

NEEDHAM RESEARCH INSTITUTE NEWSLETTER

Newsletter No. 15

EAST ASIAN HISTORY OF SCIENCE TRUST

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IN MEMORIAM JOSEPH NEEDHAM 1900–1995

On 10th June 1995 a full congregation packed Great St. Mary's Church in Cambridge for a service in memory of Joseph Needham. There were present many personal friends and acquaintances of all ages from all over the world as well as official representatives of many organisations with which Dr. Needham had been associated during his long and active life. Something of the unique flavour of that life is suggested by the fact that these organisations ranged from the Cambridge Morris Men to the Chinese Academy of Sciences.

The service was organised by Gonville and Caius College, which bade a worthy farewell to one of its most distinguished members in this or any other century. The main address was given by Mr. Brian Harland, a fellow of the College of many years' standing and a life-long friend of Dr. Needham. The choir of the College performed two Daoist chants to fitting musical accompaniment, in addition to pieces more familiar in the setting of the University Church. This was an occasion that would have been most perfectly appreciated by the one person who could not be there to take part, but those of us who were there will not forget it easily.

This section of the Newsletter does not set out to repeat the lengthy obituary notices and appreciations that have appeared in many newspapers and journals over the last year. In the three documents which follow we offer something rather different. One is a formal tribute to Dr. Needham which may well be taken to speak for the entire community of Chinese scholars, and it is presented in the form it took at his memorial service. Another is a personal reminiscence by an old friend and early



Joseph Needham

encourager of his work who knew Dr. Needham well in his war-time years in China. But we begin, fittingly, with some writing by Dr. Needham himself. It is the letter in which he formally announced to Cambridge University Press his plans for *Science and Civilisation In China*. Those of us who (nearly fifty years after the letter was written) are still seeing this massive work off the desks of collaborators and

through the press will smile ruefully when the already almost middle-aged Needham confidently states that he intends to keep the whole thing within the confines of a book "between 600 and 800 pp". If he had done so, what riches we would have missed! Let us be grateful that we can enjoy the rich scholarly harvest of a great man's long and well-spent life - and let us resolve to see that his work goes on.

THE START OF SCC: JOSEPH NEEDHAM'S PROPOSAL TO CAMBRIDGE UNIVERSITY PRESS

Gonville & Caius College,
Cambridge
18th May, 1948

S.C.Roberts Esq.
University Press
Cambridge
My Dear Roberts:

Would you please be so kind as to regard this letter as a formal request on my part that the University Press should publish the book which I have now in preparation : *SCIENCE AND CIVILISATION IN CHINA*. I was very grateful to you for so kindly giving me of your time in our conversation this morning, and I am delighted that circumstances have permitted the first discussion of the present project while you are still at the helm. You know that I feel that my collaboration of many years as an author with you and your colleagues has been an honour as well as a pleasure for me.

In accordance with our agreement I am enclosing herewith two copies of the full plan of the book, and four copies of the one-page summary.

In view of the present state of the field of the history of science and its social background in the Far East, the book I am writing can not hope to be more than a pathfinding one, calculated to stimulate other scholars much better qualified than myself, whether Western or Chinese. To do justice to the fascination of this greatly-neglected subject

would need many lifetimes of work. There is a vast scattered literature, quite apart from the original texts and their criticism, which has never before been reviewed.

I must say that I feel a vocation for this work, for I fear that if I do not devote some time to it, it might well be many years before anyone else appears with the right chance collocation of qualifications. To handle the present theme, one should be a working scientist with considerable first-hand experience of research; but one should also have some knowledge of, and have done some original work in, the history of science and scientific thought in Europe. One requires also a minimum of acquaintance with the Chinese language, sufficient to render one independent of reliance upon translations, and to enable one to consult original sources. One should also have had personal experience of Chinese life, and the opportunity of guidance from Chinese scholars. Although very conscious of my own limitations, I feel that I approach nearer to these requirements than anyone else interested in the subject. In China during four years from 1942 to 1946 I was in a particularly good position, neither purely governmental, commercial nor missionary, but the head of a mission of scientific and cultural cooperation. I was exceedingly fortunate in that my duties took me throughout the length and breadth of Free China, and I lost no opportunity of making notes and consulting with Chinese scholars on the present subject. I was also lucky enough to accumulate an excellent collection of the relevant Chinese books and to get them safely transported back to Cambridge, where I am now making use of them. I dare not, therefore, decline the responsibility which circumstances and inclinations have laid upon me.

