

RECENT ADVANCES IN
ACUPUNCTURE RESEARCH

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Editors

Published by

Institute for Advanced Research in Asian Science and Medicine
Garden City, New York 1979

Editors' Note

ANY DISCUSSION OF RESEARCH in acupuncture begins with a paradox. It seems certain that traditional therapeutic concepts and techniques indigenous to major cultural traditions have been judged empirically over the centuries by their efficacy and consequent social acceptance. Yet in modern times, it seems equally certain that the mechanisms of such therapeutic methods must be demonstrated and validated scientifically if they are to be accepted by one culture from another, or within the human community at large. At the center of our discussion then is the question of proof, the proof which on the one hand comes from popular acceptance in a particular social and cultural milieu over the course of history, and that proof which on the other hand is demanded by the intellectual rigorousness of international science. And acupuncture finds itself at the center of such concerns especially as it becomes rediscovered in the West over the course of time.

Tremendous interest and controversy have dogged acupuncture as the West becomes reacquainted with it. Certainly the public, in its search for effective medical treatments, has in many cases attempted to welcome acupuncture into the folds of established medicine, while the medical community has remained somewhat more reserved. We have again the paradox of popular knowledge versus scientific truth. One must on the one hand understand, indeed empathize with, the patient who in desperation and suffering looks to any form of "cure," while scientists demand that the "mechanism," "validity" and "reliability" of a given theory and technique be proven before it can be used responsibly.

The record of acupuncture's dissemination in the West is an intricate one, encompassing debate between the exigencies of public interest and of scientific proof. The Dutchman Ten Rhyne is said to have written the first Western monograph on acupuncture in 1683. Gustaf Landgren, a Swede, wrote a thesis on acupuncture in 1829, translated by Ågren in this volume, as part of his medical studies at the University of Uppsala. The American physician William Osler recommended acupuncture for sciatica and lumbago in 1929 in his esteemed *Textbook of Medicine*. More recently, editor James Reston reported his experiences with acupuncture analgesia in the *New York Times* in 1971 which contributed greatly to American public interest in acupuncture. New York State took a leading role in 1973 by forming a commission appointed by then-Governor Rockefeller to explore the clinical, legal and policy-oriented implications of acupuncture in the United States. The conclusions of this significant panel of experts is presented in Riddle's article contained within this volume. At the same time, the National Institute of General Medical Sciences sponsored an "Acupuncture Research Conference" in Washington, D.C., which sparked subsequent scientific interest in acupuncture. Acquaintance with acupuncture has become widespread in the United States in a few short years. For example, it is possible to receive acupuncture treatments of varying degrees of legitimacy in many American cities. Furthermore, a body of knowledge of divergent validity and scholarly

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quality has emerged recently in the United States.

From the above account, it seems clear that Western interest in acupuncture has spanned both a popular belief in its efficacy as well as a scientific demand for further validation. We agree with both sides of this dialogue. Certainly, newer and more effective treatments for a variety of medical disability and suffering must constantly be sought. Acupuncture has much to recommend it as a form of treatment from the point of view of health service delivery. It is inexpensive, readily transportable, and simply taught. Although an invasive technique in the strict sense of the term, it carries little in the way of morbidity. In its indifference to elaborate technology, it truly is, as we have stated elsewhere, a socially relevant software rather than a mechanistic hardware. It is a technique which shapes and focuses attention on the process of the physician-patient relationship rather than its content. Clearly the world community is searching for ever more appropriate technologies. And yet, we must also agree with the scientific point of view. Indeed, research of all types is needed in order that a scientifically validated acupuncture may take its place in the world armamentarium of medical techniques and concepts.

Acupuncture is a technique which draws many scholarly perspectives to it. It is of interest first of all as a scientific phenomenon. What are the mechanisms for its therapeutic efficacy in the bewildering assortment of disorders for which it is allegedly useful? What sense can be made of its analgesic properties, its influence on central neurotransmitters, its reported dependence on various physiological mechanisms? How is it possible that a few needles inserted into the body can provide analgesia sufficient for major surgery? As a basic scientific and clinical phenomenon, acupuncture remains very much a mystery. It is also of interest as a historical phenomenon. How is it that such techniques, indigenous to many cultural traditions, come to be and evolve with the passing of centuries? What are the cultural, social and economic influences that shape its acceptance? What are the ideological and legal forces which determine its adoption? What are the implications of such indigenous techniques for the architecture of health care delivery, both in developed as well as in developing countries? What role do psychological set and social expectation play in its efficacy? What are the dynamics of its adaptability in a new social milieu, by a society with different beliefs and medical approaches? Clearly, we have many questions and, as yet, few answers.

