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U.S. CHINA BUSINESS REVIEW®

TRANSLATION SERVICES OF THE NATIONAL COUNCIL

The National Council provides translation services for member companies and other firms wishing to have material translated into modern, simplified Chinese characters.

In all business contacts with the People's Republic of China, having correspondence, brochures, and other information translated into the script presently used in China facilitates communications with China's trade organizations. This is because China has limited translation resources: information received in China in Chinese can be disseminated and responded to much faster than if the correspondence is in English.

It is very important for the Chinese characters used in correspondence with Chinese trade authorities to be clear, fluid, and well-drawn. It is important to recognize that present terminology and style of business correspondence used among overseas Chinese differ considerably from that now in use in the People's Republic of China.

Services Offered

The National Council offers a translation service, with strict quality control, for all companies involved in business with China for translation of:

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- Business Cards
- Brochures and Pamphlets
- Summary of Technical Data
- Advertisements
- Catalogues
- Any other form of communication required

These services also include review, revision and correction of translations, both written and oral, made via other agencies in the U.S. and elsewhere, and referral to printing houses possessing modern Chinese ideographic forms. The Council has a simplified-Chinese typewriter.

As information that companies wish to convey to the Chinese normally includes technical terms, the Council's services also include a reference system of leading Chinese-speaking authorities in the U.S. in all major technical fields. These include those of applied mathematics, physics, biochemistry, civil engineering construction, electrical engineering, medical technology, metallurgy, statistics, computer sciences, heavy engineering, textile machinery, electronics and petroleum technology.

The Council also has an extensive set of reference works available including specialized dictionaries, atlases, and recent literature from China.

In the preparation of Chinese script, the following processes are involved: initial translation, research for technical terms, reference to specialized dictionaries, calligraphic copying, and final checking of contents.

To insure strict quality control, the translators used by the Council have been screened by authorities on modern Chinese usage. The services made available by the Council are also often recommended by the Washington Liaison Office of the People's Republic of China.

Charges

Translation charges depend on the type and extend of translation involved. Charges are increased for work needed at short notice. Fees are based on an hourly charge, plus additional cost if additional translation consultations with specialists are involved. There is a reduced hourly rate for members of the National Council. Non-members pay a higher rate. Estimates may be obtained in advance without charge. All services are provided in the strictest confidence.

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U.S. CHINA BUSINESS REVIEW

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The National Council for United States-China Trade is grateful to His Excellency Huang Chen, Chief of the Liaison Office of The People's Republic of China in Washington, for the calligraphy on the front cover of the U.S. China Business Review.

CHINA TRADE EVENTS

KWANGCHOW, April 15-May 15

The Chinese Export Commodities Fair was held, with Vice-President Searls and Business Advisory Services Director Driscoll representing the Council's Washington office. Also attending was John Kamm, the Council's Hong Kong representative. Irene Kamm and Louisa T.K. Chow shared secretarial responsibilities.

NEW YORK, April 28

Economic relations between the US and China was the subject of a luncheon address by Council President Phillips sponsored by the Far East-America Council of Commerce and Industry, Inc.

WASHINGTON, D.C., June 14

The Annual Meeting of the National Council will be held at the Mayflower Hotel, 1127 Connecticut Avenue, N.W. A meeting of the Board of Directors will be conducted in the morning, followed by a reception (12:30) and luncheon (1:00) at which Senator Hugh Scott (R-Pa.) will be the speaker. The meeting will be in session from 2:45 until 5:30 p.m. and will conclude with an evening reception from 5:30 to 7:00 p.m. Other speakers include Graham E. Marx, President and General Manager of G.A. Gray Company, subsidiary of the Warner and Swasey Company of Cincinnati; William Clarke, Dept. of Commerce, and Professor Lucian Pye, MIT. For further information contact Pat Caperones (202) 331-0290.

