Organization in Madagascar*. Seminar Press.

> The tombs of the Malagasy highlands and the rite in which the dead are taken out, rewrapped and returned.

Braun, M., Schwickert, M., Nielsen, A., et al. (2011). Effectiveness of traditional Chinese “gua sha” therapy in patients with chronic neck pain: a randomized controlled trial. *Pain Medicine* 12(3), 362–369.

> Scraping of the skin against a warm pad in 48 patients. Less neck pain after one week.

Buck, P. H. (Te Rangi Hīroa) (1949). *The Coming of the Maori*. Maori Purposes Fund Board.

> The standard account of the old Māori way of life by a Māori physician and anthropologist. The chapter on sickness gives the division of illnesses and the work of the expert.

Chatchawan, U., Thinkhamrop, B., Kharmwan, S., Knowles, J., and Eungpinichpong, W. (2005). Effectiveness of traditional Thai massage versus Swedish massage among patients with back pain associated with myofascial trigger points. *Journal of Bodywork and Movement Therapies* 9(4), 298–309.

A trial in 180 patients. Both forms of massage eased back pain to the same degree.

Connor, L., Asch, P., and Asch, T. (1986). *Jero Tapakan: Balinese Healer*. Cambridge University Press.

The monograph that accompanies a series of films of one Balinese medium at work: a consultation in trance, a treatment by kneading, and the healer's own comments on seeing herself.

Cox, P. A. (1993). Saving the ethnopharmacological heritage of Samoa. *Journal of Ethnopharmacology* 38(2–3), 181–188.

An ethnobotanist on the Samoan healers, their plants, and what is owed to them.

Domhoff, G. W. (1985). *The Mystique of Dreams: A Search for Utopia through Senoi Dream Theory*. University of California Press.

An examination of the claim that a Malaysian people trained their children to control dreams. The claim does not survive.

Durie, M. (1994). *Whaiora: Māori Health Development*. Oxford University Press.

The history of Māori health from first contact to the 1990s by the psychiatrist who shaped its policy. The law of 1907, the prophets, the models of health and the return of the healers.

Durie, M. H. (1985). A Maori perspective of health. *Social Science and Medicine* 20(5), 483–486.

The first printed statement of health as a house of four walls: spirit, mind, body and family.

Eiseman, F. B. (1990). *Bali: Sekala and Niskala*, vol. 1. Periplus.

Essays on Balinese religion and ritual by a long resident. The seen and the unseen, the calendar, the offerings, the rites of birth and death.

Eisenbruch, M. (1992). The ritual space of patients and traditional healers in Cambodia. *Bulletin de l'École française d'Extrême-Orient* 79(2), 283–316.

The Khmer healers, their classification of illness and their rites, recorded in the years after the Khmer Rouge.

Elfahmi, Woerdenbag, H. J., and Kayser, O. (2014). Jamu: Indonesian traditional herbal medicine towards rational phytopharmacological use. *Journal of Herbal Medicine* 4(2), 51–73.

A review of the chief plants of the Javanese herbal drinks, what has been tested, and how the state grades herbal products.

Forsyth, M., and Eves, R. (eds.) (2015). *Talking it Through: Responses to Sorcery and Witchcraft Beliefs and Practices in Melanesia*. ANU Press.

Studies of sorcery accusation and the violence that follows it in Papua New Guinea and its neighbours, and of what has been tried against it.

Fortune, R. F. (1935). *Manus Religion*. American Philosophical Society.

The household ghost of the Admiralty Islands, who punishes hidden offences and unpaid debts with illness, and the confessions that end it.

Frankel, S. (1986). *The Huli Response to Illness*. Cambridge University Press.

A physician and anthropologist counts how a highland people of New Guinea explain and treat their illnesses. Most are given ordinary causes.

Geertz, C. (1960). *The Religion of Java*. Free Press.

The classic study of a Javanese town: the communal feast, the spirits, the kinds of healer and their own account of how a cure works, and the reckoning of days.

Gustafson, K. R., Cardellina, J. H., McMahon, J. B., et al. (1992). A nonpromoting phorbol from the Samoan medicinal plant Homalanthus nutans inhibits cell killing by HIV-1. *Journal of Medicinal Chemistry* 35(11), 1978–1986.

The isolation of the compound prostratin from a bark that Samoan healers gave for hepatitis.

Handy, E. S. C. (1927). *Polynesian Religion*. Bernice P. Bishop Museum Bulletin 34.

A comparison of the religions of all the Polynesian island groups, with chapters on sickness, confession, the experts and the soul.

Hinton, D. E., Pich, V., Marques, L., Nickerson, A., and Pollack, M. H. (2010). Khyâl attacks: a key idiom of distress among traumatized Cambodia refugees. *Culture, Medicine and Psychiatry* 34(2), 244–278.

The Khmer understanding of wind that surges upward in the body, as found in survivors of the 1970s, and the family treatments for it.

Hu, X. Y., Wu, R. H., Logue, M., et al. (2017). Andrographis paniculata (Chuān Xīn Lián) for symptomatic relief of acute respiratory tract infections in adults and children: a systematic review and meta-analysis. *PLoS ONE* 12(8), e0181780.

Thirty-three trials with 7,175 patients. Shorter cough and sore throat, from trials of poor quality.

Human Rights Watch (2016). *Living in Hell: Abuses against People with Psychosocial Disabilities in Indonesia*. Human Rights Watch.

A report on the shackling and confinement of the mentally ill by families and healers, and on the campaign to end it.

Inglis, K. A. (2013). *Ma‘i Lepera: Disease and Displacement in Nineteenth-Century Hawai‘i*. University of Hawai‘i Press.

The history of leprosy and exile in Hawai‘i from Hawaiian-language sources. The patients’ own names for the illness and the families who followed their sick.

Kaholokula, J. K., Look, M., Mabellos, T., et al. (2021). A cultural dance program improves hypertension control and cardiovascular disease risk in Native Hawaiians: a randomized controlled trial. *Annals of Behavioral Medicine* 55(10), 1006–1018.

Hula classes lowered blood pressure in 263 native Hawaiians more than education alone.

Kamakau, S. M. (1964). *Ka Po‘e Kahiko: The People of Old* (M. K. Pukui, trans.; D. B. Barrère, ed.). Bishop Museum Press.

Newspaper articles of the 1860s by a Hawaiian historian who had known the old experts. The classes of healers, their training, the family guardians and the sorcerers, in a Hawaiian’s own words.

Katz, R. (1993). *The Straight Path: A Story of Healing and Transformation in Fiji*. Addison-Wesley.

A psychologist’s account of two years with Fijian healers. The conduct on which a healer’s power depends.

Keesing, R. M. (1982). *Kwaio Religion: The Living and the Dead in a Solomon Island Society*. Columbia University Press.

The ancestors, the rules of purity, divination and the sacrifice of pigs among a people who kept their old religion.

Kiecolt-Glaser, J. K., Loving, T. J., Stowell, J. R., et al. (2005). Hostile marital interactions, proinflammatory cytokine production, and wound healing. *Archives of General Psychiatry* 62(12), 1377–1384.

Blister wounds in 42 couples healed more slowly after a marital disagreement than after a supportive talk, and most slowly in hostile couples.

Krauss, B. H. (2001). *Plants in Hawaiian Medicine*. Bess Press.

Thirty of the chief medicinal plants, each with its preparation and use as recorded from Hawaiian healers.

Kretzer, K., Davis, J., Easa, D., Johnson, J., and Harrigan, R. (2007). Self identity through Ho‘oponopono as adjunctive therapy for hypertension management. *Ethnicity and Disease* 17(4), 624–628.

Blood pressure before and after a class in the solitary form, in 23 adults. No comparison group.

Kuptniratsaikul, V., Dajpratham, P., Taechaarpornkul, W., et al. (2014). Efficacy and safety of Curcuma domestica extracts compared with ibuprofen in patients with knee osteoarthritis: a multicenter study. *Clinical Interventions in Aging* 9, 451–458.

Turmeric extract against ibuprofen in 367 patients for four weeks. Equal relief and fewer stomach complaints.

Laderman, C. (1983). *Wives and Midwives: Childbirth and Nutrition in Rural Malaysia*. University of California Press.

The Malay village midwife, the rules of food, the hot and the cold, and the forty-four days after a birth, observed by an anthropologist who trained with a midwife.

Lebot, V., Merlin, M., and Lindstrom, L. (1992). *Kava: The Pacific Drug*. Yale University Press.

The botany, chemistry, history and ceremony of the pepper root, by a plant breeder, a botanist and an anthropologist.

Lessa, W. A. (1959). Divining from knots in the Carolines. *Journal of the Polynesian Society* 68(3), 188–204.

The knot divination of the Caroline Islands, with its sixteen pairs and 256 combinations, and its likeness to the geomancy of Africa and Arabia.

Lieban, R. W. (1967). *Cebuano Sorcery: Malign Magic in the Philippines*. University of California Press.

Healers and sorcerers in a Philippine city. Sorcery as a form of justice that works only against the guilty.

Lindenbaum, S. (1979). *Kuru Sorcery: Disease and Danger in the New Guinea Highlands*. Mayfield.

The trembling illness of the Fore as its victims understood it, by the anthropologist who helped to trace its path.

Macpherson, C., and Macpherson, L. (1990). *Samoan Medical Belief and Practice*. Auckland University Press.

The fullest study of Samoan healers: who they are, the illnesses they name, the displaced centre, spirit sickness and the daily traffic between healer and hospital.

Mahony, F. J. (1970). *A Trukese Theory of Medicine*. Doctoral dissertation, Stanford University.

The medicine of Chuuk, in which each spirit causes an illness and owns its cure.

Mauss, M. (1925; English 1990). *The Gift: The Form and Reason for Exchange in Archaic Societies* (W. D. Halls, trans.). Routledge.

The classic study of the obligation to give, to receive and to return. It quotes the Māori elder's account of the *hau* of a gift.

McMakin, P. D. (1978). The suruhanos: traditional curers on the island of Guam. *Micronesica* 14(1), 13–67.

The Chamorro healers, their plants and kneading, and the illnesses laid to the ancestral spirits.

Metge, J. (1986). *In and Out of Touch: Whakamaa in Cross Cultural Context*. Victoria University Press.

A study, made with Māori elders, of the state of shame and withdrawal, how it arises and how others end it.

Meyer, M. (1995). To set right: ho'oponopono, a native Hawaiian way of peacemaking. *The Compleat Lawyer* 12(4), 30–35.

A short account of the course of the meeting for lawyers and mediators, by a Hawaiian educator.

Minuchin, S., Baker, L., Rosman, B. L., et al. (1975). A conceptual model of psychosomatic illness in children: family organization and family therapy. *Archives of General Psychiatry* 32(8), 1031–1038.

The study in which a child's blood chemistry followed the conflict of the parents. Small, influential and disputed.

Moseley, J. B., O'Malley, K., Petersen, N. J., et al. (2002). A controlled trial of arthroscopic surgery for osteoarthritis of the knee. *New England Journal of Medicine* 347(2), 81–88.

In 180 patients, a pretended operation with skin cuts alone relieved worn knees as well as the real one for two years.

Ngui, P. W. (1969). The koro epidemic in Singapore. *Australian and New Zealand Journal of Psychiatry* 3(3a), 263–266.

The report on several hundred cases of the fear of genital retraction in Singapore in 1967.

NiaNia, W., Bush, A., and Epston, D. (2017). *Collaborative and Indigenous Mental Health Therapy: Tātaihono, Stories of Māori Healing and Psychiatry*. Routledge.

A Māori healer and a psychiatrist describe cases that they treated together, each from his own understanding, with the families' accounts.

Ooi, C. P., Yassin, Z., and Hamid, T. A. (2012). Momordica charantia for type 2 diabetes mellitus. *Cochrane Database of Systematic Reviews* (8), CD007845.

Four trials of the bitter gourd. No reliable lowering of blood sugar.

Parsons, C. D. F. (ed.) (1985). *Healing Practices in the South Pacific*. Institute for Polynesian Studies.

Chapters on Tonga, Samoa, Fiji, the Māori and other peoples by fieldworkers. The Tongan sickness of the spirits and the tending of graves.

Pittler, M. H., and Ernst, E. (2003). Kava extract versus placebo for treating anxiety. *Cochrane Database of Systematic Reviews* (1), CD003383.

The pooled trials of extracts of the root against a dummy. A small but real lowering of anxiety.

Pukui, M. K. (1942). Hawaiian beliefs and customs during birth, infancy, and childhood. *Occasional Papers of the Bernice P. Bishop Museum* 16(17), 357–381.

A Hawaiian's own record of the care of mother and child: the rules of pregnancy, the delivery, the cord and afterbirth, the moulding of the infant and the remedies given through the milk.

Pukui, M. K., Haertig, E. W., and Lee, C. A. (1972). *Nānā i ke Kumu (Look to the Source)*, vol. 1. Hui Hānai.

A Hawaiian elder, a psychiatrist and a social worker set down the Hawaiian understanding of family, illness, dreams, guardians and the setting right of relations. The chief source for this part.

Riley, M. (1994). *Māori Healing and Herbal: New Zealand Ethnobotanical Sourcebook*. Viking Sevenseas.

The fullest compilation of recorded Māori plant remedies, plant by plant, with the old sources quoted.

Robarchek, C. A. (1979). Conflict, emotion, and abreaction: resolution of conflict among the Semai Senoi. *Ethos* 7(2), 104–123.

The meeting by which a forest people of Malaysia talk a quarrel out until nothing is left of it.

Sarris, J., Byrne, G. J., Bousman, C. A., et al. (2020). Kava for generalised anxiety disorder: a 16-week double-blind, randomised, placebo-controlled study. *Australian and New Zealand Journal of Psychiatry* 54(3), 288–297.

The larger and longer trial, in 171 people. No benefit, and more abnormal liver tests with the extract.

Sarris, J., Stough, C., Bousman, C. A., et al. (2013). Kava in the treatment of generalized anxiety disorder: a double-blind, randomized, placebo-controlled study. *Journal of Clinical Psychopharmacology* 33(5), 643–648.

A water extract against a dummy in 75 people for six weeks. Anxiety fell more with the extract.

Sather, C. (2001). *Seeds of Play, Words of Power: An Ethnographic Study of Iban Shamanic Chants*. Tun Jugah Foundation.

The chants of the Iban shamans with translation and commentary. The soul, the plant counterpart, and the rites that tend and sever it.

Scott, W. H. (1994). *Barangay: Sixteenth-Century Philippine Culture and Society*. Ateneo de Manila University Press.

The islands as the first Spanish reports describe them, with the mediums, their trances, their offerings and their treatment of the sick.

Shintani, T. T., Hughes, C. K., Beckham, S., and O'Connor, H. K. (1991). Obesity and cardiovascular risk intervention through the ad libitum feeding of traditional Hawaiian diet. *American Journal of Clinical Nutrition* 53(6 Suppl.), 1647S–1651S.

Twenty native Hawaiians ate the foods of their ancestors without limit for three weeks. Weight, blood fats and blood sugar fell.

Shook, E. V. (1985). *Ho'oponopono: Contemporary Uses of a Hawaiian Problem-Solving Process*. University of Hawaii Press.

Case studies of leaders who adapted the family meeting to social work, youth programmes and treatment centres. What they kept and what they changed.

Simons, R. C. (1996). *Boo! Culture, Experience, and the Startle Reflex*. Oxford University Press.

A psychiatrist's study of the Malay state of startled imitation, with films and comparisons from other countries.

Skeat, W. W. (1900). *Malay Magic*. Macmillan.

The great collection of Malay charms and rites of the 1890s: the soul of people, rice and metals, the healer's ceremonies, the casting out of harm.

Spencer, D. M. (1941). *Disease, Religion and Society in the Fiji Islands*. Monographs of the American Ethnological Society 2.

A study of one Fijian district in which serious illness is traced to breaches of duty among kin and cured by atonement.

Spiro, M. E. (1967). *Burmese Supernaturalism*. Prentice-Hall.

Witches, ghosts, the thirty-seven lords and the exorcists of the brotherhoods in a Burmese village, and how they stand to Buddhism.

Strang, H., Woods, D. J., Sherman, L. W., Mayo-Wilson, E., and Ariel, B. (2013). Restorative justice conferencing using face-to-face meetings of offenders and victims: effects on offender recidivism and victim satisfaction. *Campbell Systematic Reviews* 9(1).

Ten randomised trials. A modest fall in repeat offending and more satisfied victims.

Tambiah, S. J. (1970). *Buddhism and the Spirit Cults in North-east Thailand*. Cambridge University Press.

A village study that sets the monks, the rite of calling the soul, the guardian spirits and the healing of the possessed in one frame.

Tan, M. L. (2008). *Revisiting Usog, Pasma, Kulam*. University of the Philippines Press.

A physician and anthropologist sorts the Filipino theories of illness and takes each seriously as an account of experience.

Turner, G. (1884). *Samoa, a Hundred Years Ago and Long Before*. Macmillan.

A missionary's record of Samoan life before it changed, with the family confession at a sickbed and the gods of each village.

Vatta, M., Dumaine, R., Varghese, G., et al. (2002). Genetic and biophysical basis of sudden unexplained nocturnal death syndrome (SUNDS), a disease allelic to Brugada syndrome. *Human Molecular Genetics* 11(3), 337–345.

The sudden death of young Southeast Asian men in their sleep traced to a gene for a channel of the heart muscle.

Vitale, J., and Hew Len, I. (2007). *Zero Limits*. Wiley.

The book that spread the solitary form and its four sentences. The source of the story of the hospital ward, which has no other record.

Wade, N. G., Hoyt, W. T., Kidwell, J. E. M., and Worthington, E. L. (2014). Efficacy of psychotherapeutic interventions to promote forgiveness: a meta-analysis. *Journal of Consulting and Clinical Psychology* 82(1), 154–170.

Fifty-four studies of courses that teach pardon. More forgiveness, less depression and anxiety, more hope.

Whistler, W. A. (1992). *Polynesian Herbal Medicine*. National Tropical Botanical Garden.

A botanist's record of the remedies of each island group. Argues that most remedies taken by mouth arose after European contact.

Wikan, U. (1990). *Managing Turbulent Hearts: A Balinese Formula for Living*. University of Chicago Press.

How Balinese keep a bright face as a duty of health, and the fear of sorcery from those nearest that lies behind it.

Witvliet, C. V. O., Ludwig, T. E., and Vander Laan, K. L. (2001). Granting forgiveness or harboring grudges: implications for emotion, physiology, and health. *Psychological Science* 12(2), 117–123.

Brow tension, skin conductance, heart rate and blood pressure in 71 students while they nursed a grudge and while they imagined pardon.

World Health Organization (2007). *Assessment of the Risk of Hepatotoxicity with Kava Products*. WHO.

The review of the reported cases of liver injury, the possible causes, and the advice to prefer water extracts of peeled root.

Yorke, J., and Shuldham, C. (2005). Family therapy for chronic asthma in children. *Cochrane Database of Systematic Reviews* (2), CD000089.

Two small trials, 55 children. Treatment of the family improved breathing measures and reduced days of impairment.

Part VII — Convergence

Chigwedere, P., Seage, G. R., Gruskin, S., Lee, T. H., and Essex, M. (2008). Estimating the lost benefits of antiretroviral drug use in South Africa. *Journal of Acquired Immune Deficiency Syndromes* 49(4), 410–415.

An estimate of the lives lost while a government withheld the drugs against AIDS and recommended other remedies.

Grollman, A. P., Shibutani, S., Moriya, M., et al. (2007). Aristolochic acid and the etiology of endemic (Balkan) nephropathy. *Proceedings of the National Academy of Sciences* 104(29), 12129–12134.

The kidney disease of Balkan farming villages traced to the seeds of a birthwort in the wheat.

Haller, C. A., and Benowitz, N. L. (2000). Adverse cardiovascular and central nervous system events associated with dietary supplements containing ephedra alkaloids. *New England Journal of Medicine* 343(25), 1833–1838.

A review of 140 reports of harm from ephedra sold as a supplement, among them strokes and ten deaths.

International Agency for Research on Cancer (2004). *Betel-quid and Areca-nut Chewing and Some Areca-nut-derived Nitrosamines*. IARC Monographs 85.

The assessment that the areca nut, with or without tobacco, causes cancer in man.

Johnson, S. B., Park, H. S., Gross, C. P., and Yu, J. B. (2018). Use of alternative medicine for cancer and its impact on survival. *Journal of the National Cancer Institute* 110(1), 121–124.

People with curable cancers who chose alternative medicine alone were two and a half times as likely to die as those who took standard treatment.

Lehrer, P., Kaur, K., Sharma, A., et al. (2020). Heart rate variability biofeedback improves emotional and physical health and performance: a systematic review and meta analysis. *Applied Psychophysiology and Biofeedback* 45(3), 109–129.

Fifty-eight studies of training in slow breathing at the rate at which heart and breath resonate. A small to moderate benefit over many kinds of complaint.

Levack, B. P. (2016). *The Witch-Hunt in Early Modern Europe* (4th ed.). Routledge.

The standard history of the European prosecutions, with the estimate of the number of trials and executions.

Lim, A., Cranswick, N., and South, M. (2011). Adverse events associated with the use of complementary and alternative medicine in children. *Archives of Disease in Childhood* 96(3), 297–300.

Reports from Australian children's doctors over three years. The four deaths followed the replacement of effective treatment.

Ng, A. W. T., Poon, S. L., Huang, M. N., et al. (2017). Aristolochic acids and their derivatives are widely implicated in liver cancers in Taiwan and throughout Asia. *Science Translational Medicine* 9(412), eaan6446.

The mark that the birthwort compound leaves in the genes, found in most of the liver cancers examined in Taiwan.

Ramsay, H. M., Goddard, W., Gill, S., and Moss, C. (2003). Herbal creams used for atopic eczema in Birmingham, UK illegally contain potent corticosteroids. *Archives of Disease in Childhood* 88(12), 1056–1057.

Twenty of twenty-four creams sold as herbal for children's eczema contained strong steroids.

Part VIII — Atlas: The Illnesses, One by One

Arrizabalaga, J., Henderson, J., and French, R. (1997). *The Great Pox: The French Disease in Renaissance Europe*. Yale University Press.

> How physicians, cities and hospitals of the years after 1495 understood and treated the new illness, with the trade in guaiac wood and the use of mercury.

Barr, R. G., Konner, M., Bakeman, R., and Adamson, L. (1991). Crying in !Kung San infants: a test of the cultural specificity hypothesis. *Developmental Medicine and Child Neurology* 33(7), 601–610.

> San infants, who are carried constantly and fed many times an hour, cry as often as Western infants and for about half as long. The peak of crying in the second month is the same.

Bay, A. R. (2012). *Beriberi in Modern Japan: The Making of a National Disease*. University of Rochester Press.

> How the Japanese navy and army, and the old and the new schools of medicine, argued over the illness from 1870 to 1930, with the figures of the war of 1904.

Benedict, C. (1996). *Bubonic Plague in Nineteenth-Century China*. Stanford University Press.

> Follows the plague from Yunnan to Canton and Hong Kong, with the Chinese observations of dying rats, the name of the rat epidemic and the Chinese and colonial responses of 1894.

Bhargava, A., Bhargava, M., Meher, A., et al. (2023). Nutritional supplementation to prevent tuberculosis incidence in household contacts of patients with pulmonary tuberculosis in India (RATIONS): a field-based, open-label, cluster-randomised, controlled trial. *Lancet* 402(10402), 627–640.

> A monthly food basket for the households of patients lowered new tuberculosis among their members by about two fifths.

Carpenter, K. J. (1986). *The History of Scurvy and Vitamin C*. Cambridge University Press.

> The standard history: the voyages, the trial of 1747, the long delay, the loss of the remedy after 1860 and the finding of the vitamin. Written by a nutritionist who weighs each old claim against what is now known.

Carpenter, K. J. (2000). *Beriberi, White Rice, and Vitamin B: A Disease, a Cause, and a Cure*. University of California Press.

The Asian history of the illness, the Japanese navy, the hens of Batavia and the count in the prisons of Java. Shows how a correct treatment preceded a correct explanation by decades.

Chibanda, D., Weiss, H. A., Verhey, R., et al. (2016). Effect of a primary care-based psychological intervention on symptoms of common mental disorders in Zimbabwe: a randomized clinical trial. *JAMA* 316(24), 2618–2626.

Lay grandmothers on a bench outside the clinic. After six months 14 per cent of their patients were depressed, against 50 per cent with usual care.

Fibiger, J. (1898). Om Serumbehandling af Difteri. *Hospitalstidende* 6, 309–325, 337–350.

The Copenhagen trial of the serum, with patients assigned by the day of admission. Often named as the first clinical trial with a properly formed comparison group.

Katz, S. H., Hediger, M. L., and Valleroy, L. A. (1974). Traditional maize processing techniques in the New World. *Science* 184(4138), 765–773.

Compares fifty-one societies. Those that depend on maize all cook it with lime or ash, which frees the bound vitamin. The classic case of a food practice that protects without being explained.

Luhrmann, T. M., Padmavati, R., Tharoor, H., and Osei, A. (2015). Differences in voice-hearing experiences of people with psychosis in the USA, India and Ghana: interview-based study. *British Journal of Psychiatry* 206(1), 41–44.

Sixty patients in three countries. The American voices were harsh strangers; many Indian and Ghanaian voices were kin or God.

Meegan, M. E., Conroy, R. M., Lengeny, S. O., Renhault, K., and Nyangole, J. (2001). Effect on neonatal tetanus mortality after a culturally-based health promotion programme. *Lancet* 358(9282), 640–641.

Among the Maasai, the dressing of the newborn's cord with cow dung was replaced by clean water and milk, with the birth attendants' agreement. Deaths from lockjaw of the newborn fell steeply.

Rees, W. D. (1971). The hallucinations of widowhood. *BMJ* 4(5778), 37–41.

Of 293 widowed people in one Welsh district, nearly half had sensed the presence of the dead spouse. Most found it helpful and had told no one.

Roe, D. A. (1973). *A Plague of Corn: The Social History of Pellagra*. Cornell University Press.

The illness from Spain and Italy to the American South, with the experiments of 1915 and the resistance to them.

Romani, L., Whitfeld, M. J., Koroivueta, J., et al. (2015). Mass drug administration for scabies control in a population with endemic disease. *New England Journal of Medicine* 373(24), 2305–2313.

Three island communities of Fiji. Treating every person at once with a tablet lowered scabies by 94 per cent in a year, far more than treating the sick and their contacts.

Salminen, P., Paajanen, H., Rautio, T., et al. (2015). Antibiotic therapy vs appendectomy for treatment of uncomplicated acute appendicitis: the APPAC randomized clinical trial. *JAMA* 313(23), 2340–2348.

In 530 Finnish adults with a plain appendicitis, 73 per cent of those treated with antibiotics needed no operation within a year. The follow-up at five years found 61 per cent still without one.

Sinclair-Gieben, A. H. C. and Chalmers, D. (1959). Evaluation of treatment of warts by hypnosis. *Lancet* 274(7101), 480–482.

Fourteen patients with warts on both sides. Suggestion was given for one side only. In nine of the ten who reached deep hypnosis, the warts of that side alone disappeared.

Slusher, T. M., Olusanya, B. O., Vreman, H. J., et al. (2015). A randomized trial of phototherapy with filtered sunlight in African neonates. *New England Journal of Medicine* 373(12), 1115–1124.

In 447 Nigerian newborns with jaundice, sunlight under a filtering film was as effective and as safe as conventional lamps. A hospital treatment that began as a nurse’s observation, returned to the sun.

Summers, W. C. (2012). *The Great Manchurian Plague of 1910–1911: The Geopolitics of an Epidemic Disease*. Yale University Press.

The epidemic of the lungs in Manchuria, the work of Wu Lien-teh, the mask and the burning of the dead.

Thacher, T. D., Fischer, P. R., Pettifor, J. M., et al. (1999). A comparison of calcium, vitamin D, or both for nutritional rickets in Nigerian children. *New England Journal of Medicine* 341(8), 563–568.

In 123 Nigerian children with rickets, calcium healed the bones better than the vitamin. The illness has more than one missing carrier.

Wu, P.-C., Chen, C.-T., Lin, K.-K., et al. (2018). Myopia prevention and outdoor light intensity in a school-based cluster randomized trial. *Ophthalmology* 125(8), 1239–1250.

Taiwanese schools that sent first-graders outdoors had less new short sight and slower growth of the eye. With the Guangzhou trial, the basis for outdoor time as prevention.

Part IX — Reference: Points, Drugs, Books, People and Comparisons

Allen, J. P. (2005). *The Art of Medicine in Ancient Egypt*. Metropolitan Museum of Art.

A short, exact introduction with a new translation of the surgical papyrus.

Arber, A. (1986). *Herbals: Their Origin and Evolution. A Chapter in the History of Botany, 1470–1670* (3rd ed.). Cambridge University Press.

The standard history of the printed herbals from the first incunables to the seventeenth century, with their makers, their woodcuts and the doctrine of signatures.

Beck, L. Y. (trans.) (2005). *Pedanius Dioscorides of Anazarbus: De materia medica*. Olms-Weidmann.

The first complete English translation from the Greek of the drug book that the West and the Islamic world used for sixteen centuries.

Blumenthal, M. (ed.) (1998). *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*. American Botanical Council.

The judgements of the German state commission on some three hundred and eighty plants: approved uses, doses, unwanted effects, and the plants that were not approved.

Clark, B. (trans.) (1995). *The Quintessence Tantras of Tibetan Medicine*. Snow Lion.

An English translation of the Root Tantra and the Explanatory Tantra, the first two parts of the Four Tantras.

Gates, W. (trans.) (2000). *An Aztec Herbal: The Classic Codex of 1552*. Dover.

A reprint of the 1939 translation of the herbal of Martín de la Cruz, with the plant paintings.

Government of India (2003). *The Ayurvedic Formulary of India*, Part I (2nd ed.). Department of Indian Systems of Medicine and Homoeopathy, New Delhi.

The official book of the compound medicines of Indian medicine, with the methods for each form and a table that sets the classical weights and measures beside the metric ones.

