

NEEDHAM RESEARCH INSTITUTE NEWSLETTER

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EAST ASIAN HISTORY OF SCIENCE TRUST

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THE DRAGON'S ASCENT



The Dragon's Ascent Project was publicly launched in Hong Kong on 6th September 2001 at a reception hosted by the Honourable Dr Lee Quo-Wei, Chairman of the Chinese Civilisation Education Trust. At the launch Dr Lee was congratulated by the Chief

Executive of the Hong Kong SAR government, and other leading figures in Hong Kong (picture reproduced by courtesy of Sing Pao Daily News). This five year project has resulted in a series of 8 one-hour television films on Chinese culture, inspired by the work of Joseph Needham together with a

book and a CD-ROM. All rights in the project have been purchased by Pacific Century Cyberworks and the proceeds are being shared between the Needham Research Institute and the Institute for the History of Natural Sciences in Beijing. We are extremely grateful for the support given to this project

by Dr Lee and other generous donors to the Chinese Civilisation Education Trust. The funds received by the NRI will enable us to attain the long sought-for goal of establishing a full-time permanent Directorship of the Institute. Further details of the project are included inside the Newsletter.



EXHIBITION: JOSEPH NEEDHAM IN WARTIME CHINA (1942-1946)

Dr Huang Hsing-Tsung speaking at the opening of a major exhibition on the work of Joseph Needham at the National Science and Technology Museum, Kaohsiung. Report inside.

HOW THE DRAGON ASCENDED

The Dragon's Ascent project grew from an agreement five years ago between a group of academics and a team of international film-makers. The initial discussions took place as a result of approaches made to Dr Christopher Cullen by Alistair Michie, a film-maker who had come across Science and Civilisation in China in the course of his work, and had been struck by the riches it contained. After detailed negotiations, a Memorandum of Understanding was signed in July 1996 between The East Asian History of Science Trust (the body responsible for the Needham Research Institute) and the film-makers regarding the production of the project. This partnership was later expanded to include the Institute for the History of Natural Science of the Chinese Academy of Sciences in Beijing, China.

From the start of the project, the collaborators were agreed on a number of principles. First, they were determined to produce materials of the finest quality possible with the objective of maximising the impact of the materials on the audience; second, funding had to be provided in a way that would not compromise either academic or editorial independence; and finally, all the collaborators wanted to structure sales income in a way that would generate benefits for the academic organisations involved. It was agreed that the Needham Research Institute and the Institute for the History of Natural Science should share equally in the proceeds of the project. On this basis of a shared vision and shared benefits it was possible to construct a close and fruitful collaboration.

All funding for the project was raised through the Chinese Civilisation Education Trust, which was set up in Hong Kong in September 1997. Dr the Honourable Lee Quo-Wei, Chairman of its Board of Advisors, played a vital role in raising funds mainly from Hong Kong philanthropic individuals as well as institutional donors.

The recognition Dr Needham's work has achieved in China explains the unique access given to the Dragon's Ascent film-makers and their academic research partners across the country.

Research for the project commenced at the end of 1997. The following year, the full production team was established and 42 weeks of filming got under way. Over 250 hours of original super 16mm film, hundreds of interviews and over 4,000 photographs were produced.

At the height of operations, over 100 people were involved in the production. They included teams of academics from the Needham Research Institute and the Institute for the History of Natural Science, researchers, camera teams, book designers and writers from leading universities around the world such as Harvard, Chicago and the Australian National University.

The Dragon's Ascent television series comprises the following eight one-hour episodes:

1. Forging the Future
2. Two-way Traffic
3. The Power to Predict
4. History as a Mirror
5. Feast or Famine
6. Family Values
7. The Health Culture
8. The Dragon Ascends?

In addition there is a fully illustrated book written by Dr Christopher Cullen with contributions by a number of other scholars, together with a CD-ROM. We are sure that many friends of the Institute will want to obtain copies of the Dragon's Ascent series and the associated book and CD-ROM. However all rights in these products have been purchased by Pacific Century Cyberworks in Hong Kong who will be solely responsible for distribution. At present, the book is on sale in Hong Kong. Arrangements are being set in place for distribution of the film series, book and CD-ROM world wide and we shall give notice of these arrangements as soon as they are concluded. Meanwhile, we must ask our readers not to write to the NRI asking to be sent copies of these products, since we cannot supply them.