Research of many types is needed. It was in response to such needs that *The American Journal of Chinese Medicine* was founded in 1972. It has attempted to serve as a medium for scholarly and cultural exchange of many forms. The record of its work, and of the development of knowledge concerning acupuncture, is recorded in the more than 2,500 pages of scientific reports and articles which it has published since its inception. Reviewing these articles can certainly foster a tolerance for a medically pluralistic attitude. These articles come from a variety of theoretical, scientific and clinical viewpoints expressed by authors from around the world who have perceived something of interest and value in comparative approaches to medicine in general, and in acupuncture and related techniques in particular. Since it began, our Journal has been fortunate in circulating to some fifty countries around the world. It has drawn to it a distinguished board of editors and support from contributors of every description.

Thus, acupuncture is a simple technique, perhaps, but a complex phenomenon. Such complexity is reflected in the assortment of articles which we have assembled in this volume. They are divided into five broad areas:

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- 1) History, philosophy and theories of acupuncture
- 2) Experimental research in acupuncture
- 3) Clinical reports
- 4) Instrumentation used in acupuncture research and therapy
- 5) Legal and social perspectives on acupuncture

The diversity of these articles speaks for itself. In the same spirit which prompted the inauguration of our Journal, we offer this book in the hope that it will stimulate further research in this field. The publication of this volume coincides with the National Symposium of Acupuncture and Moxibustion and Acupuncture Anesthesia under the joint auspices of the Chinese Medical Association and the Association of Traditional Chinese Medicine, held in Peking June 1-5, 1979, which involves the contributions of scholars from around the world. Such initiatives are timely and necessary to effect the further detribalization of our medical understandings as we proceed toward a more ecumenical sense of medicine which can be of benefit for all the world's people.

The record of science is always a record of change. Theories are made, validated or discarded. Knowledge progresses in a circuitous fashion, with a mixture of logic and chance, towards an even more refined state. In a similar fashion, the articles and reports in this volume are *meant* to be superceded. Such progress indeed must be the wish of every scientist and the motivating force which can bring the scientific community together to exchange ideas and experiences. We are happy to have contributed in some small way to facilitate the gathering of these scientists around the stimulating enigma of acupuncture.

*Garden City, New York, U.S.A.
January 29, 1979*

Frederick F. Kao, M.D., Ph.D.
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China, Chinese Medicine, and the Chinese Medical System

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THE REDISCOVERY of China by Henry Kissinger in 1971, exactly 700 years after Marco Polo's original four-year journey from Venice to Peking, will perhaps be remembered by future historians as one of the most important cultural and political events of the 1970's, not to be outshadowed by moon-walks or nuclear detente. It has underscored the movement of the human species from political bipolarity to multipolarity, and to a world in which grey too is a beautiful color along with black and white. Furthermore, it has brought home to us the realization that there are many alternative ways of life, philosophies and beliefs which have a validity equal to our own, and that although they come cloaked in the unfamiliar guise of foreign lands and distant cultures, they quickly become familiar and clear to us because they are alternative answers to the same questions which men have asked in all ages and cultures. The cultivation of such a philosophically pluralistic point of view may help us to better address ourselves to the questions of how men shall live, how they shall believe, and how they shall provide for and heal themselves.

One of the greatest impacts of recent developments in the re-evaluation of intercultural relationships comes from the rediscovery of the Chinese system of medicine, a hybrid of ancient and modern concepts, which is currently in practice in China today. From the recent and widespread publicity and discussion which it has received, it is clear that Chinese medicine including acupuncture has caught the fancy of Westerners, professional and layman alike. It is eminently possible that further understanding of the Chinese art of healing, from acupuncture to the concept of the barefoot doctor, will exert a profound impact upon medical understanding and practice in the Western world, which itself has been responsible for one of the greatest periods of progress in the history of the scientific development of medicine.

