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# China Report

SCIENCE AND TECHNOLOGY

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CHINA REPORT  
SCIENCE AND TECHNOLOGY

No. 206

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## NATIONAL DEVELOPMENTS

### IMPORTANCE OF TEACHING HISTORY OF SCIENCE STRESSED

Beijing ZIRAN BIANZHENGFA TONGXUN [JOURNAL OF DIALECTICS OF NATURE] in Chinese No 2, 10 Apr 83 pp 69-71

[Article by Gao Dasheng [7559 6671 5116] of Qinghua University: "Attention Must Be Given to Teaching and Research in the History of Science and Technology"]

[Text] Lenin once profoundly pointed out: "If one wants to carry on the cause of Hegel and Marx, one should dialectically study the history of human thought and of science and technology." When founding the world view of dialectical materialism, Marx and Engels studied and researched in exhaustive detail the newest results of the science and technology of their times and the history of the development of science and technology, thereby setting an example for us. According to the above-mentioned guidance of Lenin's, if we want to become dialectical materialists, we must possess a knowledge of the history and science and technology. I completely agree with Comrade Qian Sanqiang's [6929 0005 1730] idea: "The history of science and technology is a treasure land containing enormous spiritual riches. If we are able to give attention to this treasure land, and draw nourishment from it, I believe the work of all trades and professions will greatly benefit." When teaching graduate students and college students the history of science and technology, we have come to deeply understand that the knowledge of this history is an indispensable component part of the structure of a student's knowledge and that it is a lively subject in the students' education in dialectical materialism. Copy after copy of preliminary study summaries reflect the fact that students thirst for the ideological nourishment drawn from this "treasure land" that is the history of science and technology. They say: We want to study the scientists' self-cultivation of moral character, the noble sentiments and courageous spirit of devoting their life to scientific truth; we want to study the methods of scientists in inventing and creating, their ways of knowing things, and, raising these things to the heights of methodology and epistemology, make a philosophical outline of them; we want to study the experiences and lessons of the scientists' successes and failures in their scientific explorations; we want to study the course of the history of the development of science and technology, the relationship between science and technology, and the internal exciting causes in the development of science; etc. The students also demand that the teaching of the history of science and technology be closely integrated with the reality of our

country. They say: "Through an understanding of the glorious success of China's science and technology in ancient times, our national sense of pride and self-confidence will be strengthened; from the experiences and lessons of the backwardness of our country's science and technology in modern times, a sense of responsibility and an enterprising spirit will be aroused. We are determined to throw ourselves into the struggle to develop China with vigor and develop the motherland's science and technology." These words of the students brimming with fervor show vividly that the history of science and technology is a science rich in vitality; at the same time they are a tremendous encouragement and spur to teachers engaged in teaching courses in the history of science and technology.

In recent years, although our country has made a good start in the work of teaching and research in the history of science and technology, it should be said that it is only a beginning and before us lies a formidable task. In order to advance this work in a down-to-earth way, I think we should stress handling well the following several questions.

We must advocate the integration of the history of scientific thought with the history of scientific experiments. A history of science is a history in which scientific experimentation and scientific theory permeate each other and go forward hand in hand. Since the beginning of the 19th century, following the in-depth development of scientific research there has been a division of work between theoretical research and experimental research--e.g., in physics research there has been a division of work between the theoretical physicist and the experimental physicist--but, looking at the whole of scientific and technological undertakings, the two kinds of research coordinate with each other and are in complete harmony. Of course, in the teaching of the history of science and technology today, there may be a suitable division of work based on the different objects of the teaching. For example, some would stress the history of scientific thought and others the history of scientific experimentation. But this "division of work" definitely cannot be understood as a "division of the family." Precisely the opposite is the case: the work of teaching and research in the history of science and technology should be devoted to revealing the internal links and movement of contradictions between scientific theory and scientific experimentation. The history of science shows that scientific experimentation is the foundation of scientific theory. A contradiction between the new facts of scientific experimentation and an original old scientific theory means that the contradiction contains a new theory, and it is a powerful motive force for the development of science. Therefore, in teaching the history of science, one must stress the position and role of scientific experimentation, especially introducing and analyzing milestone scientific experiments (like the Michelson-Morley experiment and the blackbody radiation experiment in physics) so that the students will understand: without scientific experiments there would be no development of modern science. At the same time, we must also clarify the design, conception, and method of scientific experiments as well as the role of scientific instruments in scientific experiments. While we stress the role of scientific experiments, we must also explain the historical sequence of ideas in the evolution of scientific thought and expound on the history of the development of scientific thought. In our teaching and

research in the history of science, if we were to stop only at recording the scientific successes of individual scientists, turning the history into an "account book" of a type that chronicles events, then the history would certainly be flat and insipid. We should put our stress on the history of scientific thought, i.e., reveal the whole process in scientific thought from conception, generation, development, and leap to transformation into scientific theory, viz, the history of the growth of scientific thought. Therefore, in the teaching and research in the history of science, we must not only collect and to textual research on scientific facts, but also study the nature of the laws of scientific knowledge and development, and from them draw nourishment in the form of an epistemology and methodology of universal meaning.

How are we to reveal the path that scientists took to grow to full stature, and how are we to evaluate their historical achievements? This is an important theoretical question in the teaching and research of the history of science and technology. In the past some books and periodicals on the history of science frequently stressed the individual scientist's ability, wisdom, and inspiration, and frequently overlooked the social and historical conditions behind the emergence of a great discovery. For example Newton's apple and Watt's kettle lid became the "sources" of new ideas in science and technology. Education in the history of science must comprehensively analyze the objective and subjective conditions for a scientist to obtain a major breakthrough: we must look at the individual scientist's qualities, like being diligent in study, attaching importance to practice, and daring to blaze new trails; even more we must look at the close interrelationship between the appearance of a great invention, the social and historical conditions at the time, and the level of development of science and philosophical thought. Many excellent scientists were good at using the stage and conditions provided by society at a given time to display their own ability, and then were able to make brilliant achievements. The great masters in the history of science have left us many legacies, so what should we learn from them? In teaching the history of science, we should make a point of leading students not only to study the outstanding scientific and technological achievements they created, but also to study their noble moral sentiments, so that they become the models for college students in creating socialist material civilization and spiritual civilization. Just as Einstein said in "Mourning for Marie Curie": "At the time when a lofty personage such as Madame Curie ends her life, we do not want to be content only to recall the contributions that the results of her work have already made to humankind. The significance of a first-rate personage of the times and the course of history in the aspect of his or her moral character is perhaps greater than in the aspect of his or her pure achievements in ability and wisdom. Even the latter hinges upon the degree of the personage's character and morals to a far greater extent than is normally thought." Naturally, when studying the outstanding scientific achievements and lofty character of the great masters, we must also, in the spirit of seeking truth from facts, point out the limitations imposed on them by the historical conditions at a given time and from this draw a lesson.