Graz, B., Willcox, M. L., Diakite, C., et al. (2010). *Argemone mexicana* decoction versus artesunate-amodiaquine for the management of malaria in Mali: policy and public-health implications. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 104(1), 33–41.

In 301 patients with uncomplicated malaria, a healer's decoction gave clinical recovery in 89 per cent, against 95 per cent with the standard drugs. A model of how a traditional remedy can be tested where it is used.

Huffman, M. A., and Seifu, M. (1989). Observations on the illness and consumption of a possibly medicinal plant *Vernonia amygdalina* (Del.), by a wild chimpanzee in the Mahale Mountains National Park, Tanzania. *Primates* 30(1), 51–63.

A sick chimpanzee was watched as it chewed the bitter pith of a shrub that it otherwise leaves alone, and recovered within a day. The first detailed record of self-medication by a wild ape, with a plant that the local healers use for the same complaints.

Lemma, A. (1970). Laboratory and field evaluation of the molluscicidal properties of *Phytolacca dodecandra*. *Bulletin of the World Health Organization* 42(4), 597–612.

The Ethiopian soapberry kills the snails that carry bilharzia. The work began from the observation of dead snails below the places where women washed clothes with the berries.

Lloyd, G. E. R. (ed.) (1978). *Hippocratic Writings* (trans. J. Chadwick, W. N. Mann and others). Penguin.

The best single volume for a first reading: the Oath, Aphorisms, Prognostic, Epidemics I and III, Airs Waters Places, The Sacred Disease, The Nature of Man and others, with an introduction on what can and cannot be said of Hippocrates.

Mackenzie, I. S., Rogers, A., Poulter, N. R., et al. (2022). Cardiovascular outcomes in adults with hypertension with evening versus morning dosing of usual antihypertensives in the UK (TIME study). *Lancet* 400(10361), 1417–1425.

In this trial 21,104 patients took their usual pills in the morning or in the evening, by lot, and were followed for a median of 5.2 years. The hour made no difference to heart attack, stroke or vascular death.

Margot, J. L. (2015). No evidence of purported lunar effect on hospital admission rates or birth rates. *Nursing Research* 64(3). DOI 10.1097/NNR.0000000000000086.

An astronomer re-analyses a paper that claimed an effect of the full moon, shows the errors in it, and sums up the larger studies, which find none.

Meulenbeld, G. J. (1999–2002). *A History of Indian Medical Literature* (5 vols). Egbert Forsten.

The complete survey of every Indian medical text and author, with contents, dates and the scholarship on each. The work of a Dutch physician and Sanskritist over thirty years.

Muller, J. E., Stone, P. H., Turi, Z. G., et al. (1985). Circadian variation in the frequency of onset of acute myocardial infarction. *New England Journal of Medicine* 313(21), 1315–1322.

Among 2,999 patients the attacks peaked between six in the morning and noon. In those whose attack was timed by a blood test, it began three times as often at nine in the morning as at eleven at night.

Pittler, M. H., Verster, J. C., and Ernst, E. (2005). Interventions for preventing or treating alcohol hangover: systematic review of randomised controlled trials. *BMJ* 331(7531), 1515–1518.

Eight trials of eight remedies, among them borage, artichoke and prickly pear. No compelling evidence that any of them prevents or treats a hangover.

Singer, P. N. (trans.) (1997). *Galen: Selected Works*. Oxford University Press.

A selection that shows Galen as philosopher and as physician, with the essay on his own books and the Art of Medicine.

Spencer, W. G. (trans.) (1935–1938). *Celsus: De medicina* (3 vols). Loeb Classical Library, Harvard University Press.

Latin and English on facing pages. The clearest ancient account of regimen, of the illnesses and of surgery, by a Roman who was not a physician.

Spink, M. S., and Lewis, G. L. (1973). *Albucasis on Surgery and Instruments*. Wellcome Institute of the History of Medicine.

Arabic text and English translation of the surgical treatise of al-Zahrawi, with his drawings of the instruments.

Srikantha Murthy, K. R. (trans.) (1991–1995). *Vāgbhaṭa's Aṣṭāñga Hṛdayam* (3 vols). Krishnadas Academy.

Sanskrit text and English translation of the most used textbook of classical Indian medicine.

Temkin, O. (trans.) (1956). *Soranus' Gynecology*. Johns Hopkins University Press.

The chief ancient work on midwifery, birth and the care of the newborn, in a careful translation.

Unschuld, P. U. (2016). *Huang Di Nei Jing Ling Shu: The Ancient Classic on Needle Therapy*. University of California Press.

The first complete scholarly translation of the second half of the Inner Classic, with the Chinese text.

Unschuld, P. U. (trans.) (2021–2024). *Ben Cao Gang Mu: 16th Century Chinese Encyclopedia of Materia Medica and Natural History* (9 vols). University of California Press.

The first complete translation of Li Shizhen's compendium, with the Chinese text.

Wilms, S. (trans.) (2007). *Bèi Jí Qiān Jīn Yào Fāng: Essential Prescriptions Worth a Thousand in Gold for Every Emergency. Volumes 2–4 on Gynecology*. The Chinese Medicine Database.

Sun Simiao on the illnesses of women, with his essay on the duties of the physician.

World Health Organization, Western Pacific Region (2008). *WHO Standard Acupuncture Point Locations in the Western Pacific Region*. WHO Regional Office for the Western Pacific.

The international standard for the places of the 361 points, agreed by experts of China, Japan and Korea after six years of meetings. Gives each point in anatomical terms with drawings.

Yang, S. (trans.) (1998). *The Divine Farmer's Materia Medica: A Translation of the Shen Nong Ben Cao Jing*. Blue Poppy Press.

The oldest Chinese drug book, with its three grades and 365 entries.

Appendices

Abbot, N. C., Harkness, E. F., Stevinson, C., et al. (2001). Spiritual healing as a therapy for chronic pain: a randomized, clinical trial. *Pain* 91(1–2), 79–89.

In 120 patients with lasting pain, a healer did no better than an actor in the room or nobody behind a screen.

Alm, J. S., Swartz, J., Lilja, G., Scheynius, A., and Pershagen, G. (1999). Atopy in children of families with an anthroposophic lifestyle. *Lancet* 353(9163), 1485–1488.

Children at Steiner schools in Sweden had allergies about half as often as children at neighbouring schools.

Alvarez, W. C. (1919). Origin of the so-called autointoxication symptoms. *Journal of the American Medical Association* 72(1), 8–13.

The symptoms laid to poisons from the bowel are produced by its stretching.

Antonovsky, A. (1987). *Unraveling the Mystery of Health: How People Manage Stress and Stay Well*. Jossey-Bass.

The question of what keeps people well, and the sense of coherence as the answer.

Asher, G. N., Jonas, D. E., Coeytaux, R. R., et al. (2010). Auriculotherapy for pain management: a systematic review and meta-analysis of randomized controlled trials. *Journal of Alternative and Complementary Medicine* 16(10), 1097–1108.

Seventeen trials of treatment at the ear. Less pain than in the comparison groups.

Asser, S. M., and Swan, R. (1998). Child fatalities from religion-motivated medical neglect. *Pediatrics* 101(4), 625–629.

The deaths of 172 American children whose parents relied on prayer. Most would have lived with ordinary treatment.

Astin, J. A., Harkness, E., and Ernst, E. (2000). The efficacy of “distant healing”: a systematic review of randomized trials. *Annals of Internal Medicine* 132(11), 903–910.

Twenty-three trials of prayer, mental healing and touch without contact. Mixed results from trials of uneven quality.

Barabási, A.-L., Gulbahce, N., and Loscalzo, J. (2011). Network medicine: a network-based approach to human disease. *Nature Reviews Genetics* 12(1), 56–68.

The programme of reading an illness as a change in a neighbourhood of the cell’s web of genes and proteins.

Barker, D. J. P., Winter, P. D., Osmond, C., Margetts, B., and Simmonds, S. J. (1989). Weight in infancy and death from ischaemic heart disease. *Lancet* 334(8663), 577–580.

Men who had been light at birth and at one year died most often of heart disease.

Benson, H., Dusek, J. A., Sherwood, J. B., et al. (2006). Study of the Therapeutic Effects of Intercessory Prayer (STEP) in cardiac bypass patients. *American Heart Journal* 151(4), 934–942.

The largest trial of prayer by strangers, in 1,802 patients. No benefit, and more complications in those who knew that they were prayed for.

Bickerdike, L., Booth, A., Wilson, P. M., Farley, K., and Wright, K. (2017). Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open* 7(4), e013384.

Fifteen evaluations of referral to community activities. Promising reports and weak evidence.

Bisson, J. I., Roberts, N. P., Andrew, M., Cooper, R., and Lewis, C. (2013). Psychological therapies for chronic post-traumatic stress disorder (PTSD) in adults. *Cochrane Database of Systematic Reviews* (12), CD003388.

The trials of treatments for the after-effects of terror. The eye-movement method equals the best talking treatment.

Bjelakovic, G., Nikolova, D., Gluud, L. L., Simonetti, R. G., and Gluud, C. (2007). Mortality in randomized trials of antioxidant supplements for primary and secondary prevention. *JAMA* 297(8), 842–857.

In the sound trials, supplements of beta carotene, vitamin A and vitamin E slightly raised the death rate.

Breitbart, W., Rosenfeld, B., Pessin, H., et al. (2015). Meaning-centered group psychotherapy: an effective intervention for improving psychological well-being in patients with advanced cancer. *Journal of Clinical Oncology* 33(7), 749–754.

A course on meaning eased despair in 253 patients near the end of life.

Brien, S., Lachance, L., Prescott, P., McDermott, C., and Lewith, G. (2011). Homeopathy has clinical benefits in rheumatoid arthritis patients that are attributable to the consultation process but not the homeopathic remedy: a randomized controlled clinical trial. *Rheumatology* 50(6), 1070–1082.

A trial that separated the homeopathic interview from the remedy. The interview helped and the remedy did not.

Bruton, A., Lee, A., Yardley, L., et al. (2018). Physiotherapy breathing retraining for asthma: a randomised controlled trial. *Lancet Respiratory Medicine* 6(1), 19–28.

In 655 patients, breathing exercises improved life with asthma for a year and left lung measurements unchanged.

Buijze, G. A., Sierevelt, I. N., van der Heijden, B. C. J. M., Dijkgraaf, M. G., and Frings-Dresen, M. H. W. (2016). The effect of cold showering on health and work: a randomized controlled trial. *PLoS ONE* 11(9), e0161749.

Three thousand Dutch adults. A cold end to the daily shower cut absence from work by 29 per cent, without fewer days of illness.

Cadegiani, F. A., and Kater, C. E. (2016). Adrenal fatigue does not exist: a systematic review. *BMC Endocrine Disorders* 16(1), 48.

Fifty-eight studies. No support for the diagnosis.

Cecil, R. L., and Angevine, D. M. (1938). Clinical and experimental observations on focal infection, with an analysis of 200 cases of rheumatoid arthritis. *Annals of Internal Medicine* 12(5), 577–584.

Patients whose teeth and tonsils had been removed for inflamed joints had gained nothing. The study that ended the theory.

Cherkin, D. C., Sherman, K. J., Balderson, B. H., et al. (2016). Effect of mindfulness-based stress reduction vs cognitive behavioral therapy or usual care on back pain and functional limitations in adults with chronic low back pain. *JAMA* 315(12), 1240–1249.

In 342 adults the eight-week course and a talking treatment both did better than usual care.

Chow, R. T., Johnson, M. I., Lopes-Martins, R. A. B., and Bjordal, J. M. (2009). Efficacy of low-level laser therapy in the management of neck pain: a systematic review and meta-analysis of randomised placebo or active-treatment controlled trials. *Lancet* 374(9705), 1897–1908.

Sixteen trials of weak red light on the neck. Less pain than with a sham.

Clond, M. (2016). Emotional Freedom Techniques for anxiety: a systematic review with meta-analysis. *Journal of Nervous and Mental Disease* 204(5), 388–395.

Fourteen trials of tapping. A large effect on anxiety, which the tapping points do not explain.

Cohen, S., Tyrrell, D. A. J., and Smith, A. P. (1991). Psychological stress and susceptibility to the common cold. *New England Journal of Medicine* 325(9), 606–612.

Volunteers given a cold virus fell ill more often the more strain they had reported.

Collet, J.-P., Vanasse, M., Marois, P., et al. (2001). Hyperbaric oxygen for children with cerebral palsy: a randomised multicentre trial. *Lancet* 357(9256), 582–586.

Oxygen under pressure did no better than slightly pressurised air in 111 children.

Conde-Agudelo, A., and Díaz-Rossello, J. L. (2016). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane Database of Systematic Reviews* (8), CD002771.

Twenty-one trials. Two fifths fewer deaths, fewer infections, less chilling.

Costello, J. T., Baker, P. R. A., Minett, G. M., et al. (2015). Whole-body cryotherapy (extreme cold air exposure) for preventing and treating muscle soreness after exercise in adults. *Cochrane Database of Systematic Reviews* (9), CD010789.

Four small studies. No sound evidence of benefit.

Cowie, R. L., Conley, D. P., Underwood, M. F., and Reader, P. G. (2008). A randomised controlled trial of the Buteyko technique as an adjunct to conventional management of asthma. *Respiratory Medicine* 102(5), 726–732.

In 129 patients, those taught the method needed less inhaled drug after six months.

Coyne, J. C., Pajak, T. F., Harris, J., et al. (2007). Emotional well-being does not predict survival in head and neck cancer patients. *Cancer* 110(11), 2568–2575.

In 1,093 patients, mood at the start had no bearing on survival.

Dagnelie, P. C., and van Staveren, W. A. (1994). Macrobiotic nutrition and child health: results of a population-based, mixed-longitudinal cohort study in the Netherlands. *American Journal of Clinical Nutrition* 59(5 Suppl.), 1187S–1196S.

Infants of Dutch macrobiotic families grew slowly and lacked several nutrients. The families adjusted the diet.

Das-Munshi, J., Rubin, G. J., and Wessely, S. (2006). Multiple chemical sensitivities: a systematic review of provocation studies. *Journal of Allergy and Clinical Immunology* 118(6), 1257–1264.

Under truly blind conditions, patients could not tell the chemical from clean air.

DeKosky, S. T., Williamson, J. D., Fitzpatrick, A. L., et al. (2008). Ginkgo biloba for prevention of dementia: a randomized controlled trial. *JAMA* 300(19), 2253–2262.

Three thousand older people took ginkgo or a dummy for six years. No fewer lost their memory.

Devinsky, O., Cross, J. H., Laux, L., et al. (2017). Trial of cannabidiol for drug-resistant seizures in the Dravet syndrome. *New England Journal of Medicine* 376(21), 2011–2020.

A compound of cannabis that does not cloud the mind halved the fits of children with a severe epilepsy.

Dismukes, W. E., Wade, J. S., Lee, J. Y., Dockery, B. K., and Hain, J. D. (1990). A randomized, double-blind trial of nystatin therapy for the candidiasis hypersensitivity syndrome. *New England Journal of Medicine* 323(25), 1717–1723.

A drug against yeasts did no more than a dummy for the general complaints laid to yeast.

Doll, R., Peto, R., Boreham, J., and Sutherland, I. (2004). Mortality in relation to smoking: 50 years' observations on male British doctors. *BMJ* 328(7455), 1519.

Smokers died ten years sooner. Stopping at forty won back nine of the ten.

Du Toit, G., Roberts, G., Sayre, P. H., et al. (2015). Randomized trial of peanut consumption in infants at risk for peanut allergy. *New England Journal of Medicine* 372(9), 803–813.

Infants fed peanut early developed the allergy far less often than those who avoided it.

Egner, P. A., Wang, J.-B., Zhu, Y.-R., et al. (2001). Chlorophyllin intervention reduces aflatoxin-DNA adducts in individuals at high risk for liver cancer. *Proceedings of the National Academy of Sciences* 98(25), 14601–14606.

A compound made from leaf pigment halved the mark of a mould poison in people of a Chinese region with much liver cancer.

Elkins, M. R., Robinson, M., Rose, B. R., et al. (2006). A controlled trial of long-term inhaled hypertonic saline in patients with cystic fibrosis. *New England Journal of Medicine* 354(3), 229–240.

A mist of strong salt water improved the lungs of patients with an inherited disease of thick mucus.

Engel, G. L. (1977). The need for a new medical model: a challenge for biomedicine. *Science* 196(4286), 129–136.

The paper that proposed to treat body, person and surroundings as one.

Enright, J. T. (1999). Testing dowsing: the failure of the Munich experiments. *Skeptical Inquirer* 23(1), 39–46.

A re-analysis of the largest test of dowsers, paid for by the German government. The best dowsers found a hidden pipe no better than chance.

Ernst, E. (2009). Is reflexology an effective intervention? A systematic review of randomised controlled trials. *Medical Journal of Australia* 191(5), 263–266.

Eighteen trials of pressure on the foot. No condition in which it did more than the comparison treatment.

Ernst, E. (2010). Bach flower remedies: a systematic review of randomised clinical trials. *Swiss Medical Weekly* 140, w13079.

Seven trials. No difference from a dummy.

Estruch, R., Ros, E., Salas-Salvadó, J., et al. (2018). Primary prevention of cardiovascular disease with a Mediterranean diet supplemented with extra-virgin olive oil or nuts. *New England Journal of Medicine* 378(25), e34.

In 7,447 Spaniards at risk, the diet of the region with added olive oil or nuts lowered heart attacks and strokes by about three tenths.

Ezzo, J., Manheimer, E., McNeely, M. L., et al. (2015). Manual lymphatic drainage for lymphedema following breast cancer treatment. *Cochrane Database of Systematic Reviews* (5), CD003475.

Six trials. The strokes add a modest benefit to bandaging.

Farias, M., Maraldi, E., Wallenkampf, K. C., and Lucchetti, G. (2020). Adverse events in meditation practices and meditation-based therapies: a systematic review. *Acta Psychiatrica Scandinavica* 142(5), 374–393.

About one practitioner in twelve reports an unwanted effect, most often anxiety or low mood.

Fenton, T. R., and Huang, T. (2016). Systematic review of the association between dietary acid load, alkaline water and cancer. *BMJ Open* 6(6), e010438.

No evidence that an alkaline diet or alkaline water prevents or treats cancer.

Field, T. M., Schanberg, S. M., Scafidi, F., et al. (1986). Tactile/kinesthetic stimulation effects on preterm neonates. *Pediatrics* 77(5), 654–658.

Babies born too early who were stroked three times a day gained weight much faster and went home six days sooner.

Fincham, G. W., Strauss, C., Montero-Marin, J., and Cavanagh, K. (2023). Effect of breathwork on stress and mental health: a meta-analysis of randomised-controlled trials. *Scientific Reports* 13, 432.

Twelve trials. A small to moderate fall in stress.

Flik, C. E., Laan, W., Zuithoff, N. P. A., et al. (2019). Efficacy of individual and group hypnotherapy in irritable bowel syndrome (IMAGINE): a multicentre randomised controlled trial. *Lancet Gastroenterology and Hepatology* 4(1), 20–31.

In 354 Dutch patients, six sittings of hypnosis relieved the irritable bowel in about two of five, against one of six with teaching alone.

Forestier, R., Desfour, H., Tessier, J.-M., et al. (2010). Spa therapy in the treatment of knee osteoarthritis: a large randomised multicentre trial. *Annals of the Rheumatic Diseases* 69(4), 660–665.

In 382 patients, three weeks at a spa with exercises did better than the exercises alone, six months later.

Furlan, A. D., Giraldo, M., Baskwill, A., Irvin, E., and Imamura, M. (2015). Massage for low-back pain. *Cochrane Database of Systematic Reviews* (9), CD001929.

Twenty-five trials. Less pain in the short term.

Garfinkel, D., and Mangin, D. (2010). Feasibility study of a systematic approach for discontinuation of multiple medications in older adults. *Archives of Internal Medicine* 170(18), 1648–1654.

Seventy old people were advised to stop more than half their drugs. Most stayed off them and felt better.

Golden, R. N., Gaynes, B. N., Ekstrom, R. D., et al. (2005). The efficacy of light therapy in the treatment of mood disorders: a review and meta-analysis of the evidence. *American Journal of Psychiatry* 162(4), 656–662.

Bright light in winter depression and in depression that is not seasonal. A large and a moderate effect.

Goldenberg, J. Z., Yap, C., Lytvyn, L., et al. (2017). Probiotics for the prevention of Clostridium difficile-associated diarrhea in adults and children. *Cochrane Database of Systematic Reviews* (12), CD006095.

Thirty-one trials. Bacteria taken with an antibiotic lowered the risk of the dangerous diarrhoea by more than half.

Goodwin, P. J., Leszcz, M., Ennis, M., et al. (2001). The effect of group psychosocial support on survival in metastatic breast cancer. *New England Journal of Medicine* 345(24), 1719–1726.

The larger trial. The group eased pain and low mood and did not lengthen life.

Goyal, M., Singh, S., Sibinga, E. M. S., et al. (2014). Meditation programs for psychological stress and well-being: a systematic review and meta-analysis. *JAMA Internal Medicine* 174(3), 357–368.

Forty-seven trials. Moderate benefit for anxiety, low spirits and pain; no better than other active treatments.

Gurovich, Y., Hanani, Y., Bar, O., et al. (2019). Identifying facial phenotypes of genetic disorders using deep learning. *Nature Medicine* 25(1), 60–64.

A program trained on 17,000 photographs puts the right inherited syndrome among its first ten guesses in 91 per cent of cases.

Haller, J. S. (1994). *Medical Protestants: The Eclectics in American Medicine, 1825–1939*. Southern Illinois University Press.

The history of the American botanical physicians, their schools, their remedies and their end.

Hampton, J. R., Harrison, M. J. G., Mitchell, J. R. A., Prichard, J. S., and Seymour, C. (1975). Relative contributions of history-taking, physical examination, and laboratory investigation to diagnosis and management of medical outpatients. *BMJ* 2(5969), 486–489.

In 66 of 80 new patients the history alone gave the diagnosis.

Hamre, H. J., Becker-Witt, C., Glockmann, A., et al. (2004). Anthroposophic therapies in chronic disease: the Anthroposophic Medicine Outcomes Study (AMOS). *European Journal of Medical Research* 9(7), 351–360.

Nearly nine hundred outpatients followed after starting anthroposophic treatment. Lasting improvement, without a comparison group.

He, M., Xiang, F., Zeng, Y., et al. (2015). Effect of time spent outdoors at school on the development of myopia among children in China: a randomized clinical trial. *JAMA* 314(11), 1142–1148.

Forty minutes of outdoor activity added to the school day lowered the rate at which children became short-sighted.

Hemilä, H., and Chalker, E. (2013). Vitamin C for preventing and treating the common cold. *Cochrane Database of Systematic Reviews* (1), CD000980.

Twenty-nine trials with more than eleven thousand people. No fewer colds; slightly shorter ones.

Hillier, S., and Worley, A. (2015). The effectiveness of the Feldenkrais method: a systematic review of the evidence. *Evidence-Based Complementary and Alternative Medicine* 2015, 752160.

A review of the trials. Better balance in older people; other effects less sure.

Hole, J., Hirsch, M., Ball, E., and Meads, C. (2015). Music as an aid for postoperative recovery in adults: a systematic review and meta-analysis. *Lancet* 386(10004), 1659–1671.

Seventy-three trials. Music around an operation lowered pain, fear and the use of painkillers.

Horneber, M. A., Bueschel, G., Huber, R., Linde, K., and Rostock, M. (2008). Mistletoe therapy in oncology. *Cochrane Database of Systematic Reviews* (2), CD003297.

Twenty-one trials. Weak evidence for well-being during cancer treatment; none for survival.

Hróbjartsson, A., and Gøtzsche, P. C. (2010). Placebo interventions for all clinical conditions. *Cochrane Database of Systematic Reviews* (1), CD003974.

Dummy compared with no treatment in some two hundred trials. Clear effects on pain and nausea; little on measured outcomes.

Huber, M., Knottnerus, J. A., Green, L., et al. (2011). How should we define health? *BMJ* 343, d4163.

Proposes to define health as the ability to adapt and to manage oneself, in place of complete well-being.

Janssen, C. W., Lowry, C. A., Mehl, M. R., et al. (2016). Whole-body hyperthermia for the treatment of major depressive disorder: a randomized clinical trial. *JAMA Psychiatry* 73(8), 789–795.

One heating of the whole body to a mild fever improved depression for six weeks, against a sham.

Kaptchuk, T. J. (1998). Intentional ignorance: a history of blind assessment and placebo controls in medicine. *Bulletin of the History of Medicine* 72(3), 389–433.

How the blind trial was invented to test mesmerism in 1784, and how it passed into medicine.

Kasper, S., Gastpar, M., Müller, W. E., et al. (2010). Silexan, an orally administered Lavandula oil preparation, is effective in the treatment of ‘subsyndromal’ anxiety disorder: a randomized, double-blind, placebo controlled trial. *International Clinical Psychopharmacology* 25(5), 277–287.

A capsule of lavender oil eased anxiety clearly more than a dummy in 221 patients.

Kenney, J. J., Clemens, R., and Forsythe, K. D. (1988). Applied kinesiology unreliable for assessing nutrient status. *Journal of the American Dietetic Association* 88(6), 698–704.

Three practitioners disagreed with one another and with the laboratory.

Kjeldsen-Kragh, J., Haugen, M., Borchgrevink, C. F., et al. (1991). Controlled trial of fasting and one-year vegetarian diet in rheumatoid arthritis. *Lancet* 338(8772), 899–902.

A week’s fast and a year without meat eased inflamed joints for the whole year.

Klein, A. V., and Kiat, H. (2015). Detox diets for toxin elimination and weight management: a critical review of the evidence. *Journal of Human Nutrition and Dietetics* 28(6), 675–686.

No sound evidence that commercial cleansing diets remove poisons.

Knipschild, P. (1988). Looking for gall bladder disease in the patient's iris. *BMJ* 297(6663), 1578–1581.

Five Dutch iridologists were right in about half of 78 cases and did not agree with one another.

Knowler, W. C., Barrett-Connor, E., Fowler, S. E., et al. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine* 346(6), 393–403.

In 3,234 people, modest weight loss and walking cut new diabetes by 58 per cent, the drug by 31 per cent.

Koopman, F. A., Chavan, S. S., Miljko, S., et al. (2016). Vagus nerve stimulation inhibits cytokine production and attenuates disease severity in rheumatoid arthritis. *Proceedings of the National Academy of Sciences* 113(29), 8284–8289.

An implanted stimulator of the vagus nerve lowered inflammation in patients with inflamed joints.

Kox, M., van Eijk, L. T., Zwaag, J., et al. (2014). Voluntary activation of the sympathetic nervous system and attenuation of the innate immune response in humans. *Proceedings of the National Academy of Sciences* 111(20), 7379–7384.

Twelve trained men changed their body's answer to a bacterial fragment at will, which had been thought impossible.

Lam, R. W., Levitt, A. J., Levitan, R. D., et al. (2016). Efficacy of bright light treatment, fluoxetine, and the combination in patients with nonseasonal major depressive disorder: a randomized clinical trial. *JAMA Psychiatry* 73(1), 56–63.

In 122 patients, light did better than a dummy device, and light with the drug did best.

Lamas, G. A., Goertz, C., Boineau, R., et al. (2013). Effect of disodium EDTA chelation regimen on cardiovascular events in patients with previous myocardial infarction: the TACT randomized trial. *JAMA* 309(12), 1241–1250.

In 1,708 patients the infusions gave slightly fewer new heart events. A second trial in people with diabetes did not confirm the benefit.

Lamontagne, F., Masse, M.-H., Menard, J., et al. (2022). Intravenous vitamin C in adults with sepsis in the intensive care unit. *New England Journal of Medicine* 386(25), 2387–2398.

In 872 gravely ill patients, the vitamin by vein led to more deaths or lasting organ failure than a dummy.

Lee, M. S., Pittler, M. H., and Ernst, E. (2008). Effects of reiki in clinical practice: a systematic review of randomised clinical trials. *International Journal of Clinical Practice* 62(6), 947–954.

Nine trials of reiki. Too few and too small to show an effect.

Lewith, G. T., Kenyon, J. N., Broomfield, J., et al. (2001). Is electrodermal testing as effective as skin prick tests for diagnosing allergies? A double blind, randomised block design study. *BMJ* 322(7279), 131–134.

In more than 1,500 blind tests the device could not tell allergic people from others.

Licciardone, J. C., Minotti, D. E., Gatchel, R. J., Kearns, C. M., and Singh, K. P. (2013). Osteopathic manual treatment and ultrasound therapy for chronic low back pain: a randomized controlled trial. *Annals of Family Medicine* 11(2), 122–129.

In 455 patients, six sittings of osteopathic handling relieved back pain more than a sham.

Linde, K., Clausius, N., Ramirez, G., et al. (1997). Are the clinical effects of homoeopathy placebo effects? A meta-analysis of placebo-controlled trials. *Lancet* 350(9081), 834–843.

Eighty-nine trials pooled. Better than a dummy overall, with no single condition clearly helped. The authors later showed that the better trials gave smaller effects.

Lindqvist, P. G., Epstein, E., Landin-Olsson, M., et al. (2014). Avoidance of sun exposure is a risk factor for all-cause mortality: results from the Melanoma in Southern Sweden cohort. *Journal of Internal Medicine* 276(1), 77–86.

Among 29,518 Swedish women followed for twenty years, those who avoided the sun died about twice as often.

Lipsitz, L. A., and Goldberger, A. L. (1992). Loss of “complexity” and aging: potential applications of fractals and chaos theory to senescence. *JAMA* 267(13), 1806–1809.

The proposal that health shows in a rich variation of the body’s rhythms, and age and illness in its loss.

Little, P., Lewith, G., Webley, F., et al. (2008). Randomised controlled trial of Alexander technique lessons, exercise, and massage (ATEAM) for chronic and recurrent back pain. *BMJ* 337, a884.

In 579 patients, twenty-four lessons cut the days with back pain from twenty-one to three a month, a year later.

Loftus, E. F., and Pickrell, J. E. (1995). The formation of false memories. *Psychiatric Annals* 25(12), 720–725.

A quarter of the subjects came to remember an invented event of their childhood.

