NEEDHAM RESEARCH INSTITUTE NEWSLETTER

Newsletter No. 3 EAST ASIAN HISTORY OF SCIENCE TRUST January 1988

NEEDHAM RESEARCH INSTITUTE

Following the invitation of the Trustees, Professor Ho Peng Yoke (Ho Ping-Yü) has accepted appointment as Director-Designate of the Institute and will assume directorship at a date to be determined. In August 1987 Mrs Liang Lien-Chu was appointed Librarian, following Miss Carmen Lee's resignation.

The Institute expresses its warm congratulations to two scholars who have been collaborating actively with the *Science and Civilisation* project. Dr Dieter Kuhn, whose work on textile technology is forthcoming as Part 9 of Volume V, has been appointed Professor of Chinese Language and Literature at Würzburg University. Dr Christopher Cullen, whose contribution will be included in Volume VII, will take up his appointment as Lecturer in the History of Asian Technology at the School of Oriental and African Studies, University of London, on 1 January 1988. It is gratifying for the Institute that the first incumbent of this newly established post will be a specialist in the science and technology of China.

BENEFACTIONS

Financial support has been gratefully received from the Governing Body of Queens' College; and from Mr Ahmed Ben Bella, former President of Algeria, to fund a conference on 'The historical dynamics of Oriental Societies', which will be held at the Institute in the autumn of 1988. Mr Michael Goedhuis, of Colnaghia Oriental (Bond Street, London) has kindly contributed funds to be used specifically for the Institute's garden; and Dr Frederick Ratcliffe (Librarian, University of Cambridge) has presented a handsome visitors' book the use of which was inaugurated by His Royal Highness the Duke of Edinburgh on 12 June last.

The Librarian acknowledges with thanks the gifts of books from the estate of the late Dr J. V. Mills and from Dr Martin Bernal. In addition the Institute has received the working papers prepared by Dr Mills for a register of the names of seaports in south-east Asia. The fifty folders of these papers include a rich corpus of material which awaits systematic investigation, and it is hoped that the Institute may at some stage be able to undertake the completion of such work with the help of scholars who would be interested.

VISIT OF THE DUKE OF EDINBURGH

His Royal Highness and Joseph Needham; in the background Dr Lu Gwei-Djen; Lord Adrian (Vice-Chancellor); Dr Philip Mao (Chairman, East Asian History of Science Foundation, Hong Kong); Sir Brian Pippard (Chairman of the Committee of Management).

Once annually His Royal Highness the Duke of Edinburgh, Chancellor of the University, visits Cambridge to confer honorary degrees on those distinguished in the arts and sciences; and he usually takes the opportunity to pay personal visits to parts of the University or associated establishments to see for himself the work that is being undertaken there. On the day following the former occasion, 12 June 1987, His Royal Highness paid an hour-long visit to the Institute, where he was greeted by the Director, and Associate Director, and the Chairmen of the three Trusts, as well as Sir Brian Pippard, Chairman of the Committee of Management. He then met the Secretary of the UK Trust, other Trustees, and members of the Committee of Management, the architect (Mr Christophe Grillet), and representatives of Messrs Johnson and Bailey who had built the premises. Other distinguished visitors who were in attendance included Lord Adrian (Master of Pembroke College and Vice-Chancellor), Sir William Wade (Master of Gonville and Caius College), and Sir Jack Lewis (Warden of Robinson College).

Informality was the keynote of the occasion, as it was intended that His Royal Highness should see the working conditions of the Institute together with material evidence of its achievements; and above all that he should meet scholars engaged in the Institute's work. Dr Needham conducted the Duke through the catalogue room and other parts of the building including the library. Sir Brian Pippard demonstrated working models of various types of mediaeval Chinese clockwork, deftly showing the mechanism of the water-wheel link-work escapement in action. An example of a Chinese 'magic mirror' was on display, with its particular characteristic optical effects. In the tea-room a full set of the Institute's publications was on display. The Duke was presented with a set of *Science and Civilisation in China* and the *Shorter Science and Civilisation in China*, by the kindness of the Cambridge University Press.