Carrying on old ideas and creating new ideas is basic contradiction in the development of science and technology, and is also an important problem for research in the history of science and technology. Carrying on old ideas is the continuity in the development of science; the creation of new ideas is the objective of carrying on old ideas. Newton said it well: If I was able to see farther than other people, it was because I stood on the shoulders of giants. One of the objectives in teaching the history of science and technology is to help the students to see where the shoulders of the giants are, in order, on the basis of predecessors, to create new ideas. In the past several years, because accounts have been settled with the ultra-"leftist" ideological trend as well as its pernicious influence of nihilism in dealing with the scientific and cultural legacy, the atmosphere for study among students has thickened and their zeal for arduous study has become more than sufficient, which is a gratifying phenomenon. The problem now is to further heighten the realm of thought and, on the basis of studying and carrying on old ideas, to advocate boldness in creating new ideas. The lofty ideal is to stimulate the enormous motive force of the spirit of blazing new trails. In the history of science, the lofty spirit of many scientists of courageously devoting their lives to the pursuit and defense of scientific truth will forever be worthy of our study.

Concerning the relationship between the general history and the subject history (or special history) of science and technology, I think that the general history should bring along the special history and that the two should be organically integrated. For the students, we must first of all demand that they study the general history in order that they will gain a basic understanding of the entire process in the history of the development of science and technology, and its laws in their entirety. On the basis of the study of the general history of science and technology, by means of such forms as course assignments, we will then arouse the students to do research themselves in the subject history of their speciality. Everybody reports that the rewards are great in having many students, on the basis of widespread gathering of data, write many good articles on the histories of their subjects, in that they not only grasp the threads of the history of the development of science but also broaden their horizons. A professor of our school demands that graduate students make up a research course in the history of the development of their subjects. He says: "Before writing this thesis a student certainly must write this kind of study report (note: meaning making up a study course in the history of the development of his subject), in the hope that he will be able to know about the emergence, developmental process, and present state of the questions that are raised, and thus estimate the value, position, and necessity of the questions. In this way, when it is time to defend his thesis, he will have fairly comprehensively analyzed the questions and will have his own opinions." I think that the views of this professor are right and full of foresight. The goal of training graduate students in that they become high-level scientific and technological talents, and in the future many of them will not only be participants in tackling key problems in science and technology but also organizers and leaders. Without a doubt knowledge of the history of science and technology will be of important significance for them in forming strategic viewpoints, improving their abilities to organize and lead, and improving scientific research methods.

9727

CSO: 4008/129

CHINA AIMS FOR BIG JUMP IN COMMUNICATIONS

Beijing ZHONGGUO RIBAO [CHINA DAILY] in English 29 Jun 83 p 1

[Text]

China's "backward" communications system will receive a major boost over the next seven years and aim for modernization by the year 2000.

The Minister of Posts and Telecommunications, Wen Minsheng, told China Daily yesterday that plans have been drawn up to quadruple both the number of telephones and the handling capacity of the postal service.

"Our communications system is antiquated and extremely poor," Wen said. "It has failed to keep pace with the development of the national economy."

Over the last 30 years, China's gross industrial output value has increased 45-fold, while the number of telephone has gone up only five-fold, he said.

In Beijing, which has a population of nine million, there are currently only 200,000 telephones — an average of only one telephone for every 45 people. Nearly all of China's long-distance telephone calls still use overhead lines.

"But this backward picture will change," the minister pledged. "By the year 2000 all units, enterprises and institutions will be able to have telephones installed on demand."

More public telephones and telephones in individual apartments can also be expected.

"Literally every village will have telephones," Wen said. At present more than 300,000 rural production brigades do not have a single telephone.

In addition more than 70 per cent

of local authorities from county level upwards will have long-distance telephones with direct dialling, as well as international and telegram services. Microwave cables will also be constructed.

The ministry's plans project that there will be 20 telephones for every one hundred people in major cities, and nationally the figure will triple from one to three telephones per 200 people.

The minister said that although the communications system has a long way to go, encouraging progress has been made since the "cultural revolution" ended.

Four-hundred thousand telephones have been installed in the last two years, compared with an average of only 40,000 per year during the ten years of turmoil, he said.

This year the ministry expects to install 250,000 telephones in urban areas and add 1,250 long-distance lines.

Before launching its own communications satellite, China will lease the INTELSAT channel to facilitate communications in its distant and border areas, the minister said. Work will begin on four satellite ground stations this year.

The minister visited France and Belgium last month to strengthen links with countries with advanced communications.

"We hope to co-operate with those countries in transforming our microwave equipment plants, jointly producing electronic teleprinters, and we want to buy some pieces of digital packed switching equipment," Wen said.

## APPLIED SCIENCES

### ORE SORTING IN CHINA REVIEWED

Suzhou FEIJINSHU KUANG [NONMETALLIC ORES] in Chinese No 2, 1983 p 31

[Article: "Present State and Future Development of Research on Sorting Technology in China"]

[Excerpt] Research on sorting technology began in China at about the end of the 1950's. One after another the Ministry of Metallurgical Industry, the Ministry of Coal Industry, the Ministry of Building Materials, the Second Ministry of Machine-Building and the Fourth Ministry of Machine-Building organized manpower and invested in research on this technology. They also made definite accomplishments.