HOUSTON, June 23

The National Council is planning a conference which will focus on China's production and trade in oil and on China as a market for petroleum related equipment. Co-sponsors include the Houston Chamber of Commerce, the Petroleum Equipment Suppliers Association, and the Houston World Trade Association. Topics will cover the Chinese economic and political situation, with an emphasis on the practicalities and prospects of doing business with the PRC. The luncheon speech will be delivered by Philip Habib, Assistant Secretary of State for East Asian and Pacific Affairs. Speakers include Melvin Searls, Council Vice-President; Christopher H. Phillips, Council President; J. Ray Pace, President, Baker Trading Company; Harned Hoose, China trade advisor; A.A. Meyerhoff, authority on China's petroleum geology; Jan-Olaff Willums, Norwegian expert on Chinese petroleum; Professor Victor Li, Stanford Law School; Professor Michel Oksenberg, University of Michigan; William W. Clarke, Director, China Division of the U.S. Department of Commerce. The conference is open to the public. For details contact George Driscoll, Council Director of Business Advisory Services (202) 331-0290.

CHARLOTTESVILLE, Va. September 24

The University of Virginia will hold a conference on US-China Trade. Among the speakers will be Christopher H. Phillips, President of the National Council. Enquiries to the Asian Studies Committee, University of Virginia, Cabell Hall, Charlottesville, Va. 22901.

KWANGCHOW, October 15-November 15

The 40th Chinese Export Commodities Fair will be held. National Council representatives Melvin W. Searls, Jr. and John T. Kamm will be attending.

PEKING, October

The second official National Council delegation to China is tentatively scheduled to visit China's capital at the invitation of the China Council for the Promotion of International Trade.

ST. LOUIS, November

The National Council is planning a conference on US-China trade. For details call George Driscoll (202) 331-0290.

YOUR MEN IN PEKING

When in Peking, US Commercial Staff at the US Liaison Office will be happy to assist you. Please feel free to call them if you are in China's capital.

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Gerry Friedman with Chinese escorts at the Great Wall, February, 1976.

CANTON-THEN PEKING... A Jewelry Buyers Quest

Gerry Friedman

My husband and I were guests at the Canton Fair from October 31 to November 4, 1975, where a treasure chest of jewels was opened for us.

Even more exciting, for those of us who went, the Fair was more than a bazaar. It was an adventure that stirred the senses of anyone who has ever wondered what's happening inside a country that covers one-seventh of the earth, has one out of every five people in the world.

But the jewelry alone was worth the trip!

Some of it was very new, others old, though none was aged more than 150 years. Antiques that age may not leave the country.

The jewelry shown included an awesome cache of hard-to-find, hand-carved coral, turquoise, lapis and jade, skeins—chains—necklaces strung with gemstones, cinnabar bracelets, necklaces, crafted from a 2000-year-old technique, and carved peach pits from yesterday's harvest.

The jewelry represented was only a part of a vast assortment of products at the Chinese Export Commodities Fair last autumn, an event jointly sponsored by the national Foreign Trade Corporations of China, admission to which is only through invitation.

Gerry Friedman, fashion consultant to Honora Jewelry Ltd., went to the Canton Fair last Fall to buy jewelry. She is also, under her professional name, Gerry Gewirtz, fashion consultant to National Jeweler, *and the editor of* The Jeweler's Forecast and Advertising Service, *an authoritative fashion guide for the jewelry industry.*

The Fashion Fact of '75

We quickly grasped the fashion fact that the silhouette for '75 was the same for everybody and the same as last year's. Everyone in China wears loose pants, the worker's type jacket. There's little difference in color except among the youngest children. No one wears jewelry, which explained the guffaws when I asked about the home market for personal adornment. (No signs of wedding bands, either.)

We stayed at the Tung Fang Hotel, a square, giant-sized, nine-story building, built around a wide courtyard with the look of a sterile hospital it was so clean. The hotel had friendly dining rooms, superb food, an upstairs late-night party room.

There's no tipping. Workers at the hotel are mostly language students working to "further the future of the People's Republic." Children attend school until 16, then work at a farm for two years, and either go to college or work where they are needed.

Interestingly, one rarely sees any of these young people holding hands or showing any overt affection to a person of the opposite sex. It is much more natural to see boys or girls walking together with members of their own sex.

Representatives of the Peking Jewelry Branch of the Light Industrial Products Corporation negotiating with Friedman.

Constantly in Motion

The Fair grounds are just across from the hotel—fortunately! The bike traffic can be dangerous. There are few cars, and they fight the thousands of bikes that seem to be constantly in motion.

The Fair building looks like pictures of the Great Hall in Peking. It has quotes and photos of the Chairman at every entrance way to an exhibit room.