Lu Jiayi: Obituary

We were very sorry earlier this year to hear the news of the passing of Professor Lu Jiayi, former President of the Chinese Academy of Sciences and a distinguished research chemist. Professor Lu was a close friend of Joseph Needham for many years, and visited the Institute on several occasions. In recent years he gave whole-hearted support

to the Dragon's Ascent Project, and even contributed a version of the Chinese saying *yi shi wei jian*, "use history as a mirror" as a dedicatory inscription in his own fine calligraphy. He was undoubtedly one of the best minds of his generation in China, and a worthy representative of the long Chinese tradition of excellence in the sciences. We have lost a very good friend in him.

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“JOSEPH NEEDHAM IN WARTIME CHINA”

EXHIBITION AND SYMPOSIUM IN KAOHSIUNG, TAIWAN, DECEMBER 2000

On December 7th, 2000, the National Science and Technology Museum (NSTM), Kaohsiung, Taiwan, formally opened the exhibition “Joseph Needham in Wartime China”. From 8th to 9th December, a Symposium in honour of the 100th birthday of Dr. Needham was also held. Both events were attended by the Director, Professor Ho Peng Yoke, the Deputy Director, Dr. Christopher Cullen, and the Librarian, Mr. John Moffett.

THE EXHIBITION

The exhibition was, everyone agreed, extremely impressive. Mr. Wang Yuh-Fung, the exhibition designer, had made two visits to Cambridge to survey and select material for it, where Dr. Sally Church and the Librarian had assisted him. He also did a great deal of research on his own account. The Museum is new, one of the largest in the world, and currently well funded. The exhibition was housed in a large hall just off the main lobby, devoted solely to our exhibition. The result of all this very hard work was a marvellous product, both visually and intellectually. The story of the growth of Dr. Needham’s interest in China, his time spent working there, and the genesis of *Science and Civilisation in China* unfolded as one progressed through the exhibition, while the items that had been selected were very professionally and elegantly mounted and displayed. Mr. Wang had also put together relevant photographs and reports from different universities and institutes visited by Dr. Needham during the War, displaying them to great effect in the centre of the exhibition.

The opening ceremony of the exhibition was hosted by the Museum President, Mr. Hsieh Yih-Yung, and was also attended by dignitaries including Dr. Yan Hong-Sen, Director of the Advisory Office of the Ministry of Education. The Minister of

Education had particularly hoped to see the exhibition, but had had to cancel his visit at the last minute. Dr. Yan came as his representative, and showed a keen interest in and knowledge of Dr. Needham and his contributions to the history of Chinese science. The opening had been preceded by a press conference, at which Professor Ho and John Moffett said a few words.

The exhibition will continue until the end of June 2001, when it will be moved to the Museum of Natural History in Taichung. It will remain there for six months until 2nd December, after which it will move again on to the National Museum of Taiwan in Taipei for a further three months.

THE SYMPOSIUM

The Symposium was held in the Conference Centre opposite the Museum. Eleven scholars from the UK, Australia, USA, Japan, and Taiwan presented papers on aspects of Dr. Needham’s life and work. After the official opening by the Museum President, Mr. Hsieh Yih-Yung, Professor Ho spoke first about his many years working with Dr. Needham on the history of Chinese science. Dr. Cullen then talked about the significance of astronomy in Han times, and John Moffett introduced the work of the Institute before turning to the early development of the Library collection. We were all especially delighted that Dr. H.T. Huang had been able to come over to join the event. Dr. Huang was, of course, Dr. Needham’s assistant in Chungking during the War, a former Deputy Director of the Institute, and is the author of the newly published *SCC* volume on food technology. He reminisced about his time at the Sino-British Science Cooperation Office, giving all present a very personal link to that time and place. He was followed by Professor Liu Kwang-ting, Professor of Chemistry at National Taiwan University and pioneer in the study of the history of science in Taiwan, who talked about the friendship between Needham and Fu Ssu-Nien, one of China’s leading historians of the period, and former Director of the Institute for History and Philology of the Academia Sinica. Professor Nakayama Shigeru gave some