Sunshine blessed the occasion, playing happily on some recently completed handiwork of the gardeners. After touring the rooms to meet the staff and those engaged in research (Mr Blue, Dr Bray, Mrs Brodie, Dr Jami, Miss Lee, Mrs Liang, Mrs Kirkpatrick, Dr Ma, Mr Robinson and Professor Sleeswyck), the Duke stepped on to the veranda to chat with those present — on the anthropic principle, Uri Geller's exploits, etc. ...

The Director of the Institute and the Trustees felt deeply honoured by this royal visit.

VISITORS

The Institute was glad to welcome a number of friends and supporters at a small reception which was held on 14 October. Recent visitors on other occasions have included Dr Hans Ågren (Uppsala, Sweden); Professor Chheng Chen-I (University of California at San Diego); Mr Kim Dongwon (Korea and Harvard); Mr Alan Elliott (Hon.

Sec., Friends of UNESCO); Mrs Fang Chao-Ling (Hong Kong); Ms Judith Farquhar (University of North Carolina); Mr J. F. Ford (ex British Foreign Service, Chungking); Dr Fujiwara Chiyoko (Kyoto); Mr K. Gunwardana (Sri Lanka); Mr and Mrs George Hicks and their sons (Hong Kong); Professor Ho Peng-Yoke (Griffith University, Queensland, Australia); Mr Al Huang Chung-Liang (Illinois and Fukien); Dr I Myung-Hee (Seoul and Strasbourg); Professor Noel Q. King (University of California at Santa Cruz); Ms Carolyn Kuongshin (Seoul); Dr Paul Lee (Canada); Professor Li Hu-Hou (Hefei University, China); Professor Li Shih-An (Birmingham and Kweichow); Mrs Audrey Le Lièvre (London); Professor Clifford Lo (Harvard); Mr D. L. O. Mendis (Sri Lanka); Professor Gert Naundorf (Würzburg); Ms P'êng Ching-Fu (London); Dr V. Radhakrishnan (Raman Research Institute, India); Prof. Philip Rehbock (University of Hawaii); Ms Jane Shen (Montreal); Mrs Frances Shillinglaw (Atlanta, Georgia); Mr George de Silva (Sri Lanka); Dr F. R. Stephenson (Durham); Mr Sun Yi-Feng (Nanking); Ms Nancy Wang Ching-Hung (National Palace Museum, Taipei); Ms Joyce Wu Jung-Tzu (Leiden).

FORTHCOMING

It is hoped that subsequent issues of this newsletter will include two reports. One will concern a conference held in Bogotà, Colombia, under the title 'The Socio-economics of Science'. The second will concern a new interpretation of some texts that record dynastic developments in the pre-imperial period; the new interpretation will seek to relate the evidence of these texts to astronomical observations and the statements embedded in Chinese mythology. Changes in the chronology hitherto suggested for pre-imperial history will be proposed.

It is with deep regret that we report that Dr Dorothy Needham, F.R.S., died on 22 December 1987.

Reception party: (left to right) The Lord Roll of Ipsden (Chairman, East Asian History of Science Trust, U.K.), Mr John Diebold (Chairman, East Asian History of Science, Inc., New York), Dr Joseph Needham, Dr Lu Gwei-Djen, Dr Philip Mao (Chairman, East Asian History of Science Foundation, Hong Kong), Sir Brian Pippard (Trustee and Chairman, Committee of Management).

LIBRARIAN'S JOTTINGS

Of the many portraits of Joseph Needham, perhaps there is one which can be said to have captured his time of transition from one mode to another, of dedicated living. It is a small charcoal drawing, hung on a wall in his main study. The faint Chinese inscription reads, "In the winter of the year *khuei-wei* I was visiting Lanchow at the same time as Dr Li Yo-Sê. It happened to be his birthday, and this drawing was made for a keepsake. (Signed) Wu Tso-Jen, 9th December 1943". There was nothing else in the background; just blank. Then, the "Project" was probably no more than a glimmer in the eye of the Scientific Counsellor at the British Embassy to war-torn China.