Lévi-Strauss, C. (1962). *La Pensée sauvage*. Plon. English: *The Savage Mind*. University of Chicago Press, 1966.

Argues that peoples without writing know nature by exact observation and classification, a science of the concrete.

Mackey, M. C., and Glass, L. (1977). Oscillation and chaos in physiological control systems. *Science* 197(4300), 287–289.

The paper that proposed to read some illnesses as a change in the rhythm of a sound control loop.

Maddox, J., Randi, J., and Stewart, W. W. (1988). “High-dilution” experiments a delusion. *Nature* 334(6180), 287–290.

The report of the journal’s own team on the experiments with extreme dilutions. Under blind conditions the effect was not found.

Margolin, A., Kleber, H. D., Avants, S. K., et al. (2002). Acupuncture for the treatment of cocaine addiction: a randomized controlled trial. *JAMA* 287(1), 55–63.

In 620 patients the five ear points did no better than needles elsewhere or relaxation.

Marmot, M. G., Shipley, M. J., and Rose, G. (1984). Inequalities in death: specific explanations of a general pattern? *Lancet* 323(8384), 1003–1006.

Ten years of deaths among 17,530 British civil servants. The lowest grade died three times as often as the highest.

Matthews, D. A., Marlowe, S. M., and MacNutt, F. S. (2000). Effects of intercessory prayer on patients with rheumatoid arthritis. *Southern Medical Journal* 93(12), 1177–1186.

Prayer in person with the laying on of hands eased inflamed joints for a year in a small group. Prayer from a distance added nothing.

McCarney, R., Fisher, P., Spink, F., Flint, G., and van Haselen, R. (2002). Can homeopaths detect homeopathic medicines by dowsing? A randomized, double-blind, placebo-controlled trial. *Journal of the Royal Society of Medicine* 95(4), 189–191.

Six dowsing homeopaths chose the right bottle in 48 per cent of 156 pairs.

McEwen, B. S. (1998). Protective and damaging effects of stress mediators. *New England Journal of Medicine* 338(3), 171–179.

The wear that follows when the body’s adjustments to strain no longer come back.

Mishori, R., Otubu, A., and Jones, A. A. (2011). The dangers of colon cleansing. *Journal of Family Practice* 60(8), 454–457.

A review of the washing of the bowel. No benefit, and a list of harms.

Mitchell, J. M., Bogenschutz, M., Lilienstein, A., et al. (2021). MDMA-assisted therapy for severe PTSD: a randomized, double-blind, placebo-controlled phase 3 study. *Nature Medicine* 27(6), 1025–1033.

Three sittings with the compound and talks freed two in three patients from the diagnosis, against one in three with talks and a dummy.

Moertel, C. G., Fleming, T. R., Creagan, E. T., et al. (1985). High-dose vitamin C versus placebo in the treatment of patients with advanced cancer who have had no prior chemotherapy. *New England Journal of Medicine* 312(3), 137–141.

The second of two careful trials of vitamin C by mouth in advanced cancer. No benefit.

Morris, J. N., Heady, J. A., Raffle, P. A. B., Roberts, C. G., and Parks, J. W. (1953). Coronary heart-disease and physical activity of work. *Lancet* 262(6795), 1053–1057.

London bus conductors had half the heart attacks of the drivers. The study that began the science of exercise and health.

Morris, P. A. (1982). The effect of pilgrimage on anxiety, depression and religious attitude. *Psychological Medicine* 12(2), 291–294.

Twenty-four sick pilgrims to Lourdes. Less anxiety and low mood for at least ten months.

National Health and Medical Research Council (2015). *Evidence on the Effectiveness of Homeopathy for Treating Health Conditions*. NHMRC, Canberra.

The Australian government's review of the reviews, for sixty-one conditions. No reliable evidence of effect for any.

Noble, D. (2006). *The Music of Life: Biology Beyond the Genome*. Oxford University Press.

The author of the first model of a heart cell argues that no single level, and least of all the gene, directs a living body.

Nolen, W. A. (1974). *Healing: A Doctor in Search of a Miracle*. Random House.

A surgeon follows up people declared healed at a famous preacher's meetings, and visits the Philippine healers. He finds no cure of bodily disease.

O'Dea, K. (1984). Marked improvement in carbohydrate and lipid metabolism in diabetic Australian Aborigines after temporary reversion to traditional lifestyle. *Diabetes* 33(6), 596–603.

Ten Aboriginal people with diabetes lived for seven weeks as hunters and gatherers. Their blood sugar came down almost to normal.

Oba, K., Teramukai, S., Kobayashi, M., et al. (2007). Efficacy of adjuvant immunochemotherapy with polysaccharide K for patients with curative resections of gastric cancer. *Cancer Immunology, Immunotherapy* 56(6), 905–911.

Eight Japanese trials with 8,009 patients. A fungus extract added to standard drugs gave a modest gain in survival.

Pakhomov, A. G., Akyel, Y., Pakhomova, O. N., Stuck, B. E., and Murphy, M. R. (1998). Current state and implications of research on biological effects of millimeter waves: a review of the literature. *Bioelectromagnetics* 19(7), 393–413.

A review of the Soviet and later work on weak waves of extremely high rate. Many effects reported, few repeated elsewhere.

Park, B. J., Tsunetsugu, Y., Kasetani, T., Kagawa, T., and Miyazaki, Y. (2010). The physiological effects of Shinrin-yoku (taking in the forest atmosphere or forest bathing): evidence from field experiments in 24 forests across Japan. *Environmental Health and Preventive Medicine* 15(1), 18–26.

Lower pulse, blood pressure and stress hormone after time in a forest than after time in a city.

Pedersen, B. K., and Saltin, B. (2015). Exercise as medicine: evidence for prescribing exercise as therapy in 26 different chronic diseases. *Scandinavian Journal of Medicine and Science in Sports* 25(Suppl. 3), 1–72.

The evidence for exercise as treatment, illness by illness.

Pehek, J. O., Kyler, H. J., and Faust, D. L. (1976). Image modulation in corona discharge photography. *Science* 194(4262), 263–270.

The moisture of the skin accounts for most of the changes in a Kirlian picture of a fingertip.

Pihtili, A., Galle, M., Cuhadaroglu, C., et al. (2014). Evidence for the efficacy of a bioresonance method in smoking cessation: a pilot study. *Forschende Komplementärmedizin* 21(4), 239–245.

A sham-controlled trial in 190 smokers. More of the treated had stopped after a week and after a year.

Pirmohamed, M., James, S., Meakin, S., et al. (2004). Adverse drug reactions as cause of admission to hospital: prospective analysis of 18,820 patients. *BMJ* 329(7456), 15–19.

In two English hospitals 6.5 per cent of admissions were due to harm from a drug.

Pittler, M. H., Brown, E. M., and Ernst, E. (2007). Static magnets for reducing pain: systematic review and meta-analysis of randomized trials. *Canadian Medical Association Journal* 177(7), 736–742.

Nine trials of fixed magnets for pain. No effect.

Postuma, R. B., Iranzo, A., Hu, M., et al. (2019). Risk and predictors of dementia and parkinsonism in idiopathic REM sleep behaviour disorder: a multicentre study. *Brain* 142(3), 744–759.

Of 1,280 people who act out their dreams, 73.5 per cent developed a disease of the brain within twelve years.

Ridker, P. M., Everett, B. M., Thuren, T., et al. (2017). Antiinflammatory therapy with canakinumab for atherosclerotic disease. *New England Journal of Medicine* 377(12), 1119–1131.

A drug against one signal of inflammation lowered the rate of new heart attacks without touching blood fats.

Ristow, M., Zarse, K., Oberbach, A., et al. (2009). Antioxidants prevent health-promoting effects of physical exercise in humans. *Proceedings of the National Academy of Sciences* 106(21), 8665–8670.

Vitamins against oxidation cancelled the gain that training gives in the handling of sugar.

Roberts, L., Ahmed, I., Hall, S., and Davison, A. (2009). Intercessory prayer for the alleviation of ill health. *Cochrane Database of Systematic Reviews* (2), CD000368.

Ten trials with 7,646 patients. No clear effect.

Rosa, L., Rosa, E., Sarner, L., and Barrett, S. (1998). A close look at therapeutic touch. *JAMA* 279(13), 1005–1010.

Twenty-one practitioners could not tell, better than by guessing, over which of their hands another hand was held.

Rubinstein, S. M., van Middelkoop, M., Assendelft, W. J. J., de Boer, M. R., and van Tulder, M. W. (2011). Spinal manipulative therapy for chronic low-back pain. *Cochrane Database of Systematic Reviews* (2), CD008112.

Twenty-six trials. A small, short-lived benefit, no larger than that of other treatments.

Scheffer, M., Bascompte, J., Brock, W. A., et al. (2009). Early-warning signals for critical transitions. *Nature* 461(7260), 53–59.

Systems of many kinds return more slowly from small pushes as they near a tipping point.

Schwartz, S. A., Utts, J., Spottiswoode, S. J. P., et al. (2014). A double-blind, randomized study to assess the validity of applied kinesiology (AK) as a diagnostic tool and as a nonlocal proximity effect. *Explore* 10(2), 99–108.

The muscle test could not tell a vial of poison from a vial of salt water.

Schöni, M. H., Nikolaizik, W. H., and Schöni-Affolter, F. (1997). Efficacy trial of bioresonance in children with atopic dermatitis. *International Archives of Allergy and Immunology* 112(3), 238–246.

A double-blind trial in children with eczema. The device did no better than a sham.

Scull, A. (2005). *Madhouse: A Tragic Tale of Megalomania and Modern Medicine*. Yale University Press.

The history of Henry Cotton's operations on mental patients on the theory of focal infection, from the hospital's own records.

Seely, D., Szczurko, O., Cooley, K., et al. (2013). Naturopathic medicine for the prevention of cardiovascular disease: a randomized clinical trial. *Canadian Medical Association Journal* 185(9), E409–E416.

A year of naturopathic care added to usual care lowered the risk of heart disease in 246 postal workers.

Seidel, S., Kreutzer, R., Smith, D., McNeel, S., and Gilliss, D. (2001). Assessment of commercial laboratories performing hair mineral analysis. *JAMA* 285(1), 67–72.

One lock of hair, six laboratories, results that differed more than tenfold.

Shang, A., Huwiler-Müntener, K., Nartey, L., et al. (2005). Are the clinical effects of homoeopathy placebo effects? Comparative study of placebo-controlled trials of homoeopathy and allopathy. *Lancet* 366(9487), 726–732.

110 trials of homeopathy set beside 110 of ordinary drugs. In the large, well-made trials the homeopathic remedies did not differ from a dummy.

Shoba, G., Joy, D., Joseph, T., et al. (1998). Influence of piperine on the pharmacokinetics of curcumin in animals and human volunteers. *Planta Medica* 64(4), 353–356.

A compound of pepper raised the uptake of the chief compound of turmeric twentyfold in volunteers.

Simon, A., Worthen, D. M., and Mitas, J. A. (1979). An evaluation of iridology. *JAMA* 242(13), 1385–1389.

Three iridologists could not find kidney disease in photographs of the eyes of 143 people.

Simpson, W. F. (1989). Comparative longevity in a college cohort of Christian Scientists. *JAMA* 262(12), 1657–1658.

Graduates of a Christian Science college died younger than those of a neighbouring university.

Smyth, J. M., Stone, A. A., Hurewitz, A., and Kaell, A. (1999). Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis. *JAMA* 281(14), 1304–1309.

Patients who wrote about the worst events of their lives were measurably better four months later.

Spiegel, D., Bloom, J. R., Kraemer, H. C., and Gottheil, E. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet* 334(8668), 888–891.

Women in a weekly supportive group lived eighteen months longer. The finding was not confirmed.

Strachan, D. P. (1989). Hay fever, hygiene, and household size. *BMJ* 299(6710), 1259–1260.

Children with more older siblings had less hay fever. The paper that began the hygiene hypothesis.

Stupp, R., Taillibert, S., Kanner, A., et al. (2017). Effect of tumor-treating fields plus maintenance temozolomide vs maintenance temozolomide alone on survival in patients with glioblastoma. *JAMA* 318(23), 2306–2316.

Alternating electric fields given through the scalp lengthened the life of patients with a brain tumour by some months.

Sturt, J., Ali, S., Robertson, W., et al. (2012). Neurolinguistic programming: a systematic review of the effects on health outcomes. *British Journal of General Practice* 62(604), e757–e764.

Ten studies. Little evidence of benefit to health.

Taylor, L. H., Latham, S. M., and Woolhouse, M. E. J. (2001). Risk factors for human disease emergence. *Philosophical Transactions of the Royal Society B* 356(1411), 983–989.

Of 1,415 organisms that infect man, 61 per cent come from animals, and 75 per cent of the newly emerging ones.

Tegmark, M. (2000). Importance of quantum decoherence in brain processes. *Physical Review E* 61(4), 4194–4206.

A calculation that quantum states in nerve cells last far too briefly to matter for thought.

Teut, M., Lüdtke, R., and Warning, A. (2006). Reliability of Enderlein's darkfield analysis of live blood. *Alternative Therapies in Health and Medicine* 12(4), 36–41.

Readers of fresh blood under dark-field lighting did not agree with each other on what they saw.

Tröger, W., Galun, D., Reif, M., et al. (2013). Viscum album [L.] extract therapy in patients with locally advanced or metastatic pancreatic cancer: a randomised clinical trial on overall survival. *European Journal of Cancer* 49(18), 3788–3797.

In 220 patients who could have no other treatment, survival was longer with mistletoe. Not yet repeated.

Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science* 224(4647), 420–421.

Patients with a view of trees went home sooner and needed fewer strong painkillers than those who faced a wall.

van de Leemput, I. A., Wichers, M., Cramer, A. O. J., et al. (2014). Critical slowing down as early warning for the onset and termination of depression. *Proceedings of the National Academy of Sciences* 111(1), 87–92.

Moods linger longer and hang together more closely in people who are about to become depressed.

Van den Bruel, A., Thompson, M., Buntinx, F., and Mant, D. (2012). Clinicians' gut feeling about serious infections in children: observational study. *BMJ* 345, e6144.

In 3,890 children, a physician's feeling that something was wrong, against a reassuring examination, raised the odds of grave infection twenty-fivefold.

van Lommel, P., van Wees, R., Meyers, V., and Elfferich, I. (2001). Near-death experience in survivors of cardiac arrest: a prospective study in the Netherlands. *Lancet* 358(9298), 2039–2045.

Of 344 patients whose hearts had been restarted, 18 per cent reported an experience of nearness to death. They were followed for eight years.

van Nood, E., Vrieze, A., Nieuwdorp, M., et al. (2013). Duodenal infusion of donor feces for recurrent Clostridium difficile. *New England Journal of Medicine* 368(5), 407–415.

The Amsterdam trial of the transfer of stool. Four in five cured, against fewer than one in three with the antibiotic.

Wang, J., García-Bailo, B., Nielsen, D. E., and El-Sohemy, A. (2014). ABO genotype, "blood-type" diet and cardiometabolic risk factors. *PLoS ONE* 9(1), e84749.

In 1,455 people the benefits of the blood type diets did not depend on the blood group.

Wastyk, H. C., Fragiadakis, G. K., Perelman, D., et al. (2021). Gut-microbiota-targeted diets modulate human immune status. *Cell* 184(16), 4137–4153.

Ten weeks of fermented foods widened the range of bowel bacteria and lowered signs of inflammation.

Weinhold, J., Hunger, C., Bornhäuser, A., et al. (2013). Family constellation seminars improve psychological functioning in a general population sample: results of a randomized controlled trial. *Journal of Counseling Psychology* 60(4), 601–609.

In 208 adults a three-day seminar improved mental health for four months, against a waiting list.

Wesselius, T., Heersema, D. J., Mostert, J. P., et al. (2005). A randomized crossover study of bee sting therapy for multiple sclerosis. *Neurology* 65(11), 1764–1768.

Twenty-six Dutch patients were stung three times a week for half a year. No effect on the illness.

Whiting, P. F., Wolff, R. F., Deshpande, S., et al. (2015). Cannabinoids for medical use: a systematic review and meta-analysis. *JAMA* 313(24), 2456–2473.

Seventy-nine trials. Moderate evidence for lasting pain and for the cramps of multiple sclerosis.

WHO Immediate KMC Study Group (2021). Immediate "kangaroo mother care" and survival of infants with low birth weight. *New England Journal of Medicine* 384(21), 2028–2038.

In five countries, carrying on the skin from birth lowered deaths in the first month by a quarter.

Wilhelmi de Toledo, F., Grundler, F., Bergouignan, A., Drinda, S., and Michalsen, A. (2019). Safety, health improvement and well-being during a 4 to 21-day fasting period in an observational study including 1422 subjects. *PLoS ONE* 14(1), e0209353.

The largest record of supervised fasting. Lower weight and blood pressure, better mood, and few unwanted effects.

Wood, J. V., Perunovic, W. Q. E., and Lee, J. W. (2009). Positive self-statements: power for some, peril for others. *Psychological Science* 20(7), 860–866.

People with a low opinion of themselves felt worse after repeating that they were lovable.

Zeevi, D., Korem, T., Zmora, N., et al. (2015). Personalized nutrition by prediction of glycemic responses. *Cell* 163(5), 1079–1094.

Eight hundred people answered the same meals with very different rises of blood sugar, which could be predicted for each person.

Index of names and subjects

A plain number is a chapter. The letter E with a number is an entry of the atlas in Part VIII. The letter A with a number is a section of Appendix A. A word of the theory is given with the chapters that define it, since such a word stands on nearly every page. Persons are listed under the family name where they have one. Where a subject stands in more than forty places, the first forty are given.

The index was made by a program that searched the text for each name and word. It finds the word and not the thought. A chapter that treats a subject under another name will be missing, and Appendix D gives the other names.

A

Abalone 52, 95
abaton 37
Abhayarishta 97
Abhraka bhasma 97
Abies webbiana 97
abiku 24, 31
Abimbola, Wande 24, 25, 27, 28, 102
Abode of Qi (ST 11) 94
Abode of the Hollow Organs (SP 13) 94
Abode of Thought (BL 49) 94
Aboriginal Australians 6, 8, 13, 21, 23, 72, 75, E23, E26, E29, E36, E41, E53, E54, E67, E87, 100, 102, 104, 107, 109, A2, A5
Above the Joint (GB 3) 94
Abrams, Albert 102, A3
Abresham 97
Abrus precatorius 97
Abscess of the gut E74
Abundant Bulge (ST 40) 47, 94
Acacia 36, 95, 97
Acacia catechu 95, 97
Acanthopanax 95
Achillea millefolium 98
Aching tooth E27
Achyranthes 52, 96, 97
Achyranthes aspera 97
Acokanthera schimperi 100
Aconite 45, 52, 54, 65, 75, E12, E13, E74, 95, 96, 97, 103, 104, 108
Aconitum carmichaelii 95
Aconitum ferox 97
Aconitum heterophyllum 97
Aconitum napellus 98
Acorus 52, E39, E42, E81, 96, 104
Actaea racemosa 99
Adansonia digitata 100
Addiction and craving 10, 20, 30, 83, E40, E61, E89, 93, 99, 100, 104, A6
Adenophora 95
Adenophora tetraphylla 95
Ader, Robert 22, 102, A7
Aelius Aristides 37, 43, 102
Aesculus hippocastanum 98
Aframomum melegueta 100
African ginger 100
African plum 30, E72, 100, 104
African potato 100
African wormwood 100
Afsanteen 40
Aftimoon 40, 108
Afyun 97, 108
Agar 97
Agaric fungus 97
Agastya 61, 97, 102
Agastya haritaki 97
Agathosma betulina 11, 100
Agave 99
Aged tangerine 52
agni 57
Agrimonia pilosa 95
Ahiphena 97, 108
!aia 11
AIDS 11, 70, 75, 100, 102, A1
Ailanthus altissima 95
Airs, Waters, Places 38, 101
Aiye 52
Ajirna, agnimandya 59
Ajmal Khan, Hakim 40, 102
Ajo sacha 16
ajogun 24, 29
Ajowan 97
Ajwain khurasani 97
Akebia 52, 75, 95, 96
Akebia quinata 95
Akkadian 34
Akuamma 100
alafia 24
Albizia julibrissin 95
Alchemilla vulgaris 98
Alcmaeon of Croton 37, 38, 43, 102
Alcohol and drunkenness 10, 13, 16, 18, 20, 69, 70, E40, E72, 104, 106, 109, A5, A6
Alder buckthorn bark 98
Alexander, Frederick Matthias 102, A4
Alexandria 36, 38, 39, 42, 44, 72, 100, 102
Alisma 52, 96
Alkali E21, 97, 102, 104, A1, A5
All-Inclusive Great Building Decoction 96
Allium fistulosum 95
Allium macrostemon 95
Allium sativum 95, 98
Allium tuberosum 95
Aloe 36, 39, 60, E52, 95, 97, 98, 100, 104, 108
Aloe ferox 100
Aloe vera 95, 98
Aloeswood 95, 97
Alpinia katsumadai 95
Alpinia officinarum 95
Alpinia oxyphylla 95
Alstonia boonei 100
Althaea officinalis 98
Alum 17, 34, 70, 71, 72, 95, 97
ama 34, 57, 66
Amalaki 60, 108
Amavata 59, E25, 104
Ambar 97
Amber E11, E93, 95, 96, 97, 104
Ambergris 97
amchi 62
American ginseng 95, 96, 99
Ammi majus 100
Ammi visnaga 100
amok 70
Amomum 52, E89, 95, 96, 104
Amomum kravanh 95
Amomum tsao-ko 95
Amulets and talismans 21, 23, 31, 35, 36, 43, 44, E39, E48, 104
Anadenanthera 99
Anaemia and pale blood 54, 57, 87, E61, 93, 97, 104
Anaesthesia 17, 22, 39, 44, 65, 99, A3, A5, A7, A10
Ancestors 4, 6, 7, 8, 9, 10, 13, 15, 16, 17, 18, 19, 21, 23, 24, 25, 27, 28, 29, 30, 31, 44, 54, 58, 63, 66, 68, 69, 70, 71, 72, 73, 75, 76, E19, E34, E37, E56, E84, 100 and others
Andrographis 60, E9, 95, 104
Andrographis paniculata 95
Anemarrhena 52, 96
Anemarrhena, Phellodendron and Rehmannia Pill 96
Anethum sowa 97

angakkuq 9, 20
Angelica and Peony Powder 96
Angelica archangelica 98
Angelica dahurica 52, E23, 96
Angelica Decoction for Cold Limbs 96
Angelica Decoction to Build Up the Blood 52
Angelica pubescens 48, 52, E24, E25, 96, 104
Angelica Pubescens and Mistletoe Decoction 48, 52, E24, E25, 104
Angelica root 45, 52, 53, E43, 98, 104
Angel's trumpet 99
Angong niuhuang wan 52
Anise 39, E91, 97, 98, 104
Anise fruit 98
Anisimov, Arkadii 14, 102
Anisun 97
Anmian (point) 94
Annona muricata 99
Antelope horn 95, 96
Antelope Horn and Uncaria Decoction 96
Antonio Agpaoa 70, 102
Antonovsky, Aaron 102, A7
Ants and their jaws 99
Anu taila 97
Anxiety and fear 4, 7, 9, 10, 11, 13, 14, 15, 17, 19, 21, 22, 23, 30, 31, 33, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 54, 57, 58, 59, 61, 63, 65, 67, 70, 71, 75, E6, 83 and others
Anxixiang 95
Apamarga 97
Apasmara 59, E39, 104
Apatanaka 59
Aphorisms 38, 40, 61, E20, 101, 102
Apis cerana 95
Apocynum venetum 95
Appendicitis 89, E74, 93, 94, 95, 96, 104
Apricot 32, 52, E10, E49, 96, 103
Apricot Kernel and Perilla Leaf Powder 96
Aquilaria sinensis 95
Aragvadha 97
Arborvitae 95, 96
archeus 6, 42
Arctium lappa 95, 98
Arctostaphylos uva-ursi 98
Ardita 59
Areca 52, 70, 75, E8, E58, 95, 96, 104, 109
Areca catechu 95
Areca nut 52, 70, 75, E8, E58, 95, 96, 104, 109
Areca nut with betel leaf and lime 70
Aretaeus of Cappadocia 39, 101, 102
Argan 100
Argania spinosa 100
Argemone mexicana 100
Arisaema E66, 95, 96, 104
Arisaema erubescens 95
Arjuna 59, 60, E11, 97, 104
Arjunarishta 97
Arka 97
Arm Five Miles (LI 13) 94
Arm Three Miles (LI 10) 94
Armpit Abyss (GB 22) 94
Arnebia euchroma 95
Arnica flower 98
Arnica montana 98
Arogyavardhini 97
Aromatic ginger 70
Arq gulab 97
Arrernte 9, 10, 13, 102
Arrow poison tree 100
Arrow poison vines 100
Arrow poisons 99, 100
Arsenic 8, 40, 42, 52, 55, 61, 74, 75, 76, E49, E63, 93, 95, 96, 103, 104, A6
Arshas 59, E22, 104
Artemisia 52, E17, E92, 95, 96, 98, 100, 104
Artemisia absinthium 98
Artemisia afra 100
Artemisia anomala 95
Artemisia capillaris 52, E17, E92, 96, 104
Artemisia Capillaris Decoction 52, E17, E92, 104
Artemisia vulgaris 98
Artemisinin and sweet wormwood 8, 44, 52, 55, 75, 76, E2, 96, 102, 103, 104, A10
Arthritis and worn joints 11, 40, 51, 53, 58, 59, 60, 61, 70, 74, 75, E25, 93, 95, 97, 99, 100, 104, A1, A3, A5, A7, A8, A9
Artichoke leaf E75, 98, 104
Arura 97, 108
Asafoetida 34, 60, 66, E15, E93, 97, 104, 108
Asarum heterotropoides 95
Asgand 97
Ash gourd 97
Asháninka 99
ashe 8, 19, 20, 24, 44, 54, 56, 75, 76
Ashmari 59, E21, 104
Ashoka 56, 60, E43, 97, 104, 107
Ashokarishta 97
Ashvagandha 60, 97
Asiatic pennywort 70
āšipu 32, 34, 106
Asl-us-soos 40, 108
Aspalathus linearis 100
Asparagus 52, 60, E43, E55, E91, 95, 97, 104, 108
Asparagus cochinchinensis 95
Aspirin and the willow 20, 34, 35, 36, 39, 42, 50, 75, E1, E11, E15, E23, E24, E25, E26, E68, 93, 98, 99, 104, 107, A2, A6
Asrol 40, 108
Ass-hide glue 48, 52, E38, E61, E90, 96, 104
Ass-Hide Glue and Mugwort Decoction 96
Aster 95, 96
Aster tataricus 95
Asthma and wheezing 18, 41, 45, 47, 51, 52, 54, 55, 59, 60, 69, 70, 74, 75, 79, E10, E29, E70, 93, 94, 95, 96, 97, 99, 100, 101, 104, 105, A4, A7, A8, A10
Asthma weed 100
Astragalus 52, E13, E54, 95, 96, 104
Astragalus complanatus 95
asû 32
Asylum and mental hospital 29, 106, 107, A7, A8, A9
Atisara 59, E6, 104
Ativisha 97
Atractylodes lancea 52
Atreya 56, 59, 67, 101, 102
Atropa belladonna 98
Attached Branch (BL 41) 94
Aua 10, 102
Aucklandia 52, 96
'aumakua 68
Autumn crocus 39, 40, 75, E20, 93, 97, 98, 104
Avipattikara 97
'awa 68, 70
ayahuasca 4, 7, 8, 9, 10, 16, A6

ayajo 28
aye, orun 6, 24, 30
Ayurveda 8, 40, 56, 61, A2
Aztecs 10, 18, 21, 23, 69, 73, 75, E7, E12, E13, E20, E27, E45, E48, E53, 99, 101, 102, 109

B

ba, ka, sahu 6, 43
babalawo 24, 25, 26, 27, 28, 29, 30, 31, 43
Babchi 40, 108
Babylon 1, 7, 32, 33, 34, 35, 36, 37, 38, 43, 45, 54, 56, 58, 67, 69, 72, 73, E1, E5, E13, E27, E37, E39, E41, E46, E82, E83, E84, 93, 101, 102, 106, A9, A11
Bach, Edward 102, A6
Back pain 8, 11, 14, 22, 30, 40, 46, 47, 48, 49, 51, 52, 53, 54, 55, 61, 67, 70, 74, 75, E24, E25, 94, 95, 100, 104, A4, A6, A7, A8
Back Stream (SI 3) 47, 94
Bacopa 60, E39, E42, 97, 104
bad kan 62, 63
Badiano, Juan 18, 101, 102
Badiyan 97, 108
Badou 95, 108
Badranjboya 40
Bael 60, E6, 97, 104
Bafeng (point) 94
Baghdad 32, 40, 101, 102, 106, 107
Baibiandou 95
Baibu 95
Baidoukou 95
Baifan 95
Baifuzi 95
Baiguo 95
Baihe 52
Baihe gujin tang 52
Baihu tang 52
Baihuanshu (BL 30) 94
Baihuasheshecao 95
Baihui (GV 20) 94
Baiji 95
Baijiangcao 95
Baijiezi 95
Baimaogen 95
Baiqian 95
Baishao 52
Baitouweng 95, 96
Baitouweng tang 96
Baiwei 95
Baixianpi 95
Baizhi 52
Baizhu 52, 96
Baiziren 95
Bajitian 95
Baked earth 95
Bakuchi 97
Bala 60
Balagraha 59
Bali 70, 71, 72, 73, 75, 76, 102
balian, belian, babaylan 70
Baliospermum montanum 97
Balsam of Peru 99
Bamboo Leaf and Gypsum Decoction 96
Bamboo shavings 52, 95, 96
Bamboo silica 95, 97, 108
Bambusa textilis 95
Bambusa tuldoides 95
Banafsha 40, 97
Banana 53, 57, 68, 70, E52, 104
Banisteriopsis caapi 16, 99
Banlangen 52
Banmao 95
Banxia 52, 96
Banxia baizhu tianma tang 96
Banxia houpo tang 52
Banxia xiexin tang 52
Banzhilian 95
Baobab 100
Baohe wan 52
Baohuang (BL 53) 94
Baphicacanthus cusia 95
Barbed skullcap 95
bardo 6
Barker, David 102, A10
Barley 36, 38, 40, 52, 59, 62, 64, E1, E6, E9, E18, E19, E44, E58, E71, E91, 96, 97, 103, 104
Barrenness E44
Barura 97, 108
Bascom, William 24, 25, 26, 27, 102
Basedow, Herbert 13, 102
Bastien, Joseph 17, 102
Bathing and springs 13, 16, 17, 18, 20, 30, 34, 37, 38, 39, 40, 41, 42, 43, 59, 62, 64, 66, 68, 70, 72, 75, E19, E21, E22, E25, E28, E29, E34, E35, E38, E39, E43, E46, E48, E54, E60, E72, E80, E86 and others
Bauhinia variegata 97
baul 40
Baxie (point) 94
Bazhen tang 52
Bazheng san 52
Beam Gate (ST 21) 94
Bearberry leaf E71, 98
Bedwetting 92, E93, 93, 104
Beer 9, 30, 32, 33, 34, 36, 43, 63, 64, E20, E27, E51, E53, E57, E91, E93, 100, 103, 104
Behidana 97
Behind the Crown (GV 19) 94
Beimu gualou san 96
Beishashen 95
Belamcanda chinensis 95
Beleric myrobalan 60, 97, 108
Below the Joint (ST 7) 94
Ben Sira 42, 102
Benedetti, Fabrizio 21, 22, 102
Benincasa hispida 95, 97
Benshen (GB 13) 94
Benveniste, Jacques 102, A3
Benzoin 95, 96
Beras kencur 70
Berberis aristata 97
Bergenia ligulata 97
Berglund, Axel-Ivar 10, 102
Beriberi E58, 104, A5
Bernard, Claude 102, A1
Bernardi, Luciano 5, 61, 74, 102, A9
Berti 30
Best, Elsdon 70, 102
Betel 57, 70, E40, 109
Betel leaf 70
Betony 98
Betula pendula 98