fascinating recollections from his long friendship with Dr. Needham and his contacts with the great Japanese historian of Chinese science, Yabuuti Kiyoshi, who sadly passed away last year. Two more of our collaborators on *SCC* were also there. Professor E. Leong Way spoke engagingly about Chinese traditional pharmacology, and Professor Christian Daniels investigated the origin of the vertical wedge oil press in southwestern China. Other papers were presented by Professor Angela Leung (Director, Sun Yat-Sen Institute for Social Sciences and Philosophy, Academia Sinica) on hygiene and public health in pre-modern China; Dr. Wang Daw-Hwan (Institute for History and Philology, Academia Sinica) on the significance of Dr. Needham’s embryological work to his later studies on China; and Mr. Xu Yibao, a Ph.D. student at City University of New York, discussed Dr. Needham’s work on the history of mathematics. Professor Pan Jixing (Chinese Academy of Sciences, Beijing) was unfortunately prevented from being there by visa problems, but his paper on the early development of firearms in China was read by a member of the Museum staff.

All of us felt that the Symposium was a great success, with plenty of time for discussion between papers, and also during the final session, hosted by the eminent historian of Chinese mathematics, Professor Horng Wann-Sheng. There was a great deal of interesting discussion on many subjects raised by the papers, all held in a very congenial and relaxed atmosphere. One of the purposes of the Symposium and of the Museum’s activities in general is to raise public awareness of science, and in this case the history of Chinese science, the contributions to it of scholars such as Dr. Needham, and their relevance to society today. It was very gratifying

therefore, to see the many members of the general public, including school children, who attended and contributed to the lively discussion.

The East Asian History of Science Trust, and the staff of the Institute would like to thank all those involved in making the Exhibition and Symposium such a success: the Taipei Representative Office in the UK for setting the whole project in motion; the British Council (Taipei), the Academia Sinica (Taipei), the Sun Yat-Sen Institute for the Social Sciences and Philosophy (Academia Sinica, Taipei), and the Interchange Association (Japan) for their generous financial sponsorship; and Dr. Anne Farrer, former Assistant Keeper of the Department of Oriental Antiquities, British Museum, for her advice and efforts regarding all aspects of the conservation, handling and display of our Trust’s property in the Exhibition. This was the first time that the Institute had been involved in such a large-scale international exhibition project, and her professional expertise in such matters was an essential component in the success of the collaboration. Thanks are due also to the expert conservators of the British Museum for the remounting of several important scrolls of painting and calligraphy used in the Exhibition, and James Bloxam and Len Boothby in Cambridge for other conservation work on exhibited items. The repair of these items (generously funded by the NSTM), which are of such great significance to the Institute, means that they will have had their “lives” greatly extended, and will be available for display for many decades to come. And finally, of course, our thanks to Mr. Hsieh Yih-Yung and all the staff of the National Science and Technology Museum in Kaohsiung for mounting such a marvellous event.



Official opening of the exhibition, NSTM December 2000
(4th from Left: Hsieh Yih-Yung, Centre: Ho Peng Yoke, Right: H. T. Huang)

PUBLICATIONS

As Chair of the Publications Board I am pleased to announce an addition to the Needham Research Institute Studies series, currently published by Cambridge University Press. This is *Innovation in Chinese Medicine* edited by Elisabeth Hsu (Cambridge 2001, hardback). This substantial volume is a collective publication to which many scholars have contributed chapters: it had its origin in the explorations conducted during a workshop held at the Institute a few years ago, but continued since then through lengthy dialogue and considerable further research.

As its title indicates, the aim of this volume is to look at ways in which medical theory and practice in pre-modern China were subject to change, and to determine the ways in which this change was nucleated and made effective as accepted innovation. Such a volume as this seems well overdue, given the persisting tendency of westerners (and some in East Asia) to describe characteristics of Chinese medicine in terms which leave aside the dimension of change, and to abstract medicine from history. In this volume the contributors document examples of significant innovation ranging from high theory to pharmaceuticals and the genres of Chinese medical literature, striving throughout to set their story in the context of Chinese culture and history on the wider scale beyond medicine. The result is certainly a valuable contribution to scholarship, which should be of interest to a wide circle of readers. Dr Hsu has done an immense amount of work to bring this complex volume to press, and I am happy to be able to thank her for all her efforts in the service of scholarship.

This volume and the research which underpins it were supported in part by generous help from the Lu Gwei-djen Memorial Charitable Trust. We are happy to offer it as a worthy tribute to the memory of Dr Lu Gwei-djen, in recognition of the immense contributions she made to scholarship in general and to the Science and Civilisation in China project in particular, through her lifetime of collaboration with Joseph Needham.