The ores on which sorting technology scored initial successes fairly early in China were mostly scheelite, uranium, diamonds, and gypsum. For example, bank in August 1983, the Yaoling scheelite mine in Guangdong used multipath photoelectric ore sorting machines to sort scheelite ore. For technological sorting criteria, please see Table 5. In 1967, the Mengyin diamond mine in Shandong used the GFJ-Type 3 single-path high-frequency sorting machine in semiindustrial experiments on the separation of kimberlite (the mother rock of diamonds) from the adjoining rock. Results are shown in Table 6. The Jiangxi Ferrous Metallurgy Institute made an early start and had fair success in the development of light sorting machines. The diamond x-ray machine developed by the Hunan 601 Mine was certified as providing fine results through numerous years of use in production. When the FJS-I type light sorting machine experimentally developed by the Suzhou Nonmetallic Mines Design Academy was used to sort gypsum at the Yingcheng gypsum mine, the fiber gypsum grade in the concentrate reached as high as 95.5 percent, and the fiber recovery rate was higher than 90 percent. The Fifth Institute of the Fourth Ministry of Machine-Building did a large amount of work and achieved a lot of success with radioactive sorting.

Table 5. Result of Photoelectric Sorting of Scheelite Ore at Yaoling Scheelite Mine

1 机号	2 指 标					
	3 粒度 (毫米)	4 处理能力 (吨/小时)	5 脉石选出率 (%)	6 废石丢弃率 (%)	7 脉石中含废石 (%)	8 废石中含脉石 (%)
9 1°光选机	-45+28	6.681	50.54	94.12	43.94	7.23
9 2°光选机	-28+19	1.98	64.40	94.79	30.52	6.52

Key:

1. Machine Designation
2. Indices
3. Size
4. Processing Capacity (tons/hour)
5. Gangue Sorting Rate (%)
6. Barren Rock Discard Rate (%)
7. Barren Rock Content of Gangue (%)
8. Gangue Content of Barren Rock (%)
9. Light Sorting Machine

Table 6. Results of High Frequency Sorting of Kimberlite and Adjoining Rock

1 分选粒度 毫米	2 产物名称	3 产率 (%)	4 金伯利岩		5 废石		6 处理量 (吨/小时)
			7 含量(%)	8 回收率(%)	9 含量(%)	9 丢弃率(%)	
10 精矿		22.3	43.90	91.85	56.1		
-120+30 11 尾矿		77.7	1.69	8.15		85.8	9.0
12 原矿		100.0	13.30	100.00	86.7		

Key:

1. Sort Size (millimeters)
2. Name of Product
3. Output Rate (%)
4. Kimberlite
5. Barren Rock
6. Amount Processed (tons/hour)
7. Content (%)
8. Recovery Rate (%)
9. Discard Rate (%)
10. Concentrate
11. Tailings
12. Native Ore

Research on sorting technology by other trades and industries also made very great advances. Examples are the peanut sorter (developed jointly by the Qingdao Import-Export Company and the Marine Academy of Shandong Province), and the rice sorter (developed by the Hailun Radio Plant of the Fourth Ministry of Machine-Building Industry, both of which can be used in production.

In addition, some sorting equipment has been introduced from abroad in recent years, and this has helped the country gain experience in developing sorting technology. Some copies and spare parts have been patterned after them. Necessary importation doubtlessly is beneficial to the development of China's sorting techniques.

However, because of the way in which manpower and resources are scattered, and because of the lack of a commensurate coordinating unit, as of now a great distance must be traveled to satisfy needs in development of the national economy. Sorting technology deserves to be called a multiple technology, and several dozen people throughout the country are engaged in this kind of research work. However, there is no single fully staffed, much less coordinated, plant. Herein lies the crux of why results have not been substantial on this problem to date. China's resources in scientific research personnel and funds are currently still limited, and the foregoing state of affairs must inevitably lead to duplication in work and a waste of manpower and material resources. It will result in a long research cycle, low standards and poor quality. Consequently not one product with a finalized design has come out so far.

With proper readjustment of existing units specializing in research or sorting techniques, and with organizational support, it is not difficult to imagine major breakthroughs in this field within a short period of time. The author might as well put forward some of his own hopes, namely, providing a suitable number of electronics, machine manufacturing, optics, technological (ore sorting) and geology experts to work with production plants in setting up a sorting technology theoretical research and sorting machine development center (or company), which would greatly benefit the development of sorting endeavors in China.

9432

CSO: 4008/128

ERRATUM: This BRIEF republished from JPRS 84007 of 29 July 1983, No. 204 of this series, p 14 in order to provide the proper name of two ministries.

APPLIED SCIENCES

BRIEFS

DRILLING MACHINERY SYMPOSIUM--A symposium on technological development of vertical shaft drill machine, sponsored jointly by General Bureau of Heavy Mining Machinery, Ministry of Machine-Building Industry, and Capital Construction Department of the Ministry of Coal Industry, was held in Luoyang in late March 1983. The condition of development of vertical shaft drill machine, in China was reviewed and summarized before the delegation proceeded to evaluate the L-40 Drill Machine made in West Germany. It was acknowledged that vertical shaft drills made in China had provided meritorious service in the construction of coal mine shafts and the improving and renovation of these drill machines have made them even more obviously superior. It was resolved by the delegation that on the basis of the L-40, a light and highly efficient vertical shaft drill will be developed, however. It was proposed that Luoyang Institute of Mines will assign a chief designer and the Shaft Construction Institute will assign the chief engineer, while the Luoyang Mining Machinery Plant will be responsible as the general contractor for its manufacture. [Text] [Luoyang KUANGSHAN JIXIE [MINING MACHINERY] in Chinese No 4, Apr 83 p 40] 6248

CSO: 4009/180

LIFE SCIENCES

BRIEFS

ARTIFICIAL VALVE TRANSPLANT--Two years ago, the Changkai Hospital, attached to the Second Military Medical University, transplanted a Chinese-manufactured artificial valve in the heart of a woman from Henan Province. Six months after the operation, she resumed work in the fields. She gave birth to a healthy baby in March this year. The cardiogram showed that her heart is normal. Not long ago, another woman, who also had a heart valve transplant in the same hospital, gave birth to a baby. Both mother and baby are healthy. This shows that Chinese-made artificial heart valves are up to advanced standards. [Summary] [OW150621 Beijing Domestic Service in Mandarin 0200 GMT 11 Aug 83]

CSO: 4008/183

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84057 of 5 August 1983, No 205 of this series  
pp 10-13.

## SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

### BIOGRAPHY OF PROFESSOR WANG YOU PUBLISHED

Beijing YAOXUE TONGBAO [CHINESE PHARMACEUTICAL BULLETIN] in Chinese No 5, 1983  
pp 43-45

[Introduction of Pharmaceutical Personage by Tu Chuanzhong [1458 0278 1813]  
and Yen Yuemin [0791 2588 2404]: "Professor Wang You, a Bio-Organic Chemist"]

[Text] Wang You [3076 3731] styles himself Junmou [0689 6180], a native of Hangzhou municipality, Zhejiang Province, born in 1910 and graduated with a Bachelor of Science degree from the Industrial Chemistry Department of the privately-run Jinling University in Nanjing municipality in 1931. He studied at the Institute of Chemistry, Munchen University, Germany in 1935 and was granted a Doctor of Science degree Magna Cum Laude in the winter of 1937. He is a researcher and the director of the Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences (CAS); vice president of the CAS's Shanghai Branch; member of the Chemical Department of the State Council; chief editor of HUAXUE XUEBAO [ACTA CHIMICA SINICA]; member of the editing committee of KEXUE TONGBAO [SCIENCE BULLETIN], ZHONGGUO KEXUE [SCIENTIA SINICA] and SHENGWUHUAXUE YU SHENGWUWULI XUEBAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA]; and member of the Standing Committee of China Chemical Society.

Wang is a well-known chemist. His specialty is organic chemistry and biochemistry. Ever since he began engaging in scientific research some 50-odd years ago, he has always worked at the front line and has never departed from laboratories except for one and a half years during the "Great Cultural Revolution" period when he was illegally isolated.

After his graduation from Jinling University and before his departure to study in Germany, Professor Wang worked in the privately-run Union Medical College, Beijing, following Wu Xian [0702 2009], a biochemist, in research on male hormones and so forth. In the period from October 1935 to December 1937, at the Institute of Chemistry, Munchen University, Germany, he was a postgraduate directed by the famous Nobel-prize-winning chemist, Professor Heinrich Wieland in the study of making unsaturative cholic acid and cholesterol, and synthesized acetyl cholesterolone and acetyl cholesterol. After receiving a doctoral degree, he continued his research there. From September 1938 to March 1939, he worked as a visiting researcher in the Department of Organic Chemistry, Kaiser Wilhelm Institute for Medical Research at Heidelberg. Under the direction of the world-famous Nobel-prize-winning chemist, Professor Richard Kuhn, he engaged in the research of chemistry of

Safranine and synthesized 14-acetyl safranine. In April 1939, he politely declined the invitation to remain working there by Professor Kuhn and transferred to London, England and worked as a visiting researcher at the Institute of Biochemistry, Methodist Medical College on the synthesis of substances of female hormones and so forth. After going through the strict training and cultivation by famous professors, Wang formed a serious and careful style of scientific research and spirit of devoting himself to the sciences and daring to blaze new trails; all these exerted tremendous influences in his scientific career thereafter.

In August 1939, Wang returned to Beijing, China and worked in the privately-run Union Medical College as instructor and then associate professor. In addition to instructing bio-organic chemistry, he spent most of his time on the determination of pregnanediol in the urine of pregnant women and the study of effective elements and pharmacologic effects of Chinese angelica. In January 1942, the College was occupied by the Japanese army and there was nothing to do but leave for the South.

In the 1940's, Wang was hired as director of the privately-run Shanghai Bingkang Pharmaceutical Plant and concurrently as director of its laboratory. He developed work related to pharmaceutical research there and devoted himself to the improvement of injection production and the synthesis of sulfa drugs at first; it was ill-informed because by that time Shanghai was under Japanese occupation. In any case, he heard by chance that there was a newly-invented special antibiotic that was cultured from mold. For the good of mankind, he studied hard in order to master knowledge in fields of microbiology and fermentation, and made up his mind to blaze trails for antibiotics research in China. After going through several years' research and experiment and overcoming various difficulties, he finally isolated a new kind of antibiotic--citrinin, and wrote a thesis titled "Citrinin." After this thesis was published in the U.S. magazine "Science" in 1947, U.S. news agencies dispatched this news from San Francisco and reported that Chinese Chemist Wang You and his colleagues succeeded in making citrinin, an antibiotic whose effect is similar to penicillin. Nevertheless, the capitalists of the pharmaceutical plant, for the purpose of making money, were against Wang's research of citrinin and fired him. In September 1947, Wang worked as a researcher in the preparatory office of the Medical Institute of Academia Sinica, continuing the research of citrinin in the aspects of its structure, synthesis, biological actions, toxicity, pharmacology and so forth. This was the first time China had a rather systematic research of an antibiotic. After China's liberation in 1949, CAS was organized and Wang was appointed a researcher of the Institute of Physiology and Biochemistry and transferred as a researcher and Deputy Director of the Institute of Organic Chemistry in late 1952. The party and government thought highly of the development of science in China and provided favorable conditions for scientific research, and these helped to finally gain a satisfactory result in research of citrinin. Wang wrote about 10 theses on citrinin, and one of them--"A Chemical Study of Citrinin" was awarded third prize of China's Scientific Awards for the first time in 1956. In 1952, Wang took part in the sponsorship of the organizing and convening of China's first working conference on antibiotics, he again took part in the

organization of the Shanghai Committee of Antibiotics Research and the National Committee of Antibiotics Research. In 1955, he presided over the International Scientific Conference on Antibiotics, all these have played important roles in promoting our country's antibiotics research and production. Thus, Wang You is one of the founders of China's antibiotics research. In 1962, Wang was appointed Acting Director of the Institute of Organic Chemistry, CAS. Under his direct leadership, research of basic elements of life--nucleic acid, protein and polysaccharide were set up step by step. In 1965, for the first time in the world, China was successful in total synthesis of crystalline bovine insulin; this achievement was given a high value by the international scientific community and was awarded a prize in the 1978 National Science Conference. Wang was one of the leaders of this program, he managed and participated himself in the work of synthesis of the A-chain of this bovine insulin. In late 1981, China, again, was the first country in the world to successfully synthesize a ribonucleic acid with biological activity--yeast alanine transfer-ribonucleic acid (T-RNA). This indicated once more that China is steadfast in its position to remain in the ranks of countries advanced in biological macromolecules. Wang, as one of the leaders of this achievement, made new improvement and had new findings in the ways and mechanism of chemical synthesis; these show his constant effort in basic theory.