Bhallataka 97
Bharangi 97
bhasma 56, 60, 97
Bhavamishra 56, 101, 102
Bhringaraja 60, 95, 97, 108
Bhringaraja taila 97
Bhumyamalaki 60
Bian Que 44, 45, 58, 102
Bianxu 95
Bibhitaki 60, 108
Bibo 95, 108
Bichat, Xavier 42, 102
Bichengqie 95
bidan 70
Biejia 95, 96
Biesele, Megan 11, 102
Biguan (ST 31) 94
Bilberry 98
Bilva 60
bimaristan 40
Binao (LI 14) 94
Bingfeng (SI 12) 94
Binglang 52
Bingpeng san 96
Bingpian 95
Birch leaf 98
Bircher-Benner, Maximilian 102, A5
Birth E45
Bisfaij 97
Bishop's weed 100
Bite of a snake E51
Bitter ginger 70
Bitter gourd 57, 70, 75, 97
Bitter kola 100
Bitter leaf 28, 100
Bitter orange 52, E19, 95, 96
Bitter vine 70, 75
Bixie 95, 96
Bixie fenqing yin 96
bla 62, 63
Black aconite 97
Black ash of mercury 97
Black cohosh 99, A1, A6
Black Elk 10, 20, 102
Black gram E55, 97, 104
Black haw 99
Black hellebore 98
Black nightshade 68, 97
Black pepper 60, E15, 95, 97, 104, 108
Black powder for the eyes 97
Black seed 40, 42, 70, 75, 100, 103
Black sesame 95
Black-striped snake 95
Blackberry lily 95, 96
Bladder Transport (BL 28) 94
Blast-fried ginger 95, 96
Blazing Valley (KI 2) 94
Bleek, Wilhelm 12, 102
Bletilla 95
Bletilla striata 95
Blindness 1, 5, 11, 27, 36, 37, 39, 40, 44, 50, 52, 53, 61, 65, 67, 74, 75, 76, E5, E13, E18, E25, 82, E29, E31, E32, E61, E70, E72, E74, E81, 93, 94, 102, 104, 106, 107, A1, A3, A5 and others
Blister beetle 95
Blood pressure 8, 13, 16, 40, 41, 52, 54, 55, 60, 61, 67, 68, 69, 70, 73, 74, 75, 79, E13, E14, E42, E45, E55, E78, 93, 94, 95, 96, 98, 99, 100, 105, A4, A5, A7, A8, A9
Bloodletting 12, 37, 39, 40, 41, 42, 43, 51, 59, 60, 62, 63, 64, 66, 68, 70, 72, 74, 75, 76, E1, E13, E20, E22, E57, E64, 93, 98, 102, 104, 107, 109, A1, A2, A3, A10
Bloodroot 99
Blue Beryl 62, 101, 102
Blue cohosh 99
Blue poppy 97
Blumea 70
Boas, Franz 9, 102
Bobinsana 16
Böck, Barbara 32, 102
Body Pillar (GV 12) 94
Bogoras, Waldemar 9, 10, 14, 102
Bohe 52
Boils and abscesses 8, 10, 11, 14, 17, 18, 20, 32, 34, 36, 38, 39, 42, 43, 44, 51, 52, 54, 57, 59, 68, 70, E2, E18, E21, E65, 89, E74, E91, 93, 94, 95, 96, 97, 103, 104
Boldo 99
Bombyx mori 95
bomoh 70
Bone Behind the Ear (GB 12) 94
Boneset 99
Bongkar 97, 108
Bongnag 97
Books of the science of mercury 56, 101
Borage 40, 97
Borax E65, 95, 96, 97, 104
Borneol 52, E65, 95, 96, 104
Borneol and Borax Powder 96
Bos taurus 95
Boswellia sacra 95, 100
Bottle gourd 68
Bouchard, Charles 102, A1
Bowen, Tom 102, A4
Bower manuscript 101
Brahma rasayana 97
Brahmi 60, 97
Brahmi ghrita 97
Brain Hollow (GB 19) 94
Branch Ditch (TB 6) 94
Branch of the Upright (SI 7) 94
Breadfruit 68, 70
Breast Window (ST 16) 94
Breasted, James 35, 101, 102
Breathing exercises 44, 61, 66, 67, 73, 74, 75, A2, A4, A7, A8, A11
Bright Eyes (BL 1) 47, 94
Bright Light (GB 37) 94
Brissot, Pierre 41, 102
Broken bone E26
Broken Sequence (LU 7) 47, 51, 94
Broom tops 98
Broussais, François 41, 102
Brown seaweed 68
Brown, John 102, A1
Brucea 95
Brucea javanica 95
Brugmansia 16, 99
Bubalus bubalis 95
Bubbling Spring (KI 1) 47, 94
Buchinger, Otto 102, A5
Buchu 11, 12, 30, 100

Buckner, William 4, 8, 21, 102
Buddha's hand citron 95
Buddleja 95
Buddleja officinalis 95
Budwig, Johanna 102, A5
Bufo gargarizans 95
Bugleweed 95
Buguzhi 95, 108
Build Up the Yang to Restore Five Tenths Decoction 52, E13, 104
Bulang (KI 22) 94
Bupleurum 45, 49, 52, 65, E15, E23, E75, 96, 104
Bupleurum Powder to Spread the Liver 52, E15
Bupleurum, Cinnamon Twig and Dried Ginger Decoction 96
Burdock 52, 95, 96, 98
Burdock root 98
Burnet 95
Burning 11, 13, 19, 32, 34, 39, 40, 42, 44, 47, 48, 49, 51, 52, 55, 57, 58, 59, 60, 62, 63, 64, 65, 66, 69, 75, E6, E15, E24, E25, E30, E43, E45, E62, E64, E69, 89, E71, E80, E82 and others
Burning urine E71
Burning with mugwort 14, 42, 44, 47, 51, 52, 54, 55, 65, E24, E25, E43, E44, E45, E64, E73, E93, 94, 96, 98, 104, 107
Burns 7, 13, 14, 16, 17, 18, 20, 22, 33, 35, 36, 39, 42, 43, 44, 48, 54, 56, 57, 63, 68, 70, 75, E1, E7, E15, E27, E39, 85, E49, E52, E53, E64, E65, E82, 93, 94, 95, 97, 98 and others
Burnt iron 60, E61, 104
Burong (ST 19) 94
Burreed 95
Bursera 99
Burton, Robert 41, 102
Buryats 9, 10, 14, 15, 21, 23, 62, E84, 102
Bush cherry 95
Butcher's broom 98
Buteyko, Konstantin 102, A8
Buthus martensii 95
Butterbur E23, E70, 98, 104
Buttermilk 59, E22, E29, E80, 97, 104
Buyandelger, Manduhai 9, 15, 102
Buyang huanwu tang 52
Buzhong yiqi tang 52
Bwiti 30

C

Cabe puyang 70
Cacao 99, 109
Caesalpinia sappan 95
Cajuput oil 70
Calabar bean 30, 100, 102
Calamine 95
Calcite 97
Calendula officinalis 98
Calf's Nose (ST 35) 94
Call E88
Callaway, Henry 10, 102
Callilepis laureola 100
Calm the Palace Pill with Cattle Gallstone 52, E13, 104
Calm the Stomach Powder 52
Calm the Wheezing (point) 94, 96
Calm the Wheezing Decoction 96
Calomel 41, 95
Calotropis gigantea 97
Caltrop 95
Camalonga 16
Cambodia and the Khmer 70, 71, 72, 73, E36, E46, E58, E85, 104
Campbell Thompson, Reginald 32, 102
Camphor 16, 63, 64, E1, 95, 97, 104, 108
Camphor Twenty-Five 64, 97
Cancer 18, 19, 20, 22, 24, 35, 38, 41, 52, 55, 65, 70, 75, E1, E19, E38, 85, E49, E56, E72, 93, 95, 98, 99, 100, 102, 104, 109, A1, A3, A4, A5, A6, A7, A8, A9, A10, A11
Cancer bush 100
Candlenut 68, 70
Cang'erzi 95, 96
Cang'erzi san 96
Cangzhu 52
Cannabis 52, E16, E39, 96, 97, 104, 108, A6, A10
Cannabis sativa 97
Cannon, Walter 13, 21, 68, 102
Canon of Medicine 40, 101, 102
Caodoukou 95
Caoguo 95
Cape aloe 100
Capital Bone (BL 64) 94
Capital Gate (GB 25) 94
Capsella bursa-pastoris 98
Capsicum annuum 99
Caraka 56, 57, 58, 59, 60, 66, 67, 73, 74, E56, 101, 102, 103, 104, 106, 109
Carapichea ipecacuanha 99
Caraway fruit 98
Cardamom 52, E89, 95, 96, 97, 104, 108
Carica papaya 99
Carrier 4
Cartier, Jacques 20, 102
Carum carvi 98
Cascara 20, 99
Casimiroa edulis 99
Cassia 95, 97
Cassia fistula 97
Cassumunar ginger 70
Castor 36, 39, 59, 60, E16, E24, E25, E74, 97, 104
Castor oil plant 36, 39
Cataract E31
Catechu 95, 96, 97
Caterpillar fungus 95, 97, 108
Catha edulis 100
Catharanthus roseus 30, 100
Cat's claw 99
Cat's whiskers 70
Cattail pollen 52, 95, 96
Caulophyllum thalictroides 99
Causes and Cures 42, 101
Cayce, Edgar 102, A11
Cebaiye 95
Celastrus paniculatus 97
Celosia 95
Celosia argentea 95
Celsus 39, 41, 101, 102
Centaurium erythraea 98
Centaury 98
Centella asiatica 97, 100
Centipede E39, 95, 104
Central Capital (LR 6) 94
Central Courtyard (CV 16) 94
Central Islet (TB 3) 94
Central Pivot (GV 7) 94
Central Rushing (PC 9) 47, 94

Central Treasury (LU 1) 47, 94
Centre of the Spine (GV 6) 94
Cerbera manghas 100
Cetraria islandica 98
Chaenomeles speciosa 95
Chaihu 52, 96
Chaihu guizhi ganjiang tang 96
Chaihu shugan san 52
Chain 4
Chakramarda 97
Chamomile flower 98
Chandana 60, 108
Chandraprabha 97
Change of life E47
Changqiang (GV 1) 94
Changshan 45, 95
Channel Gutter (LU 8) 94
Chansu 95
Chant and song 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 28, 29, 30, 37, 38, 42, 43, 44, 45, 46, 47, 52, 53, 65, 68, 70 and others
Chantui 95
Chao Yuanfang 44, 53, 54, E67, 101, 102
Charms, spells and incantations 4, 6, 12, 13, 14, 16, 18, 19, 20, 21, 27, 28, 32, 33, 34, 35, 36, 37, 38, 42, 43, 44, 54, 56, 59, 69, 70, 71, 72, 75, E23, E24, E27, E34, E51, E52, E68, E82, 93, 98 and others
Chaste tree fruit 98
Chaulmoogra 95
Chebulic myrobalan 60, E22, 95, 97, 104, 108
Cheekbone Crevice (SI 18) 94
Chelidonium majus 98
Chen Yan 44, 102
Chengfu (BL 36) 94
Chengguang (BL 6) 94
Chengjiang (CV 24) 94
Chengjin (BL 56) 94
Chengling (GB 18) 94
Chengman (ST 20) 94
Chengqi (ST 1) 94
Chengshan (BL 57) 94
Chenpi 52
Chenxiang 95
Cheqianzi 52
Cherokee 20, 72, 73, 95, 99, 102, 107
Chest Village (SP 19) 94
Chewing stick 100
Chicory 40, E17, 97, 104
Child that does not thrive E48
Child that is lost E90
Childbirth 14, 18, 22, 32, 33, 43, 47, 52, 53, 54, 60, 62, 68, 70, E13, E16, E45, E48, 94, 95, 97, 98, 99, 104, A5
Chilli 16, 18, 56, 57, E25, E64, E69, 93, 99, 104
Chinaberry 95, 96
Chinaberry Fruit Powder 96
Chinemys reevesii 95
Chinese angelica 52, E43, 104
Chinese lovage 95
Chinese quince E58, 95, 104
Chinese raspberry 95
Chinese rhubarb 97
Chinese yam 52, 96
Chiretta 97, 108
Chiretta Eight 97
Chiric sanango 16
Chishao 52
Chishizhi 95
Chitraka 97
Chixiaodou 95
Chize (LU 5) 94
Chob chini 97
Cholera 41, E5, E6, 97, 102, 104, A1, A3
Chondrodendron tomentosum 99
Chonglou 95
Chongmen (SP 12) 94
Chongyang (ST 42) 94
Chongzhi 97
Chopra, Deepak 61, 102, A3
Chrysanthemum 52, E9, E32, E81, 95, 96, 104
Chrysanthemum indicum 95
Chrysopogon zizanioides 97
Chuanbeimu 52
Chuanlianzi 95
Chuanniuxi 95
Chuanshanjia 95
Chuanwu 95
Chuanxinlian 95
Chuanxiong 52, 96
Chuanxiong chatiao san 96
Chugang 97, 108
Chukchi 9, 10, 14, 102
Chullachaqui caspi 16
Chumtsa 97, 108
Chunpi 95
Chunyu Yi 44, 102
Chyavanaprasha 97
Cibotium 95
Cibotium barometz 95
Ciliao (BL 32) 94
Cimicifuga 52, 96
Cinchona officinalis 99
Cinnabar 45, 52, 96, 97
Cinnabar Pill to Calm the Spirit 96
Cinnamomum camphora 95, 100
Cinnamomum verum 97
Cinnamon 45, 52, 53, 65, E9, E43, 96, 97, 104, 108
Cinnamon Twig and Poria Pill 52, 65
Cinnamon Twig Decoction 45, 52, E9, 96, 104
Cinnamon Twig Decoction with Fossil Bone and Oyster Shell 96
Cinnamon Twig, Peony and Anemarrhena Decoction 96
Cirsium japonicum 95
Cirsium setosum 95
Cishi 95
Cistanche 52, E55, 104
Citrus aurantium 95
Citrus medica 95
Citrus reticulata 95
Ciwujia 95
Clam 95
Clamped Stream (GB 43) 94
Clarified butter 56, 57, 59, 60, E2, E3, E9, E23, E26, E31, E32, E34, E39, E42, E44, E52, E53, E55, E61, E64, E66, E72, 97, 103, 104
Clark, Hulda 102, A5
Clasping the White (LU 4) 94
Classic of Difficult Issues 44, 45, 46, 47, 49, 50, 101, 102
Classic of the Divine Farmer 44, 45, 101, 103
Claviceps purpurea 98
Clear Cold Abyss (TB 11) 94

Clear Dryness and Rescue the Lung Decoction 96
Clear Summer Heat and Build Up the Qi Decoction 96
Clear the Nourishing Level Decoction 96
Clear the Qi and Transform Phlegm Pill 96
Clear the Stomach Powder 48, 52, E27, 104
Clear the White Powder 96
Cleft Gate (PC 4) 94
Clematis 52
Clements, Forrest 8, 9, 102
Clerodendrum serratum 97
Closes 1
Cloud Gate (LU 2) 94
Clouded lens E31
Clove 28, 70, E27, E44, 95, 97, 104, 108, 109, A5
Clubmoss 95
Cnidium 95
Cnidium monnieri 95
Coastal hibiscus 68
Coca 17, 22, 72, 73, E23, E40, E80, 99, 102, 104, 107, 109
Coca and cocaine 16, 17, 22, 72, 73, E23, E40, E80, 99, 102, 104, 107, 109, A3
Cochlearia officinalis 98
Cocklebur 95, 96
Cocklebur Powder 96
Coconut 68, 70, E6, 97
Cocos nucifera 97
Codonopsis 52
Coffea arabica 100
Coffee 16, 19, 49, E72, 100, 109, A5
Cogon grass 95, 96
Coix 52, E68, E74, 96, 104
Cola nitida 100
Colchicum autumnale 98
Cold damage 44, 45, 46, 52, E1, 96, 101, 102, 104
Colds and cough 11, 13, 14, 18, 19, 20, 21, 28, 30, 34, 36, 38, 39, 40, 41, 42, 45, 46, 47, 48, 51, 52, 54, 55, 57, 59, 60, 64, 68, 70, 75, 77, E3, 79, E9, E31, E65, 93, 94, 95 and others
Colic and the crying child 60, 70, E75, 92, E93, 96, 97, 98, 104, A4
Colocynth 36, 97
Coltsfoot 95, 96, 98
Coltsfoot leaf 98
Combretum micranthum 100
Comfortable Chest (KI 26) 94
Comfrey root 98, 109
Commentary on the Anatomy of the Canon 101
Commiphora myrrha 95, 100
Compendium of Caraka 101
Compendium of Kashyapa 101
Compendium of Sharngadhara 101
Compendium of Simple Drugs and Foods 101
Compendium of Sushruta 101
Complementary universe 6
Complete Book of the Medical Art 101, 102
Completion Gate (LR 13) 94
Compound Red Sage Dripping Pill 96
Comprehensive Book 40, 101
Conch 61, 97
Confession 14, 18, 20, 21, 22, 23, 30, 34, 38, 39, 68, 69, 70, 71, 72, E56, E83, E87, 104, A7
Confluence of Yang (BL 55) 94
Congbai 95
Conium maculatum 98
Connecting Valley of the Belly (KI 20) 94
Connor, Linda 70, 102
Constantine the African 41, 42, 102
Constipation 20, 68, E16
Consumption E3
Consumption and tuberculosis 11, 17, 19, 36, 59, 70, 78, E3, 93, 95, 97, 102, 104, A1, A5, A7, A8
Container of Fluids (CV 24) 47, 94
Convallaria majalis 98
Convolvulus 60, 97
Convulsions and fits 1, 3, 4, 6, 7, 8, 9, 10, 18, 19, 23, 28, 30, 31, 32, 33, 39, 41, 42, 43, 44, 46, 47, 48, 49, 50, 52, 54, 58, 59, 65, 67, 70, 71, 72, 74, 75, E1, E33, E39 and others
Cook, James 68, 70, 102
Copaiba 99
Copaifera 99
Copal 18, 99
Copper 34, 35, 36, 63, 64, E32, 97, 104
Coptis 45, 48, 52, 65, E6, E18, E38, E92, 96, 97, 99, 103, 104
Coptis and Ass-Hide Glue Decoction 48, 52, E38
Coptis Decoction to Resolve Poison 52
Cordia 40, 97
Coriander 36, E71, 97, 104
Coriandrum sativum 97
Corkwood 13, 22
Corn silk 95
Cornelian cherry 52
Corner Spring (CV 23) 94
Corrections of Errors among Physicians 44, 101
Corydalis 52, 96
Costus 97, 108
Cotton, Henry 102, A1
Cough and the cold E9
Courtyard of the Spirit (GV 24) 94
Cow's urine mixture 100
Cox, Paul 70, 102
Cranberry E71, 99, 104, A6
Crane's Summit (point) 94
Crataegus monogyna 98
Crataeva nurvala 97
Craving E40
Creosote bush 99
Critical day 38, 41, 43, 72, 73, 105, A10
Crocus sativus 97
Crook of the Temple (GB 7) 94
Crooked Curve (BL 4) 94
Crooked face E79
Crooked Wall (SI 13) 94
Croton 37, 95, 97, 99, 102, 108
Croton lechleri 99
Croton tiglium 95, 97
Crouching Rabbit (ST 32) 94
Cruz, Martín de la 18, 101, 102
Crying child, the teeth and the wet bed E93
Cryptolepis sanguinolenta 100
Cryptotympana pustulata 95
Crystal Rosary 64, 101
Csordas, Thomas 8, 19, 102, A9
Cuba 24, 25, 30, E37, 104
Cubeb 97
Cubit Marsh (LU 5) 94
Cucumis melo 95
Cucurbita moschata 95
Cullen, William 102, A1
Culpeper, Nicholas 98, 102, A2
Cumin 34, 36, 39, 42, E91, 97, 104
Cuminum cyminum 97

Cupping 14, 21, 40, 42, 51, 65, 66, 70, 72, 75, E24, E65, E69, 104, 105
curandero, vegetalista 16, 17, 18
Curculigo 95, 96
Curculigo orchioides 95
Curcuma 34, 95
Curcuma longa 95
Curcuma phaeocaulis 95
Curcuma wenyujin 95
Curved Bone (CV 2) 94
Cuscuta chinensis 95
Cuttlebone 95
Cyathula 52, 95
Cyathula officinalis 95
Cyclina sinensis 95
Cynanchum 95, 96
Cynanchum atratum 95
Cynanchum stauntonii 95
Cynara scolymus 98
Cynomorium 95
Cynomorium songaricum 95
Cyperus 52, E44, 96, 104
Cyperus and Perilla Leaf Powder 96
Cytisus scoparius 98

D

Da buyin wan 96
Da chaihu tang 96
Da chengqi tang 52
Da dingfeng zhu 96
Da qinglong tang 96
Dabao (SP 21) 94
Dachangshu (BL 25) 94
Dadima 97
Dadu (SP 2) 94
Dadun (LR 1) 94
Daemonorops draco 95
Dafengzi 95
Dafupi 95
Dahe (KI 12) 94
Daheng (SP 15) 94
Dahuang 45, 52, 96, 108
Dahuang fuzi tang 96
Dahuang mudan tang 96
Daimai (GB 26) 94
Daizheshi 95
Daji 95
Daju (ST 27) 94
Daling (PC 7) 94
Damiana 99
Dance 1, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15, 16, 19, 20, 22, 23, 24, 28, 30, 35, 36, 39, 58, 59, 68, 70, 71, 72, 74, 75, 76, E34, E37, E41, E77, E85, 102, 104, 105, 106 and others
Dandelion 52, E75, E91, 96, 98, 104
Dandouchi 95
Danggui 45, 52, 96
Danggui buxue tang 52
Danggui shaoyao san 96
Danggui sini tang 96
Dangshen 52
Dannangxue (point) 94
daño 16, 21
Danshen 52, 96
Danshen yin 96
Danshu (BL 19) 94
Danti 97
Danzhuye 95
Daochi san 52
Daphne genkwa 95
Daqingye 95
Darchini 97, 108
Daruharidra 97
Dashamula 60, 97
Dashamula kvatha 97
Dashamularishta 97
Dasuan 95, 108
Date palm 34
Datura 9, 95, 97, 99
Datura metel 95, 97
Datura wrightii 99
Daun pepaya 70
Davi Kopenawa 16, 102
Dawa-ul-misk 97
Daying (ST 5) 94
Dazao 52, 108
Dazhong (KI 4) 94
Dazhu (BL 11) 94
Dazhui (GV 14) 94
Deadly nightshade E77, 93, 98, 104, A3
Deafness and ringing ears 19, 32, 33, 46, 47, 48, E14, E33, E84, E92, 94, 95, 104, A3, A4
Declining Connection (BL 8) 94
Decoction for the Four Limbs that are Cold 45, 52
Decoction of the Three Fruits 97
Decoction that Warms like the Sun 96
Deer antler 9, 52, E55, 96, 104
Deinagkistrodon acutus 95
Dementia and the fading mind 83, E42, 93, 98, 100, 104, A3, A7
Dendrobium 52, 96
Dengxincao 95
Depression and melancholy 3, 4, 8, 13, 16, 18, 21, 22, 30, 39, 41, 42, 43, 53, 54, 61, 64, 69, 83, E34, E35, E36, E46, E56, E83, E85, 93, 97, 98, 99, 102, 104, A3, A5, A6, A7, A8, A10
Depth 1, 3
Descurainia sophia 95
Desjarlais, Robert 15, 102
despacho 17
Devil's claw 11, 30, E24, 100, 104, A6
Devil's club 99
Dhanyaka 97
Dharamsala 62, 64
Dhataki 97
Dhattura 97
Diä!kwain 12, 102
Diabetes and sweet urine 13, 18, 20, 21, 30, 39, 41, 49, 54, 55, 59, 65, 69, 70, 75, 77, 80, E18, E19, E49, E91, 93, 97, 99, 100, 101, 102, 104, A5, A8, A9, A10
Diagnosis of Madhava 101
Diagnostic Handbook 33, 34, 101
diaita 38
Dianthus superbus 95
Diaphragm Gate (BL 46) 94
Diaphragm Transport (BL 17) 94
Diarrhoea and loose stools 13, 16, 17, 18, 21, 22, 45, 46, 47, 48, 49, 51, 52, 54, 57, 59, 60, 68, 70, E6, E15, E16, E32, E48, E49, E86, 94, 95, 96, 97, 98, 99, 100, 104, A5
Dicang (ST 4) 94
Dichroa 45, 95
Dichroa febrifuga 95

Dictamnus dasycarpus 95
Diet and food as medicine 4, 5, 8, 10, 16, 20, 22, 23, 35, 37, 38, 39, 40, 41, 42, 43, 52, 55, 56, 58, 59, 60, 61, 62, 67, 68, 70, 72, 74, 75, E10, E11, E12, E15, E16, E18, E19, E20, E33, E35 and others
Dietl, Joseph 41, 43, 102
Difuzi 95
Digitalis purpurea 98
Digupi 52
Diji (SP 8) 94
Dill 36, E91, E93, 97, 104
Dilong 95
Dimocarpus longan 95
Dingchuan (point) 94, 96
Dingchuan tang 96
Dingxiang 95, 108
Dingzhi wan 96
Dioscorea hypoglauca 95
Dioscorea mexicana 99
Dioscorides of Anazarbus 39, 98, 101, 102, 103, 109
Diospyros kaki 95
Diphtheria 88, E65, 104
Dipsacus asper 95
Direction 1, 4
Dispersing Luo River (TB 12) 94
Dittany 95
Divination 2, 3, 4, 6, 7, 9, 10, 18, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 36, 38, 42, 44, 45, 46, 47, 51, 52, 62, 64, 66, 69, 70, 71, 72, 73, 76, E34, E37, E39 and others
Diwuhui (GB 42) 94
Diyu 95
Dizziness 29, 45, 46, 47, 48, 51, 52, 54, 63, 70, E14, E33, E61, 90, E78, 93, 94, 95, 96, 104, A3, A4
doctores 7, 10
Dodder 40, 41, 52, E90, 95, 96, 104, 108
Dodds, Eric 37, 102
Dogbane 95
Dolichos lablab 95
Domtri 97
Dongchongxiacao 95, 108
Dongguapi 95
Door of the Bodily Soul (BL 42) 94
Door of the Brain (GV 17) 94
dosha 1, 2, 3, 57
Dow, James 8, 102
Dragon's blood 95, 96, 99
Draksha 97
Drakshasava 97
Drakzhun 97
Dreaming, the 6, 12, 13, 19, 102, A3, A11
Dreams 3, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 27, 29, 32, 35, 36, 37, 38, 39, 42, 43, 44, 46, 47, 48, 49, 57, 58, 65, 66, 67, 68, 70 and others
Drift 4
Drimia maritima 98
Dripping Valley (SP 7) 94
Drive Out Standing Blood from the Lower Belly Decoction 96
Drive Out Standing Blood from the Mansion of Blood Decoction 48, 52, E11, 104
Dropsy 18, 37, 39, 41, 54, 59, 70, 79, E12, 87, E58, 93, 95, 97, 98, 102, 104, A2, A6
Drum 3, 5, 6, 9, 10, 11, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 29, 50, 58, 61, 68, 72, 75, E33, 97, 102, 106, 107, A9
Drumstick tree 97
Dry ginger 60, E15, 97, 104
Drynaria 95
Drynaria fortunei 95
Dryobalanops aromatica 95
Dryopteris crassirhizoma 95
Dubi (ST 35) 94
Duckweed 95
Dugdha 97
Duhuo 52
Duhuo jisheng tang 52
Duiduan (GV 27) 94
dukun 70
Durie, Mason 70, 102
Dushu (BL 16) 94
Duzhong 52
Dying E56
Dysentery and the bloody flux 60, 70, E6, 94, 95, 96, 97, 99, 100, 104, A5
Dysphania ambrosioides 99
Dzati 97, 108