We hope too that Lu Gwei-djen would have been pleased by the reprint of *Celestial Lancets*, the epoch-making work on Acupuncture and Moxibustion that she authored with Joseph Needham. Although this book has been out of print for a number of years, it remains the best historical treatment of these subjects in a western language, and we were therefore very pleased when it was possible to arrange to have it reprinted by Curzon Press, with a substantial new introduction by Dr Vivienne Lo, herself an acupuncture practitioner, but also an active young scholar who studied Chinese at Cambridge, and completed a PhD at SOAS in London under my supervision. She now holds a newly created post at the Wellcome Trust Centre for the History of Medicine, University College London. Dr Lo's introduction provides an appreciation of this book in the light of the important archaeological and literary discoveries of the last few decades, and enables the reader to bridge the gap between Lu and Needham's original writing and the latest developments in the field. It is a tribute to the original authors that Dr Lo insists on the continuing value of this book as a source of inspiration for researchers today. The reprinted text is in the final stages of production, and should be available from Curzon Press around the end of 2001.

Christopher Cullen
Chair, Publications Board

THE LIBRARY

As Librarian, I have been fortunate enough to manage two visits to China in the last nine months. After the opening of the Joseph Needham Exhibition in Kaohsiung last December (see the article in this Newsletter), I went on to Beijing for ten days. I was able to purchase some new books, and visited academics at Beijing Science and Technology University, Beijing University, the Academy of TCM, and, of course, the Institute for the History of Natural Science. In August of this year, I again returned to Beijing for similar purposes, visiting Qinghua University in addition to

returning to the above named places. I was also spirited off to Taiyuan in Shanxi Province for a two day visit. As ever, I am very grateful to all those who showed me such kindness and help. I should especially like to thank Professor Guo Guichun, President of Shanxi University, and Professor Gao Ce of the Institute for Research in Science, Technology and Society, Shanxi University for their marvellous hospitality during my visit.

BOOKS AND DONATIONS

This year the Library was very fortunate to receive a generous one-off grant from the Universities' China Committee to purchase some expensive Chinese reference books, which I acquired during my recent visit to Beijing. This helped to some extent to alleviate the tight money situation this year. We have been able to keep up reasonably well with new Chinese publications, but it has not been possible to purchase as many Western language books as are needed. As ever, I should like to thank all those who have so generously donated books and offprints to the Library. These include: Cha Yongchun, Robert S. Cohen, David Wright, Ho Peng Yoke, Lee Cheung-yeol, A.R. Butler, Geoffrey Lloyd, Mark Elvin, Robin Yates, Kim Taylor, Wang Guozhong, Chen Jiujin, Pan Jixing, Institute for History of Natural Science (Beijing), Niu Weixing, Karl Wulff, Stanley Herzman, National Science and Technology Museum (Kaohsiung), W. Pachow, Liu Chun-tsan, Qian Wen, Horng Wann-Sheng, Lin Zhonggan, Matsumoto Miwao, Michael van Remortel, Jeon Sang-woon, Fr. Domenico Milani, Alfredo Cadonna, Shi Yunli, Peter Marshall, Samia Al Azharia Jahn, Kushida Hisaharu, Li Jianmin, Peter Marshall, Yan Kangnian, Chan Ching-chuen, Catherine Jami, Karsten Flohr, Volker Scheid, Roderick Whitfield, Mei Jianjun, Grace Fong, Wang Huanxian, Gao Ce, Institute for Research in Science, Technology and Society (Shanxi University), Chai Zejun, Shanxi Scientific Publishing House, Ma Jixing, Zhang Baichun, Guo Shuchun, Liu Dun, Herman Reichenbach, Christian Daniels, Qiao Ruijin, Anne Gerritsen, National Central Library (Taiwan), and Wu Liangyong.