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Both Chinese medicine and acupuncture have had a long and venerable history. The Chinese system of medicine is one of the very few in human cultural history, whose development can be traced in terms of millennia rather than centuries or decades. It emerged as a fully self-consistent and self-contained philosophical physiology well before the birth of Christ, and has maintained its structure and integrity over the course of four thousand years.

The history of Chinese medicine can be chronologically traced in terms of three developmental stages. In its infancy about three or four millennia ago, Chinese medicine was folk medicine. During the feudal stage of Chinese history which lasted from about 1000 B.C. to the beginning of the twentieth century, the folk medicine of China evolved into systematic Chinese traditional medicine. This contained herbology, acupuncture, massage, exercise therapy, etc., and was based upon a self-consistent and rigorous system of medical diagnosis and treatment.

The third stage of development in Chinese medicine began in 1949, although strictly speaking it had earlier sources or origin. As far back as 600 A.D., there had been dissemination of foreign medicine in China, which had somehow been assimilated into Chinese traditional medicine. Beginning in the 19th century, Western medical knowledge and techniques accompanied the Western presence in China and were gradually integrated with Chinese traditional medicine. The integration of Western science and medical insight with Chinese traditional medicine inaugurated a new and more ecumenical medicine in China. Therefore, modern Chinese medicine is no longer referred to in China as *Chung-I* which means Chinese traditional medicine, but rather as *Chung-Kuo-I-Hsueh* or *New Chinese Medicine* signifying the amalgamation of ancient and modern as well as Western science and Eastern medical insight.

This New Chinese Medicine includes such diverse techniques as the employment of X-ray machines for diagnosis, the use of antibiotics for therapy and the application of surgery for cancer, as well as the employment of herbs, new anti-inflammatory medicine and the use of acupuncture anesthesia. The delivery system under New Chinese Medicine, in addressing itself to the task of providing for 800 million citizens, is based upon the integration of worker and physician, the utilization of mobile medical and the use of continuing education in its real sense. The report by Chen and Ha in 1971 during their visit to Canada, clearly shows the astonishing progress which has been made in China in the field of health care delivery. From a total of 18,000 doctors in the entire country prior to 1949, China's medical professionals have increased to 145,000 doctors in the countryside alone by the end of 1970. In addition to regular doctors, there are now over one million medical workers in the entire country, including barefoot doctors, Red Guard doctors, and army health officers, who form an effective phalanx of "mini" doctors (1).

The system of medical education in China has also changed. The laboratory is now located where the patients are. Teachers in mobile units travel to teach medical workers in the field. Confusing and pedantic educational methods have been abolished or transformed. Research is directed to commonly occurring and recurrent diseases. There are general planned goals in research with little or no "Brownian movement". Through intensive research, Chinese traditional medicine is being put on a scientific basis.

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Thus, Chinese medicine is not a monolith. We must conscientiously distinguish between ancient and modern conceptions in Chinese medicine, between folk medicine arising from particular cultural circumstances of systems of belief and legend, and modern theories and techniques which are eminently rooted within the context of scientific scrutiny and discussion. Any presentation of Chinese medicine must address itself to the issues on these two levels, in order that the ancient may not obscure or trivialize the contemporary, nor the contemporary make the ancient seem arcane or superficial.

Much has been written on the subject of Chinese medicine and acupuncture, especially in recent years, and it is perhaps worthwhile to examine the nature of these literary contributions. Just as we distinguish Chinese traditional medicine from Chinese contemporary medicine, so we may wish to separate the medical literature of ancient China from that of modern China. Chinese medicine has historically been wedded to a naturalistic and ancient philosophical outlook which has developed over the course of millennia, viz. the *Yin-Yang* doctrine and concepts of vital energy. These have been valuable metaphors for describing various natural phenomena as adequately as was historically possible. However, it is also no secret that there now exists a vast literature concerning recent research into Chinese medicine and acupuncture both in the West and East. Many publications concerning recent innovations in Chinese medicine have, for example, been issued in China. Prior to the Sino-Soviet split, there was also a great interest in acupuncture and Chinese medicine in the Soviet Union, involving widespread investigative and clinical work. There has also been public action and activity in Korea, Japan, France, Switzerland, Germany, and more recently, in the United States.