E

Eaglewood 63, 64, 97
Eaglewood Eight 97
Eaglewood Thirty-Five 64, 97
Ear Gate (TB 21) 94
Ear Harmony Crevice (TB 22) 94
Earth Granary (ST 4) 94
Earth Pivot (SP 8) 94
Earthworm 52, 95
Ebers, Georg 35, 102
ebo 28
Echinacea angustifolia 99
Echinopsis pachanoi 99
Ecklonia kurome 95
Eclipta 60, 95, 96, 97, 108, 109
Eclipta prostrata 95
Eczema 47, 75, E29, A3, A5
Eddy, Mary Baker 102, A9
Edelstein, Emma and Ludwig 37, 102
Eduardo Calderón 17, 102
Efik 30, 100
egungun 24
Eight Corrections Powder 48, 52, E21, E71, 104
Eight Evils (point) 94
Eight principles 2, 46, 48, 49, 50, 67, 73
Eight Treasures Decoction 48, 52, E43
Eight Winds (point) 94
Eisenberg, Leon 8, 102
Ejiao 52
Elbow Crevice (LI 12) 94
Elder 4, 13, 14, 15, 19, 30, 68, 69, 70, 71, E36, E88, 98, 102, 104, 106
Elecampane root 98
Elettaria cardamomum 97
Eleuterio Terte 70, 102
Eleutherococcus gracilistylus 95
Eleutherococcus senticosus 95
Eliade, Mircea 7, 9, 10, 102
Eliminate Wind Powder 96
Embelia ribes 97
Emblic 59, 60, E15, E54, E61, 97, 104, 108, 109
Emetic nut 60
empacho 18
Empedocles of Sicily 6, 37, 102, 109
Empty Basin (ST 12) 94

Emu bush 13
Encircling Glory (SP 20) 94
End the Discharge Decoction 96
Enema 16, 17, 32, 34, 35, 41, 59, 60, 63, 64, 68, 75, E13, E24, 97, 100, 103, 104, 105, A5
Engel, George 102, A7
Epazote 99
Ephedra 45, 48, 52, 65, 75, 76, E9, E10, E19, 95, 96, 104, A6
Ephedra Decoction 45, 48, 52, 65, E9, 104
Ephedra sinica 95
Ephedra, Apricot Kernel, Gypsum and Liquorice Decoction 52, E10
Epidaurus 7, 37, 42, 43, 63, 102, 106, 107, A9
Epidemics 16, 17, 18, 24, 30, 38, 41, 44, 52, 54, 56, 59, 70, 78, E4, E5, E62, 95, 96, 97, 101, 102, 104, A1, A3
Epilepsy and the falling sickness 15, 29, 32, 33, 37, 38, 41, 42, 43, 59, 60, 63, 64, 83, E39, 93, 94, 95, 97, 98, 101, 104, A3, A6, A10
Epimedium 52, E55, 96, 104
Epimenides of Crete 37, 102
Equisetum arvense 98
Equisetum hyemale 95
Eranda 60
Erasistratus of Keos 39, 40, 41, 43, 102
Ercha 95
Erchen tang 52
Erheliao (TB 22) 94
Erickson, Milton 102, A7
Eriobotrya japonica 95
Eriocaulon buergerianum 95
Erjian (LI 2) 94
Erjian (point) 94
Ermen (TB 21) 94
Ermiao san 96
Erxian tang 96
Erythrophleum suaveolens 100
Erythroxylum coca 99
Erzhi wan 96
Esagil-kin-apli 32, 33, 101, 102
Escape Restraint Pill 52, E35
ese 28
Essentials from the Golden Casket 101
Essie Parrish 20, 102
Ethics and oaths of healers 14, 29, 32, 33, 34, 37, 38, 43, 44, 62, 65, 72, E21, E83, 101, 102, 104, 106
Ethiopian pepper 100
Eucalyptus leaves and gum 13
Eucommia 52, E24
Eupatorium 95, 99
Eupatorium fortunei 95
Eupatorium perfoliatum 99
Euphorbia hirta 100
Euphorbia kansui 95
Euphorbia neriifolia 97
Euphorbia pekinensis 95
Euphrasia officinalis 98
Eupolyphaga sinensis 95
Euryale ferox 95
Evenki 9, 10, 14, 21, E88, 102, 104
Everlasting 100
Evil eye 42, E48, E66, 104
Evodia 52, E23, E58, 96, 104
Evodia Decoction 96
Exchange of Trust (KI 8) 94
Exorcism 1, 7, 32, 33, 36, E5, E37, A9
Extending Vessel (BL 62) 94
Extremity of the Mouth (GV 27) 94
Eyebright 98
Eyebrows' Pouring (BL 3) 94
Eyes of the Knee (point) 94
Eyes of the Loin (point) 94
Ezhu 95

F

Fadiman, Anne 15, 102
Fading mind E42
Failing ear E33
Failing of desire E55
Falling sickness E39
Fang 2, 18, 30, 46, 56, 73, 102
Fangfeng 52
Fangji 95, 96
Fangji huangqi tang 96
Fanxieye 95, 108
Farnsworth, Norman 22, 102
Fasting 4, 5, 7, 8, 9, 10, 11, 14, 16, 17, 18, 20, 23, 29, 33, 37, 38, 42, 43, 49, 50, 54, 57, 59, 60, 64, 66, 68, 69, 70, 71, 72, 75, E1, E12, E15, E16, E17, E19, E25 and others
Fat Child Pill 96
Fear, fright and the lost soul E36
Fei'er wan 96
Feishu (BL 13) 94
Feiyang (BL 58) 94
Feizi 95
Feldenkrais, Moshe 102, A4
Felicie, Jacoba 42, 102, 106
Fengchi (GB 20) 94
Fengfang 95
Fengfu (GV 16) 94
Fenglong (ST 40) 94
Fengmen (BL 12) 94
Fengmi 95, 108
Fengshi (GB 31) 94
Fennel 36, 39, 42, E43, E91, E93, 95, 96, 97, 98, 104, 108
Fennel fruit 95, 98
Fenugreek 36, E18, E91, 97, 104
Fermented soybean 95, 96
Fernandez, James 30, 102
Fever 4, 7, 10, 16, 17, 18, 20, 28, 29, 30, 32, 33, 34, 35, 37, 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 52, 53, 54, 56, 57, 58, 59, 60, 62, 63, 65, 66, 67, 70 and others
Fever bark 99
Fever that returns E2
Fever vine of Ghana 100
Feverfew 42, E23, 98, 104
Ficaria verna 98
Field of the elixir 53
Field thistle 95, 96
Field Thistle Drink 96
Fifth Place (BL 5) 94
Figwort 95, 96
Fiji 69, 70, 71, 72, 76, E67
Filfil siyah 97, 108
Filipendula ulmaria 98
Finsen, Niels 102, A8
Fish Border (LU 10) 94
Fish Waist (point) 94
Fitzgerald, William 102, A4
The five great roots 97
Five Meetings of Earth (GB 42) 94

Five Peels Drink 96
Five Pivots (GB 27) 94
The five small roots 97
Five steps 7
Five-Ingredient Drink to Remove Poison 96
Five-Ingredient Powder with Poria 52, E12, 104
Five-leaved chaste tree 70, 97
Flank Sinews (GB 23) 94
Flat milkvetch 95, 96
Fleeceflower 52, E54, 95, 96, 109
Floating Cleft (BL 38) 94
Floating White (GB 10) 94
Floyer, John 50, 102
Fluid Gate (TB 2) 94
Flux E6
Fly agaric 9, 14
Foeniculum vulgare 95, 98
fofō 70
Food Cavity (SP 17) 94
Foot Connecting Valley (BL 66) 94
Foot Governor of Tears (GB 41) 94
Forest tree of Samoa 70
Form of failure 4
Forsythia 44, 48, 52, E9, 96, 104
Fortune, Reo 70, 102
Foshou 95
Fossil bone 52, 65, E60, 96, 104
Fossil teeth 95
Four Alert Spirits (point) 94
Four figures 7
Four Fullnesses (KI 14) 94
Four Gentlemen Decoction 48, 52
Four Ingredients Decoction 48, 52, E43, E61, 96, 104
Four Ingredients Decoction with Peach Kernel and Safflower 96
Four plants of Niprisan 100
Four Rivers (TB 9) 94
Four Seams (point) 94
Four Tantras 7, 62, 67, 101, 102, 106, A2
Four Whites (ST 2) 94
Fox nut 95, 96
Foxglove E12, 93, 95, 98, 102, 103, 104, A2
Fracastoro, Girolamo 41, 102, A1
Fractures and bone-setting 14, 15, 17, 18, 19, 24, 28, 29, 35, 38, 40, 42, 44, 54, 55, 56, 68, 70, 74, 75, 81, E24, E26, E54, 93, 95, 97, 98, 101, 104, 109, A2, A3
Fragrant Solomon's seal 95
Frame and copy 4
Frangula alnus 98
Frangula purshiana 99
Frankincense 36, 60, E25, 95, 96, 100, 104, 108
Frankl, Viktor 102, A7
Fraxinus rhynchophylla 95
Free and Easy Wanderer Powder 48, 52, E35
French lavender 40, 97
Freud, Sigmund 20, 102
Fright and the lost soul 6, 8, 9, 10, 13, 14, 15, 16, 17, 18, 20, 21, 23, 31, 37, 42, 43, 44, 45, 47, 48, 50, 51, 52, 54, 60, 62, 64, 66, 67, 70, 71, 72, 74, 75, 76, E28, 83, E34, E35 and others
Fringed pink 95
Fritillaria 52, 95, 96
Fritillaria and Trichosanthes Powder 96
Fritillaria thunbergii 95
Front Valley (SI 2) 94
Fuai (SP 16) 94
Fubai (GB 10) 94
Fufang danshen diwan 96
Fufen (BL 41) 94
Fuhaishi 95
Fujie (SP 14) 94
Fuling 52
Fuliu (KI 7) 94
Fulonggan 95
Fumaria indica 97
Fumigation and smoke 9, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 32, 34, 36, 41, 42, 45, 49, 52, 54, 59, 60, 64, 70, E5, E10, E11, E27, E40, E43, E48, E56, E60, E62, E63, 93, 95, 96, 97 and others
Fumitory 97, 108
Fungus of rye E23, E45, 93, 98, 104
Fupenzi 95
Fuping 95
Fushe (SP 13) 94
Futonggu (KI 20) 94
Futu (LI 18) 94
Futu (ST 32) 94
Fuxi (BL 38) 94
Fuxiaomai 95
Fuyang (BL 59) 94
Fuyuan huoxue tang 96
Fuzi 52, 96, 108
fyofyo 30

G

Gabur 97, 108
Galangal 42, 95, 96, 97, 108
Galanthus 98
Galega officinalis 98
Galen of Pergamon 37, 38, 39, 40, 41, 42, 43, 50, 55, 62, 72, 73, 74, E15, E87, 97, 98, 101, 102, 104, 105, 109, A1, A11
Gallbladder Point (point) 94
Gallbladder Transport (BL 19) 94
Gallnut 95
Gallstone 52, E13, 93, 95, 96, 97, 104
Gallstones 52, E13, E21, 89, E75, 93, 94, 95, 96, 97, 104
Gallus gallus 95
Gan mai dazao tang 52
Gancao 52, 96, 108
Gandhaka 97
Ganjiang 52, 96
Ganlu xiaodu dan 96
Ganoderma lucidum 95
Ganshu (BL 18) 94
Gansong 95, 108
Gansui 95
Gaoben 95
Gaohuangshu (BL 43) 94
Gaoliangjiang 95, 108
Gaozaban 40, 97
Garcinia kola 100
Gardenia 49, 52, E17, E92, 96, 104
Garlic 16, 34, 36, 42, 51, 52, 53, 57, 60, 75, E32, E33, E44, E91, 95, 97, 98, 100, 101, 104, 108, 109
Garuda Five 97
Gastrodia 48, 52, E14, E39, E66, E77, E78, 96, 104
Gastrodia and Uncaria Drink 48, 52, E14, E78, 104
Gate of Abundance (BL 37) 94
Gate of Life (GV 4) 47, 94
Gate of Muteness (GV 15) 94

Gate of the Cloud Soul (BL 47) 94
Gate of the Cycle (LR 14) 47, 94
Gate of the Origin (CV 4) 47, 94
Gate of the Origin Transport (BL 26) 94
Gateway of the Spirit (CV 8) 94
Gathered Bamboo (BL 2) 47, 94
Gaultheria procumbens 99
//gauwasi 11, 21
Ge Hong 44, 52, 102
Geertz, Clifford 70, 102
Gegen 52, 96
Gegen tang 96
Geguan (BL 46) 94
Gejie 95, 96
Gekko gecko 95
Geller, Markham 32, 34, 102
General History of the Things of New Spain 101
Generate the Pulse Powder 52, E80, 104
Generation and Transformation Decoction 52, E45
Genkwa 95, 96
Gentian 48, 52, 57, 63, E33, E38, E69, 95, 98, 104
Gentian Decoction to Clear the Liver 48, 52, E33, E38, E69, 104
Gentian root 52, 95, 98
Gentiana lutea 98
Gentiana macrophylla 95
George Sword 20, 102
Gerard of Cremona 40, 102
Gerson, Max 102, A5
Geshu (BL 17) 94
Ghariqun 97
Ghrita 60, 97
!gi:xa 9, 12
Giant knotweed 95
Giant milkweed 97
Gillen, Francis 10, 102
Gilo 97, 108
Ginger 40, 45, 51, 52, 53, 57, 59, 60, 63, 65, 68, 70, 72, E9, E15, E43, E46, E57, E78, E89, 95, 96, 97, 100, 104, 108, A6
Ginkgo biloba 95
Ginkgo nut 95, 96
Ginseng 45, 48, 52, 54, 65, 75, E13, E42, E54, E55, E81, E89, 95, 96, 99, 103, 104
Ginseng and Aconite Decoction 96
Ginseng and Gecko Powder 48, 96
Ginseng Powder to Overcome Poison 96
Ginseng, Poria and White Atractylodes Powder 96
Girdle of fire E69
Girdle Vessel (GB 26) 94
Giwang 97
Gleditsia sinensis 95
Glehnia 95, 96
Glehnia littoralis 95
Gloriosa superba 97
Glycine max 95
Glycyrrhiza glabra 98
Gmelin, Johann Georg 9, 102
The Go-Between (PC 5) 94
Goanna and emu fat 13
Goat's rue E18, E91, 93, 98, 104
Godanti 97
Goitre E50, 94, 95, 97
Gokshura 60, 95
Gokshuradi guggulu 97
Gold 16, 17, 27, 30, 37, 40, 44, 51, 59, 64, E5, E48, E72, E92, 95, 97, 101, 104
Gold coin E92, 95, 104
Golden Fluid and Jade Fluid (point) 94
Golden Gate (BL 63) 94
Golden Lock Pill to Hold the Essence 96
Golden milk 60
Golden Mirror of Medicine 101
Golden rain E40, 98, 104
Golden root 14
Golden Yellow Powder 96
Goldenrod 98
Goldenseal 99, A1
Gomutra 97
Gongsun (SP 4) 94
Good leaf 100
Goodheart, George 102, A11
Gouji 95
Gouqizi 52
Gout 18, 39, 40, 41, 42, 43, 52, 59, 60, 63, 65, 75, 80, E20, E47, 93, 96, 97, 98, 104, A1
Gouteng 52, 96
Governor Transport (BL 16) 94
Grahani 59
Grains of paradise 100
Grandfather and Grandson (SP 4) 94
Grape 17, 97
Grasping the Wind (SI 12) 94
The Great (ST 27) 20, 94, 97
Great Abyss (LU 9) 47, 94
Great Bell (KI 4) 94
The Great Black Pill of the Cold Compound 97
Great Bone (LI 16) 94
Great Brightness (KI 12) 94
Great Build the Yin Pill 96
Great Compendium of Needling and Burning 44, 101
Great Crevice (ST 3) 94
Great Gateway (CV 14) 94
Great Hammer (GV 14) 47, 94
Great Horizontal (SP 15) 94
The Great Iron Pill 97
The Great Many-Compound Jewel Pill 97
Great medical papyrus 101
Great Metropolis (SP 2) 94
Great Mound (PC 7) 94
Great Pile (LR 1) 47, 94
Great pox E63
Great Rushing (LR 3) 47, 94
Great Shuttle (BL 11) 94
Great Stream (KI 3) 47, 94
Great Welcome (ST 5) 94
Great Wrapping (SP 21) 47, 94
Greater cardamom 97
Greater celandine E68, 98, 104
Greater plantain 98
Greatest Opening (LU 6) 94
Greatest Treasure Pill 96
Green gram 97
Green Spirit (HT 2) 94
Green tangerine 95, 96
Gridhrasi 59
Grief 9, 10, 13, 15, 16, 17, 18, 20, 21, 22, 24, 30, 39, 40, 41, 43, 45, 46, 47, 48, 57, 59, 60, 63, 68, 70, 71, 72, 73, 75, 76, E6, E28, 83, E34, E35, E36, E38, E39, E41 and others
Griffonia simplicifolia 100

Grof, Stanislav 102, A8
Gromwell 95
Ground beetle 95
Guadi 95
Guaiac wood 18, E63, 99
Guaiacum officinale 99
Gualou 52, 96
Gualou xiebai baijiu tang 96
Guanchong (TB 1) 94
Guangming (GB 37) 94
Guanmen (ST 22) 94
Guanyuan (CV 4) 94
Guanyuanshu (BL 26) 94
Guanzhong 95
Guaraná 99, 109
Guaraní 99, 109
Guava leaf 99
Guduchi 60, 97, 108
Guenther, Mathias 11, 102
Guest House (KI 9) 94
Guggulu 60, 97
Guide Out the Red Powder 48, 52
Guijia 95
Guilai (ST 29) 94
Guipi tang 52
Guizhi 52, 96, 108
Guizhi fuling wan 52
Guizhi jia longgu muli tang 96
Guizhi shaoyao zhimu tang 96
Guizhi tang 52
Gujingcao 95
Gul-e-surkh 40, 108
Gulma 59
Gum Crossing (GV 28) 47, 94
Gumdigger's soap 70
Gunja 97
Gureje, Oye 29, E34, 102
Gurgum 97, 108
Gusuibu 95
Guya 95
Gymnema sylvestre 97
Gynaecology 101
Gynostemma 95
Gynostemma pentaphyllum 95
Gypsum 52, E10, 96, 97, 103

H

h-men 9, 18
Habb-e-ayarij 97
Haematite 52, 95, 96
Hagenia abyssinica 100
Hahnemann, Samuel 38, 102, A1, A3
Haifengteng 95
Haigeqiao 95
Haijinsha 95
Haile, Berard 19, 102
Haima 95
Haipiaoxiao 95
Hairy agrimony 95
Haiti 30, E37, 104
Haizao 95
hakim 40, 42, 43, 56, 97, 102
Haliotis diversicolor 95
Hall of the Seal (point) 94
Hall of the Spirit (BL 44) 94
Hallowell, Irving 9, 20, 102
Hamamelis virginiana 99
Hamer, Ryke Geerd 102, A7
han 12, 15, 44, 45, 49, 51, 54, E88, 96, 102, 103, 104, A1, A3
Han Jisheng 51, 102
Hanaoka Seishu 65, 102
Hand-trembler 19, 22, 23, E85, 104
Handroanthus impetiginosus 99
Hanyan (GB 4) 94
Hanzal 97
Hao qin qingdan tang 96
Haridra 60, 95, 108
Haritaki 60, 95, 97, 108
Harm from remedies 16, 28, 30, 52, 54, 59, 60, 70, E25, E48, 94, 95, 96, 97, 98, 99, 100, 108, A5
Harner, Michael 9, 10, 16, 102, A9
Harpagophytum procumbens 11, 100
Harvey, William 42, 102
hau 68, 70, 102
Hawaiian poppy 68
Hawthorn 52, E12, 98, A6
Hay fever 89, E70, 93, 98, 104, A3, A5, A10
Hay, Louise 102, A7
Head Governor of Tears (GB 15) 94
Headache E23
Headache and migraine 11, 13, 16, 17, 18, 32, 33, 35, 39, 40, 42, 46, 47, 48, 49, 51, 52, 54, 55, 63, 70, 74, 75, E14, 81, E23, E33, E38, E80, E84, 93, 94, 95, 96, 97, 98, 104, A1, A3, A4 and others
Head's Binding (ST 8) 94
Heart of the Eight Limbs 56, 62, 101
Heart pain 61, 75, 79, E11, 93, 94, 96, 102, 104, A5, A10
Heart Transport (BL 15) 47, 94
Heartsease 98
Heated bamboo 95
Heatstroke E46, 90, E80, 93, 104
Heavenly Appearance (SI 17) 94
Heavenly Connection (BL 7) 94
Heavenly Crevice (TB 15) 94
Heavenly Emperor's Pill for the Heart 48, 52, E38
Heavenly Gathering (SI 11) 94
Heavenly Pool (PC 1) 47, 94
Heavenly Rushing (GB 9) 94
Heavenly Spring (PC 2) 94
Heavenly Stream (SP 18) 94
Heavenly Well (TB 10) 94
Heavenly Window (SI 16) 94
Heaven's Chimney (CV 22) 94
Heaven's Pivot (ST 25) 47, 94
Heaven's Tripod (LI 17) 94
Heavy metals in medicines 8, 60, 61, 75, 103, A11
Heberden, William 41, 102
Hecaoya 95
Hedera helix 98
Heding (point) 94
Hedyotis 95
Hedyotis diffusa 95
Heeßel, Nils 32, 33, 102
Hegu (LI 4) 94
Hehuanpi 95
Heizhima 95, 108
Helichrysum 100
Helleborus niger 98
Hellinger, Bert 102, A7
Helmont, Jan Baptist van 41, 42, 74, 102, A1

Hemidesmus indicus 97
Hemlock 98
Hemp 52, E16, E39, 96, 97, 104, 108, A6
Hemp Seed Pill 52, E16
Henbane 34, 39, E27, E77, 93, 97, 98, 104
Henggu (KI 11) 94
Henna 100
Henry Auwae 68, 102
Heo Jun 65, 101, 102
Hering, Constantine 102, A3
Hernández, Francisco 18, 102
Hernia 89, E73, 93, 94, 95, 96, 104
Herophilus of Chalcedon 39, 43, 102
Heshouwu 52
Hesy-Ra 35, 102
Heyang (BL 55) 94
Hezi 95, 108
Hibiscus sabdariffa 100
Hidden Gate (KI 21) 94
Hidden White (SP 1) 47, 94
High blood pressure E14
Hildegard of Bingen 42, 43, E83, 98, 101, 102, 106, A2, A9
Hingu 60, 108
Hingvashtaka 97
Hippocampus kelloggi 95
Hippocrates of Kos 37, 38, 39, 40, 41, 42, 102
Hippocratic Collection 38, 101
Hirudo nipponica 95
Hmong 6, 9, 10, 15, 21, 23, 54, 70, 72, E36, E39, 102, 104
Hoffmann, Friedrich 102, A1
Hofmann, Albert 18, 102
Hogfennel 95, 96
Holarrhena 60, E6, 97, 104
Hold and Support (BL 36) 94
Holt-Lunstad, Julianne 22, 69, E54, 102
Holy basil 60, E56, 104
Holy water 17, 29, 70
Homalomena 95
Homalomena occulta 95
Homesickness 13, 21, E35, E36, E87, 104
Honey 11, 12, 13, 18, 29, 34, 35, 36, 37, 38, 40, 41, 42, 43, 44, 48, 52, 53, 56, 57, 59, 60, 63, 67, 70, 75, E8, E9, E16, E18, E19, E32, E52, E53, E55, E65, E70, E76, E89, E92 and others
Honey-Fried Liquorice Decoction 96
Honeysuckle 44, 48, 52, E9, E92, 96, 104
Honeysuckle and Forsythia Powder 48, 52, E9, 104
Honghua 52
Hongjingtian 95, 108
Honglen 97, 108
Hongteng 95
Hoodia gordonii 11, 100
ho'oponopono 68, 69, A9
Hop cone 98
Hordeum vulgare 97
Horehound 98
Horse chestnut seed 98, A6
Horse gram 97
Horse radish tree 70
Horsetail 98
Hospital 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 29, 31, 32, 37, 39, 40, 41, 42, 43, 44, 48, 49, 51, 52, 54, 55, 56, 59, 60, 61 and others
Hot springs and mud 70
Houding (GV 19) 94
houngan, mambo 30
Houpo 52
Houttuynia 95
Houttuynia cordata 95
Houxi (SI 3) 94
Howitt, Alfred 10, 102
hózhó 8, 19
Hridroga 59, E11, 104
Hua Tuo 44, 53, 94, 102
Hua Tuo's points beside the spine (point) 94
Huagai (CV 20) 94
Huaihua 95, 96
Huaihua san 96
Huajiao 95
Huangbai 52
Huangfu Mi 44, 66, 101, 102, 106
Huangjing 95
Huanglian 45, 52
Huanglian ejiao tang 52
Huanglian jiedu tang 52
Huangmen (BL 51) 94
Huangqi 52, 96
Huangqin 52
Huangshu (KI 16) 94
Huangtu tang 96
Huantiao (GB 30) 94
Huaroumen (ST 24) 94
Huashi 95
Huatuo jiaji (point) 94
Huber, Machteld 102, A10
Huffman, Michael 28, 102
Hugu 95
Huhuanglian 95, 108
Huiyang (BL 35) 94
Huiyin (CV 1) 94
Huizong (TB 7) 94
Hujiao 95, 108
Human afterbirth 95
Human hair 13, 95, 109
Humour 2, 32, 34, 37, 38, 39, 40, 41, 42, 43, 60, 61, 66, 67, 70, 72, 73, E1, E6, E7, E15, E20, E24, E25, E27, E31, E32, E65, E67, E71, E72, E78, 101, 102, 104, 105, A1, A2
Humours 2, 32, 34, 37, 38, 39, 40, 41, 42, 43, 60, 61, 66, 67, 70, 72, 73, 74, E1, E6, E7, E15, E20, E24, E25, E27, E31, E32, E65, E67, E71, E72, E78, E85, 101, 102, 104, 105, A1, A2
Humulus lupulus 98
Hunayn ibn Ishaq 40, 102
Hundred Meetings (GV 20) 47, 94
Hunger cactus 100
Hunmen (BL 47) 94
Hunt, George 9, 102
Huomaren 52, 108
Huoxiang 95, 96
Huoxiang zhengqi san 96
Hupo 95
Hutaoren 95
Huzhang 95
Hyacinth bean 95, 96
Hydnocarpus anthelminticus 95
Hydrastis canadensis 99
Hymns of the Atharvaveda 101
Hyoscyamus niger 98
Hypericum perforatum 98
Hypoxis hemerocallidea 100

Hyriopsis cumingii 95
Hyssop 97
Hysteria and the wandering womb 9, 36, 41, E43, 104

I

iatromantis 37
Iban 15, 70, 71, 72
Ibn al-Baytar 101, 102
Ibn al-Khatib of Granada 41, E62, 102
Ibn al-Nafis 101, 102
Ibn Butlan 40, 102
Ibn Qayyim of Damascus 42, 43, 101, 102
Ibn Sina (Avicenna) 40, 41, 42, 43, 101, 102, A2, A3
Iboga 9, 30, 31, E40, 100, 102, 104, A6
icaros 9, 10, 16
Iceland moss 98
Ife 24, 25, 26, 30, 102
Igjugarjuk 10, 102
ihiyotl 18
ilaj bil tadbir 40
Ilex paraguariensis 99
Illness from a broken rule E83
Illness from the dead E84
Illness of longing E87
Illness of maize E59
Illness sent by another E82
ilm al-raml 26
Imhotep 35, 36, 102
Imperata cylindrica 95
In Front of the Crown (GV 21) 94
Increase the Fluids Decoction 96
Incubation in a sanctuary 7, 37, 39, 43, 72, 74, 76, E12, E44, 104, 105, 106, 107, A8, A11
Indian frankincense 60, E25, 104
Indian madder 60
Indian mulberry 68, 70
Indian pennywort 97
Indian sarsaparilla 97
Indian snakeroot 40, 60
Indian tobacco 99
Indian valerian 97
Infertility 29, 37, 38, 57, 84, E44, E61, E82, 92, 93, 94, 95, 96, 97, 104, A6
Influenza 41, 52, 54, 65, 70, E1, E5, 98
Ingham, Eunice 102, A4
Initiation 6, 8, 9, 10, 18, 20, 25, 27, 29, 30, 31, 72, E88, 99, 100, 102, 104, 107
Inner Classic of the Yellow Emperor: Divine Pivot 101
Inner Classic of the Yellow Emperor: Plain Questions 101
Inner Courtyard (ST 44) 94
Inner Pass (PC 6) 47, 51, E89, 94, 104
Inoculation and vaccination 4, 29, 44, E4, E17, E48, E64, E65, E66, E69, 98, 99, 102, A1, A3, A5, A7, A10
Inscriptions of Wat Pho 101
Inuit 6, 7, 9, 10, 20, 21, 23, 34, 69, 102, A5
Inula 52, 95, 96, 97, 98, 108
Inula and Haematite Decoction 96
Inula Decoction of Four 97
Inula helenium 98
Inula japonica 95
Inula racemosa 97, 108
Ipecac 22, 99
Ipomoea nil 95
Ipomoea purga 99
Iroquois 20, 23, 72, E57, 93, 99, 102, 104
Isabgol 40, E16
isangoma 10
Isatis 52, 95
Isatis indigotica 95
Ishaq ibn Imran 41, 102
Itch E67
Itching and scaling skin E29
Itrifal kishnizi 97
Itrifal ustukhuddus 97
Ivy leaf 98
iwa pele 24