In the field of pharmaceutical research, under Wang's leadership, success was also achieved in verifying the chemical structure of the effective constituent of *fraxinus bungeana*--substance of *fraxinus bungeana* which has antidiarrheal efficacy, and at present, positive research is underway on the structure of the protein contained in the root of Chinese *trichosanthes* which is effective in inducing labor. He managed also the research and creation of a new kind of substituted palm--carboxymethyl saccharogenic starch, it is highly effective and safe. This is an original Chinese creation, and in comparison with dextrose glycoside, which is used worldwide, their effects are the same but the former has the advantages of ready supply of raw materials and simple productive technology. It was already applied widely in clinical utilization.

In addition, Wang initiated research of organic and biological catalysis in China. Results gained in the research of petroleum dewaxing in submerged fermentation have been popularized in the fermental production of low freezing-point petroleum in some refineries, and results gained in the research of petroleum yeast-protein feedings have laid a foundation for the research and production of petroleum protein. Besides these, he also made contribution in the research and production of the reactive and sensitized dyes of China.

Wang is serious in work and meticulous in scholarship, he always gives directions personally in every research task assigned to him, from designation of process, method of synthesis, means of analysis, sorting of data to the final completion of a report; demands set by him are strict and not the least bit of negligence is allowed. He trains the younger generation by personal example as well as verbal instruction. All youths cultivated by him are now backbones of their professions, some of them are even in the leading positions of research departments.

More than 100 academic theses by Wang have been published in various periodicals at home and abroad, more than ten of his achievements in research were commended by the state and the CAS. The party and people give him the trust and honor he deserves for his brilliant ability and outstanding contributions. In 1955, he was appointed member of the Medical and Pharmaceutical Team of the Science Planning Commission of the State Council; in 1961, he had the honor of being admitted into the CPC; in 1962, he participated in drawing the 10-year Plan of Scientific and Technological Development; he was representative to the Second Chinese People's Political Consultative Conference and a deputy to the 2nd, 3rd, and 5th National People's Congress; in 1977, he was chosen as an advanced worker in Shanghai; in 1978, he was chosen as an advanced person who made significant contributions in scientific and technological work.

Wang has done much positive and valuable work in developing exchange and friendship of academic circles between China and foreign countries. He was one of the persons who took charge of the Beijing International Meeting of Antibiotics 1955, China-West Germany Academic Discussion on Protein and Nucleic Acid 1979 and Sino-U.S. Chemical Meeting of Natural Products in 1980. His accomplishments in scientific research are valued and praised by the international academic community. In October 1974, the Imperial College of Science and Technology, London University suggested naming Wang as its honorable researcher, but he politely declined it because of the situation at that time. In 1981, he was elected member of the Editing Committee of the international periodical "Nucleic Study" and honorable member of the Editing Committee of the "Tetrahedron" and the "Tetrahedron Bulletin."

At present, Wang is over 70 years old but is still vigorous, he makes nothing of hardships to work day and night. Filled with ardor and sincerity, he wants to make much greater contributions to China's research and basic elements of life in his remaining years and to devote the energies of all his live to the scientific research of his motherland.

12272

CSO: 4008/125

## SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

### BRIEFS

CHINESE-AMERICAN SCIENTIST HONORED--In the afternoon of 28 June, Shanghai Jiaotong University, with permission from the Ministry of Education held a ceremony to present an honorary professorship to Dr Tian Binggeng [3944 3521 5087], an American-Chinese. Professor Tian Binggeng is a graduate of Jiaotong University, class of 1942. He is currently the head of the Department of Electron Physics Research, Bell Telephone Laboratories, Inc. At the same time, he is also an academician of the U.S. National Academy of Sciences as well as the U.S. National Academy of Engineering. He has contributed greatly to research in integrated optics. He has been referred to as the "father of integrated optics" and is known worldwide. He is very much concerned about the development of science and technology in China and for many years has been helping our country's Ministry of Post and Telecommunications to work with optical fiber telecommunications specialists abroad. This time he is here specifically for the Beijing Science and Technology Policy Symposium. [Text] [Shanghai WEN HUI BAO in Chinese 1 Jul 83 p 2]

CSO: 4008/167

Automation

AUTHOR: SHI Pengfei [2457 7720 7378]

ORG: None

TITLE: "3d Session of the Pattern Recognition and Artificial Intelligence Conference of China Automation Society Held in Shanghai"

SOURCE: Shenyang XINXI YU KONGZHI [INFORMATION AND CONTROL] in Chinese No 3, 1983 p 35

ABSTRACT: The 3d session of the pattern recognition and artificial intelligence conference of the China Automation Society and the 1st session of the pattern recognition technology conference of the China Electronic Computer Science Society were held jointly in Shanghai on 6-11 April 1983. More than 200 delegates representing nearly 100 organizations all over the country attended. The meeting was chaired by Prof CHANG Zhou [1603 6650]. Of the more than 100 papers read at the conference, 36 involved theories and methods of pattern recognition, 19 graphic processing and pattern recognition systems and equipment, 8 industrial and other applications, and 10 artificial intelligence. Discussions on three special topics (pattern recognition systems and equipment, education, and applications) were held. All agreed that although related courses have been established in some schools of higher education in China to shoulder the responsibility of training specialists in the field, the task of applying pattern recognition technology extensively in all realms of the national economy to link it closely with production remains to be implemented. It was therefore proposed that a short training course be organized in the second half of this year at Shanghai's Jiaotong University. It was decided that the next session of the conference will be held in Hefei City.