The jewelry hall is most unobtrusive with jewelry displayed inside "discussion rooms"—really showrooms. Here, there's no gut reaction, but ah's and oh's. Connoisseur or not, you know you're looking at great jewelry and at very low prices. One German jeweler at the Fair showed me a piece of coral carving he estimated was about one-fifth to one-tenth the price of a comparable piece in Italy.

Customers come and buy bundles of beads, trays of carvings. They pay right there. There are fixed prices, no bargaining. The word of the Chinese is absolutely trustworthy.

Mr. Wang from Peking told me the best-selling beads and stones last year were turquoise, jade, agate, tiger-eye, aventurine, white jade, tourmaline, malachite, lapis, ruby and sapphire. But turquoise and jade were the best.

"We're expert at jade," he said. "We've been cutting it for 1000 years. And it's harder to cut than a diamond which has a shape already. We have to find the vein and then cut it right."

Cinnabar Revival

Cinnabar, enjoying a fashion revival, is much in demand, but some have to wait a year to get their bead orders filled.

The Shanghai jewelers showed less costly goods than Peking, with the emphasis on hand-painted enamel on silver or on gold. Some showed biwas (fresh water pearls) but the quality was generally unacceptable. The larger cultured pearls were of fine quality, though in short supply.

It was especially difficult to obtain figures on Chinese jewelry production, though Mr. Wang proudly talked about his 700-man jade factory in Peking. Peeping into homes during our sight-seeing led me to conclude there was still a lot of piece work going on.

It was much easier to assess the modus operandi in the porcelain business. We visited the Shiwan Art Pottery and Porcelain Factory, staffed by more than 530, of whom 65 percent are women. It covers 25,000 square meters.

The factory reminded us of Stoke-on-Trent or Copenhagen until we learned that the state may determine both the subject and style of expression. As Brian M. Sullivan says in Whitson's *Doing Business with China* "a work is expected to be instructive, an expression of the revolution."

And When You Do Business in Peking, It's Talking With "Friends"

Just three months later we were back in China, this time in Peking. Veterans of a visit to Canton, we were now guests of the Peking Jewelry Branch of the China National Light Industrial Products Import and Export Corporation—no longer an impersonal statistic in a big Fair entourage.

We anticipated this second trip with a little less nervous interest, but the excitement about the unfamiliar was sustained. Boarding the carrier in Tokyo was like going aloft on an airborne Orient Express. This impression was heightened because two American diplomatic couriers, complete with pouch, sat in front of us.

China seemed closer, more tangible, less dreamlike when we went by plane instead of train. The trip from the Golden Gate to the Ginza, shortened by a new 747 route (Pan Am) and then the even shorter flight to Peking, made the once Forbidden City, a closer, friendlier port of debarkation.

The feeling of neighborliness was strengthened from the moment we landed. A warm smile lit up the face of one of our hosts, Mr. Kua Ying-ming, a company manager, who greeted us at the airport. He was with a business associate. We were to learn later that this seems a constant in China. There are never fewer than two people with a foreign visitor.

Mr. Kua helped us through customs, put our bags in his chauffeured car, then escorted us to the airport dining room for our first unforgettable taste of Peking food, against which Western imitations pale by comparison.

We drove along a magnificent, tree-lined road that went uninterrupted for miles into the capital city. And along the way, it was the same unexpected mar-

riage of new and old that had so captivated and intrigued us in Canton. Older women driving water buffalo side by side with students, some of whom took a skate break—that is, to skate with what looked like a mixture of miniature sleds and skates on tiny ponds or waterholes.

And then, into the city!

Peking—drastically different from Canton in appearance with its giant dimensions, it breadth, the new high rises that formed the main boulevard leading to Tien An Men Square.

The Square has the majesty one expects from a historic spot where the new China had its birth. It was here that Chairman Mao first raised the flag of the PRC.

We were lodged at the Peking Hotel, a 17-floor modern hotel. We had a room with a balcony that looked out on the vast avenues, suggesting an airplane view of the Square.

Business was postponed to the following morning to allow us time to rest. But first we were invited to dinner and to meet some of the other principals of the jewelry company. We dined with Mr. Kua and also Mr. Ma Hung-chi, manager of the export department of the factory, and Mr. Cheng Tso-hwang, factory manager. It was our only meeting with Mr. Cheng.