J

Jaborandi 99
Jade Hall (CV 18) 94
Jade Pillow (BL 9) 94
Jade Pivot (CV 21) 94
Jade Windscreen Powder 48, 52, E9, E70, 104
Jade Woman Decoction 96
Jalap 18, 99
Jam of Chyavana 60, E54, 103, 104
Jambu 97
jamu 70, A2
Janzen, John 21, 102
Japanese thistle 95
Jatamansi 60, 95, 108
Jatiphala 97, 108
Jatyadi taila 97
Jaundice 33, 34, 48, 49, 52, 54, 56, 57, 59, 60, 70, 80, E17, E75, 94, 95, 97, 104, A2, A3, A5, A8
Java 70, 71, 72, 73, 74, 75, 76, E58, E82, E85, 95, 99, 102, 104
Javanese turmeric 70
Jaw Bone (ST 6) 94
Jaw Serenity (GB 4) 94
Jawarish Jalinus 97
Jawarish kamuni 97
Jayapala 97, 108
Jenner, Edward 44, 102
Jero Tapakan 70, 102
jhankri 15
Jiache (ST 6) 94
Jiangcan 95
Jianghuang 95, 108
Jianjing (GB 21) 94
Jianli (CV 11) 94
Jianliao (TB 14) 94
Jianshi (PC 5) 94
Jianwaishu (SI 14) 94
Jianyu (LI 15) 94
Jianzhen (SI 9) 94
Jianzhongshu (SI 15) 94
Jiao ai tang 96
Jiaogulan 95
Jiaosun (TB 20) 94
Jiaoxin (KI 8) 94
Jiegeng 52
Jiexi (ST 41) 94
Jili 95
Jimai (LR 12) 94
Jimen (SP 11) 94
Jineijin 95
jing 2, 46, 66, 73, 102
Jing Fang 2, 46, 73, 102
Jingdaji 95

Jinggu (BL 64) 94
Jingjie 95
Jingmen (GB 25) 94
Jingming (BL 1) 94
Jingqu (LU 8) 94
Jingui shenqi wan 52
Jinjin and Yuye (point) 94
Jinlingzi san 96
Jinmen (BL 63) 94
Jinqiancao 95
Jinsuo (GV 8) 94, 96
Jinsuo gujing wan 96
Jinyingzi 95
Jinyinhua 52
Jiquan (HT 1) 94
Jiraka 97
Jiucaizi 95
Jiuwei (CV 15) 94, 96
Jiuwei qianghuo tang 96
Jivaka 56, 60, 70, 102
Jixueteng 95
Jizhong (GV 6) 94
Joining Valley (LI 4) 47, 51, 94
Ju/'hoansi 10, 11, 12, 23, 102
Juan Gregorio 20, 102
Juemingzi 95
Jueyinshu (BL 14) 94
Juglans regia 95, 98
Jugu (LI 16) 94
Juhe 95, 96
Juhe wan 96
Juhua 52
Jujube 40, 45, 52, E35, E38, 95, 96, 97, 103, 108
Juliao (GB 29) 94
Juliao (ST 3) 94
Julius Apellas 37, 102
Jumping Circle (GB 30) 47, 94
Juncus effusus 95
Jung, Carl 10, 102
Juniper 14, 19, 34, 36, 64, E29, E59, E71, E93, 98, 104
Juniper berry 98
Juniperus communis 98
Jupi zhuru tang 96
Juque (CV 14) 94
Jvara 59, E1, E2, 104
Jyotishmati 97

K

Ka Po'e Kahiko 101
Kababchini 97
Kabat-Zinn, Jon 102, A7
//Kabbo 12, 102
Kadsura pepper 95
Kafur 97, 108
kahuna 68, 70
Kahuna kilokilo 68
Kahuna lomilomi 68
Kahuna makani 68
kairos 38
Kaishora guggulu 97
Kakadu plum 13
Kakola 97
Kalamegha 60
Kallawaya 10, 17, 102
Kalonji 40
Kalyanaka ghrita 97
Kamakau, Samuel 68, 101, 102
Kamala 59, E17, 104
Kampavata 59
Kanchanara 97
Kanchanara guggulu 97
Kanna 11, 100
Kansui 95, 96
Kantakari 60
Kapikacchu 60
Kaptchuk, Ted 8, 22, 51, 74, 102, A1
Kapu kai 68
kapu, tapu 68, 70
Karanja 97
Karavellaka 97
Kardec, Allan 70, 102, A9
Karkatashringi 97
Karpura 97
Kasa 59, E9, 104
Kashaya 20, 102
Kasni 40
Kasturi 97
Katsumada's galangal 95
Katuki 60, 108
Katz, Richard 11, 70, 102
Kau Dwa 11, 102
Kelp 95
Kendall, Laurel 10, 15, 102
Kenin-Lopsan, Mongush 14, 102
Kerala 56, 60, 61, E9, E10, 97, 102, 104
Key Link of Yang (BL 48) 94
Key to the Patterns and Medicines of Children 44, 101
Khadira 97
Khadiradi 97
Khamira abresham 97
Khamira gaozaban 97
Khamira marwarid 97
Khashkhash 97
Khat 100, 109
Khatmi 97
Khella 100
Khoekhoe 11, 12, 30, 100, 102
Khubbazi 97
Khulanjan 97, 108
khwan 15, 70
Kidney Qi Pill from the Golden Casket 48, 52, E72, 104
Kidney Transport (BL 23) 47, 94
Kigelia africana 100
King of bitters 60, 70, 75, E17, 95, 104
Kingsley, Peter 37, 102
Kinkéliba 100
Kino lau 68
Kiratatikta 97, 108
Kirlian, Semyon 102, A11
Kleinman, Arthur 8, 22, 54, 102, A6
Kluckhohn, Clyde 19, 102
Knee Joint (LR 7) 94
Kneipp, Sebastian 42, 102, A5, A8
Knot of the Belly (SP 14) 94
Knot, the first 2
Knotgrass 52, 95
Koch, Robert 42, 102, A1
Köcher, Franz 32, 102
Kochia 95
Kochia scoparia 95

Kola 14, 24, 25, 27, 28, 30, 100, 109
Kola nut 24, 25, 30, 100
Koller, Carl 17, 102
Kongzui (LU 6) 94
Korea 9, 10, 15, 19, 21, 23, 34, 44, 48, 65, 72, E35, E37, E41, E55, E84, E88, E91, 101, 102, 104, 107, A1, A2, A11
Koso 100
Kouheliao (LI 19) 94
kra 30
Krameria lappacea 99
krasis 38
Kratom 70, 75
Krieger, Dolores 102, A3
krisis 38
Kroeber, Alfred 20, 102
Kru khmer 70
Ksenofontov, Gavriil 10, 14, 102
Kshirabala taila 97
Kuandonghua 95
Kudzu 52, 96, 109
Kudzu Decoction 96
Kufang (ST 14) 94
Kulattha 97
Kulianpi 95
Kumari 60, 108
Kumaryasava 97
Kumis kucing 70
Kumkuma 97, 108
Kunbu 95
Kunci suruh 70
Kunir asam 70
Kunlun (BL 60) 47, 94
Kunlun Mountains (BL 60) 47, 94
Kunz, Dora 102, A3
Kupilu 97, 108
Kuriyama, Shigehisa 50, 102
kurunpa 13, 21
Kushen 95
Kushi, Michio 102, A5
Kushmanda 97
Kushmanda avaleha 97
Kushtha 59, E7, E29, 97, 104, 108
Kutaja 60
Kutajaghana 97
Kwakwaka'wakw 9, 102
Kyurura 97, 108

L

Labat, René 32, 102
Laburnum anagyroides 98
Lactuca virosa 98
Ladder of two, ladder of three 2
Laderman, Carol 15, 70, 102
Lady's mantle E43, 98, 104
Laennec, René 42, 102
Laifuzi 95
Lakota and Oglala 9, 10, 15, 20, 22, 23, 34, 72, 73, 75, 102
Lambo, Thomas Adeoye 29, 102
Lame Deer, John Fire 20, 102
Laminaria japonica 95
Lane, Arbuthnot 102, A1
Langali 97
Langevin, Helene 47, 102
Lanweixue (point) 94
Laogong (PC 8) 94
Laooq sapistan 97
Lapacho 99
Large Intestine Transport (BL 25) 94
Large-leaf gentian 95
Larrea tridentata 99
Lashuna 60, 108
Lashunadi 97
Lasiosphaera fenzlii 95
latah 70
Latsi 97, 108
Lavana bhaskara 97
Lavandula angustifolia 98
Lavanga 97, 108
Lavender 40, E36, 97, 98, A6
Lawsonia inermis 100
Layer of cure 4
Le Huu Trac 65, 102
Leading Valley (GB 8) 94
Leadwort 97
Leafless fern ally 68
Leafy twig of arborvitae 95
Lee Je-ma 65, 101, 102
Lee, Richard 11, 102
Leech 40, 42, 43, 58, 60, 66, 67, 95, 107
Leechbooks 42, 98, 101, 103, A2
Leeches 37, 40, 41, 42, 43, 58, 60, 66, 67, 72, 75, E25, E76, 95, 102, 104, 107
Left Metal Pill 52, E15
Leg Five Miles (LR 10) 94
Leg Three Miles (ST 36) 47, 51, E74, 94
Leigongteng 95
Leiwan 95
Lemon balm 40, 97, 98
Leonurus cardiaca 98
Lepidium apetalum 95
Lepidium meyenii 99
Leprosy 18, 59, 63, 68, 78, E7, E30, 95, 97, 100, 104
Lesser cardamom 97
Lesser celandine 98
Lesser galangal 95
Lesser Marsh (SI 1) 47, 94
Lesser Palace (HT 8) 94
Lesser Rushing (HT 9) 47, 94
Lesser Sea (HT 3) 94
Lesser Shang (LU 11) 47, 94
Lessertia frutescens 100
Lettuce E38, 97, 98, 104
Lévi-Strauss, Claude 9, 102, A10
Levin, Michael 102, A3
Lewis-Williams, David 7, 9, 12, 102
Lhasa 62, 102, 106, 107
Li Dongyuan 44, 52, 96, 101, 102, 103, 109
Li Shizhen 44, 50, 67, 73, 101, 102, 103
Liangmen (ST 21) 94
Liangqiu (ST 34) 94
Lianqiao 52
Lianquan (CV 23) 94
Lianzi 52
Lidui (ST 45) 94
Lieque (LU 7) 94
Light grains of wheat 95
Light on Medicine 56, 101
Ligou (LR 5) 94
Ligusticum 52, E23, 95, 96, 99, 104
Ligusticum porteri 99

Ligusticum Powder Taken with Tea 96
Ligusticum sinense 95
Ligustrum lucidum 95
Lilu 95
Lily 42, 48, 52, 54, 95, 96, 97, 98, 109
Lily Bulb Decoction 48, 52
Lime flower 98
limpia 18
Limu kala 68
Lindera E73, E93, 95, 96, 104
Lindera aggregata 95
Lindera Powder of Tiantai 96
Lines Opening (ST 38) 94
Ling gui zhu gan tang 96
Ling, Per Henrik 102, A4
Lingdao (HT 4) 94
Lingjiao gouteng tang 96
Lingtai (GV 10) 94
Lingxu (KI 24) 94
Lingyangjiao 95
Lingzhi 95
Linking Decoction 96
Linking Path (GB 28) 94
Linseed E91, 98, 102, 104, A5
Linum usitatissimum 98
Liquidambar orientalis 95
Liquorice 34, 39, 40, 45, 52, 57, 60, 65, E9, E10, E15, E17, E35, E42, E80, 96, 97, 98, 104, 108
Liquorice root 34, 40, 52, 60, 98
Liquorice, Wheat and Jujube Decoction 52, E35
Lishi 97, 108
Litchi chinensis 95
Lithospermum erythrorhizon 95
Litsea 95
Litsea cubeba 95
Little Book of the Medicinal Herbs of the Indians 101
Liu Wansu 44, 96, 102
Liuhuang 95
Liujinu 95
Liujunzi tang 52
Liushen wan 96
Liuwei dihuang wan 52
Liuyi san 96
Liver Transport (BL 18) 47, 94
Lizhihe 95
Lizhong wan 52
Lloyd, Lucy 12, 102
Lobelia inflata 99
Locking 5
Lockjaw 36, 88, E66, 93, 96, 101, 104
Lodhra 97
Loha bhasma 60
lomilomi 68
Long Life for the Child Pill 96
Long pepper 57, 60, 63, 66, 70, E9, E10, E15, E32, 95, 97, 103, 104, 108
Long Strong (GV 1) 47, 94
Longchi 95
Longdan xiegan tang 52
Longdancao 52
Longevity and Life Preservation in Eastern Medicine 101
Longgu 52, 96
Longyanrou 95
Lönnrot, Elias 14, 102
López Austin, Alfredo 18, 102
Lophatherum 95
Lophatherum gracile 95
Lophophora williamsii 99
Loquat 95, 96
Lotus 52, 56, 61, 95, 96
Lougu (SP 7) 94
Louis, Pierre 41, 42, 74, 102, 105
Lourdes 42, 43, 107, A9
Lovesickness 42, 91, E87, 104
Low, Chris 11, 102
Lowen, Alexander 102, A4
Lower Crevice (BL 34) 94
Lower Great Void (ST 39) 94
Lower Ridge (LI 8) 94
Lower Stomach Duct (CV 10) 94
Luganshi 95
Lugen 95
Luhui 95, 108
Luna, Luis Eduardo 7, 10, 16, 102
Lung Transport (BL 13) 47, 94
Lungwort 98, A2
Luobumaye 95
Luohanguo 95
Luoque (BL 8) 94
Luoshiteng 95
Luozhen (point) 94
Lupuna 16
Lurong 52
Lust, Benedict 102, A5
Luxi (TB 19) 94
lwa 30
Lychee 95
Lycium 52, E54, E81, 96, 104
Lycium Fruit, Chrysanthemum and Rehmannia Pill 96
Lycopodium japonicum 95
Lycopus lucidus 95
Lygodium japonicum 95
Lysimachia christinae 95
læce 42

M

Ma xing shi gan tang 52
Maasai E66
Mabiancao 95
Mabo 95
Maca E55, 99, 104
machi 10, 17
Machixian 95
Macrotyloma uniflorum 97
Mad dog E64
Madagascar 26, 30, 31, 70, 71, 73, E41, E49, E62, 100
Madagascar periwinkle 30
Madanaphala 60
Madder 60, 95, 96, 97, 108
Madhava 56, 59, 101, 102
Madhu 60, 108
Madness E34
Madness and psychosis 9, 10, 12, 16, 18, 28, 29, 39, 40, 41, 54, 59, 60, 63, 70, 75, E14, 83, E34, E41, 88, E63, E64, E88, 93, 94, 95, 97, 98, 100, 102, 104, A1, A4, A5, A6, A7
Magnetite 95
Magnolia 45, 48, 52, E35, E70, 95, 96, 104
Magnolia biondii 95
Maguey 18, E53, E91, 99, 104, 109
Mahanarayana taila 97

Mahasudarshana 97
Mahatiktaka ghrita 97
Mahayogaraja guggulu 97
Mahuang 45, 52
Mahuang tang 52
Mahuanggen 95
Maidenhair fern 97
Maidong 52
Maimendong tang 96
Maimonides, Moses 42, 43, E10, 101, 102, 104
Main root of aconite 95
Maiya 52
Majno, Guido 34, 35, 102
Major Blue-Green Dragon Decoction 96
Major Bupleurum Decoction E75, 96, 104
Major Order the Qi Decoction 52
Major Pearl to Settle Wind 96
Majun dabid-ul-ward 97
Majun falasifa 97
Majun suranjan 97
Al-Majusi (Haly Abbas) 101, 102, A2
Makaradhvaja 97
Mako 97
Malachite 36
Malaria 8, 17, 22, 28, 33, 41, 43, 44, 45, 52, 55, 59, 74, 75, 78, E1, E2, E61, E63, 93, 95, 99, 100, 102, 104, 105, A1, A3, A10
Malays 9, 15, 69, 70, 71, 72, 73, 75, 76, E45, E46, E58, E62, E85, E86, 102, 104, 105, A7
Male fern 39, E8, 104
Mallow 60, 68, E9, 97, 104
Malo, David 68, 102
Malt sugar 95, 96
mana 8, 68, 70
mancharisqa, susto 17, 21
Mandragora officinarum 98
Mandrake 34, 39, 98
Mandrake root 98
Mandukaparni 97
Mangxiao 52
Manis pentadactyla 95
Manjingzi 95
Manjishtha 60, 95, 108
Man's Welcome (ST 9) 94
Mantis Egg Case Powder 96
Manu 97, 108
Manus 69, 70, 71, 72, 76, E83, E84, 102
Manuscripts of Mawangdui 44, 51, 101
Many plants E51, 100
Mao Zedong 44, 102
Māori 69, 70, 71, 72, 73, E6, E53, E71, 102, 106, A2
Mapuche 9, 10, 17, 21, E88, 99, 104
Maqianzi 95, 108
Maqlû 34
mara'akame 18
Margaret Machado 68, 102
María Sabina 10, 18, 23, 102
Maricha 60, 108
Marigold flower 98
Marking nut 97
marma 61
Marrubium vulgare 98
Marsh at the Bend (PC 3) 94
Marshall, Lorna 11, 14, 102
Marshmallow 97, 98
Marshmallow root 98
Marula 100
Marwarid 97, 108
Masha 97, 103
Massage and the hands 8, 11, 13, 17, 18, 32, 34, 40, 44, 53, 60, 61, 63, 64, 65, 66, 68, 70, 71, 72, 73, 75, E13, E16, E19, E24, E26, E28, E45, E46, E48, E54, E60, E79, E93, 102, 104, 107, 109, A3 and others
Mastagi 97
Mastic E15, 97, 104
Masunaga, Shizuto 102, A4
Maté 99, 109
Maté and guaraná 109
Matricaria chamomilla 98
Matsés 16, 99
Matthews, Washington 19, 102
mauri 70
Maya 9, 18, 20, 22, 23, 28, 32, 34, 36, 72, 73, E47, E49, E68, 93, 99, 101, 102, 104, 105, 106, 107, A1
Mayapple 20, 22, E49, E68, 93, 99, 104, A1
Mayr, Franz Xaver 102, A5
Mazatec 9, 10, 18, 99, 102, 107
Maziren wan 52
Meadow saxifrage 98
Meadowsweet 98
Measles 14, 20, 40, 70, E4, E32, 101, 102, 104, A3, A9
Medicated leaven 52, 95, 96
Medicine of the Prophet 42, 100, 101, 102
Meditation 61, 62, 63, 64, 67, 70, 75, E85, 102, 104, A7, A9
Meeting 1, 3, 7
Meeting of Hearing (GB 2) 94
Meeting of the Clan (TB 7) 94
Meeting of the Soft Spot (GV 22) 94
Meeting of Three Yin (SP 6) 47, 51, 94
Meeting of Yang (BL 35) 94
Meeting of Yin (CV 1) 47, 94
Meichong (BL 3) 94
Meiguihua 95, 108
Melancholy E35
Melia azedarach 95
Melia toosendan 95
Melilotus 98
Melissa officinalis 98
Melzack, Ronald 47, 102
Menopause 51, 60, 63, 84, E47, 92, 96, 99, 104, A6
Menstruation 10, 11, 12, 40, 41, 45, 46, 48, 57, E43, E47, E61, 94, 104, A5
Mentha pulegium 98
Mercury 8, 40, 41, 42, 43, 45, 52, 56, 60, 61, 64, 66, 67, 70, 75, 76, E54, E63, E93, 93, 95, 96, 97, 101, 102, 103, 104, 109, A1, A3, A11
Meretrix meretrix 95
Mesh 4
Meshashringi 97
Mesmer, Franz Anton 102, A1, A3, A7
Mesua ferrea 97
Methika 97
Method 2, 5, 9, 11, 13, 14, 17, 18, 19, 22, 23, 25, 26, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 43, 44, 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 60, 61 and others
metu 35
Mezger, Johan 102, A4
Mica 97
Mid-Spine Transport (BL 29) 94
Middle Crevice (BL 33) 94

Middle Ditch (GB 32) 94
Middle of Man (GV 26) 47, 94
Middle of the Breast (ST 17) 94
Middle of the Chest (CV 17) 47, 94
Middle of the Crook (BL 40) 47, 51, 94
Middle of the Stomach Duct (CV 12) 47, 94
Middle Pole (CV 3) 94
Middle Pouring (KI 15) 94
Middle Seal (LR 4) 94
Middle Shoulder Transport (SI 15) 94
Midwives 14, 17, 18, 20, 24, 33, 37, 38, 42, 70, E23, E45, E46, E66, 93, 98, 99, 101, 106, A2
Milk 12, 14, 15, 17, 28, 34, 36, 42, 43, 47, 57, 59, 60, 63, 68, 70, E3, E11, E12, E17, E20, E26, E29, E30, E38, E40, E41, E44, E46, E48, E55, E58, E59, E60, E66, E68, 92, E90, E91, E92 and others
Milk thistle seed 98
Mimenghua 95
Mimosa tenuiflora 99
Mineral pitch 97
Mingmen (GV 4) 94
Minor Blue-Green Dragon Decoction 52, E10, E70, 96, 104
Minor Build the Middle Decoction 96
Minor Bupleurum Decoction 45, 52, 65
Minor Decoction for a Chest that is Bound 96
Minor Order the Qi Decoction 96
Mint 39, 42, 52, E89, 96, 104
Minthostachys mollis 99
Minute Angle (TB 20) 94
Mirabilite 52, 96
Mirror 1
Miscarriage 20, 92, E90, 93, 104
Mistletoe 48, 52, E24, E25, E39, E49, E90, 96, 98, 104, A3
Mixed 1
mizaj 40
mkhris pa 62, 63
Moerman, Daniel 8, 20, 102, A7
Mohanlian 95, 108
Momiyai 97
Momordica charantia 97
Momordica cochinchinensis 95
Mongols 9, 14, 15, 44, 62, E26, 102, 104, 107, A2
Monkshood 98
Montanoa tomentosa 99
Monthly course E43
Moon Crystal 97
Mooney, James 20, 102
Moreno, Jacob 102, A7
Morgagni, Giovanni Battista 42, 102, A1
Morinda 95, 96
Morinda officinalis 95
Moringa oleifera 97
Morita Shoma 65, 102
Morning glory 68, 95, 99
Morning sickness 92, E89, 93, 104
Morrnah Simeona 69, 102
Morus alba 95
Mosla 95
Mosla chinensis 95
Mother-of-pearl 95
Motherwort 52, E43, 98, 104
Mound of Ruins (GB 40) 94
Mount Tai Rock Powder 96
Mountain pitch 97
Mountain sickness 57, 62, 63, E23, 90, E80, 95, 99, 104
Mouth Grain Crevice (LI 19) 94
Moving Between (LR 2) 94
Moxa 51, 65
Moyao 95
Mubiezi 95
Muchuang (GB 16) 94
mudang, mansin 9, 15
Mudanpi 52
Mudga 97
Mufarrih yaquti 97
Mugua 95
Mugwort 14, 42, 44, 47, 51, 52, 54, 55, 65, E24, E25, E43, E44, E45, E64, E73, E93, 94, 96, 98, 104, 107
Mukta and Pravala pishti 97
Mulberry 52, 68, 70, E9, E32, 95, 96, 104
Mulberry Leaf and Apricot Kernel Decoction 96
Mulberry Leaf and Chrysanthemum Drink 52, E9, 104
Mulberry mistletoe 52
Muli 52, 96
Muli san 96
Mullein flower 98
Muña 99
Murccha 59
Murdock, George 8, 102
Mushk 97, 108
Mushrooms, sacred 9, 10, 18, 22, 30, 75, E35, E40, E56, 95, 98, 99, 102, 105, A6
Musk 52, 96, 97, 108
Musta 60
Mustard 34, E48, 95, 96
Mutong 95
Muxiang 52
Muzei 95
Mylabris phalerata 95
Myristica fragrans 95, 97
Myroxylon balsamum 99
Myrrh 34, 36, 95, 96, 100

N

n/om 8, 9, 10, 11, 12, 23, 106
nabz 40
Nagakeshara 97
namburbi 34
Nanguazi 95
Nanshashen 95
Naohu (GV 17) 94
Naohui (TB 13) 94
Naokong (GB 19) 94
Naoshu (SI 10) 94
Nardostachys jatamansi 95
Narikela 97
Native mallow 68, E9, 104
Native nettle without sting 68
Native pepper shrub 70
Natron 36
Natural indigo 95
Nature of Man 38, 101
Navajo 2, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 19, 20, 21, 22, 23, 32, 34, 60, 69, 72, 73, 74, 75, E5, E33, E36, E59, E67, E84, E85, 101, 102, 103, 104, 105, 106, 107, A8, A9 and others
Navayasa lauha 97
Ndembu 21, 23, 30, 69, 72, 102
Near-death experience 6, 68
Needling 5, 8, 15, 20, 22, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 64, 65, 66, 67, 71, 72, 73, 74, 75, E10, E11, E13,

E14, E15, E16, E19, E23, E24, E25, E27, E28, E31, E33 and others
Neem 57, 60, 75, E27, E29, E53, E67, 97, 104
Neiguan (PC 6) 94
Neihardt, John 10, 20, 102
Neiting (ST 44) 94
Nelumbo nucifera 95
Net of the Three Yang (TB 8) 94
Nettle 42, 68, E70, E72, 98, 104
New Zealand flax 70
ngangkari 9, 13
Ngubane, Harriet 10, 102
Nicotiana rustica 16, 99
Nigella sativa 100
Nightingale, Florence 102, A1
Nightmare and sleep paralysis 15, 18, 37
nílch'i 19
Nimba 60
Nine-Ingredient Decoction with Notopterygium 96
Nineveh 32, 43, 101, 102
Nirgundi 97
Niubangzi 95
Niuhuang 52, 95
Niuxi 52
noaidi 14
Nogier, Paul 51, 102, A3
Not Contained (ST 19) 94
Notoginseng 52, E11, E53, 96, 104, 109
Notopterygium 52, E23, 96
Notopterygium Decoction to Overcome Damp 96
Nourish the Yin and Clear the Lung Decoction E65, 96, 104
Nut grass 60, 97
Nutmeg 63, E35, 95, 96, 97, 104, 108
Nüzhenzi 95

O

Oak bark 98
Obesity 20, 22, 25, 34, 35, 38, 39, 43, 50, 55, 57, 59, 60, E11, E12, E14, 80, E18, E19, E44, E55, 93, 97, 104, A1, A3, A5, A7, A10
Ocimum gratissimum 100
odu 25, 26, 31
Offering and sacrifice 5, 7, 9, 14, 15, 17, 18, 19, 20, 21, 23, 24, 25, 27, 28, 29, 30, 31, 32, 34, 37, 43, 44, 54, 58, 59, 60, 63, 64, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, E34 and others
ofo 28
'ohana 68
Ohsawa, George 102, A5
Oil of a coastal tree 70
ojas 4, 57, 66
Ojibwe 9, 10, 20, 21, 23, 34, 72, 102
Old man's water E72
Olivia Arévalo 16, 102
Omphalia lapidescens 95
On Fractures 38, E26, 101, 104
On Joints 10, 38, 101
On Medical Materials 98, 101
On Medicine 1, 7, 16, 42, 56, 70, 75, 101, A10
On Pestilence 44, 101
On Smallpox and Measles 101
On the Causes and Signs of Acute and Chronic Diseases 101
On the Sacred Disease 37, 38, 43, 101
ongon 15
O'odham 20, 21, 23, 32, 102
oogun 28
Ophiocordyceps sinensis 95
Ophiopogon 52, 96
Ophiopogon Decoction 96
Opium 39, 40, 41, 56, 68, 70, E6, E38, E40, E56, E66, E74, E93, 93, 95, 96, 97, 98, 100, 104, 108, A1
Opium poppy 39, 95, 96, 98
Oplopanax horridus 99
Opuntia 99
Ordeal 10, 30, E42, 93, 99, 100
Ordeal nut 100
Order's Limit (BL 54) 94
ori 24, 69, 70, 71, 72, 73, E6, E53, E71, 102, 106, A2
Origins and Signs of All Illnesses 44, 101
orisha 7, 24, 25, 27, 28, 29, 30, 31, E4, E34, E37, E44, E83, E88, 104
Ornish, Dean 61, 74, E11, 102, A10
Orpen, Joseph 12, 102
Ortiz de Montellano, Bernard 18, 102
Osha 99
Oujie 95
Outer Hill (GB 36) 94
Outer Mound (ST 26) 94
Outer Pass (TB 5) 47, 94
Outer Shoulder Transport (SI 14) 94
Outside the Crook (BL 39) 94
Over-read 4
Ox gallstone 95, 96
Ox liver 36
Ox-eye daisy of Natal 100
Oyster 52, 65, E60, 96, 104
Oyster Shell Powder 96

P

Pablo Amaringo 16, 102
Pacific yew E49, 99
Paeonia officinalis 98
Pagoda Tree Flower Powder 96
Pain of the back E24
Pain of the heart E11
Pain of the stomach and bad digestion E15
Pain without a wound E28
Pain, lasting 4, 8, 22, 40, 51, 52, 55, 74, 75, E24, 94, 99, A3, A4, A6, A9
Pakshaghata 59
Palace of Hearing (SI 19) 47, 94
Palace of Heaven (LU 3) 94
Palace of the Child (point) 94
Palace of Toil (PC 8) 94
Palace of Wind (GV 16) 94
Pale blood E61
Palm fibre 95, 96
Palmer, Daniel David 102, A4
Palsy of the face 18, 51, E13, 90, E79, 93, 94, 95, 96, 104
Panax quinquefolius 95, 99
Pandu 59, E61, 104
Pané, Ramón 16, 102
Pangdahai 95
Pangguangshu (BL 28) 94
Pangolin scales 95, 96
Panthera tigris 95
Paojiang 95
Papaver somniferum 95, 97, 98
Papaya 70, E8, E52, 99, 104, A5
Papaya leaf 70
Papyrus of Kahun 101