In order to make sense of Chinese medicine as a whole, we must consider both the ancient and the modern together, realizing that contemporary developments and writings, which are written in the vernacular of the international scientific community, perhaps have even a greater applicability to the state of world medical knowledge, than the ancient and arcane Chinese texts, interesting as they might be. The fact that many contemporary writers on the subject of Chinese medicine and acupuncture have chosen to dwell upon ancient concepts and texts is a mixed blessing. We all recognize the historical importance and validity of the works of Hippocrates and Galen, for example, but would by no means consider them to be representative of the state of medicine in the Western world today. Western observers must take into account both what is new about Chinese medicine as well as what has been historically true if they are to make any sense of it at all. Progress in understanding and knowledge within Chinese medicine has taken the form of a transition from philosophy to physiology. Western observers must therefore make the same conceptual leap in order to most fully and responsibly explore this area of medical knowledge.

There are indeed many contrasts between Eastern and Western philosophy medicine, but these do not necessarily imply the superiority of one or the inferiority of the other. The possibilities for synergistic interrelationships between the two become increasingly more evident. The Western scientific approach was predicated upon the objectification and conquest of nature, and upon the maintainance of the dualism between subject and object. In the treatment of disease, one searched for causes in the external not in the internal realm; cause was divorced from the self,

and disease occurred to and not from the body. The medical naturalism of Eastern medical thought on the other hand was predicated upon precisely the inverse formulation in which disease was a function of internal factors, of the malfunctioning of the self, and in which one's own bodily and vital energies were implicated in both the genesis and the treatment of disease. Western man has been the artificer and the creator of machines. Eastern man has been relatively more passive in the fact of nature, and in recent years the architect of the organic human machine. We may contrast the thousands of dollars worth of anesthesia equipment used in the West with the acupuncturist's simple steel needle. We may compare Western prosthetic devices with procedures currently used in China for the useful transplantations of digits and limbs. We may compare a Western pharmaceutical factory with the Chinese herb garden. The overall Western ethos has lead to the concept of hardware, while that of the East has lead to the concept of software.

An American psychologist, Abraham Maslow, has remarked, "if the only tool you have is a hammer, then it is very tempting to treat everything as though it were a nail". Western science has proceeded precisely on the basis of this principle. The solution to the investigation is, in every case, bounded by the specific definition of the problem. Western medicine deals with illness in terms of the specific organ which is malfunctioning. If the stomach is bad, remove it. Chinese medicine inverts this procedure. If you have a headache, you may want to apply treatment to the foot. The relatedness of all bodily parts as a whole is the main concept of Chinese medical therapy. The body is a synthetic unity which may be analytically divided into many parts, but a synthetic unity which can never be understood or usefully treated by a mere examination of parts. In other words, the whole is equal to the sum of its parts, but the sum of the parts does not equal the whole. East differs from West in terms of differing philosophical concepts of overall function. Western medicine has proceeded analytically; the empiricism of many centuries has only relatively recently given way to systemic, process-oriented thought. Chinese medicine is a synthetic discipline which constantly relates biological events to the overall systemic laws of homeostatis, balance and integration, and which is thus an intuitively "natural" approach to life processes.

Such philosophical and theoretical comparison is made more vivid by actual experience. In August of 1972, I had the good fortune to see China first-hand. My astonishment in observing Chinese medicine at work was not of a small magnitude, and I came away pondering the basic principles and recent development of Chinese medicine and the Chinese medical system. This article constitutes a report of my views concerning both the historical development and the modern practice of Chinese medicine.

Part I—The Early Development of Chinese Medicine (From Antiquity to 1000 B.C.)

Medicine is as old as the human race, as old as the necessities of the removal of disease—Halser

Any historical study and investigation of events occurring over several millennia in a culture's past must indeed be a formidable task. This is especially true in the task of searching for historical evidence concerning the development of philosophical

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thought in Chinese traditional medicine from the vastness of China's cultural history. Among the many vital questions to which a historian must address himself, lies the separation of medicine as folk myth and exorcism from medicine as system and science. For, medicine is a complex phenomenon dealing with all aspects of human material existence, body and life. Medicine in the course of human history has been a diverse and totalistic explanatory system, which is not merely science, and often is not merely reducible to it.