Your strong emphasis this morning that it would be very undesirable for such a book to exceed one volume agrees entirely with my own view. I visualise the book as between 600 and 800 pp. My aim is to address it, neither to sinologists nor to the general public, but to all educated people, whether themselves scientifically trained or not, who are interested in the comparative history of civilisation, especially the comparative development of Asia and Europe.

There is one point I would like to make already at this early stage, namely that notwithstanding what I have just said about the audience, I believe that it will be essential to include a certain number of Chinese characters. This for two reasons. First, that unless one does so, it is absolutely impossible (unless one adopts a rather too modern system of romanisation which I would prefer to avoid), owing to the nature of the Chinese language, to secure accuracy and remove ambiguities. Secondly, I believe that the use of the characters stimulates interest; there is now a big expansion of oriental studies, and some of the younger men who did interpreter's courses during the war are just those whom one would like to attract into this field of research. I suggest, however, that the characters be restricted to footnotes on each page (especially for proper names and titles of books and technical terms), and also to an appendix in which I should like to give the original texts, often very short, which are the *locus classicus*, as it were, of each discovery and invention.

Finally, I would like to say that I believe the present work will prove to be a contribution to international understanding, especially, no doubt, after others have found means to relay its conclusions in more popular form. I had in China the definite impression that very many Chinese scholars and scientists are somewhat puzzled by what seems the failure of their great civilisation to give rise to modern science and technology. Throughout Asia there is a kind of hidden "anxiety-neurosis" on this point, for Asian people know that today there is nothing which prevents them individually doing scientific work just as good as that of Westerners. Conversely, Europeans and Americans, though they may have quite abandoned any earlier prepossessions about the "superiority of the white race", still face the fact that nearly all the greatest names in the development of modern science have been Europeans. If then it is possible to show, as I believe that one can, that given the concrete environment, both material and social, at the two ends of the Heartland, with all its differences, it would have been very difficult for either civilisation to have developed differently; then it should be possible to reach a more

balanced appraisal of their achievements. Had Europe suffered from the same inhibitory factors as China, there might well have been no Galileo, no Gesner, no Newton, in our part of the world either. I believe that it is very important that there should be a better understanding of Chinese achievements in science and technology on the one hand, to remove the dominant misconception of China as a purely agricultural and artistic culture; and that the Chinese themselves, on the other hand, should appreciate more of Hebrew prophecy, Greek philosophy and Roman law, so often obscured for them by the brilliance of European-invented technologies.

With best wishes,

Yours sincerely,

JOSEPH NEEDHAM

A SPEECH AT THE MEMORIAL SERVICE FOR DR. JOSEPH NEEDHAM (10TH JUNE, 1995)

BY
PROFESSOR XI ZEZONG,
MEMBER OF THE
CHINESE ACADEMY OF
SCIENCES

On behalf of the Chinese Academy of Sciences, Professor Zhou Guangzhao and Professor Lu Jiaxi, President and former President of the Chinese Academy of Sciences, I join you here with the deepest sorrow to remember that great figure of our time, Dr. Joseph Needham.

The passing away of Dr. Needham is a great loss not only to your people but also to the Chinese people as well. He was one of the most distinguished and respected scholars in the hearts of the Chinese people. Over the past 50 years, his friendly feeling towards China was only enhanced with the lapse of time. On many international occasions, he braved adverse circumstances, speaking in defence of justice and on behalf of the interests of the Chinese people. In the meantime, he was bent on an in-depth

probe into the history of Chinese science and technology, and offered unreserved support and made outstanding contributions to the development of China's science and technology.