Dinner starts on a social basis but there is ultimately talk about business, deliveries of early orders for the jeweler with whom we travel and for whom I serve as fashion-consultant.

At the Factory

Next morning, we are picked up at the hotel by Mr. Kua and his friend. We talk about working hours in China. There are three shifts around the clock. Factories are located in the suburbs and vary in size from the very small to one large-sized installation which has 1,000 workers. They specialize in different kinds of jewelry, with gold workers in one plant, silver workers in another.

Trade negotiations take place in one building. There are many different tables scattered around a giant-sized first floor. About three to five company representatives work with one buyer. The floor looks like a microcosm of the United Nations. There are Japanese, Chinese, Germans and, of course, the three of us.

We sat with Mr. Kua, Mr. Ma, Mrs. Li and Mr. Chang. Mrs. Li does much of the correspondence with America; Mr. Chang is in charge of all gold merchandise.

Looking and buying is a slow process compared with American showroom hopping. For example, the head of the jewelry company for which I work came expressly to reorder quality merchandise. But it took the better part of the morning before he was able to see the quality of goods he wanted.

There was continuous tea drinking and talking about past orders.

The Real Buying

Ah—finally, the real buying began. Again as in Canton, there was no bargaining. Prices were firm, fair, appreciably lower than anywhere else in the world. And the goods were as unique. There were cloisonne and enamel beads, silver antiques, even more carvings than we had seen in Canton, and exquisitely colored gemstones.

It was cash on the line. There is no credit in China. Payment is by cash or letter of credit. And each place is a separate trading mart. One must have a separate letter of credit for Shanghai or for Peking. Prices represent what is the highest price of gold on the day an order is confirmed.

Prices are established by a group who makes its determination after a consideration of quality, color, workmanship, type of production, and availability. For example, cost of coral is based on the amount of hand carving and the color. Chinese turquoise is short in supply and, consequently, is very costly. The interest in ethnic-oriented jewelry all over the world has been responsible for a renaissance of cinnabar beads and what the Chinese consider a rise in prices.

What about the people of Peking and the city itself?

The people seem more sophisticated than the Cantonese, and the city is more dramatic and exciting. A visit to the Great Wall, known to the Chinese as Wan Li Chang Cheng, is worth the whole trip. Like the Taj Mahal, it looks the way one imagined it would.

Food in Peking is spectacular. Unlike Cantonese food, it is fried, oily and generally spicer. And since wheat is the main crop of the north, bread is served along with rice. It is steamed, white and looks like a dumpling.

The trip was really a "wonder." 完

Friedman with a Chinese commercial official in Canton.

The Chinese Carpet Fair-Tientsin 1976

John Thomas Kamm

In the last issue of UCBR, *John Kamm, the National Council's Hong Kong representative, described what happened at two of China's first export-oriented mini-fairs in Peking and Shanghai. In this issue, Kamm describes the second annual Chinese Carpet Fair, at which greater flexibility on made-to-order rugs, more immediate supplies, and special catalogues were featured. Kamm also describes a factory visit. For details of last year's Carpet Fair, see* UCBR, *Vol. 2 No. 2.*

Welcome Mat for Made to Order

The 1976 Chinese Carpet Fair took place February 16-26, 1976, at the Tientsin Industrial Exhibition Hall. It was organized and run by a multi-departmental committee made up of local (Tientsin) and headquarters (Peking) representatives. A striking feature of the fair was the extent of local participation.

The Chairman of the fair was Liu Wen-tien, chairman of the Tientsin Branch of the CCPIT. The Secretary-General of the fair—a Mr. Lee—was appointed by the head office of the China Native Produce and Animal By-Products Import and Export Corporation, known after its cable address as CHINATUHSU. Below the position of Secretary-General were several "deputy secretary-general" posts; most of these posts were filled by local foreign trade and production department officials.

Among the departments represented at this level were the Tientsin Municipal Foreign Trade Bureau, the Tientsin Animal By-Products Branch of CHINATUHSU and the Tientsin Municipal Carpet Corporation (TMCC). The TMCC is the local bureau which supervises Tientsin's eight carpet factories.

The presence of representatives from the municipal bureau had a significant impact on the success of the fair. Workers, design personnel and technical staff from the Tientsin factories were "on call" throughout the event. At least one American businessman present was asked to speak before a group of such carpet industry representatives; topics centered around the distinctive features of the US market for carpets and rugs.