ACADEMIC VISITORS

It has been a busy year at the Institute. Dr. Kim Taylor (Wellcome Research Fellow), who last year completed her Ph.D on the institutionalisation and standardisation of Chinese medicine in China after 1949, will be with us for three years. Her current project is on cholera in China, 1862-1932. Li Foundation Scholar Zhou Zhongfu returned to Beijing in December 2000, and we welcomed Dr. Niu Weixing in January, 2001. Dr. Niu lectures at the newly created Department for the History of Science and Philosophy of Science at Shanghai Jiaotong University. He is an historian of Chinese astronomy, currently working on mediaeval contacts between India and China. At the same time, Dr. Lee Choong-Yeol (Kyungwon University, Korea) arrived to spend a year here. Dr. Lee is a specialist in traditional Korean medicine, especially interested in the clash between traditional and Western medicine in Korea in the 20th century. He is working this year on the relationship between traditional and Western medicine in China before 1949. In March and April we were delighted to welcome from Qinghua University (Beijing) the distinguished historian of Chinese architecture and city planning, Professor Wu Liangyong, and his colleague, Dr. Wu Tinghai, to the Institute. Professor Wu began his studies under Liang Sicheng during the 1940's, and very generously presented the Library with a set of the recently published *Collected Works of Liang Sicheng*, which he edited. Our old friend, and former Ph.D student of Dr. Needham's, Professor Hashimoto Keizo (Kansai University) was with us for six months, continuing his work on Jesuit science in China. Two scholars from the Institute for Research in Science, Technology and Society, Shanxi University, Professors Qiao Ruijin and Gao Ce, spent several months based here. We hope that they, and perhaps the President of their University, Professor Guo Guichun, may return next year for further visits, and that this will be the start of regular contacts and visits between Cambridge and Taiyuan. Togo Toshihiro (Jimbunken, Kyoto), also joined us for three months during the summer. Toshihiro is working on his Ph.D

on the history of Chinese medicine, and is also a practising doctor of traditional medicine (as well as ballroom dancer).

During the year we were also joined for varying lengths of time by many other visitors, including Donald Sutton, Nicola Di Cosmo, Lee Jon-chan, Margaret Pearson, Robin Yates, Grace Fong, Valerie Hylton, Lisa Raphals, Hilary Smith, Mark Elvin, Zhang Youshang, Takao Fujita, David Mayor, Chen Chung-yu, Hisaharu Kushida, Chen Shiunn-shyang, Paul Kroll, Francesca Bray, Elena Valussi, Ed Shaughnessy, Rose Kerr, Ma Li, Ray Ma, Zhao Feng, and Magdalene von Dewall (and do forgive me if anyone has slipped my mind!).

John Moffett
Librarian

DISTINGUISHED VISITORS TO THE INSTITUTE

Dr. Needham's reputation, and that of the Institute, mean that we are a regular port of call for visiting VIP's and senior academics from China and elsewhere on their visits to the UK. This year we have been delighted to receive visits from: The Registrar of Hong Kong University, Dr. Richard Ho; Professor Xu Zhihong, President of Beijing University, Professor Zhu Qingshi, President of China Science and Technology University, Hefei, Professor Bai Chunli, Vice-President, Chinese Academy of Sciences, and Mrs. Regina Ip, Secretary for Security, Hong Kong SAR.

CONGRATULATIONS

We are delighted to report that Dr. Elisabeth Hsu, who for many years has carried on research at the Institute under several scholarships and research grants, has been appointed to a post as a lecturer at the Institute of Social and Cultural Anthropology at Oxford University. All of us at the Institute would like to thank her for her many contributions to the life of the Institute in the past decade, and wish her every success in her new job.

SEMINARS AND WORKSHOPS

WORKSHOP ON THE HISTORY OF CHINESE MEDICINE

We took advantage of the presence of a number of specialists in the history of Chinese medicine visiting the Institute this summer to host a workshop on the History of Chinese Medicine on August 3rd. Attending the Workshop were our visiting historians of medicine, Lee Choong-Yeol, Lee Jon-Chan and

Togo Toshihiro, as well as Volker Scheid of SOAS, Anthony Butler of the University of St. Andrews and many others.

The day centred around two presentations, the first being by Dr. Kim Taylor, who chose to present some of her work to-date on the medical reaction to the earliest cholera epidemics in China in early-mid 19th-century China. The paper focussed on four texts by the physicians Chen Xiuyuan, Wang Qingren, Xu Zimo and Wang Shixiong, all of whom were

responding to a cholera epidemic in their locality. Each interpreted it differently, yet one theory in particular, namely that in Wang Shixiong's *Huoluan lun* (1838), has prevailed over the course of time, his work becoming the authoritative text on cholera in China. This led to a discussion of which factors contribute to one theory gaining supremacy over others in the field of medicine.