Forty-three years later, in his 86th year, an oil painting of him presented at the Great Hall of the People on the occasion of the publication of his collected papers in Chinese, manifested something of what had been achieved and recognized through his writing and research. In the background two standing figures are busily making paper, beside an armillary sphere and man's first magnetic compass in the shape of a Chinese spoon. A dove of peace carrying an olive branch, is winging across the top of the picture, above Needham's head, from left to right.

It means a great deal to have this visual depiction of science and civilisation, particularly on this centenary of the birth of Julian Huxley, the first Director-General of UNESCO, a very good friend and colleague with whom Joseph Needham did pioneering work in the Headquarters in London, then Paris, during the years 1946–1948, whilst Lu Gwei-Djen stayed there for nearly 9 years.

This painting by Chang Ch'ing-T'ao, of the Chinese Navy, is now hanging in the catalogue room — always referred to affectionately as the "Engine-Room" by members of the Institute. Not so much because we are technologically-minded, more for the sound-effect due to the steel drawers gliding and running whenever the card-indexes are consulted. We are constantly made aware of how, like the Tao, everything is on the move. All the time.

Many visitors to the Library and readers of our Newsletter have asked me about the square red seal *Wei Chung-Kuo K'o-hsüeh Chi-shu Shih Yung* — "For the use of the History of Science and Technology in China" — particularly with the regard to its origin. The seal, which appears at the head of this newsletter, is fixed as a plate to all the swing-doors of the Institute. Back in the summer of 1958 when Volume 3 of *Science and Civilisation in China* was going through the press, Joseph Needham and Lu Gwei-Djen made a return visit to Peking. The project was by then well and truly on its way, after the appearance of Volume 1 in 1954, followed by Volume 2 in 1956. The moment was ripe, so to speak, for "putting a seal on it".

An old seal was found, made from a piece of amber marble, already inscribed on its base with some other seal-marks, and crowned with carvings of the popular motif of the four artistic pursuits of a classical scholar, namely *ch'in, ch'i, shu, hua*, i.e. the lute, chess, books, paintings. The lute was balanced on a latticed stand, the chess-board showed signs of wear and tear along one edge, some books were stacked in the corner opposite to scrolls of paintings standing in a container, decorated with orchids on the side. The whole piece dated back to the 18th century, probably from the Ch'ien-Lung reign period. The weight and the dimension felt right, and the seal-maker, Fu Ch'in, decided he would simply slice off the original seal at the base before working on its fateful new career. Nothing was kept, alas, of its first identity except, for a 7-character inscription, down another side of the scrolls' container, proclaiming *Pu K'o i jih wu ju chün* — "Not one day can go by without your company" — leaving it open to interpretation which of the four pursuits was in mind.

L.L-C.

KOREAN FOLK- MEDICINE AND THE CLASSICAL TRADITION

Though herbal remedies and shamanistic curing are mentioned in early Chinese accounts of Korea, little is known of native Korean medicine in the earliest period. By the sixth and seventh century Korea had direct access to high Chinese medicine (known in Korea as *hanŭi*). A number of Chinese medical works were imported into all three Korean states of Koguryŏ, Paekche and Silla; Chinese physicians began to visit Korea, and Koreans trained as practitioners of *hanŭi* medicine. In 692 under United Silla a state medical school patterned on the Thang model was established, and most of the texts studied were Chinese.

While Korean physicians seem to have depended largely on classical Chinese medical theory, Korea was famous in both China and Japan for the variety and quality of its medicinal plants, including the famous ginseng. Most documents relating to Korea before the late Koryŏ dynasty (thirteenth and fourteenth century) have been lost, but it seems that during the United Silla period (668–935) several anthologies of local remedies using Korean herbs were compiled, some of which have been preserved in fragmentary form in the Japanese medical texts of the period. A distinct and sophisticated Korean tradition of herbal treatment continued to develop during this period, and, as in China, there existed in parallel with the high medicine (*hanŭi*) various forms of popular medicine (*min'gan yo'bŏp*) which probably included not only herbal remedies but also acupuncture, moxibustion, various kinds of massage and dietary practices as well as shamanist and other ritual and religious treatments.