AUTHOR: QING Song [7230 2646]

ORG: None

TITLE: "Shenyang Institute of Automation, Chinese Academy of Sciences, Briefly Introduced"

SOURCE: Shenyang XINXI YU KONGZHI [INFORMATION AND CONTROL] in Chinese No 3, 1983 p 62

ABSTRACT: The Shenyang Institute of Automation was first established in 1958. During the 1962 reorganization, the automation centers and offices of the original Guizhou Branch, Lanzhou Branch, Shaanxi Branch, and Heilongjiang Branch of the Chinese Academy of Sciences were merged into one and all personnel transferred to Shenyang to become the Northeast Center of Industrial Automation. Another reorganization in 1965 resulted in the merger of the Institute of Automation in Beijing, the Office of Industrial Control, the Industrial Remote Control Group, the Automation of Electric Power System Office of the Electrical Engineering Institute, Taiyuan Automation Center, and East China Automation Center. All employees of these units were transferred to Shenyang. In 1972, the name of the organization was officially changed to Shenyang Institute of Automation, Chinese Academy of Sciences. The average age of the high level researchers is

[continuation of XINXI YU KONGZHI No 3, 1983 p 62]

48.9; that of the middle level 42. There have been 143 successful research results--56 of which have won important awards--including the unmanned remote control high mountain broadcasting station, cold rolling machine automatic control system, automated oil storage system, automatic mail sorter, microscopic image processing system, LISP interpretation system, tobacco automated weighing device, infrared measuring device for steel billets, engineering graphic display software, integrated circuit automatic supersonic bonding machine, etc. At present, the institute is engaged in research projects of oceanic robots (unmanned diving equipment), hand-eye system, language recognition, urban traffic automatic management system, remote image processing and interpretation system, unmanned ecological observation and remote sensing station, computer emulation, etc. To extend the new technological applications, the institute also operates a consultation service to help medium and small factories in technical reform matters and to handle the extension of research results.

AUTHOR: None

ORG: None

TITLE: "Systems Simulation Committee, China Automation Society, Expanded Conference"

SOURCE: Shenyang XINXI YU KONGZHI [INFORMATION AND CONTROL] in Chinese No 3, 1983 backcover, p 9

ABSTRACT: An expanded conference of the Systems Simulation Committee, China Automation Society, was held in Beijing on 17-19 April 1983. It was chaired by the director of the committee, Prof WEN Chuanyuan [2429 0278 3293]. Discussions centered on the four topics of economic benefits, important problems, domestic gaps, and short- and long-term development plans of simulation technology in China. The delegates agreed that in the past 5 years a great deal has been accomplished in simulation technology with respect to the fields of aviation, space flight, navigation, nuclear energy, metallurgy, electric power, and socio-economics. While manpower should be organized to develop a new generation of simulation computers, attention should also be given to improving the efficiency of existing equipment. It was suggested that the national defense industry departments should extend advanced simulation technology to civilian industries as soon as possible for the purpose of mutual promotion. Such overlapping fields as system recognition, model analysis, processing CSCAD technology, and performance technology, should also be emphasized.

6248

CSO: 4009/202

Electronics

AUTHOR: XUE Yanhua [5641 3508 5478]

ORG: None

TITLE: "Multi-Function Magnetic Therapeutic Machine"

SOURCE: Beijing DIANZI SHIJIE [ELECTRONIC WORLD] in Chinese No 1, 1983 p 14

ABSTRACT: The DGCL-1 multi-function magnetic therapeutic machine, a product of the state-run Wanzhong Machinery and Equipment Plant in Sichuan, has been certified by related departments and has won the Important Scientific and Technological Research Achievement Award of Sichuan Province. The machine has been clinically tested by the Chengdu Military District General Hospital and other units to treat 51 types of diseases of such fields as internal medicine, surgery, the five sense organs, dermatology, neurology, and obstetrics, achieving an average effective rate of 90.5 percent. The machine is composed of three parts (a magnetizer, a magnetic therapeutic device, and a timer) and can perform seven types of magnetic forms of treatment including analgesic, antiinflammatory, antispasmodic, and anti-diarrheal. It is also equipped with a device to display the magnetic field distribution curve. Its magnetic field form and field intensity are adjustable.

AUTHOR: ZHANG Shimin [1728 1102 2404]

ORG: None

TITLE: "High Speed Magnetic Tape Cassette Duplicator"

SOURCE: Beijing DIANZI SHIJIE [ELECTRONIC WORLD] in Chinese No 1, 1983 p 14

ABSTRACT: The GF-111 high speed magnetic tape cassette duplicator, a product of the Tianjin Municipal Electronic Computer Application Technology Research Institute, has been certified by the related supervising department and its production in batches has begun. The machine has the advantages of fast duplication, wide frequency response, low distortion, and simple operation. Its major properties are: 1) A duplicating speed of 38 cm/sec  $\pm$  2 percent, 8 times the ordinary recording speed; 2) a less than 0.5 percent flutter rate; 3) a frequency response range of 63 Hz - 6.3 Hz; 4) less than 5 percent distortion rate; 5) a greater than 50 db signal-noise ratio. Except for the magnetic recording head, all its components are made in China. All the technical indices have been certified to meet the design requirements and some have reached or surpassed those of similar products made in Japan.

AUTHOR: LI Xiangbin [2621 4161 1755]

ORG: None

TITLE: "Nanjing Daqiao Machinery and Equipment Plant Succeeds in Producing a Satellite Television Receiver"

SOURCE: Beijing DIANZI SHIJIE [ELECTRONIC WORLD] in Chinese No 1, 1983 p 14

ABSTRACT: The Nanjing Daqiao Machinery and Equipment Plant has succeeded in producing the WD-714 satellite television receiver, capable of directly receiving television signals broadcast by satellites. It can generate programs simultaneously for four 19-inch color or black-and-white television sets or monitors. When it is equipped with a video recorder, it can also duplicate cultural, entertainment, and educational programs relayed by satellite. It includes five components: antenna unit, indoor reception unit, indoor frequency separation and modulation unit including the power source, and 19-inch television receiver or monitor. Its noise coefficient is less than 2.5 db; its frequency differentiation sensitivity is 10m V/MHz; its band width is 18MHz<sup>±</sup>3MHz; its visual frequency band width is greater than 6.5MHz; its accompanying audio output distortion rate is less than 5 percent.