The second presentation was given by Professor Robin Yates of McGill University, one of whose many projects is the compilation of an SCC volume on the history of Chinese military technology. In this paper Prof. Yates gave us a sneak preview of his findings on military medicine, findings further enhanced by his discovery of some rare military medical texts in Chinese archives. Discussing treatments spanning from Han times through to the Qing, this was an informative talk revealing the predilection throughout Chinese pre-modern history for magical and herbal cures for the treatment of wounds incurred in battle. Both talks provided much food for thought and a forum for general debate.

All in all, it was a harmonious get-together for scholars who meet only too seldom and, aided along afterwards by a couple of bottles of wine and some special Japanese sweets, it made for a very pleasant day.

Kim Taylor

TEXT-READING SEMINARS

Three terms of our regular Friday text-reading seminars have come and gone since the last Newsletter, with over 20 presentations on the usual rich variety of topics, from Han Dynasty excavated texts to Manchu military strategy, motions of the moon to maritime voyages in the Ming. Once again thanks go to Elisabeth Hsu and Kim Taylor for organising these seminars, and to everyone who gave presentations and contributed to continuing to make these such stimulating occasions. Lastly, our thanks to Professor Lisa Raphals (Riverside, CA) for her fascinating presentation on the medical divinations in the Baoshan excavated texts, given "out of hours" as it were, during the summer.



Professor Sivin edited Volume 6 Part VI of Science and Civilisation in China "Medicine" by Joseph Needham and Lu Gwei-Djen, published recently. In this essay he reflects broadly on the ways in which the history of Chinese medicine has developed and suggests fruitful avenues for future progress.

AN EMBARRASSMENT OF RICHES

Professor Nathan Sivin

Historians in the West have been studying Chinese medicine systematically for about a generation. We are able to draw on historical studies that have proceeded in China for nearly fifteen hundred years. That does not mean our work has been done for us. Not only every culture but every generation asks its own questions.

In China physicians carried out almost all the historical investigations. They naturally thought of the doctors they studied as their own precursors. What they wanted to know was what led up to the kind of medicine they themselves practiced. When Europeans began to look at Chinese medicine, they saw it as exotic. They were chiefly curious about how much of it was correct, and what part was novel and might be useful – all from a modern biomedical point of view. Joseph Needham and Lu Gwei-djen, mostly writing in the 1950's and 1960's, shared this view to some extent, but posed a new set of questions. The Science and Civilisation in China project was concerned, not with the single discipline of medicine, but with the whole spectrum of ancient technical activity. They saw medicine as a world enterprise, for they affirmed that many cultures contributed to the modern scientific knowledge on which biomedicine now depends, as well as to its therapeutic resources.

Two new generations of historians of medicine have recently reshaped this discipline. Educated in the humanities and social sciences, they are curious about the body, health, and illness as not only physical and chemical but social and psychological phenomena, and the ways in which not only physicians but

patients experience them. Their ultimate concern, like that of other historians, is not the evolution of techniques alone, but change in individuals, cultures, and societies. In my introduction to the book I have surveyed what new kinds of problems they are undertaking, and in what new directions they have begun to move.

Considering the great variety of problems, new and old, waiting to be investigated, and the great contribution that better understanding can make to the history of medicine as a world phenomenon, the field is badly understaffed. That is due in turn to the great demands that it makes on those who undertake its study.

Riches

From the second century B.C. to the end of imperial China in 1911, there survive at least ten thousand medical treatises of every kind. In addition, we have access to any number of short writings on medicine by doctors and patients; for instance, one anthology recently published in China includes over two thousand excerpts from collections of miscellaneous jottings by individuals, and another excerpts thousands of records pertinent to therapy in historical compilations. There are myriads of unpublished records in the archives of the old imperial palace. Since 1970, one archaeological excavation after another has unearthed hitherto unknown medical books, some older than any that has come down through copying and printing.

There is nothing in any other civilisation like this plethora of evidence, not only for bulk but for continuity. In addition, most of it can be reliably dated, so that we can fairly regularly determine how documents and the evidence in them are related to each other.

When European high culture self-destructed between A.D. 200 and 600, it left large gaps in the written record. The many contributions of Islam to medicine did not get under way for some time after secular culture in the Middle East began to flourish in the eighth century. And we cannot date any Indian medical treatise with reasonable certitude before about A.D. 800.