Joint Sponsorship

According to the invitations issued to fairgoers, the 1976 Chinese Carpet Fair was "jointly sponsored" by six branch corporations of CHINATUHSU—the Tientsin Animal By-Products Branch, the Shanghai Animal By-Products Branch, the Shantung Animal By-Products Branch, the Peking Branch, the Talien Branch and the Kiangsu Branch.

All of these branches are "port corporations," that is to say they make direct sales, under their own brand names, to foreign buyers. In addition to these branches, several "interior" CHINATUHSU branches, which purchase carpets from producer units and transfer them to the port corporations, were also present. These

included the Tibetan, Sinkiang and Liaoning branches.

Finally, because silk carpets produced in Tientsin are handled by the Tientsin Light Industry Branch Corporation, as opposed to silk carpets produced in Shanghai which are handled by the Shanghai CHINA-TUHSU Animal By-Products branch, representatives of this branch FTC were also present for making sales to customers.

Fairgoers were housed in the Tientsin Friendship Hotel, constructed a mere six months before the Fair opened. Most meals were taken in the hotel's restaurant, which served an excellent selection of western and Chinese dishes. A reception room, post office, customs office, clinic and bank were set up on the third floor of the hotel for the convenience of fairgoers. Buses were provided to and from the Industrial Exhibition Hall according to a well-publicized timetable.

Attendance was about the same as last year, that is, 200-300 businessmen representing approximately seventy firms. The majority of buyers were Japanese but Europeans were also well-represented.

American firms attending the fair included Trans Ocean Import Company, the International Corporation of America, Baker Trading Company, IDC Marketing, the Altman Company and the Mill Valley Trading Company.

Special Prices

Once again, the Chinese offered special prices to American customers to offset the high Column II duty rates, subject to the provision that the carpets would only be sold within the US. In a break with last year, however, the Chinese were willing to denominate contracts signed at the fair in currencies other than renminbi, including the US dollar. Most traders noted increased willingness to quote C&F.

A great deal of effort had been put into the preparation of promotional displays. The Tientsin Industrial Exhibit Hall, a large complex consisting of a main building flanked by a smaller display hall with warehouse, was decked out in a wide variety of hanging tapestries. Stacks of woolen 6 x 9 and 9 x 12 carpets were placed throughout the fair complex. The second floor of the main building was given over to displays of silk carpets.

The number of carpets available for immediate sale was greatly increased over the previous year. Greater flexibility on the part of the FTCs in accepting orders of specific, "made-to-order" designs was noted.

Several new catalogues and design brochures were prepared for the fair.

Another interesting feature of the fair was the exposure given in the Chinese media. New China News Agency news teams were present throughout the fair; a feature-length color movie covering the opening ceremony, activities at the negotiating tables, the fair banquet, and other events was shot by these teams.

Visit to Carpet Factories

Visitors to the Fair had the opportunity to visit a number of carpet factories, one of which was visited by this writer. The Tientsin Number One Carpet Factory was founded in 1958 during the Great Leap Forward. It currently employs approximately 100 managerial staff and 1,300 workers, 60 percent of whom are female. Total output of all grades of carpets is 20,000 square metres per year.

The factory is under the direct supervision of the Tientsin Municipal Carpet Corporation. Each of the eight factories under this corporation specializes in the production of a different type of carpet, this factory specializing in 6 x 9 and 9 x 12 close-back super woolen carpets (woven, 80 and 120 lines).

The managerial staff is broken down into administrative, planning, and quality control departments. The factory itself consists of a design room, one spinning and combing workshop, two weaving workshops, one dyeing and finishing (cutting) room, a leveling room and a washing room. Fifty percent of the work force is engaged in weaving. Only one shift, from 7:00 AM to 4:00 PM, is worked.

One relationship between the branch FTC and the factory is as follows. The FTC (China Native Produce) signs contracts on a regular basis with the factory specifying quantity, quality and price. The total output of the factory is purchased by the FTC, of which 90 percent is exported and 10 percent is distributed domestically. The FTC is also responsible for supplying raw materials such as the wool, typically secured from producer units in NW China, and design assistance.