Dr. Needham is the first person who conducted a systematic and comprehensive study of the history of Chinese science and technology. He not only accomplished great achievements in natural sciences, but also was well versed in philosophy, history, literature and various languages. Although from a background of Western civilisation, Dr. Needham exhibited a deep understanding of oriental culture through his own perspective. He pioneered the comparative study on the Chinese history of science and technology within a worldwide context, its interaction with other countries and its virtues and shortcomings. His monumental work *Science and Civilisation in China* has fulfilled a transcendence from one civilisation to another. It stands out as a classic of the 20th century's historical research, one of the very few influential works that could offer future directions.

During the later period of the War of Resistance against Japan, Dr. Needham came to China and shared the sufferings and hardships of the Chinese people for four years. He organised the Sino-British Co-operation Office to supply us with books, periodicals, equipment and chemical reagents. In the meantime, in order to introduce to the outside world the difficult situation and the great achievements of wartime Chinese scientists, Dr. Needham published two books entitled *Chinese Science and Science Outpost*. Both of them have attracted so much wide attention from academic circles that the latter was even translated into Japanese in 1986. After the founding of the People's Republic of China, he visited our country eight times for friendship and academic exchanges. As the President of both the Sino-British Friendship Association and the Society for Sino-British Understanding, he received innumerable Chinese scientists in Britain, and recommended and arranged for visits by at least over 100 Chinese and overseas scientists. The name of Joseph Needham is a household word among the Chinese people. Last year he was elected as one of the first foreign members of the Chinese Academy of Sciences. Now I bring his diploma to you. He will live forever in the hearts of the Chinese people.

IN REMEMBRANCE OF DR JOSEPH NEEDHAM

BY
PROFESSOR CHEN LI-FU

Professor Chen Li-fu was the War-time Minister of Education in China, who has continued to take a great interest in SCC even to this day – a period of over fifty years – through his moral and financial support. His contribution describes just one part of the immense encouragement given to Joseph Needham by many Chinese scholars, statesmen and businessmen, to whose generous efforts much of the success of the project must be attributed.

Dr. Joseph Needham, who devoted his whole life to research in the history of science in China, sadly passed away at his home in Cambridge on the 24th March 1995 at the age of 94. The sad news of his death came as a considerable shock, and I have written this article especially to remember a good friend of many years.

I met Joseph Needham during the War of Resistance against Japan. At that time I was head of the Education Department. He was a member of staff at the British Information Office in Chungching (Chongqing), and we happened to be the same age. He came to see me once and indicated that he wanted to compile a book, "Science and Civilisation in China", discussing the contribution of the Chinese people to science and technology in the past. He was of the opinion that China had led the world until the 16th century and he intended to provide detailed proofs in the respective subjects of mathematics, astronomy, physics, mechanical engineering, civil engineering, ship building, technology (gunpowder, paper manufacture and printing), chemistry (alchemy), the salt industry, botany, medicine and agriculture. Dr. Needham emphasised that "between the first and thirteenth centuries, Chinese technological inventions were flowing into Europe continually, in just the same way as European technology was later to enter China." Having heard what he intended, I encouraged him vigorously, replying: "That's excellent because such a book would be better written by you than by

me, since you are not Chinese and there would be a lot of value in compiling a book out of the writings of non-Chinese regarding Chinese things". Hearing this, Dr. Needham was overjoyed, and since he had thus dedicated himself to producing such a book, I gave him a copy of the *Han Shu* and provided him with introductions to all sorts of places where he could go to collect materials, trying my hardest to make things accessible for him, and in this way was of considerable assistance to him, for which he always remained grateful. At that time, around about 1944, the War of Resistance against the Japanese was coming to an end. More than half a century has elapsed since then, and the amazing result of his lifetime's labour is this work which shows us that in the past the Chinese really did achieve spectacularly in the field of science and technology.

After the victory against Japan, Joseph Needham returned to England and devoted himself fully to research in the history of science and technology in China, and actively undertook the editing of Science and Civilisation in China, in total producing 7 volumes of some 8 or 9 million words – surely a monumental work.