6248

CSO: 4009/199

Hematology

AUTHOR: DA Wanming [6671 8001 2494]  
LU Daopei [7120 6670 1014]

ORG: Both of the Department of Medicine, Lanzhou General Hospital of PLA,  
Lanzhou

TITLE: "The Effects of Semi-synthetic Harringtonine on DNA Synthesis and Nuclear  
Area of Acute Non-lymphocytic Leukemic Cells In Vivo"

SOURCE: Tianjin ZHONGHUA XUEYEXUE ZAZHI [CHINESE JOURNAL OF HEMATOLOGY]  
in Chinese No 2, 1983 pp 84-88

TEXT OF ENGLISH ABSTRACT: By means of microspectrophotometry and autoradiography, the DNA content, labelled index (LI), mitotic index (MI) and nuclear area of leukemic cells were observed in 10 patients with acute non-lymphocytic leukemia, 48 hours before and after receiving semi-synthetic harringtonine. The results indicated that under the action of the drug a great number of S-phase cells were killed and the influx of cells from G1 into S was blocked. It showed that the DNA content was closely related to the nuclear area of the leukemic cells, and with the decrease of S cells following treatment with the drug, the number of large nuclear cells decreased. These changes only occurred during the early period of chemotherapy in those patients who responded to the drug. It was shown that changes of histograms of DNA or karyographs may predict the response of the patients to this drug.

9717

CSO: 4009/193

## Hydraulics and Pneumatics

AUTHOR: LI Fanqing [2621 5400 0615]

ORG: None

TITLE: "Certification Conference for the New Model CBQ-F540 High-Pressure Gear Pump Held in Xixia, Shandong Province:

SOURCE: Beijing YEYA YU QIDONG [HYDRAULICS AND PNEUMATICS] in Chinese No 2, 1983 p 13

ABSTRACT: The new model CBQ-F540 high-pressure gear pump was the result of the successful research by the Hoist and Conveyance Machines Research Institute, Ministry of Machine Building Industry, in 1978. Through technology transfer, it was acquired by the Xixia Hydraulic Parts Plant in Shandong Province in 1980. The plant spent more than 2 years trying to make it and the prototype was ready for testing in September 1982. The certification conference was called by the Shandong Provincial Office of Machines and held on 16-18 January 1983. The 57 delegates representing 37 research organizations, colleges, related industries, and users came to the plant to listen to reports summarizing the experimental process and to inspect the technical documentation. The prototype was tested to verify its properties and taken apart to examine the wear and tear. The delegates unanimously agreed that the CBQ-F540 is reasonably structured and operates reliably. The technical indices were considered to be advanced and the experimental manufacture and small batch production successful. Thus it was approved for production in lots.

AUTHOR: LUO Zhijun [5012 1807 7486]

ORG: None

TITLE: "JK<sub>2</sub> Plug-in Valve (Logic Valve) Integrated Element and 30-ton Electric Furnace High Water Base Fluid (Emulsified Fluid) Plug-in Valve (Logic Valve) Integrated Control System Certification Conference Held in Shanghai"

SOURCE: Beijing YEYA YU QIDONG [HYDRAULICS AND PNEUMATICS] in Chinese No 2, 1983 p 42

ABSTRACT: The certification conference organized by the Ministry of Metallurgical Industry was held in early December 1982 at the Shanghai Steel and Iron Mill No 5 and attended by 82 delegates representing 56 units. The Beijing Metallurgical Hydraulic Machinery Plant of the Ministry of Metallurgical Industry, Shanghai Research Academy of Metallurgical Design, and Shanghai Steel and Iron Mill No 5 delivered reports on designing, experimental production, and use of the integrated element and control system, which are in the four specifications Dg16, 25, 32, and 40mm, with the other four--Dg10, 50, 63, and 80mm--being developed. The work pressure for the logic element is 315b, and 100b and 315b for the integrated element. The integrated block is in a unique vertical, superposed, composite structure, not yet seen in foreign products of this type. The designing of the system began in 1979 and its production began in early 1981. By September 1982, 6,547 heats of steel, totaling 23.096 million tons had been smelted to prove the system to be reliable and the control property satisfactory. In 1982 it won 1st prizes for metallurgical electricity consumption and labor productivity. The integrated element and system have been proved by practice to be a complete success.

AUTHOR: FAN Tianxun [2868 1131 6064]

ORG: Secretariat, Hydraulics and Pneumatics Committee

TITLE: "Brief News of Hydraulics CAD Technology Symposium"

SOURCE: Beijing YEYA YU QIDONG [HYDRAULICS AND PNEUMATICS] in Chinese No 2, 1983 p 64

ABSTRACT: In accordance with the 1982 plan of the China Mechanical Engineering Society, the Hydraulics CAD Symposium was organized by Shanghai's Jiaotong University, and Shanghai Research Institute of Mechanics and held in Hangzhou on 13-18 January 1983. A total of 54 delegates representing 17 colleges, 9 research institutes, and 8 factories attended. The symposium received 38 papers, the contents of which included general purpose hydraulic program package, special use hydraulic program package, hydraulic optimization design, numerical simulation, pattern recognition, logic design, etc. The symposium made the following suggestions to the China Mechanical Engineering Society: (1) Several hydraulic CAD training courses should be organized this year and next to extend the application of advanced computer technology in the realm of hydraulic engineering; (2) A second hydraulic CAD symposium should be held in 1984; (3) Research on hydraulic CAD is closely related to improving the technology of hydraulics which is closely related to the four modernizations construction. Therefore, related leadership departments should stress its organization, planning and coordination.

AUTHOR: YANG Jinhua [2799 6930 5478]

ORG: None

TITLE: "Symposium on Hydraulic System Contamination Control Technology Held in Wuxi City"

SOURCE: Beijing YEYA YU QIDONG [HYDRAULICS AND PNEUMATICS] in Chinese No 2, 1983 p 64

ABSTRACT: The Hydraulics and Pneumatics Committee of the China Mechanical Engineering Society organized a symposium which was attended by 65 delegates in Wuxi City on 27-30 April 1983. The symposium published 11 papers on purifying the hydraulic system, effect of contamination control on the hydraulic system, contamination detection technology, oil filter, international standard of contamination control, etc. Foreign research on contamination control was introduced. Incidents of machine stoppage, production interruption, and personal injuries due to contaminated hydraulic systems were recounted and discussed to improve everyone's understanding of the importance of contamination control. Since such work has just begun in China, a great deal of work is still needed in contamination detection, precision oil filter, experimental research, etc. The delegates offered many proposals, including the organization of a lecture series before the end of 1983 to improve the technical level of contamination control of those who work with hydraulics.