The factory is embarking on an ambitious mechanization program. At present, only eight of the factory's sixty looms are steel, mechanized looms. By midyear, management hopes to replace 22 of the wooden looms with steel models. Although most of the equipment and machinery used in the factory is domestically produced, management admitted that a "small percentage" of the plant's fixed assets were imports.

Receptions

On the evening of February 16, Mr. Liu Wen-tien, Chairman of the 1976 Chinese Carpet Fair, hosted a reception and banquet in celebration of the fair's opening. The National Council's representative was invited to sit at one of the three head tables. In reply to this gesture, the National Council, in conjunction with the member American firms in attendance, hosted a reception and banquet for the Chinese trade fair officials at the Ting Yi Lou Restaurant on the evening of February 18.

During the fair it was announced that a large carpet on display depicting the Chengtu-Kunming Railway will be presented to the United Nations. The impressive wall-carpet is woven with more than 400 shades of yarn. 完

Another Good Year for the Bank of China

Dick Wilson

The overall business of the Bank of China, China's foreign trade and foreign exchange bank with branches in London, Hong Kong and Singapore, expanded by almost a quarter during 1974, according to copies of its financial statement for that year recently reaching London. The total assets of the bank rose by 23% to reach the record sum of RMB-Yuan 22 billion, equivalent to US$ 11.95 billion.*

Possibly the most interesting entry in the annual accounts, which are set out in the Table with comparisons for the previous year, is the Due from Banks item on the asset side, since this is often taken to indicate the Bank of China's foreign exchange holdings in banks outside China. During 1974 this item rose by very much more than the total assets, namely by 33% to aggregate RMB 7 billion, or $3.8 billion.

This was a year, it will be remembered, in which China's foreign trade both ways expanded in value terms by about 39%, estimating as best as possible from the partner country published figures, and in which the trade deficit with other countries rose to a sum, variously estimated by Japanese and Western observers, of $0.975 billion. The Bank of China's overall convertible sterling income from Hong Kong (invisible earnings as well as trade settlement) was also reported to be about £500 million, or $1.1 billion, during 1974.

The actual reserves of the Bank of China itself increased by 19% during 1974, to reach RMB 150 million ($81.5 million). The income for the year was up 31% to RMB 111 million ($60.3 million), on which there was a net profit of RMB 22 million ($11.9 million), or 33% better than the previous year's. The net profit almost exactly represented 1% of total assets. The annual financial statements of the Bank of China are lodged with the Registrar of Companies in Hong Kong, London and Singapore, in accordance with local legislation affecting branches of foreign companies there. 完

* RMB has here been converted at 1.8397:$1 throughout, the median rate as of December 31, 1974.

ASSETS OF CHINA'S FOREIGN EXCHANGE BANKS IN HONG KONG, 1974*

Incorporated in China

(RMB 000s)

Name	Location of Head Office	Total Assets/ Liabilities	Paid-up Capital	Deposits
Bank of China	Peking	21,991,606	19,800	6,306,376
Bank of Communications	Peking	1,503,729	18,000	938,239
Sin Hua Trust, Savings & Commercial Bank Ltd.	Shanghai	736,864	9,000	598,046
Kincheng Banking Corporation	Shanghai	670,217	9,000	509,535
Kwangtung Provincial Bank Ltd.	Canton	518,521	8,000	318,193
China & South Sea Bank	Shanghai	457,937	8,000	350,526
The China State Bank Ltd.	Shanghai	457,056	5,000	279,274
The National Commercial Bank Ltd.	Shanghai	445,044	7,000	339,174
The Yien Yieh Commercial Bank Ltd.	Shanghai	370,669	5,000	270,692
Incorporated in Hong Kong				
		(HK $000s)		
Nanyang Commercial Bank Ltd.		1,041,042	50,000	782,146
Huachiao Commercial Bank Ltd.		258,659	10,000	214,940
Po Sang Bank Ltd.		251,775	25,000	176,675
Chiyu Banking Corporation Ltd.		240,491	10,000	170,523

* Calendar 1974, as of December 31.