Fortunately the Chinese have had a very accurate recorded history, beginning many centuries before the time of Christ. With recent archaeological excavations, we have evidence that the recorded history of China may have started as early as 1700 B.C. ⁽²⁾.

Recorded history in China began with the discovery of the oracle bones in Anyang which contained interesting articles related to medicine and ancient medical practice. For example, "stone needles" were found, which were believed to have been used as acupuncture tools.

There are many legendary figures in ancient Chinese history who deserve mention because of their relation to Chinese philosophy. Three such figures are important in Chinese medicine: Fu Hsi, Huang Ti and Sheng Nung. ^(3, 4, 5). Although they are personages in the mythological period of Chinese history, they played vital roles in shaping the thoughts of the Chinese, and it is irrelevant for our present purpose to inquire as to whether these characters were invented later or actually existed.

Fu Hsi was thought to have lived around 4,000 B.C. He is said to have invented the arts of agriculture, fishing, the domestication of animals, cooking, and the institution of marriage. Before that time, it is possible that people, like animals, were free of the marriage bond. Fu Hsi also invented numbers, which transformed the earlier knot writing, similar to the Peruvian "quipu," whereby accounts were kept with knotted strings. He also invented hieroglyphics, arranged a calendar, and is said to have ruled for 115 years. Fu Hsi had the appearance of a Triton, a human figure with his lower body shaped like a scaly serpent. One of his most important inventions was *Pa-Kua*, or the system of Octograms, actually various combinations of two different broken and solid lines in three layers, making eight combinations of trigrams.

The *I Ching*, or Book of Changes, which has exerted a great influence on both Chinese thought and Western philosophy, was influenced by this discovery of *Pa-Kua*, as was early medical philosophy, including the traditional theory of acupuncture. Some students of history will also wish to ponder their relationship to Leibnizian mathematics. Hegelian dialectics and the digital computer ⁽⁶⁾.

Sheng Nung, or the "divine husbandman," is said to have lived around 3,000 B.C. It is recorded that he had the body of a man and the head of an ox. This may be related to early Chinese records dealing with the theory of evolution, in which man was said to be "related" or "descended" from animals. Sheng Nung taught the people methods of cultivating rice and other grains. This was the period, according to recent anthropological findings, when the Yang Shao culture flourished and when cereal and millet were major food ingredients ⁽²⁾. He is also remembered as the father of Chinese medicine. He tasted poison and chewed plants to discover their

medicinal properties and uses. Thus, it is said that he was often ill 100 times a day because of this experimentation, which resembles in practice, if not in intensity, some experimental procedures currently in use in China (7, 8, 9, 10). Sheng Nung was considered to be the originator of *Materia Medica* much like Mithridates, King of Pontus, who achieved a reputation in the art of taking poisons (1).

The *Pen Tsao*, or *The Great Herbal*, which has a list of 365 drugs and their properties, was attributed to Sheng Nung. It is interesting in passing to note the symmetrical relationship between the number of drugs in this work and the number of days in the year. It is more likely that the *Pen Tsao* was compiled in Chinese history by an author, or authors, of unknown origin. In subsequent periods of Chinese history, additions and elaborations were made in the *Pen Tsao*, and in 1578, Li Shih-chen compiled the *Great Herbal*, which was published by the Emperor Shen Tsung in 1596 (5). Sheng Nung is also said to have started the custom of the midday fair for commerce and exchange, to have invented stringed musical instruments and to have amplified the octagram thus leading to 2⁸ possible permutation.

Huang Ti, or the "Yellow Emperor," lived around 2700 B.C. and is the third member of the Chinese medical trinity of legend. He fought battles, repelled marauding barbarians, built roads, made discoveries in astronomy, and organized a system of government. He ordered Ts'ang Chieh, one of the state historians, to invent writing by following the footprints of birds and making up a system of 500 pictographs which are said to have been the original archaic Chinese characters (2). Huang Ti also instituted sacrificial cults, constructed houses, built astronomical observatories, and added an intercalary month to the lunar calendar. His wife started the Chinese silk industry. His soldiers fought with bows and arrows, swords and lances, and his people used gold and silver for exchange.