Paracelsus 6, 42, 43, 98, 101, 102, 103, A1, A2, A3
Paris polyphylla 95
Parkinson's disease 22, 53, 59, 60, 75, 90, E77, 93, 99, 104, A3, A11
Parmenides of Velia 37, 102
Parpata 97, 108
Parsiyaoshan 97
Parsley E71, 98, 104
Parts of vultures and other animals 100
Pashanabheda 97
Pass Gate (ST 22) 94
Passage 1
Passiflora incarnata 99
Passionflower 99
Pasteur, Louis 42, 102, A1
Patanjali 61, 102
Patchouli 95, 96
Patchouli Powder to Right the Qi 96
Patin, Guy 41, 102
Patola 97
Patrinia E74, 95, 104
Patrinia scabiosifolia 95
Pauling, Linus 102, A5, A6
Paullinia cupana 99
Pausinystalia johimbe 100
payé 9, 16
Peaceful Sleep (point) 94
Peach 44, 52, 65, E74, 96, 104
Peach Kernel Decoction to Order the Qi 96
Pearl 13, 40, 50, 52, 53, 58, 64, 68, E11, 95, 96, 97, 104, 108
Peczely, Ignaz von 102, A11
Peilan 95
Peking spurge 95, 96
Pelargonium sidoides 30, 100
Pellagra 87, E59, 93, 104, A5
Pengsha 95
Pennebaker, James 21, E83, 102
Pennyroyal 98
Pennywort 70, 97, 100
Peony Decoction 96
Peony root 45, 52, 98
Pepper bark 100
Pepper shrub 68, 70
Pepper shrub with heart-shaped leaves 70
Pepper tree 18, 70
Peppermint E15, E16, E23, E75, 98, 104, A6
pepsis 38
Perilla 52, E89, 95, 96, 104
Perilla frutescens 95
Perilla Seed Decoction to Send the Qi Down 96
Persimmon calyx 95
Peseshet 35, 102
Petasites hybridus 98
Petroselinum crispum 98
Peucedanum praeruptorum 95
Peumus boldus 99
Peyote 9, 18, 19, 20, 72, 75, E40, 99, 104
Phala ghrita 97
Phase 1, 4
Phellodendron 52, E20, 96, 104
Pheretima aspergillum 95
Philippines 70, 71, 72, 75, E18, E26, E82, E86, 102, 104, A3, A9
Phragmites communis 95
Phyllanthus 60, E17, E21, 99, 104
Phyllanthus niruri 99
Phyllomedusa bicolor 99
Phyllostachys nigra 95
Physica 7, 13, 42, 101, A3, A7, A8, A10
physis 38, 40
Physostigma venenosum 30, 100
Phytolacca acinosa 95
Phytolacca dodecandra 100
Pianli (LI 6) 94
Picralima nitida 100
Picrorhiza 60, E17, 95, 97, 104, 108
Picrorhiza scrophulariiflora 95
Piles 18, 28, 38, 54, 59, 63, 80, E22, 93, 94, 95, 96, 97, 98, 99, 104
Pilgrimage and shrines 8, 15, 17, 18, 22, 24, 30, 37, 42, 43, 59, 60, 64, 70, 72, E34, E64, E76, 104, 107, A8, A9
Pillar of Heaven (BL 10) 94
Pilocarpus 99
Pimpinella anisum 98
Pinda taila 97
Pinellia 45, 52, 65, E14, E35, E78, E89, 96, 104
Pinellia and Magnolia Bark Decoction 52, E35
Pinellia Decoction to Clear the Upper Belly 52
Pinellia, White Atractylodes and Gastrodia Decoction 96
Pingwei san 52
Pipaye 95
Piper guineense 100
Piper kadsura 95
Piper longum 95
Piper nigrum 95
Pipewort 95
Pipiling 97, 108
Pippali 60, 95, 108
Pishu (BL 20) 94
Pishuang 95
Pistacia integerrima 97
Pituri 13, 109
Placebo and the meaning response 8, 11, 16, 21, 22, 28, 42, 52, 61, 64, 70, 74, 75, E16, E24, E29, E33, E36, E40, E43, E47, E55, E61, E68, E70, E72, E82, E93, 98, 102, 109, A3, A5, A6, A7
Plague 14, 33, 35, 37, 41, 42, E1, E5, 88, E62, 93, 98, 102, 104, 105, A1
Plantago lanceolata 98
Plantago major 98
Plantain 9, 10, 42, 52, 68, E16, E21, E22, E71, 96, 98, 104, 109
Platycladus orientalis 95
Platycodon 52, 96
Pluchea lanceolata 97
Plumbago zeylanica 97
pneuma 3, 8, 19, 39, A1
Pneumonia 15, 41, 55, 74, 107
Podophyllum peltatum 99
Pogostemon cablin 95
Pohu (BL 42) 94
Point of the Blind Gut (point) 94
Points for the Painful Loin (point) 94
Poison nut 95, 97, 103, 108
Poisoning 10, 11, 12, 15, 18, 41, 52, 53, 55, 61, 75, E16, E32, E51, E63, 95, 97, 98, 104, A1, A5, A6, A8, A11
Pokeweed 95
Polygala 52, E42, E81, 96, 104
Polygonatum odoratum 95
Polygonatum sibiricum 95

Polygonum aviculare 95
Polygonum cuspidatum 95
Polygonum multiflorum 95
Polynesian arrowroot 68
Polypody 97
Polyporus Decoction 96
Polyporus fungus 95
Polyporus umbellatus 95
Pōmare, Māui 70, 102
Pomegranate 36, 39, 40, 57, 63, 64, E8, E89, 97, 104, 109
Pomegranate Five 64, 97
Pomegranate rind 39, 57
Pongamia pinnata 97
Pool at the Bend (LI 11) 47, 94
Popp, Fritz-Albert 102, A3
Poppy 39, 68, E38, E40, E56, E66, E93, 95, 96, 97, 98, 100, 104
Poria fungus 52
Poria, Cinnamon Twig, Atractylodes and Liquorice Decoction 96
Portulaca oleracea 95
Possession 4, 9, 11, 15, 16, 21, 23, 24, 30, 31, 54, 57, 60, 83, E37, 93, 97, 102, 104
Potentilla erecta 98
Powder for the Four Limbs that are Cold 96
Powder that Leads the Face Straight 96
Poxes E4
prakriti 57
Prameha 59, E18, 104
prana 3, 8, 19, 57, 66, A1, A3
Pravala pishti 97
Prayer 1, 5, 7, 9, 10, 12, 16, 17, 18, 19, 20, 23, 24, 29, 30, 34, 42, 43, 61, 64, 68, 69, 70, 71, 72, 73, 75, E27, E34, E39, E69, E82, 102, 103, 104, 105, 106, A3, A9, A11
Pregnancy 13, 18, 19, 28, 29, 30, 32, 33, 35, 36, 37, 41, 47, 50, 51, 54, 57, 59, 60, 68, 70, 71, 75, E15, E32, E44, E46, E61, E63, E67, E76, E89, E90, E91, 94, 95, 96, 97, 98, 99 and others
Pregnancy mixtures 100
Prescriptions from the Heart of Medicine 101
Prescriptions Worth a Thousand in Gold 44, 101
Preserve Harmony Pill 48, 52, E15
Price, Weston 102, A5
Prickly chaff 97
Prickly pear 99
Prickly poppy 100
Priessnitz, Vincenz 102, A5, A8
Prince, Raymond 28, 29, 102
Printed herbals 98, 101, A2
Privet 95, 96
Prognostic 38, 101
Prostate 30, 75, 89, E72, 93, 98, 99, 100, 104, A6
Protium 99
Prunella vulgaris 95
Prunus africana 30, 100
Prunus humilis 95
Prunus mume 95
Prunus serotina 99
Pseudolarix amabilis 95
Pseudostellaria 95
Pseudostellaria heterophylla 95
Psidium guajava 99
Psilocybe 99
Psoralea 40, 95, 96, 97, 108
Psoralea corylifolia 95, 97
Psoriasis E29, E30
Psychotria viridis 16, 99
Psyllium 40, 75, 98, A6
Pteria martensii 95
Pterocarpus marsupium 97
Pterocarpus santalinus 97
Pua kala 68
Pubic Bone (KI 11) 94
Pucan (BL 61) 94
Puffball 95, 96
Pugongying 52
Puhuang 95
Puji xiaodu yin 96
Pukui, Mary Kawena 68, 69, 102
Pulmonaria officinalis 98
Pulsatilla 95, 96
Pulsatilla chinensis 95
Pulsatilla Decoction 96
Pulse 1, 2, 3, 5, 8, 15, 16, 17, 18, 21, 22, 23, 30, 33, 35, 36, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 60, 61, 62, 63, 64 and others
Pulse Classic 44, 101, 102
Pumice 95
Pumpkin 27, 28, E8, E72, 95, 104
Punarnava 60
Punarnavadi mandura 97
Puncture vine 60, E21, E71, E72, 97, 104
Punica granatum 97
Pupil Crevice (GB 1) 47, 94
Purging 4, 9, 15, 16, 18, 23, 28, 29, 35, 36, 38, 39, 40, 41, 43, 44, 45, 46, 48, 52, 54, 56, 59, 60, 63, 64, 66, 68, 70, 72, 75, E1, E2, E12, E16, E17, E20, E23, E34, E74 and others
Purple coneflower 20, E65, 99, 104
Purple Palace (CV 19) 94
Purple Snow 96
Purslane 95, 97
Pushkaramula 97, 108
Pyrite 95
Pyrrosia 95
Pyrrosia lingua 95
Pythagoras 2, 6, 37, 102

Q

Qaranful 97, 108
qi 3, 4, 8, 19, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57, 65, 66, 67, 72, 75, E2, E5, E9, E10, E11, E14, E16, E19, E23, E28, E34, E35, E36, E41, E43, E46, E49, E58 and others
Qi Cave (KI 13) 94
Qi Door (ST 13) 94
Qi ju dihuang wan 96
Qian Yi 44, 52, 96, 101, 102
Qiancao 95, 108
Qianding (GV 21) 94
Qianghuo 52, 96
Qianghuo shengshi tang 96
Qiangjian (GV 18) 94
Qiangu (SI 2) 94
Qianhu 95
Qiannianjian 95
Qianniuzi 95
Qianshi 95
Qianzheng san 96
Qibao meiran dan 96
Qichong (ST 30) 94

Qihai (CV 6) 94
Qihaishu (BL 24) 94
Qihu (ST 13) 94
Qili san 96
Qimai (TB 18) 94
Qimen (LR 14) 94
Qingdai 95
Qingfen 95
Qinghao 52, 96
Qinghao biejia tang 96
Qinglengyuan (TB 11) 94
Qingling (HT 2) 94
Qingpi 95
Qingqi huatan wan 96
Qingshu yiqi tang 96
Qingwei san 52
Qingxiangzi 95
Qingying tang 96
Qingzao jiufei tang 96
Qinjiao 95
Qinpi 95
Qishe 94, 95
Qishe (ST 11) 94, 95
Qiuxu (GB 40) 94
Qixue (KI 13) 94
Quanliao (SI 18) 94
Quanxie 95
Quarantine 41, E62, A1
Quassia 99
Quassia amara 99
Qubin (GB 7) 94
Qucha (BL 4) 94
Quchi (LI 11) 94
Quechua 16, 17, 23
Quepen (ST 12) 94
Quercus robur 98
Quesalid 9, 102
Qugu (CV 2) 94
Quimby, Phineas 102, A7, A9
Quince E58, 95, 97, 104
Quinine and the fever bark 17, 22, 75, E2, E63, 93, 99, 104, A3
Quisqualis indica 95
Qumai 95
Ququan (LR 8) 94
Qurs tabasheer 97
Quyuan (SI 13) 94
Quze (PC 3) 94

R

Rabies 59, 88, E64, 93, 94, 97, 98, 104, A10
Radish 52, 70, E75, 95, 96, 104
Raimundo Irineu Serra 16, 102
Rajata bhasma 97
Rajayakshma 59, E3, 104
Raktachandana 97
Raktapitta 59
Rangu (KI 2) 94
Raphanus sativus 95
rasa 57, 60, 97
Rasmussen, Knud 6, 7, 10, 20, 102
Rasna 97
Raspberry leaf 98
Rauvolfia vomitoria 100
Al-Razi (Rhazes) 40, 41, 43, E4, 101, 102, 104, A2
Reaching the Interior (HT 5) 94
Reaching Yang (GV 9) 94
Reaching Yin (BL 67) 47, 94
Reading 1, 4
Realgar 95, 96
Receiving Light (BL 6) 94
Reckeweg, Heinrich 102, A3
Red clay 30, 95
Red earth 68
Red peony 52, 96
Red rose 40
Red sage 52, E11, 96, 104
Red Sage Drink 96
Red sandalwood 97
Reed 12, 17, 19, 30, 34, 36, 52, 70, E10, E65, E72, 93, 95, 104
Regimen 4, 37, 38, 39, 40, 41, 42, 43, 52, 55, 58, 59, 60, 67, 72, 74, E10, E11, E15, E16, E18, E20, E33, E35, E39, E40, E54, 101, 104, A1, A2, A5, A10
Regulate the Middle Pill 48, 52, E15
Regulate the Stomach and Order the Qi Decoction 96
Rehmannia 48, 52, 65, E14, E18, E33, E47, E54, E60, 96, 103, 104
Reich, Wilhelm 102, A3, A4
Reichard, Gladys 19, 102
Reichel-Dolmatoff, Gerardo 16, 102
Reid, Janice 13, 102
Reishi mushroom 95
Renshen 45, 52, 96
Renshen baidu san 96
Renshen gejie san 96
Renying (ST 9) 94
Renzhong (GV 26) 94
Residence of the Will (BL 52) 94
Restless bowel and hard stools E16
Restore Health by Moving the Blood Decoction 96
Restore the Left Pill 48, 52
Restore the Right Pill 52, E55, 104
Restore the Spleen Decoction 48, 52, E14, E35, E38
Restraining Bone (BL 65) 94
Return 4
Return (ST 29) 7, 41, 94
Returning Stream (KI 7) 94
Reverting Yin Transport (BL 14) 94
Rewand chini 97, 108
Rhatany 99
Rheede, Hendrik van 56, 102
Rheum palmatum 98
Rhinoceros Horn and Rehmannia Decoction 96
Rhodiola 14, 95, 97, 108
Rhodiola crenulata 95
Rhubarb 45, 52, 65, E16, E17, E34, E52, E74, 96, 97, 98, 104, 108
Rhubarb and Aconite Decoction 96
Rhubarb and Moutan Decoction E74, 96, 104
Rhubarb root 45, 52, E16, E17, E52, 97, 98, 104
Rhus chinensis 95
Ribwort plantain 98
Rice bean 95
Rickets 87, E60, E81, 93, 104, A5, A8
Ridge Mound (ST 34) 94
Ring 1
Ringworm bush 70
Ritual of the Bacabs 18, 101
Riyue (GB 24) 94
rlung 3, 8, 62, 63, 66

Rock salt 57, 63, 97
Roghan badam 97
Rolf, Ida 102, A4
rongoā 70, A2
Rooibos 12, 30, 100
Rooibos and buchu 30
Room Screen (ST 15) 94
Root of a pepper shrub 70
Root of the Breast (ST 18) 94
Root of the Spirit (GB 13) 94
Rosa canina 98
Rosa laevigata 95
Rosa rugosa 95
Rose 5, 10, 13, 14, 22, 33, 40, 42, 43, 45, 51, 61, 69, 75, E11, E53, E59, E69, E70, E81, 95, 97, 98, 103, 104, 105, 108, A3, A10
Rose hip 98
Roselle 100
Rosy periwinkle 70, 74, 75, E49, 93, 100
Roucongrong 52
Roudoukou 95, 108
Rouget, Gilbert 9, 102
Rougui 52
Round cardamom 95, 96
Rua Kēnana 70, 102
Rubia cordifolia 95
Rubus chingii 95
Rubus idaeus 98
Rufus of Ephesus 39, 41, 102
Rugen (ST 18) 94
Ruiz de Alarcón, Hernando 18, 102
Rules for acting, six 5
Rules of cure, four 4
Rupture E73
ruqya 42
Ruscus aculeatus 98
Rush, Benjamin 41, 102
Rushing Gate (SP 12) 94
Rushing Pass (TB 1) 47, 94
Rushing Qi (ST 30) 94
Rushing Yang (ST 42) 94
Ruta 97, 98, 108
Ruta graveolens 98
Ruxiang 95, 108
Ruyi jinhuang san 96
Ruzhong (ST 17) 94

S

Sacred mushrooms 99, 102
Safflower 52, 96, 97
Saffron 34, 40, E35, 97, 98, 104, 108
Saffron Seven 97
Sage leaf 98
Sahagún, Bernardino de 18, 101, 102
Saiga tatarica 95
Saindhava 97
sáiva 14
Sakha 9, 10, 14, 21, 23, 102
Sakikkū 33
Salernitan Rule of Health 42, 101
Salerno 42, 98, 101, 102, 106
Salimuzzaman Siddiqui 40, 102
Salix alba 98
Salt 10, 16, 18, 34, 36, 38, 41, 42, 51, 52, 53, 56, 57, 59, 60, 61, 63, 64, 68, 70, E6, E12, E13, E14, E18, E20, E21, E29, E45, E48, E50, E51, E53, E57, E61, E70, E74, E80, E89, E93 and others
Salvadora persica 100
Salvia divinorum 99
Salvia officinalis 98
Sambucus nigra 98
Sámi 8, 9, 14, 21, 23, 37, 72, E84, 102, 106, 107
Samoa 69, 70, 71, 72, 75, 76, E24, E26, E84, 102, 104, A9
San 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 21, 22, 23, 30, 50, 52, 53, 72, 73, 74, 75, 76, E84, E93, 96, 100, 102, 105, 106, 107, 109, A3, A8, A10, A11
San Pedro cactus 9, 17, 99
Sana 40, 108
Sand painting 19, 23
Sandal 97, 108
Sandalwood 60, 75, E11, E71, 95, 96, 97, 104, 108
Sandhigata vata 59
Sang xing tang 96
Sangbaipi 52
Sangjisheng 52
Sangju yin 52
Sangpiaoxiao 95, 96
Sangpiaoxiao san 96
Sangshen 95
Sanguinaria canadensis 99
Sanguisorba officinalis 95
Sangye 52, 62, 101, 102
Sangye Gyatso 62, 101, 102
Sangzhi 95
Sanjian (LI 3) 94
Sanjiaoshu (BL 22) 94
Sanjivani 97
Sanleng 95
Sanqi 52
Sanren tang 96
Santalum album 95
Sanyangluo (TB 8) 94
Sanyinjiao (SP 6) 94
Sanzi yangqin tang 96
Sapistan 40, 97
Saposhnikovia 52, 96
Sappan 95
Saqmunia 97
Saraswatarishta 97
Sargassum pallidum 95
Sargassum seaweed 95
Sargentodoxa 95
Sargentodoxa cuneata 95
Sariva 97
Sarpagandha 60, 108
Sarsaparilla 18, E63, 97, 99, 104
Sassafras 99
Sassafras albidum 99
Sasswood 100
Sausage tree 100
Saussurea costus 97
Saw palmetto E72, 99, 104, A6
Saxifraga granulata 98
Scabies 13, E29, 88, E67, 93, 95, 104, A1
Scammony 97
Sceletium tortuosum 11, 100
Scent leaf 100
Schefferus, Johannes 14, 102
Schisandra 52, 96
Schizonepeta 52, 95, 96

Schizonepeta tenuifolia 95
Schroth, Johann 102, A5
Schüssler, Wilhelm 102, A6
Sclerocarya birrea 100
Scolopendra subspinipes 95
Scorpion 18, 35, 36, 59, E25, E39, E66, E79, 95, 96, 104, 109
Scouring rush 95
Screw pine 68
Scribonius Largus 39, 102
Scrophularia ningpoensis 95
Scurlock, JoAnn 32, 102
Scurvy 20, 87, E57, E67, 93, 98, 99, 102, 104, A5
Scurvy grass E57, 98, 104
Scutellaria 52, E90, E92, 95, 96, 104
Scutellaria barbata 95
Sea buckthorn 97
Sea of Blood (SP 10) 47, 94
Sea of Qi (CV 6) 47, 94
Sea of Qi Transport (BL 24) 94
Sea water and salt 68, 70
Seahorse 95
Seam 1, 4
Second Crevice (BL 32) 94
Second Space (LI 2) 94
Securidaca longipedunculata 100
Sedru 97
Selfheal 95
semangat 70
Semecarpus anacardium 97
Semmelweis, Ignaz 102, A1
Senna 36, 40, 75, E16, 95, 97, 98, 100, 104, 108, A6
Senna alexandrina 95, 98, 100
Senna leaf 40, 95, 98
Senna obtusifolia 95
Senna tora 97
Sepia esculenta 95
Sepiella maindroni 95
Serenoa repens 99
Series against the broken oath 101
Servant's Respect (BL 61) 94
Sesame 34, 53, 58, 60, E17, E46, E52, E84, 95, 96, 97, 104, 108
Sesame oil 34, 53, 58, E46, E52, 97, 104
Sesamum indicum 95
Setaria italica 95
Settle the Liver and Extinguish Wind Decoction 48, 52
Settle the Will Pill E81, 96, 104
Seven Jewels Decoction 97
Seven Thousandths Powder 96
Seven Treasures Pill for a Fine Beard 96, 109
The Seventeenth Vertebra (point) 94
Severe Mouth (ST 45) 47, 94
Shahtara 97, 108
Shaking palsy E77
Shallaki 60, 108
Shampoo ginger 68
Shandougen 95
Shang Bend (KI 17) 94
Shang Mound (SP 5) 94
Shang Yang (LI 1) 47, 94
Shangguan (GB 3) 94
Shangjuxu (ST 37) 94
Shanglian (LI 9) 94
Shangliao (BL 31) 94
Shanglu 95
Shangqiu (SP 5) 94
Shangqu (KI 17) 94
Shangwan (CV 13) 94
Shangxing (GV 23) 94
Shangyang (LI 1) 94
Shankha bhasma 97
Shankhapushpi 60
Shanyao 52
Shanzha 52
Shanzhong (CV 17) 94
Shanzhuyu 52
Shaochong (HT 9) 94
Shaofu (HT 8) 94, 96
Shaofu zhuyu tang 96
Shaohai (HT 3) 94
Shaoshang (LU 11) 94
Shaoyao tang 96
Shaoze (SI 1) 94
Shapiro, Francine 102, A7
Sharbat banafsha 97
Sharbat bazoori 97
Sharen 52
Sharngadhara 56, 101, 102, 103
Sharon, Douglas 17, 102
Sharp-nosed pit viper 95
Shashtika 97
Shatapushpa 97
Shatavari 60, 108
Shayuanzi 95
Shea butter 28, 100
Shechuangzi 95
Shegan 95
Sheldrake, Rupert 102, A3
shen 46, 96
Shen fu tang 96
Shen ling baizhu san 96
Shencang (KI 25) 94
Shendao (GV 11) 94
Shenfeng (KI 23) 94
Shengdihuang 52
Shenghua tang 52
Shengjiang 52, 108
Shengma 52
Shengmai san 52
Shenjincao 95
Shenmai (BL 62) 94
Shenmen (HT 7) 94
Shenqu 95
Shenque (CV 8) 94
Shenshu (BL 23) 94
Shentang (BL 44) 94
Shenting (GV 24) 94
Shenzhu (GV 12) 94
Shepherd's purse 98, 109
Shexiang 52, 108
Shichangpu 52
Shidi 95
Shidou (SP 17) 94
Shigao 52, 96
Shigru 97
Shiguan (KI 18) 94
Shihu 52
Shihui san 96
Shijueming 95
Shijunzi 95

Shilajit 60, 97
Shimen (CV 5) 94
Shingkun 97, 108
Shingles 88, E69, 104
Shingtsa 97, 108
Shining Sea (KI 6) 47, 94
Shipibo 9, 16, 23, 102
Shiqizhui (point) 94
Shiquan dabu tang 96
Shirokogoroff, Sergei 9, 10, 14, 102
Shiwei 95
Shixiao san 96
Shixuan (point) 94
Shizao tang 96
Shona E85, 104
Short sight 53, 90, E81, 93, 96, 104, A8
Shotha 59, E12, 104
Shoulder Bone (LI 15) 94
Shoulder Crevice (TB 14) 94
Shoulder Well (GB 21) 47, 94
Shousanli (LI 10) 94
Shoutai wan 96
Shouwuli (LI 13) 94
Shrubby speedwell 70, E6, 104
Shuaigu (GB 8) 94
Shuar 9, 10, 16, 23, 102
Shudihuang 52
Shufu (KI 27) 94
Shugu (BL 65) 94
Shuidao (ST 28) 94
Shuifen (CV 9) 94
Shuiniujiao 95
Shuiquan (KI 5) 94
Shuitu (ST 10) 94
Shuizhi 95
Shunthi 60, 108
Shut the Sluice Pill 96
Shvasa 59, E10, 104
Shvitra 59, E30, 104
Sibai (ST 2) 94
Siberian ginseng 95
Siberian Solomon's seal 95
Sibr 97, 108
Sichuan pepper 95, 96
Sickle-cell disease 24, 28, 29, 31, 75, E48, E61, 104
Sickness of the first months E89
Sidu (TB 9) 94
Siegesbeckia 95
Sifeng (point) 94
Sigesbeckia orientalis 95
The Sigh (BL 45) 94
Sijunzi tang 52
Silk Bamboo Hollow (TB 23) 47, 94
Silver 17, 32, 37, 40, 43, 44, 51, 64, E29, E52, E72, 97, 103, 104, 106, A3, A6
Silybum marianum 98
Siman (KI 14) 94
Simhanada guggulu 97
Sinapis alba 95
Sinew Contraction (GV 8) 94
Sini san 96
Sini tang 52, 96
Siphonochilus aethiopicus 100
Siraitia grosvenorii 95
Sishencong (point) 94
Sitopaladi 97
Sivin, Nathan 46, 102
Siwu tang 52, 96
Six Gentlemen Decoction 52, E15
Six Spirits Pill 96
Six-Ingredient Pill with Rehmannia 48, 52, E14, E18, E33, E47, E60, 104
Six-to-One Powder 96
Sizhukong (TB 23) 94
Skeat, Walter 70, 102
Skin tree 99
Skull's Rest (TB 19) 94
Sleeplessness 10, 13, 18, 38, 40, 46, 47, 48, 51, 52, 54, 57, 60, 63, 65, 70, E14, E28, 83, E35, E38, 93, 94, 95, 97, 100, 104, A6
Slippery elm 20, 99
Slippery Flesh Gate (ST 24) 94
Small Intestine Transport (BL 27) 94
Small Sea (SI 8) 94
Small yellow mallow 68
Smallpox 7, 13, 14, 18, 21, 24, 27, 28, 29, 30, 31, 40, 44, 56, 63, 78, E4, 93, 101, 102, 104
Smilax E63, 95, 99, 104
Smilax aristolochiifolia 99
Smilax glabra 95
Smith, Edwin 5, 35, 43, 44, 102
Smoked plum 45, 52, 95, 96
Smoked Plum Pill 96
Snake papyrus 101
Snakebite 36, 40, 59, 60, E14, E43, 85, E51, E64, E65, 93, 95, 97, 99, 100, 104
Snakeroot 40, 60, 75, E14, E34, E51, 93, 100, 102, 104, 108
Snakeroot and reserpine 28, 40, 60, 75, E14, E34, E51, 93, 100, 102, 104, 108
Sneezing in spring E70
Snow, John 102, A1
Snowdrop E42, 93, 98
Snuffs of vision 99
Snuhi 97
Soapberry 100
Soaring Upward (BL 58) 94
Soft bones E60
Solidago virgaurea 98
Solo marpo 97, 108
Song Ci 44, 102
Songtsen Gampo 62, 102
Sophora 95, 96
Sophora flavescens 95
Sophora japonica 95
Sophora tonkinensis 95
Soranus of Ephesus 39, 41, 101, 102, A1
Sorcery and witchcraft 2, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 23, 29, 30, 32, 33, 34, 38, 42, 43, 68, 69, 70, 71, 72, 75, 76, E34, E39, E82, E88, 93, 94, 99, 101, 102 and others
Sore eye and blindness at night E32
Sorrow of the Belly (SP 16) 94
Soul 4, 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 30, 31, 37, 38, 39, 40, 41, 42, 43, 46, 54, 62, 64, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75 and others
Sour jujube 52, E38
Sour Jujube Seed Decoction 52, E38
Soursop 99
South African geranium 30, E9, 100
Sow thistle 70