BANK OF CHINA

Balance Sheet 1974
RMB—YUAN Thousands
as at 31 December

ASSETS

	1973	1974	% change
Cash	31,563	34,415	+ 9%
Due from banks	5,276,331	7,016,513	+33%
Bills discounted & Remittances bought	1,289,736	1,509,993	+17%
Loans + Overdrafts	2,840,109	3,698,111	+30%
Securities + Investments	27,811	45,771	+64%
Land, Buildings, Furniture, Equipment	63,168	74,754	+17%
Sundry accounts receivable, incl. under forward contracts	501,621	527,137	+ 5%
Other assets	78,507	88,978	+13%
Collections receivable for customers	303,143	366,536	+21%
Customers' liabilities under letter of credit & guarantee	6,515,074	7,885,254	+21%
Trust Assets	986,736	745,139	−24%
TOTAL	17,913,803	21,991,606	+23%

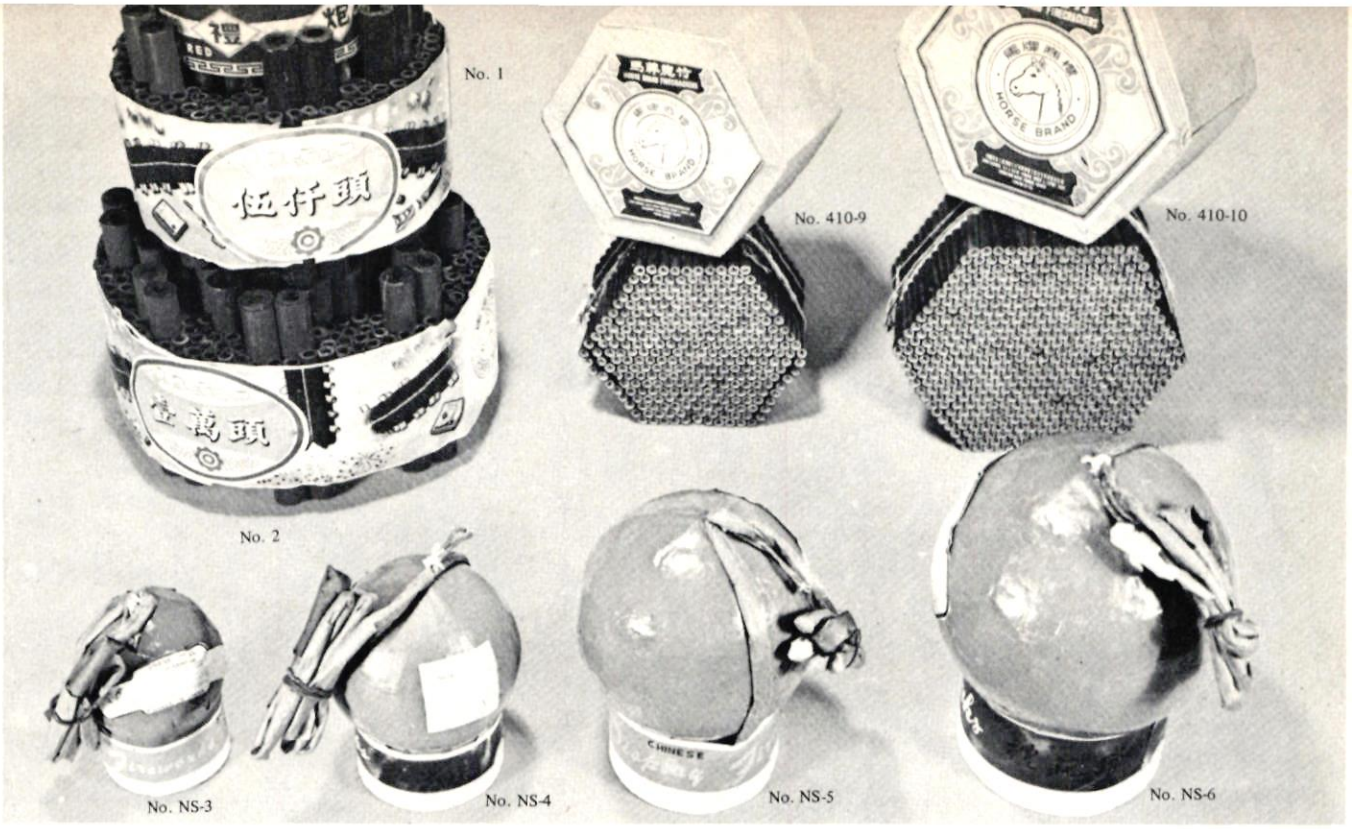
PROFIT AND LOSS STATEMENT

EXPENSES			
General	49,685	63,672	+28%
Depreciation & amortization	18,000	24,559	+36%
Net Profit	16,854	22,347	+33%
TOTAL	84,540	110,579	+31%