6248

CSO: 4009/201

Internal Combustion Engines

AUTHOR: WANG Lingquan [3769 5480 3123]

ORG: None

TITLE: "Model 6102QA Diesel Engine Certified"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 2, 1983 p 68

ABSTRACT: With the support and assistance of the China Automobile Industry Corporation and Changchun Automobile Research Institute, etc., the Maoping Motor Plant and Shanghai Internal Combustion Engine Research Institute jointly produced the 6-cylinder, water cooled, 4-stroke diesel engine, with a designated power of 125PS /3000rpm. The maximum torque is 36kgfm/1800-2000rpm; the external size is 1267 x 661 x 872mm, the weight of the entire engine is 535kg; the minimum fuel consumption of a full load is 175g/PS.h. This engine is mainly for the 5-ton Jiefang truck produced by the Automobile Manufacturing Plant No 1. Delegates to the certification conference, which was held on 5-8 January 1983 at the Maoping Motor Plant, listened to reports summarizing the research and design work, examined the product graphs and technical documentation, tested the properties of the prototype repeatedly, and inspected and discussed all related matters over and over before finally approving it for production in small batches. On 31 January 1983 the Shandong Provincial Department of Machine Building officially signed the certification document and assigned the Maoping Motor Plant and Laoyang Engine Plant to start producing it according to the diagram and documentation presented to the conference.

AUTHOR: LU Jiexiang [7120 1367 4382]

ORG: None

TITLE: "Research Result of Pressure Booster of Gasoline Engine Certified"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 2, 1983 p 86

ABSTRACT: In the past 3 years, a good deal of research has been carried out jointly by the Shandong College of Engineering and Shandong Linmu Agricultural Machinery Plant on the 4ZJQ vehicle-use turbine pressure booster in such areas as its compatibility with the Jiefang CA-10B gasoline engine, the general layout, the central positioning scheme, air intake and water spraying, and anti-knock when oxygen-containing fuels are present. The technical measures which emerged from the research work were certified by the conference, held on 22-24 January 1983, to be effective in reducing heat load, basically resolving the problem of explosion, raising the power 31.4 percent, increasing the torque 43.1 percent, reducing fuel consumption 7.4 percent, and reducing the temperature of the exhaust at the maximum power point 25°C. Due to the improved design, the booster is 51 percent smaller, 25 percent lighter, 5 percent higher in absolute heat efficiency, and 22 percent larger in flow range. The conference considered further research and application of this technology to be significant in developing transportation, saving fuel, and protecting the environment.

AUTHOR: None

ORG: None

TITLE: "The New Series 85-90 Model 490 Q Light Weight High Speed Vehicle-Use Diesel Engine Certified"

SOURCE: Shanghai NEIRANJI GONGCHENG [CHINESE INTERNAL COMBUSTION ENGINE ENGINEERING] in Chinese No 2, 1983 inside back cover

ABSTRACT: To equip China's 1.5-2-ton class trucks, 2-3-ton fork trucks, 20-24 kw generators, and various small tractors and agricultural and forestry machinery, the Shanghai Internal Combustion Engine Research Institute and Zhejiang Xinchang Diesel Engine General Plant have jointly produced the model 490 Q diesel engine. Its certification conference, called by the Zhejiang Provincial Bureau of Agricultural Machinery, was held in Xinchang on 8 December 1982 and attended by 90 delegates representing 54 organizations. The 490 Q is a new model, an improved version of the 4-cylinder model 485 Q. Advanced techniques, both domestic and foreign, have been absorbed. The production and application experiences regarding the series of diesel engines was summarized to design this improved model while continuity in external shape, installation and technological equipment was preserved. The delegates unanimously approved the design and ordered it to be put into production. They also expressed hope that the related units will continue research work on such things as raising the rotation speed to 3600rpm so as to reach and surpass the advanced level of the world and to satisfy the needs of domestic and foreign markets.

6248

CSO: 4009/200

Varied Technological Experimentation

AUTHOR: LIU Jiren [0491 4480 0088]

ORG: Department of Computer Science

TITLE: "Experimental Network in Some Areas of Northeast Institute of Technology Certified"

SOURCE: Shenyang DONGBEI GONGXUEYUAN [JOURNAL OF NORTHEAST INSTITUTE OF TECHNOLOGY] in Chinese No 2, 1983 p 62

ABSTRACT: The certification conference for the experimental network in some areas of the Northeast Institute of Technology was held at the institute on 26 February 1983. Some 24 specialists in the field from all over the country participated. The experimental network in some areas is the fruit of 2 years of research on a topic titled "The dispersed type computer system and the application of microcomputers," which has been directed by Prof LI Huatian [2621 5478 1131]. The network is in a circular structure, with the control function equally distributed to all the junctions of the circular line. The printer of the network is shared by all the computers. The high level software electronic mail delivery system has the functions of delivering, storing and forwarding mail as well as enabling direct conversation among the users.

AUTHOR: LIANG Yen [2733 8746]

ORG: None

TITLE: "In Cooperation With Fushun Steel Mill, the Northeast Institute of Technology Succeeds in Effective Assimilation of Imported Equipment"

SOURCE: Shenyang DONGBEI GONGXUEYUAN [JOURNAL OF NORTHEAST INSTITUTE OF TECHNOLOGY] in Chinese No 2, 1983 p 104

ABSTRACT: With the cooperation of the Fushun Steel Mill and under the unified planning of the Ministry of Metallurgical Industry, the Northeast Institute of Technology proceeded to carry out the work of assimilating imported VHD furnace equipment. The furnace was imported without the software technology for refining bearing steel. The institute and the mill coordinated closely to organize laboratory research and on-site experimentation to enable the equipment to operate normally, continuously to improve technology, and to stabilize the quality of the products. After a great deal of work, such indices of the bearing steel as foreign matter content and gas content reached the international advanced level. In the spirit of assimilation as well as creation, the institute also made some necessary improvements to the imported equipment. For example, the emulsion fluid of the VHD furnace hydraulic pressure system appears to freeze in winter temperatures of below 0°C so that the equipment cannot be operated during the winter. The Hydraulic Pressure Teaching and Research Office of the institute studied and produced an anti-freeze device for the emulsion fluid to enable the equipment to operate satisfactorily during the winter of 1982-83.

6248

CSO: 4009/198

END