Sparganium stoloniferum 95
Spasm Vessel (TB 18) 94
Spatholobus 95
Spatholobus suberectus 95
Spencer, Baldwin 10, 102
Sphagnum 98
Sphagnum moss 98
Sphatika 97
Spikenard 60, 95, 97, 108
Spirit Gate (HT 7) 47, 94
Spirit Path (GV 11) 94
Spirit Path (HT 4) 94
Spirit Ruin (KI 24) 94
Spirit Seal (KI 23) 94
Spirit Storehouse (KI 25) 94
Spirit Tower (GV 10) 94
Spirits and ghosts 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 28, 29, 30, 32, 33, 34, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 and others
Spirodela polyrrhiza 95
Spleen Transport (BL 20) 47, 94
Splendid Canopy (CV 20) 94
Spring at the Bend (LR 8) 94
Sprouted barley 52, 96
Sprouted millet 95
Spruce, Richard 16, 102
Squatting Crevice (GB 29) 94
Squill 39, E12, 97, 98, 104
St John's wort E35, 98, 104, A4, A6, A10
Stachys officinalis 98
Stahl, Georg Ernst 102, A1
Standing 1
Stanner, William 13, 102
Star jasmine 95
State formulary of the Song 101
Stays open 1
Steam and sweating 4, 10, 11, 13, 17, 18, 20, 21, 22, 23, 40, 44, 45, 46, 48, 49, 52, 54, 59, 60, 63, 66, 68, 70, 72, E9, E10, E12, E13, E17, E36, E40, E46, E58, E66, E74, E80, 93, 94, 95 and others
Steiner, Rudolf 42, 102, A3
Stellaria 95
Stellaria dichotoma 95
Stemona 95, 96
Stemona sessilifolia 95
Stephania 95, 96
Stephania and Astragalus Decoction 96
Stephania tetrandra 95
Sterculia 95
Sterculia lychnophora 95
Stevia rebaudiana 99
Sthaulya 59, E19, 104
Stiff Neck (point) 94
Still, Andrew Taylor 102, A4
Stol, Marten 32, 33, 102
Stomach Granary (BL 50) 94
Stomach pain and ulcer 41, 53, 54, 58, 63, E3, E11, 80, E15, E32, E52, E53, 93, 94, 95, 98, 104, A3, A7
Stomach Transport (BL 21) 94
Stone E21
Stone breaker E21, 97, 98, 99, 104
Stone Gate (CV 5) 94
Stone of the bladder and kidney 1, 39, 59, E21, E75, 93, 95, 99, 106
Stone Pass (KI 18) 94
Stone, Randolph 102, A3
Stonebreaker 70
Stones of the gall E75
Stool wood 100
Stop Coughing Powder 96
Storax 95, 96
Storax Pill 96
Storehouse (ST 14) 94
Stoutness E19
Strabo, Walahfrid 42, 102
Strand 1
Strangling throat E65
Stream Divide (ST 41) 94
Strengthen the Centre and Raise the Qi Decoction 48, 52
Strengthen the Interior (CV 11) 94
Stroke 21, 33, 39, 41, 42, 43, 47, 48, 49, 51, 52, 54, 59, 63, 71, 79, E13, 90, E78, E79, E80, 93, 94, 95, 97, 104, A3, A4, A5, A8
Stroke and palsy E13
Stroke of the sun and the sickness of great heights E80
Strophanthus 30, 100
Strophanthus seeds 30
Strychnos nux-vomica 95, 97
Strychnos toxifera 99
Styrax tonkinensis 95
Suanzaoren 52
Suanzaoren tang 52
Sucking out an object 16, 17, 18, 20, 21, 23, 59, 72, 74, 75, E8, E51, E64, 102, 104, 107
Sudden Smile Powder 95, 96
Sugar cane 68
Sugita Genpaku 65, 102
Sugiyama Waichi 65, 102
Sugmel 97, 108
Suhexiang 95, 96
Suhexiang wan 96
Suicide 20, 22, 30, A6
Suliao (GV 25) 94
Sulphur 34, 42, 56, 61, 64, E29, E67, 93, 95, 97, 104
Summit Spring (HT 1) 47, 94
Sumu 95
Sun and Moon (GB 24) 94
Sun Simiao 44, 46, 52, 53, 54, 66, 67, E58, E72, 94, 96, 101, 102, 104, 106
Sunken Valley (ST 43) 94
Suoquan wan 96
Suoyang 95
Support of the Spirit (GB 18) 94
Support the Aged (SI 6) 94
Support the Mountain (BL 57) 94
Support the Prominence (LI 18) 94
Support the Sinews (BL 56) 94
Supporting Fullness (ST 20) 94
Supreme Unity (ST 23) 94
Supreme White (SP 3) 94
Supreme Yang (point) 94
Suranjan 40, 97
Surgery 4, 5, 7, 17, 18, 19, 22, 24, 27, 29, 32, 33, 34, 35, 36, 38, 39, 40, 41, 42, 43, 44, 50, 54, 56, 58, 60, 61, 64, 65, 66, 70, 74, 75, E1, E21, E22, E26, E31, E49 and others
Surgical papyrus 35, 101, 102
Suriname 30, 99
Surma 97
Šurpu 34
Surround 4

Sushruta 56, 57, 58, 59, 60, 61, 67, E26, E31, E44, E53, 101, 102, 104, 107
Suspended Bell (GB 39) 94
Suspended Hair (GB 6) 94
Suspended Pivot (GV 5) 94
Suspended Skull (GB 5) 94
Sutherland, William 102, A4
Suzi jiangqi tang 96
Svarna bhasma 97
Swallowwort 95
Sweet Dew Pill to Remove Poison 96
Sweet flag 60, 70, E39, 97, 104
Sweet herb 99
Sweet urine E18
Sweet violet 40
Sweet wormwood 44, 52, E2, 96, 103, 104, A10
Sweet Wormwood and Turtle Shell Decoction 96
Swertia chirayita 97
Swimmer 20, 102
swnw 35
Swollen legs of the rice eaters E58
Swollen neck E50
Swollen veins and the sore that will not close E76
Sydenham, Thomas 42, 102
Sylvius, Franciscus 102, A1
Symphytum officinale 98
Symplocos racemosa 97
Syphilis and the great pox 56, E1, 88, E63, 93, 95, 97, 99, 104
Systematic Classic of Needling and Burning 44, 101
Systematic Differentiation of Warm Illnesses 44, 101
Systematic Materia Medica 44, 101
Syzygium aromaticum 95, 97
Syzygium cumini 97

T

Tabasheer 97, 108
Tabernanthe iboga 100
tabiat 40
Taboo and the broken rule 8, 14, 21, 24, 29, 31, 32, 68, 70, 71, 72, 75, E34, 91, E83, 93, 101, 104
Tagara 97
Tahupōtiki Wiremu Rātana 70, 102
Taibai (SP 3) 94
Taichong (LR 3) 94
Taíno 16, 21, 102
Taishan panshi san 96
Taixi (KI 3) 94
Taiyang (point) 94
Taiyi (ST 23) 94
Taiyuan (LU 9) 94
Taizishen 95
Takata, Hawayo 102, A3
takman 56
Takra 97
Talc 52, E71, E80, 95, 96, 104
Talisa 97
Talisadi 97
Tamarisk 34
Tambiah, Stanley 70, 102
Tamra bhasma 97
Tanacetum parthenium 98
Tanba Yasuyori 101, 102
Tangerine 52, E73, E92, 95, 96, 104
Tangerine Peel and Bamboo Shavings Decoction 96
Tangerine Seed Pill 96
Tankana 97
Tansy mustard 95
Tanxiang 95, 108
Tao hong siwu tang 96
Taodao (GV 13) 94
Taohe chengqi tang 96
Taoren 52
Taraxacum officinale 98
Tarbu 97
Taro 68, E19, 104
taulāsea 70
Taxila 56, 102
Taxus baccata 98
Taxus brevifolia 99
Te Rangi Hīroa 70, 102
Tea tree 13, 70, E9, E29, E52, E53, E67, E71, 104, A6
Tear Container (ST 1) 47, 94
Teasel E90, 95, 96, 104
Tedlock, Barbara 18, 102
Teething 68, E93, 93, A3
temazcal 18
Ten Charred Drugs Powder 96
Ten Declarations (point) 94
Ten Jujubes Decoction 95, 96
Tenodera sinensis 95
Tension 1
Terminalia chebula 95
Tetrapanax papyrifer 95
Thailand 15, 70, 71, 72, 73, 75, E9, E24, E25, E36, E40, E46, 101, 102, 104
Theobroma cacao 99
Therapeutic series 101
Theriac 41, E62, 97, 98, 103, 104
Thigh Gate (ST 31) 94
Third Space (LI 3) 94
Thomson, Samuel 102, A1
Thorn apple 65, 75, E10, 93, 95, 97, 99, 104
Thorn tree 60, E19, E25, 104
Thorny nightshade 60, E10, 104
Three fruits 60, 62, E61, E81, 97, 104
Three myrobalans 40, E16, E32, 97, 104
Three pungents 60, 97
Three Seeds Decoction 96
Three Seeds Decoction to Nourish One's Parents 96
Three treasures 46, 66, 96
Thunder ball fungus 95
Thunder god vine 54, 95
Thyme 14, 34, 41, 98
Thymus vulgaris 98
Ti plant 68, 70
Tianchi (PC 1) 94
Tianchong (GB 9) 94
Tianchuang (SI 16) 94
Tianding (LI 17) 94
Tianfu (LU 3) 94
Tianhuafen 95
Tianjing (TB 10) 94
Tianliao (TB 15) 94
Tianma 52, 96
Tianma gouteng yin 52
Tianmendong 95, 108
Tiannanxing 95
Tianquan (PC 2) 94
Tianrong (SI 17) 94
Tianshu (ST 25) 94

Tiantai wuyao san 96
Tiantu (CV 22) 94
Tianwang buxin dan 52
Tianxi (SP 18) 94
Tianyou (TB 16) 94
Tianzhu (BL 10) 94
Tianzhuhuang 95, 108
Tianzong (SI 11) 94
Tiaokou (ST 38) 94
Tiaowei chengqi tang 96
Tiger bone 95
Tigta 97, 108
Tila 60, 108
Tilia cordata 98
Tinggong (SI 19) 94
Tinghui (GB 2) 94
Tinglizi 95
Tinospora 60, E20, E42, 97, 104, 108
Tip of the Ear (point) 94
Tiryaq faruq 97
Tobacco 9, 10, 15, 16, 17, 18, 20, 23, 28, 49, 72, 75, E40, E48, E51, 98, 99, 100, 102, 104, 109, A3, A10
tohunga 70
Tokay gecko 95
tonalli 18, 21
Tonga 70, 71, 72
Tongcao 95
Tongkat ali 70
Tongli (HT 5) 94
Tongtian (BL 7) 94
Tongue, reading of the 3, 5, 9, 10, 16, 17, 19, 20, 27, 33, 38, 40, 43, 46, 47, 48, 49, 50, 53, 54, 55, 57, 58, 59, 60, 61, 62, 63, 67, 68, 70, 74, 75, E9, E10, E11, E14, E15, E17, E38 and others
Tongziliao (GB 1) 94
Tonkin sophora 95
Too hot, too cold E86
Too little milk and the inflamed breast E91
Too much thinking and the wind that rises E85
Tooth stick E27, 100, 104
Toothache 32, 43, 44, 51, 52, 68, 70, E27, 94, 95, 96, 97, 98, 99, 104
Tormentil root 98
Torreya 95
Torreya grandis 95
Toulinqi (GB 15) 94
Touqiaoyin (GB 11) 94
Touwei (ST 8) 94
Tracey, Kevin 102, A3
Trachelospermum jasminoides 95
Trachoma E32, 104
Trachycarpus fortunei 95
Trachyspermum ammi 97
Trager, Milton 102, A4
Trance 1, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 17, 18, 19, 21, 22, 23, 42, 54, 65, 70, 71, 72, 76, E37
Transport Mansion (KI 27) 47, 94
Transport of the Loin (GV 2) 94
Trauma of war and terror 13, 21, 22, 30, 37
Travell, Janet 17, 40, E31, E73, 102, 104, A4
Treasured Mirror of Eastern Medicine 65, 101, 102
Treatise on Cold Damage 44, 45, 101, 102
Treatise on the Spleen and Stomach 44, 101
Tree fern 68
Tree peony 52
Tremella fuciformis 95
Trepanation 17, 34
Trials of remedies 1, 4, 5, 8, 11, 13, 14, 16, 18, 19, 21, 22, 23, 28, 29, 30, 32, 35, 36, 37, 38, 40, 41, 42, 45, 46, 50, 51, 52, 53, 54, 55, 58, 59, 60, 61, 62, 63, 64, 65 and others
Tribhuvana kirti 97
Tribulus terrestris 95
Trichosanthes 52, 54, E11, 95, 96, 97, 104
Trichosanthes dioica 97
Trichosanthes kirilowii 95
Trichosanthes, Onion Bulb and Wine Decoction 96
Trigonella foenum-graecum 97
Trikatu 97
Trionyx sinensis 95
Triphala 97
Triphala guggulu 97
Triple burner 47, 52, 53, 94
Triple Burner Transport (BL 22) 94
Tripterygium wilfordii 95
Trisong Detsen 62, 102
Trit 1
Triticum aestivum 95
Trivrit 60, 108
Trogopterus xanthipes 95
Trota of Salerno 42, 101, 102
Trotula 42, 101, 102
True Jade Powder 96
True Man's Decoction to Nourish the Organs 96
True Shoulder (SI 9) 94
True Warrior Decoction 52, E12, 104
Tsaoko 95
Tsenden karpo 97, 108
Tsenden marpo 97
Tsothel 97
Tu Youyou 8, 44, 52, 55, 102
Tubiechong 95
Tue Tinh 65, 102
Tufuling 95
Tujingpi 95
Tukano 16, 102
Tukhm-e-kahu 97
Tulasi 60
Tumours E49
Turbina corymbosa 99
Turbud 97, 108
Turmeric 34, 57, 59, 60, 66, 68, 70, 75, E25, E29, E53, E67, E75, 95, 96, 97, 104, 108, 109, A10
Turner, Edith 21, 102
Turner, George 69, 102
Turner, Victor 21, 30
Turnera diffusa 99
Turpeth 60, 97, 108
Turquoise Twenty-Five 97
Turtledove Tail (CV 15) 94
Tusizi 95, 108
Tussilago farfara 95, 98
Tuva 9, 14, 102
Tvak 97, 108
Two Aged Ingredients Decoction 48, 52
Two Immortals Decoction 96
Two Marvels Powder 96
Two Solstices Pill 95, 96
txiv neeb 15, 70
Typha angustifolia 95
Typhoid and typhus 18, 41, 70, E1, A1

Typhonium E79, 95, 96, 104
Typhonium giganteum 95

U

Udara 59, E12, 104
ukuthwasa 10, 21
Ulmus rubra 99
Uncaria 48, 52, 65, E14, E39, E77, E78, 96, 99, 104
Uncaria tomentosa 99
Uniform 1
'unihipili 68
Universal Benefit Drink to Remove Poison 96
Unmada 59, E34, 104
Unnab 40, 108
Unread 4
Unschuld, Paul 44, 45, 46, 101, 102
Unsul 97
Unyielding Space (GV 18) 94
Upel ngonpo 97
Upledger, John 102, A4
Upper Arm (LI 14) 94
Upper Arm Meeting (TB 13) 94
Upper Arm Transport (SI 10) 94
Upper Crevice (BL 31) 94
Upper Great Void (ST 37) 94
Upper Ridge (LI 9) 94
Upper Star (GV 23) 94
Upper Stomach Duct (CV 13) 94
Upright Nourishment (GB 17) 94
Urgent Pulse (LR 12) 94
Urinary infection 89, E71, 97, 98, 104
Urine, reading of the 5, 17, 18, 28, 33, 34, 35, 36, 38, 39, 40, 41, 42, 43, 46, 47, 48, 49, 51, 52, 54, 56, 57, 58, 59, 61, 62, 63, 64, 65, 66, 67, 70, 72, 74, 75, E12, 80, E16, E17 and others
Urtica dioica 98
Ushba 97
Ushira 97
Ustukhuddus 40, 97
Usui, Mikao 102, A3

V

Vaccaria E91, 95, 104
Vaccaria segetalis 95
Vaccinium macrocarpon 99
Vaccinium myrtillus 98
Vacha 60
Vagbhata 56, 57, 60, 62, 67, 70, 73, 101, 102
Valerian root E38, 98, 104
Valeriana officinalis 98
Valeriana wallichii 97
VALIS 7
Vamshalochana 97, 108
Vanga, Naga, Yashada 97
Varicose veins and leg ulcers 40, E49, 89, E76, 93, 97, 98, 104
Varuna 97
Vasa 60
Vasavaleha 97
vata 3, 8, 57, 59, 66
Vatarakta 59, E20, 104
Vatavyadhi 59
Vatsanabha 97, 108
Veering Passage (LI 6) 94
Velvet antler of deer 14
Veratrum nigrum 95
Verbascum thapsus 98
Verbena officinalis 95, 98
Verger, Pierre 24, 27, 28, 102
Vernonia amygdalina 100
Vervain 95, 98
Vesalius, Andreas 39, 42, 102
Vetiver 97
Viburnum prunifolium 99
Vidanga 97
Vietnam 15, 19, 44, 65, 70, 72, E85, 101, 102, 104
Vigna mungo 97
Vigna radiata 97
Vigna umbellata 95
Vijaya 97, 108
Vijayasara 97
Vine of the soul 4, 7, 8, 9, 10, 16, 22, 23, 30, 72, 75, 76, E25, E40, 99, 102, 104, 105, A6
Viola 95, 96, 98
Viola tricolor 98
Viola yedoensis 95
Violet tree 100
Virchow, Rudolf 42, 102, A1, A10
viriditas 42
Virola 99
Visarpa 59
Viscum album 98
Vishama jvara 59, E2, 104
Vital Region Transport (BL 43) 94
Vitals Gate (BL 51) 94
Vitals of the Bladder (BL 53) 94
Vitals Transport (KI 16) 94
Vitebsky, Piers 14, 102
Vitellaria paradoxa 100
Vitex 95, 96, 97, 98
Vitex agnus-castus 98
Vitex negundo 97
Vitex trifolia 95
Vitis vinifera 97
Voacanga africana 100
Vogt, Evon 18, 102
Voll, Reinhold 102, A3, A11
Vuniwai vakaviti 70

W

Wa Na 11, 102
Waiguan (TB 5) 94
Wailing (ST 26) 94
Waiqiu (GB 36) 94
wairua 70
wakȟáŋ 20
Walker, James 20, 102
Walker, Mary 30, 102
Walking Corridor (KI 22) 94
Walnut 53, 95, 98, A2, A5
Wandai tang 96
Wang Bing 45, 102
Wang Qi 55, 102
Wang Qingren 44, 52, 54, 96, 101, 102
Wang Shuhe 44, 50, 101, 102
Wang Weiyi 44, 102
Wangbuliuxing 95
Wangu (GB 12) 94
Wangu (SI 4) 94
Warburgia salutaris 100
Warm Dwelling (LI 7) 94

Warm illness 44, 46, E1, 102, 104
Warm the Gallbladder Decoction 52, E36, E38, 104
Warm the Monthly Course Decoction 96
Warts 88, E68, 93, 94, 95, 97, 98, 99, 104
Wasp nest 95
Wasson, Gordon 18, 102
Water buffalo horn 95
Water Passage (ST 28) 94
Water Prominence (ST 10) 94
Water Separation (CV 9) 94
Water Spring (KI 5) 94
Way of Happiness (GV 13) 94
Weakness of old age E54
wedjat 36
Weeks after birth E46
Wegman, Ita 102, A3
Weicang (BL 50) 94
Weidao (GB 28) 94
Weil, Andrew 102, A10
Weilingxian 52
Weishu (BL 21) 94
Weiyang (BL 39) 94
Weizhong (BL 40) 94
wekhedu 35, 36
Welcome Fragrance (LI 20) 47, 94
Wendan tang 52
Wenjing tang 96
Wenliu (LI 7) 94
Wheezing E10
White aconite 97
White arsenic 52, E49, 95, 104
White atractylodes 52, E14, E78, E90, 96, 104
White clay 10, 12, 13, 30, E89, 100, 104
White Crevice (GV 25) 94
White Drug of Yunnan 96
White jelly fungus 95
White mustard 95, 96
White patches E30
White patches of the skin 40, 59, 75, 82, E30, 93, 95, 97, 100, 104
White peony 52, 96
White Ring Transport (BL 30) 94
White sandalwood 97
White sapote 99
White Tiger Decoction 45, 52
Whitmania pigra 95
Wikan, Unni 70, 102
Wilbert, Johannes 16, 102
Wild asparagus 60, E43, E55, E91, 97, 104
Wild cherry bark 99
Wild lettuce 98
Wild rosemary 14
Wild yam 99
Wilhelm, Richard 53, 102
Willis, Thomas 41, 102
Willow 20, 34, 35, 36, 39, 42, 50, 75, E1, E11, E23, E24, E25, E26, E68, 93, 98, 104, 107, A2, A6
Willow bark E11, E23, E24, E25, 93, 98, 104, A6
Wind Gate (BL 12) 94
Wind Market (GB 31) 94
Wind Pool (GB 20) 47, 94
Wind Screen (TB 17) 94
Window 1
Window of Heaven (TB 16) 94
Window of the Eye (GB 16) 94
Wine 15, 20, 24, 28, 31, 33, 34, 36, 39, 41, 42, 43, 44, 45, 48, 49, 50, 52, 53, 54, 59, 60, 63, 70, E4, E11, E15, E18, E20, E22, E32, E35, E40, E50, E53, E54, E61, E66, E77, 94 and others
Winkelman, Michael 9, 102
Winnowing Gate (SP 11) 94
Wintergreen 99
Winti 30
The Wish-Fulfilling Jewel 97
Witch hazel 20, 99, 109
Withania 60, E35, E38, E44, E55, 97, 104
Withering, William 102, 103, A2
Witsen, Nicolaas 9, 102
Woad 95, 96
Woman's medicine 18, 99
Wood fern 95
Woodfordia fruticosa 97
Woodworm Canal (LR 5) 94
Works of Galen 40, 101
Works of Maimonides 101
Works of Paracelsus 101
Worms 4, 9, 14, 16, 21, 28, 32, 35, 36, 37, 39, 40, 43, 52, 54, 59, 60, 63, 78, E8, E27, E39, E48, E61, E67, E93, 93, 95, 96, 97, 98, 99, 100, 101, 104, 107
Wormwood 18, 40, 44, 52, 64, 78, E2, E8, 93, 96, 98, 100, 103, 104, A5, A10
Worn and inflamed joints E25
Wounds 1, 4, 6, 10, 13, 14, 17, 18, 19, 20, 32, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 56, 60, 61, 62, 63, 64, 68, 69, 70, 71, 74, 75, E15, E22, 81, E26, E28, 85, E51 and others
Wounds and sores E53
Wrist Bone (SI 4) 94
Wrong closure 4
Wu Jutong 44, 101, 102
Wu Youxing 44, 101, 102
Wubeizi 95
Wuchu (BL 5) 94
Wugong 95
Wujiapi 95
Wuling san 52
Wulingzhi 95
Wumei 95, 96
Wumei wan 96
Wupi yin 96
Wushaoshe 95
Wushu (GB 27) 94
Wuwei xiaodu yin 96
Wuweizi 52
Wuyao 95, 96
Wuyi (ST 15) 94
Wuzhuyu 52, 96
Wuzhuyu tang 96
Wyman, Leland 19, 102

X

/Xam 11, 12, 23, 73, 76, 102
Xanthium sibiricum 95
xapiri 16, 23
Xhosa 10, 30, 100
Xiabai (LU 4) 94
Xiaguan (ST 7) 94
Xiajuxu (ST 39) 94
Xiakucao 95
Xialian (LI 8) 94
Xialiao (BL 34) 94

Xiang su san 96
Xiangfu 52
Xiangru 95
Xiangu (ST 43) 94
Xianhecao 95
Xianmao 95
Xiao chaihu tang 52
Xiao chengqi tang 96
Xiao jianzhong tang 96
Xiao qinglong tang 52
Xiao xianxiong tang 96
Xiaochangshu (BL 27) 94
Xiaofeng san 96
Xiaohai (SI 8) 94
Xiaohuixiang 95, 108
Xiaoji 95, 96
Xiaoji yinzi 96
Xiaoluo (TB 12) 94
Xiaoyao san 52
Xiawan (CV 10) 94
Xiaxi (GB 43) 94
Xiebai 95, 96
Xiebai san 96
Xiguan (LR 7) 94
Xijiao dihuang tang 96
Ximen (PC 4) 94
Xing su san 96
Xingjian (LR 2) 94
Xingren 52
Xinhui (GV 22) 94
Xinshu (BL 15) 94
Xinyi 95
Xionghuang 95
Xiongxiang (SP 19) 94
Xixiancao 95
Xixin 95
Xiyan (point) 94
Xiyangguan (GB 33) 94
Xiyangshen 95
Xuanfu daizhe tang 96
Xuanfuhua 95
Xuanji (CV 21) 94
Xuanli (GB 6) 94
Xuanlu (GB 5) 94
Xuanshen 95
Xuanshu (GV 5) 94
Xuanzhong (GB 39) 94
Xuduan 95
Xuefu zhuyu tang 52
Xuehai (SP 10) 94
Xuejie 95
Xueyutan 95
Xylopia aethiopica 100

Y

Yadanzi 95
Yam Drink to Separate the Clear 96
Yamen (GV 15) 94
Yang Gate of the Knee (GB 33) 94
Yang Gate of the Loin (GV 3) 94
Yang Intersection (GB 35) 94
Yang Jizhou 44, 101, 102
Yang Mound Spring (GB 34) 47, 94
Yang of the Instep (BL 59) 94
Yang Pool (TB 4) 94
Yang Stream (LI 5) 94
Yang Support (GB 38) 94
Yang Valley (SI 5) 94
Yang White (GB 14) 94
Yangbai (GB 14) 94
Yangchi (TB 4) 94
Yangfu (GB 38) 94
Yanggang (BL 48) 94
Yanggu (SI 5) 94
Yanghe tang 96
Yangjiao (GB 35) 94
Yangjinhua 95
Yanglao (SI 6) 94
Yanglingquan (GB 34) 94
Yangxi (LI 5) 94
Yangyin qingfei tang 96
Yanhusuo 52
Yanomami 16, 21, 23, 102
Yaoshu (GV 2) 94
Yaotongdian (point) 94
Yaoyan (point) 94
Yaoyangguan (GV 3) 94
Yarrow E43, 98, 104, 109
Yartsa gunbu 97, 108
Yashtimadhu 60, 108
yatiri 9, 17
Yava 97
Yavakshara 97
Yavani 97
Ye Tianshi 44, 54, 96, 102
Yejiaoteng 95
Yejuhua 95
Yellow Earth Decoction 96
Yellow newborn E92
Yellow skin and the hardened liver E17
Yemen (TB 2) 94, 100, 109
Yifeng (TB 17) 94
Yiguan jian 96
Yimucao 52
Yin and yang 1, 2, 44, 45, 46, 47, 48, 50, 53, 54, 65, 66, 67, 73, 101
Yin Cleft (HT 6) 94
Yin Corner (LR 11) 94
Yin Intersection (CV 7) 94
Yin Market (ST 33) 94
Yin Metropolis (KI 19) 94
Yin Mound Spring (SP 9) 47, 94
Yin Portals of the Foot (GB 44) 47, 94
Yin Portals of the Head (GB 11) 94
Yin Valley (KI 10) 94
Yin Wrapping (LR 9) 94
Yinbai (SP 1) 94
Yinbao (LR 9) 94
Yinchaihu 95
Yinchen 52
Yinchenhao tang 52
Yindu (KI 19) 94
Yin'er 95
Yingchuang (ST 16) 94
Yingsuqiao 95
Yingu (KI 10) 94
Yingxiang (LI 20) 94
Yinjiao (CV 7) 94
Yinjiao (GV 28) 94
Yinlian (LR 11) 94

Yinlingquan (SP 9) 94
Yinmen (BL 37) 94
Yinqiao san 52
Yinshi (ST 33) 94
Yintang (point) 94
Yinxi (HT 6) 94
Yinyanghuo 52
Yishe (BL 49) 94
Yitang 95
Yixi (BL 45) 94
Yiyiren 52
Yizhiren 95
Yoga 5, 6, 8, 40, 53, 56, 61, 64, 74, 75, E10, E24, E70, E81, 97, 102, 104, A7, A8
Yogaraja guggulu 97
Yohimbe E55, 100, 104
Yolmo 15, 102
Yolngu 13, 102
Yongquan (KI 1) 94
Yonivyapat 59
Yoruba snakeroot 100
Yoshimasu Todo 65, 102
Yougui wan 52
Youmen (KI 21) 94
Yuanhua 95
Yuanye (GB 22) 94
Yuanzhi 52
Yueju wan 52
Yuji (LU 10) 94
Yujin 95
Yuliren 95
Yumixu 95
Yunmen (LU 2) 94
Yunnan baiyao 96, 109
Yunü jian 96
Yupingfeng san 52
Yutang (CV 18) 94
Yuthok Yonten Gonpo the Younger 62, 101, 102
yuwipi 20
Yuxingcao 95
Yuyao (point) 94
Yuzhen (BL 9) 94, 96
Yuzhen san 96
Yuzhong (KI 26) 94
Yuzhu 95

Z

Zafran 40, 108
Al-Zahrawi (Albucasis) 101, 102
Zanjabil 40, 108
Zanthoxylum bungeanum 95
Zanthoxylum zanthoxyloides 100
Zanzhu (BL 2) 94
Zaocys dhumnades 95
Zaojia 95
zar 21, E37, 104
Zea mays 95
Zedoary 95
Zelan 95
Zengye tang 96
Zexie 52
Zhang Congzheng 44, 46, 59, 102
Zhang Jiebin 52, 96, 102
Zhang Xichun 52, 96, 102
Zhang Zhongjing 44, 45, 50, 54, 65, E74, 96, 101, 102, 103, 109
Zhangmen (LR 13) 94
Zhangnao 95, 108
Zhaohai (KI 6) 94
Zhebeimu 95
Zhejiang fritillary 95
Zhejin (GB 23) 94
Zhengan xifeng tang 52
Zhengying (GB 17) 94
Zhenren yangzang tang 96
Zhenwu tang 52
Zhenzhu 95, 108
Zhenzhumu 95
Zhi bai dihuang wan 96
Zhi gancao tang 96
Zhibao dan 96
Zhibian (BL 54) 94
Zhigou (TB 6) 94
Zhimu 52, 96
Zhiqiao 95
Zhishi 52, 94
Zhishi (BL 52) 52, 94
Zhisou san 96
Zhiyang (GV 9) 94
Zhiyin (BL 67) 94
Zhizheng (SI 7) 94
Zhizi 52
Zhongchong (PC 9) 94
Zhongdu (GB 32) 94
Zhongdu (LR 6) 94
Zhongfeng (LR 4) 94
Zhongfu (LU 1) 94
Zhongji (CV 3) 94
Zhongliao (BL 33) 94
Zhonglushu (BL 29) 94
Zhongshu (GV 7) 94
Zhongting (CV 16) 94
Zhongwan (CV 12) 94
Zhongzhu (KI 15) 94
Zhongzhu (TB 3) 94
Zhouliao (LI 12) 94
Zhourong (SP 20) 94
Zhu Danxi 44, 52, 54, 96, 102
Zhu Zaiyu 46, 102
Zhubin (KI 9) 94
Zhuli 95
Zhuling 95, 96
Zhuling tang 96
Zhuru 95, 96
Zhusha 52, 96
Zhusha anshen wan 96
Zhuye shigao tang 96
Zicao 95
Zigong (CV 19) 94
Zigong (point) 94
Ziheche 95
Zihuadiding 95
Zinacantán 18, 21, 23, 102
Zingiber officinale 95
Zirantong 95
Zisuye 52
Zisuzi 95
Ziwan 95
Zixue 96

Zonglütan 95
Zufa 97
Zulinqi (GB 41) 94
Zulu 7, 9, 10, 23, 30, E9, E34, 100, 102, A7
Zuogui wan 52
Zuojin wan 52
Zuqiaoyin (GB 44) 94
Zurkharwa 62, 102
Zusanli (ST 36) 94
Zutonggu (BL 66) 94
Zuwuli (LR 10) 94
Zysk, Kenneth 56, 101, 102