According to legend, Huang Ti was also responsible for the deeply influential *Huang Ti Nei Ching* or the "Yellow Emperor's Canon of Internal Medicine", discussed below.

At the time of the Shang Dynasty, (ca 1500 B.C.) there was considerable understanding and recognition of the character of disease and of the classification of diseases. The etiology and therapeutics of certain diseases were also known. According to various Chinese scholars, the word *I*, which means medicine, was written with a character-part which signified *Wu* or witch.

Among the etiology of disease, the following causes were thought to be predominant during that period:

- Causation by Heaven
- Causation from the ill will of a lesser god
- Causation from demon's worms
- Causation from changes in the weather,
i.e. wind, snow, and phases of the moon etc.

The Chou Li, which dates back to almost 1000 B.C., records the eight prayers contained in the oracle. Questions raised to the gods were:

1. *Cheng*—Will the battle be won or not?
2. *Hsiang*—Will there be any calamity or misfortune?
3. *Yü*—Will one win from his partner?
4. *Mou*—How to clear doubt away and make big plans

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5. *Kuo*—Will the Government succeed?
6. *Chih*—Will one have guests?
7. *Yü*—Will it rain or not?
8. *Liao*—Will a disease be cured?

Part II—Chinese Traditional Medicine (1000 B.C. to 1949)

The transition from a primitive Chinese medicine to systematic Chinese traditional medicine, evidences no distinct lines of demarcation, as is true in many transitional events in history. However various circumstantial observations may be noted.

Chinese traditional medicine as a self-consistent entity had separated itself from magical practices at a very early period in its development. Keele ⁽¹³⁾ has remarked, "It would seem probable that the first civilized people to free themselves from the pure magico-religious concepts of disease were the ancient Chinese." Furthermore although China did not formulate the scientific methodology in Western eyes, the Chinese made many technological discoveries of vital importance to human life at a very early period in history, i.e. printing, paper, gunpowder, the compass, silk, pottery, porcelain and so on. It is interesting to note in passing that the Chinese used gunpowder to make firecrackers for amusement, and that not until missionaries in China brought it to the Western world were guns constructed, thus giving gunpowder its name. The Chinese name for gunpowder is fire powder.

Chinese traditional medicine attained a very high degree of development during the Chou Dynasty (1066 to 221 B.C.). Excellence was achieved in medical organization and public health. The "Chou Li" or "Chou Rituals" distinguished four kinds of doctors: namely, physicians, surgeons, dietitians and veterinary surgeons ⁽⁵⁾. Their various duties were well defined. Careful clinical records were kept, and such facts as vital statistics and cause of death were also recorded. Doctors belonged to the civil service, and at the end of each year their work was examined and the salary of each given according to the success of their effort in patient care.

It is most interesting to note that during the middle of the Chou Dynasty, when this kingdom metamorphosed into the Warring States (480 to 221 B.C.), many philosophers and men of wisdom were born. This unique period of Chinese history might be compared to the Golden Age of Greek civilization, during which many sages, philosophers and religious thinkers lived and worked in the same community.

One of the major pieces of literature in Chinese medicine during this period is the *Yellow Emperor's Canon of Internal Medicine* which consisted of eighteen volumes ⁽³⁾. The origin of this book is obscure. It is believed by some that this book is actually a much later accomplishment by authors of the 8th century B.C., who attributed it to the Yellow Emperor (ca 2700 B.C.) as sole author. According to Needham ⁽¹⁴⁾, the *Yellow Emperor's Canon of Internal Medicine*, which he translated as the *Yellow Emperor's Manual of Corporal Medicine* from the original *Huang Ti Nei Ching*, corresponds closely to the Hippocratic Corpus, which was also a collection of works written during a period of time far exceeding the life of the central figure himself. The Yellow Emperor's *Nei Ching* consists of two parts, the *Su Wen* or the "Simple Questions," and the *Ling Shu* or "Spiritual Gates."