By the later Koryo both Chinese and Korean medical works were being printed in Korea, and while most of the Chinese works were theoretical, of the ten Korean works published at the time all but one (on pulse diagnosis) were compilations of prescriptions; only one, alas, has survived, but it is a glorious work, the *Hyangyak ku'gŭp pang* [Prescriptions for Coping with Emergencies Based on Korean Herbs], first printed in 1236. It contains not only numerous prescriptions for treating fifty-five groups of ailments, but also details of the nomenclature and pharmacological characteristics, habitat and preparation of 180 Korean drug plants.

Hyangyak literally means 'local herbs', but in fact the term has always been used to denote drug-plants which grow in Korea as distinct from those imported from China or elsewhere. Although Korean physicians accepted Chinese medical theory without demur, they felt that Korean drug-plants, as well as being more easily available and cheaper, might well prove more efficacious and better suited to local conditions. The tradition of recording folk remedies, and of incorporating them into the *hanŭi* theoretical tradition, thus stems from early times in Korea. Such flexibility was typical of Chinese medical practice generally, for in all schools a relatively rigid theoretical framework was subtly moderated by 'experience', whether recorded or personal, to fit the realities of the specific case being treated.

The reign of King Sejong (1418–50) marked a milestone in the relations between folk and high medicine in Korea, for he ordered the compilation first of a geographical survey of every province, which included detailed information on local drug-plants (the *Sejong chiriji* completed in 1425), and secondly of a systematic collection of local remedies, classified according to Chinese medical categories, the *Hyangyak chipsŏng pang* [Compilation of Native Korean Prescriptions] published in 1433. Furthermore it was at the direction of King Sejong that the Korean alphabetic script, *han'gŭl*, was developed in order to promote literacy among the lower classes.

The invention and propagation of *han'gŭl* added a new dimension to the relation between folk-medicine and the classical *hanŭi* tradition. Up till now the input had been one-way: folk remedies had been incorporated into the *hanŭi* corpus, but only trained physicians were familiar with classical texts, theories and treatments. With the development of an "alphabet" in which to express the Korean language, elements of *hanŭi* could be conveyed directly to the people. A series of medical works translated in whole or in part and known collectively as *ŏnhae* [explained for common use] appeared, the first being the *Ŏnhae ku'gŭp pang* [Prescriptions for Coping with Emergencies] published in 1466. This was part of a wider effort to make simple classical remedies available to the population at large; the preface of a single-chapter work, the *Ch'ŏn'ga ku'gŭp pang* [Emergency Prescriptions for Village Households] stated that the remedies given were simple enough to be used by villagers under the guidance of the village elders.

During the sixteenth and seventeenth centuries *ŏnhae* works were published on such widespread diseases as smallpox, on the prevention of contagious diseases, and on childbirth, a number of them coming from the pen of Hŏ Chun, otherwise famous as the author of the *Tongŭi pogam*.