Chinese medical writing is not just data. It uses every conceivable genre, not only prose but poetry. We have manuals of therapeutic practice and doctrines for more than two millennia. Substantial medical case records from more than a thousand years are easily accessible. We can read accounts of government-run apothecary shops since before the year 1100. Physicians' advertisements and accounts of private clinics four centuries old survive. We even have a novel in which every character is a plant, and a number of others in which physicians good and bad play a prominent part. A scholar in China recently found an eighth-century satire, in classical *materia medica* form, which describes money as a drug that can be bad for the health if one takes too little or too much of it.

Traditional medicine also survives in practice. That is not to say that it has remained unchanged century after century. Far from it; it has evolved continuously, and its most rapid period of change has been the past fifty years. Although the first writings in Chinese about European medicine came in the seventeenth century, the two systems decisively encountered each other only after 1950. The resulting "traditional Chinese medicine" is still generally available in China and in Chinese settlements elsewhere, quite distinct from biomedicine. The differences run much deeper than the former's well-known acupuncture and pulse diagnosis.

Traditional physicians still think of the body as a dynamic complex of vital functions that, when they become unbalanced, is susceptible to disease, rather than in the modern Western style as a physical structure that a lesion or a viral invasion may overwhelm. They still think of it as maintaining its functions, or growing new ones, by a continuous circulation of vitality both inside and outside a circulation system. They still envision it as a set of metabolic processes that admit air, food, and drink, adapt their content to the body's needs, and expel the residues. The organs are governmental offices that supervise processes not precisely located in space; they are not a kind of

kitchen in the Greek sense, or a biochemical factory in the modern sense.

Although these ways of understanding the body still provide a structure for medical experience, today's traditional Chinese medicine differs in a great many important respects from the classical medicine of imperial China. Physicians are no longer trained by apprenticeship to an experienced practitioner, but instead in medical schools patterned on the European model. Many of the instructors in these schools have not carried on independent practices. The curriculum now incorporates courses in anatomy, biochemistry, and other topics that have no traditional counterpart. Young doctors, by the time they have graduated from medical school, frequently do not comprehend the ancient concepts deeply enough to use them in diagnosis, and therefore depend increasingly on Western categories.

Despite these and many other discontinuities, the kernel of Chinese medicine, its kinetic vision of the body, health, and illness, survives, at least for the moment. That is important for the contribution to health care that it continues to make, mainly in China but increasingly elsewhere. It is also important to anyone interested in medicine's evolution for its live connection to the enormous surviving literature.

To the extent that the education of traditional physicians is still derived to a significant extent from ancient classics believed to contain all medical wisdom in the most concentrated form, they learn to make a direct connection between the classics they studied (which until the present generation they memorized whole) and their own clinical encounters with patients. The classics tell them what the signs and symptoms mean, and point toward a program of therapy. The outcome of each treatment in turn clarifies the inner meaning of the often gnomic classic, and prepares practitioners to deal more subtly with the next patient. Success is thus a matter partly of how acutely they see, hear, and reason, and partly of how intimately and actively they remain in touch

with writings as much as two millennia old. This cycle continues throughout each medical career. The many journals of traditional Chinese medicine published today still contain regular reports by practitioners of connections they have discovered between the clinical experience and the founding classics.

In sum, many traditional physicians who grew up and practice in the rapidly changing cities of China today still are engaged in a dialogue with the classical past—as indeed was true in England ca. 1800, when medical education was still largely based on the writings of Galen sixteen centuries earlier. That living practical link to early writings is a considerable advantage in reconstructing the evolution of Chinese medicine. It is sometimes indispensable for understanding what a given technique was.

That does not mean, of course, that every experienced practitioner is prepared without further ado to write sound history. The critical and analytic tools of the historian of medicine are indispensable for understanding what each assertion means, what values and interests it embodies, what its intellectual, technical, and social circumstances were, how it is related to other evidence, and what processes of change the totality of evidence reflects.

Embarrassments

Looked at from another point of view, this remarkably rich store of documentation has greatly complicated the advance of our understanding. I contemplate with pleasure the ignorant good luck that long ago led me to undertake a dissertation on ancient Chinese alchemy rather than medicine. Roughly a hundred alchemical treatises survive from the past two thousand years, and almost all are readily available. It was possible within a reasonable span of time to read all of them more than once. If one wishes to put a topic in its setting, wide reading is the only way to gain some idea of what the context is, and what the sum of ancient work in that enterprise was. When working in a little-cultivated field, when trying to apply a set of tools to it for the first

time, some such bird's-eye view is the only protection against serious misconceptions about where a given piece fits.