In 1967, whilst I was living overseas in the United States, former President Chiang Kai-shek called for a movement to rejuvenate Chinese culture, with its three guiding principles being morality, democracy and science. We both said and did a lot in the areas of morality and democracy, but with regards to science very little was achieved. In compliance with President Chiang's wishes, I undertook the translation of this great masterpiece of some 8 or 9 million words. At that time, I knew that Joseph Needham planned to compile a total of 7 volumes, having already completed 3 of them. Therefore, I wrote to him and, on receiving my letter, he wrote back immediately, indicating that he very much approved of my translating his work into Chinese for publication in Taiwan. Soon afterwards, Former President Chiang asked me to return to Taiwan, and at a farewell dinner held for me by some friends in New York, I mentioned in passing the plans for the translation of "Science and Civilisation in China", at which point Mr. Tung Hao-yun who was present, rose to his feet and said: "Mr. Chen, if, when you're translating this book, you

need any money, I'll support you!". This was a great encouragement to me. After returning to Taiwan, I estimated initially that about 50-60,000 American dollars was needed. Had we let Mr. Tung bear that burden alone, it would really have been too heavy, and so Mr. Tung undertook to provide 40,000 American dollars, Mr. Chang Min-yu of the Chia Hsin Cement Company 10,000 dollars, whilst Mr. Wang Yun-wu gave permission for the Commercial Press to undertake the printing and so my load was lightened. Later, I notified former President Chiang. Having listened to my report, he said: "These plans are excellent. If you don't have enough funds, I can help you". In September 1969, I founded the "Science and Civilisation in China" Translation and Editing Committee with Sun Ko, Wang Yun-wu, Tung Hao-yun, Chang Min-yu, Ku Feng-Xiang, Liu To and myself as committee members. I held the post of Chief Editor and Mr. Liu To was Assistant Editor. At the beginning translation was very difficult. The first volume used more than 1000 different words for reference purposes alone so that to do the translation, one had to have a good knowledge of both Chinese and foreign scholarship. The first book (Volume I) was published by the Commercial Press in January 1972. I sent Dr Needham a copy as a gift, enclosing a note welcoming his criticism and comments and informing him that it would not be long before the second and third volumes went to press. On the 8th March, Dr. Needham replied from Cambridge, England writing: "I have read the translation with great pleasure. The layout and style of printing make it extremely easy to read whilst the typeface and cover are clear and attractive – it is highly commendable! The number of pages in each of the following volumes is at least twice that of Volume I so that the translation will have to be divided in to two or more parts, for only then will it fit together with the first volume. My collaborators and I are really overjoyed that we have finally been able to see a Chinese edition of this book with our own eyes, and we want to take this opportunity to express our most sincere respect for you". From this point on, I followed Dr. Needham's advice and, as I translated them, I divided each of the weighty English volumes into several smaller volumes for publication in Chinese.

Once the first volume of this monumental work had been published, Dr. Needham handed over the manuscripts to his publishers, but it took several years for them to reach print owing to the very large dimensions of each successive volume.. We on the editing and translation team, however, could not waste time sitting around idly waiting, whereupon we took advantage of the lull and addressed an area that Joseph Needham's work had omitted, producing a series entitled "Selected Writings on the History of Science and Technology in China" which once again was published by the Commercial Press. To date, 25 volumes of this series have been published. This series collates vast amounts of material on every area of our country's science and technology in turn, such as agriculture, water conservancy, the salt industry and silk production.

In addition to introducing the world to China's magnificent history of scientific and technological achievement through the writing of "Science and Civilisation in China", Dr. Needham also established the East Asian History of Science Library. Apart from collecting some 70,000 American dollars to subsidise its building costs, I also sent him the Taiwan Commercial Press's edition of the *Ssu-ku chuan-shu* to add to its collection.