The *Tongŭi pogam* [Examplar of Korean Medicine], completed between 1596 and 1610, was a compilation of medical diagnoses and treatment, drawn mainly from Chinese and *hanŭi* works, which in no way departed from established classical theory; but the arrangement was so ingenious that it soon came to be used by physicians not only throughout Korea but also in China and Japan. However the work does differ on a number of practical points from more typically Chinese medical texts, the chief reason for this being the importance which Hŏ accorded to various popular Korean remedies and techniques of nourishing the vitality (*yang-saeng* in Korean). The pragmatism of Hŏ Chun was symptomatic of a developing tendency among Korean intellectuals to abandon the metaphysics and idealism of earlier neo-Confucianism in favour of a more concrete and utilitarian approach; *Silhak* (roughly translated as 'practical learning') was the name subsequently given to the proponents of such ideas. The *Silhak* scholars were impelled by an urgent need to reform and revitalise Korean society; they saw political and economic improvements as the keys to change, and devoted themselves in a variety of practical ways to improving the livelihood of the people. It is not surprising, then, to find that a number of *Silhak* scholars recorded folk remedies and penned popular medical works, emphasising the importance of 'experience' perhaps more heavily than any of their predecessors. This predisposed them to take account not only of indigenous remedies but also of Western medical ideas, acquired mainly at that time through Japan. By no means the earliest, but perhaps the most famous *Silhak* scholar to write on medicine was Chŏng Yag'yong (lit. name Tasan), an outstanding philosopher and the author of a number of medical works, some of vulgarisation, some probably Western-inspired investigations of such problems as smallpox vaccination and short- and long-sightedness. By the early nineteenth century we find for the first time, in the works of Tasan and others, a reluctance to accept Chinese theory without question: criticism of the *Shang-han lun* and the elaboration of a new diagnostic theory based on the predispositions of four distinct physical types (*sasang*). This was the first real Korean contribution to *hanŭi* at the theoretical rather than the pragmatic level, but sad to say it probably derives from the philosophy of the Sung Chinese scholar Shao Yung rather than from any indigenous Korean folk-beliefs.

By the mid-nineteenth century medical missions had been established in Korea. Under this direct threat *hanŭi* soon ossified into an intransigeant conservatism, claiming for itself the status of a science handed down intact from the Yellow Emperor, and refusing further dialogue with East or West. Korean folk-medicine has survived this difficult period, and for the last century and a half the only real attempts at amalgamation have been those of the authors of almanachs or medical handbooks for popular domestic use, devoid of professional status but fascinating in their attempt to syncretise the classical *hanŭi* tradition not only with Korean folk remedies but also with Western biomedicine.

Francesca Bray

SCIENCE AND CIVILISATION IN CHINA

published by Cambridge University Press

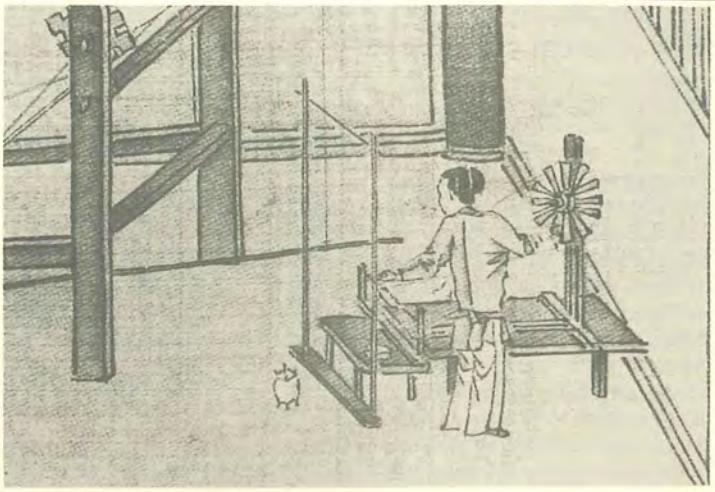
Textile Technology: Spinning and Reeling, Volume V, Part 9 by Dieter Kuhn is now due to be published in February 1988. An integral component of Dr Joseph Needham's major series, this is the first of two parts to cover Chinese textiles and textile technology. This study deals with the evolution of bast-fibre spinning and silk-reeling in the history of China. Both are basic techniques in the production of yarn and thread prerequisite to weaving. For the first time in a publication outside China the raw materials such as hemp, ramie, jute, cotton and silk and the processing techniques applied, are documented and explained in their context of historic evolution, geographic distribution and economic significance in a society based on agriculture. The book covers the time from the Neolithic to the 19th century. As well as Chinese textual sources which have been consulted, translated and interpreted, archaeological and pictorial evidence has been brought together in order to illustrate Chinese achievements in this field.

Professor Kuhn's study reveals the way in which Chinese textile-technological inventiveness has influenced textile production in other regions of the world and in medieval Europe. It explains how textile technology reached its high-point between the tenth and the thirteenth centuries, and attempts to indicate the reasons for its subsequent relative decline. The development of the textile industry in Europe was a key factor in the rise of capitalism. The study of textile technology and the organisation of textile labour in China after the Sung period may help to explain why such development did not take place there.