Medicine, with its ten thousand or so extant sources, poses a challenge orders of magnitude greater. A few dozen sources, mostly the classics in which physicians were educated in one dynasty after another, have been fairly well studied in China and Japan, but mostly from the practical point of view. They are the staples on which histories of Chinese medicine (almost all of them written by doctors) depend. A few scholars have gone noticeably further in a specialised direction. The essay on the origins of immunology by Lu Gwei-djen and Joseph Needham in the medical volume, for instance, draws on many early books about smallpox and other eruptive disorders that no previous author has used.

But the fact remains that depending on a minuscule proportion of the literature, selected for its historic currency in medical education, gives us a skewed overview. This classics-centered overview has tended to perpetuate itself, and to draw attention away from other kinds of sources.

History is, after all, about change. Despite Hegel's myth of an unchanging China, there was a great deal of change in every dynasty. The documents used most steadily as textbooks over two millennia are not necessarily those most implicated in new developments. Historians' frequent assertions that the vitality of medicine diminished from about 1400 on are, my own reading indicates, uninformed.

A typical instance of poorly mined evidence is the many collections of medical case records that document clinical experience and at the same time exhibit the considerable diversity in styles of practice. Every general history of Chinese medicine in every language ignores them. But they are rich in a kind of information that the classics almost entirely lack, namely data about the relations of physicians to their patients and to other physicians.

Another important but so far under-used kind of source is prefaces to medical books, which indicate not only how the books came to be published but who supported and promoted them, and why. Marta Hanson, only two years ago, showed for the first time that it is possible, using the prefaces to more than a hundred editions of an important medical treatise, to reconstruct the extensive network of those involved in its publication and republication over the long period of its authority.

So far the gains have been modest, and the enormous literature remains far from under control. Many other genres of medical writing, many new questions, beg to be explored.

Conclusion

I have argued that the richness of Chinese medical writing over history is not only fortunate but problematic. What can we do about it? Mustering a regiment of full-time specialists to map the territory within a few years is hardly feasible, even in China. The problem is not just recruiting and systematically training them, but preparing (and indeed persuading) them to take the informed, broad view that is essential if all their work is to cohere. It is an old custom to make a case that each individual whose work one studies is a Great Physician. I would say that, rather than expanding endlessly the roster of the Great and Good, it would be more helpful to begin forming an idea of the mundane norms of practice, a matter of which we are almost entirely ignorant.

If we admit that the research frontier, from which the breakthroughs come, will continue to be sparsely populated, must we throw up our hands? I do not think so. We now have some sense of what resources are available for the study of many interesting topics. The point is to choose our topics of study carefully in order to reconnoitre many dimensions, and to build on new work as fast as it comes out, in order to tie together what lies in these dimensions.

That is what we can now see happening, gradually but unmistakably. My introduction to the medical volume enumerates

some of the dimensions that scholars have begun to plot out, from the highly variant local character of medicine to the bearing on therapy of gender, ethnic group, and (to use a thorny word) class. We have been fortunate in the critical intelligence and good sense of students in a number of countries who have recently taken up the study of the ancient Chinese art. This does not mean that within a couple of decades we will be prepared to say the last word on the topic, but there is no hurry. Time is on our side, so long as we use it to good effect

OBITUARY

We were very sorry to learn of the death of Mrs Lillian Berkman, a member for many years of our sister Trust East Asian History of Science Inc.

Lillian R. Berkman, a pioneering businesswoman, a collector of Renaissance art and an arts patron involved with many of New York's cultural institutions, died on May 1 at her home in Manhattan. She was 79. The cause was liver failure.

Ms. Berkman founded the American Tractor Corporation with her first husband, Marc B. Rojzman, and became one of the first female executives in heavy-equipment manufacturing. She later served on the boards of many corporations, including Allied Stores Corporation and Sterling National Bank. Mr. Rojzman died in 1967.

She was for many years an active supporter of East Asian History of Science, Inc., the non-profit body in New York that has for many years helped the Needham Research Institute by generous fundraising and in many other ways. We mourn the passing of an old friend and a philanthropist in the best American tradition of social engagement combined with business success.

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