In July 1984, Dr. Hsiung Hsien-chu, Director of the State Editing and Translation Centre, visited Europe with instructions from the Education Department to investigate primary education. I asked Dr. Hsiung, when he was staying in London, to make a small detour to Cambridge University to see Dr. Needham and on my behalf, to invite him to visit Taiwan and give a few public lectures. When Dr. Hsiung returned to Taiwan, he informed me that Dr. Needham was pleased to accept the invitation and would come in the September of that year for 2 weeks, making the journey together with his collaborator, Lu Gwei-Djen. On hearing this, I was extremely excited and actively set about arranging for their reception and itinerary. Joseph Needham and Lu Gwei-Djen arrived in Taiwan on 16th September 1984, and their trip received attention from all sides within Taiwan, with the places that they were to visit becoming mobbed by journalists in search of an interview. Whilst in Taiwan, they travelled extensively

throughout the northern, central and southern parts of the island, gaining the admiration of our scholars, whilst arousing the attention of our citizens towards our nation's ancient science, technology and civilisation. Whilst in Taipei, apart from visiting the Committee for the Movement for Cultural Rejuvenation, the Editing and Translation Committee for "Science and Civilisation in China", the Central Research Institute, the Central Library, the Museum of History, the Museum of the Forbidden City and Taiwan University, on the 21st September, Dr. Needham gave a public lecture in the assembly hall of the China Airlines offices on, "The Influence of Traditional China's Science on Western Civilisation". In Hsinchu, as well as visiting Tsinghua University, on the 24th September, Dr. Needham gave a public lecture on the subject of "The Development of Biochemistry". Whilst in Taichung, he visited Chung Hsing University, Tung Hai University and the China Medical College, receiving an enthusiastic wel-

come from both students and lecturers at each campus – indeed, during his visit to Tung Hai University, he held a symposium with several hundred students and staff members of the university in which many valuable research findings were exchanged on all sides. On the 27th September, he gave a lecture on the subject of "The Naming of Plants" in Taichung's Chung Hsing Hall. On the 29th September, he visited Chung Shan University in Kaohsiung, also visiting the computer centre where he showed special interest in the field of Chinese language computing.

President Chiang Ching-kuo received Dr. Needham and Dr. Lu Gwei-Djen, at the Presidential Palace on 1st October. The President expressed his warm appreciation for their having come so far to visit, at the same time expressing gratitude for their hard work in propagating the riches of our Chinese culture. During the conversation, the President made special reference to Dr. Needham's great work, *Science and Civilisation*

in China, saying how filled with admiration he was for Dr. Needham's scholarship, breadth of experience and tireless enthusiasm over decades of writing this work, which has drawn attention to the innate resourcefulness of the Chinese people as well as their contribution to science and technology across the globe.

That same afternoon, the Foreign Minister, Chu Fu-sung, representing the government, presented Joseph Needham with the Order of the Brilliant Star, 3rd Grade with sash, citing his outstanding contribution over many years to the promulgation of ancient Chinese science and civilisation. At 5pm that day, the Education Minister, Li Huan presented the Cultural Medal to Dr. Lu Gwei-Djen, praising her for her tremendous contribution both towards the editing of *Science and Civilisation in China*, the publicising of traditional Chinese culture and towards the exchange of ideas and knowledge between China and the West.

Joseph Needham and Lu Gwei-Djen concluded their 18-day visit to Taiwan on the 2nd

October, having in little over 2 weeks caused a stir amongst the Chinese, not only by the meticulous and comprehensive nature of their great work, but, more importantly, by arousing the interest of the Chinese people towards the science and technology of ancient China. As I bade them farewell at the airport, Dr. Needham said to me: "The Chinese invented gunpowder as early as the thirteenth century but only when it reached the West was it developed into rocket space vehicles. The wisdom of the Chinese race is immense, but because of all the upheavals of the last few hundred years, it still awaits research and development, hence everything appears backward, which is most unfortunate. The Chinese people of today, though, should treasure their valuable traditions and actively develop their science and technology, confident of their ability to match the achievements of the West". The memory of him saying these words at the airport is still fresh in my mind and now that he has passed away, I am moved to tears as I recall it.

In honour of the work of the Late Joseph Needham

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