Titles published to date (1954–1987):

Volume I:	INTRODUCTORY ORIENTATIONS		£40.00 net
Volume II:	HISTORY OF SCIENTIFIC THOUGHT		£70.00 net
Volume III:	MATHEMATICS AND THE SCIENCES OF THE HEAVENS AND THE EARTH		£90.00 net
Volume IV:	PHYSICS AND PHYSICAL TECHNOLOGY		
Part 1:	Physics		£50.00 net
Part 2:	Mechanical Engineering		£80.00 net
Part 3:	Civil Engineering and Nautics		£90.00 net
Volume V:	CHEMISTRY AND CHEMICAL TECHNOLOGY		
Part 1:	Paper and Printing		£55.00 net
Part 2:	Spagyrical Discovery and Invention: Magisteries of Gold and Immortality		£55.00 net
Part 3:	Spagyrical Discovery and Invention: Historical survey from Cinnabar Elixirs to Synthetic Insulin		£45.00 net
Part 4:	Spagyrical Discovery and Invention Apparatus, Theories and Gifts		£80.00 net
Part 5:	Spagyrical Discovery and Invention: Physiological Alchemy		£70.00 net
Part 7:	Military Technology; The Gunpowder Epic		£50.00 net
Forthcoming:			
Part 6:	*Military Technology:* Missiles and Sieges	About	£50.00
Part 9:	Textile Technology: Spinning and Reeling	About	£50.00
Volume VI:	BIOLOGY AND BIOLOGICAL TECHNOLOGY		
Part 1:	Botany		£55.00 net
Part 2:	Agriculture		£65.00 net

For further details of these titles please write to Lorna Williams at Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU.

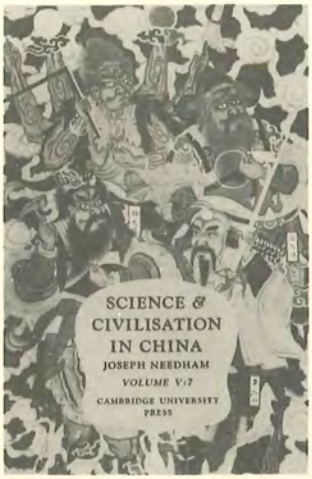


Spooling on the spindle-wheel; section from handscroll 'Sericulture', attributed to Liang Khai, *c.* 1300, but probably later. Cleveland Museum of Art.

The following titles will be published over the next ten years:

Volume V:	CHEMISTRY AND CHEMICAL TECHNOLOGY
Part 8:	*Military Technology:* Shock Weapons and Cavalry
Part 10:	*Textile Technology:* Weaving and Looms
Part 11:	*Non-ferrous metallurgy*
Part 12:	*Ferrous metallurgy and mining*
Part 13:	*Ceramic Technology*
Part 14:	*The Salt Industry, Ink, Lacquer, Pigments, Dyes and Adhesives*
Volume VI:	BIOLOGY AND BIOLOGICAL TECHNOLOGY
Part 3:	*Agro-Industries:* Animal Husbandry, Fisheries, Agricultural Industries and Forestry
Part 4:	*Horticulture and Botanical Technology* (A continuation of the volume on botany already published.)
Part 5:	*Zoology*
Part 6:	*Nutritional Science and Fermentation Technology*
Parts 7 to 10:	*Institutes of Medicine* (Anatomy and Physiology), *Medicine, Pharmaceutics*
Volume VII:	THE SOCIAL BACKGROUND
Part 1:	*Introductory Considerations*
Part 2:	*Economic Contexts*
Part 3:	*Language, Logic and Science*
Part 4:	*Political and Ideological Dimensions. General Conclusions*

It must be emphasised that the subject matter of some of the parts given above is subject to alteration as research proceeds. Further information about these titles will be included in future editions of the *Needham Research Institute Newsletter.*



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