LIABILITIES

	1973	1974	% change
Due to banks	4,286,537	5,800,831	+35%
Deposits	5,056,371	6,306,375	+25%
Remittances + drafts outstanding	49,217	64,590	+31%
Sundry accounts payable incl. under forward contracts	383,810	433,856	+13%
Other liabilities	92,048	105,627	+15%
Collections for customers	303,143	366,536	+21%
Letters of credit + guarantee	6,515,074	7,885,254	+21%
Trust liabilities	986,736	745,139	−24%
Total Liabilities	17,672,940	21,708,212	+23%
NET WORTH			
Capital	19,800	19,800	—
Surplus	77,973	91,216	+17%
Reserves	126,235	150,030	+19%
Net profit current year	16,854	22,347	+33%
Total Net Worth	240,863	283,394	+18%
TOTAL Liabilities & Net Worth	17,913,803	21,991,606	+23%
INCOME			
Interest, Commissions etc	84,540	110,579	+31%
TOTAL	84,540	110,579	+31%

Source: *The Financial Statements of the Bank of China for the Year 1974* Peking, 1 April 1975. For corresponding statements for previous years, see UCBR Vol. 1 No. 6 Nov.-Dec. 1974.



PRC-made fireworks advertised in a catalog of the Yuen Loong Hong Co. of Hong Kong, one of the many trading companies acting as intermediary agents for US pyrotechnic imports from China.

FIREWORKS FROM CHINA

Stephanie R. Green

Chinese fireworks were not available in the US in 1776. American trade with China did not begin until eight years later. But since then, Chinese fireworks have figured prominently in American celebrations: What, indeed, would be a July 4 without a fireworks display?

As UCBR's tribute to the Bicentennial Year, we feature the following report on fireworks from the PRC. This article focuses on the pleasures and problems of importing fireworks from China, pyrotechnical trends and pending legislation, and includes a look at the history of Chinese firecrackers—both in China and in the US. It also describes, in detail, the experience of one American fireworks importer who has bought direct from the PRC but now uses a Hong Kong agent, and why. Among other things, delivery schedules are often as up in the air as the fireworks themselves—when and if they arrive.

"The [fourth] of July, 1776, will be the most memorable Epocha in the History of America. I am apt to believe that it will be celebrated, by succeeding Generations, as the great anniversary Festival. . . . It ought to be solemnized with Pomp and Parade, with Shows, Games, Sports, Guns, Bells, Bonfires and Illuminations from one End of the Continent to the other from this Time forward forevermore."

So wrote an ecstatic John Adams to his wife, Abigail, on July 3, 1776, just after the signing of the Declaration of Independence in Philadelphia (actually on July 2). It would have been hard for him to imagine that 200 years later this nation's celebration of its birth would be aided by "Shows, Bonfires and Illuminations" imported from the People's Republic of China. The old patriotic stand-bys that would have warmed his heart, such as the "Repeating Old Glory Shell" and the "Little America Shell" will be joined this Independence Day by pieces with such exotic names as the "Superior Mandarin" and "Monkey Violates the Heavenly Palace"—invoking images a long way from the America of 1776, or of 1976.

Fireworks importers are certainly doing their share in expanding Sino-US trade in the bicentennial year. US purchases of fireworks from China, $480,791 in 1972, rose dramatically right after normalization of relations, to $3,187,663 in 1973, 5% of the year's total imports. The total dropped, however, in 1974 to $966,587, but soared again to reach $2,904,185 last year, with the promise of more increases in 1976. (Oddly enough, last year China also bought a tiny $1,309 worth of pyrotechnical items from us.)

1776 AND ALL THAT: HOW FIREWORKS BEGAN

In the nineteenth century, most Americans probably did not know that the variety of fireworks they had been watching since the late 1700s were originally invented in China over a millenium before. The discovery of simple pyrotechnic compositions ante-dated that of gunpowder, which was only later the major component of fireworks. Before powder was used, burning bamboo provided the key.

The original characters for "firecracker" reflected this Chinese custom of burning bamboo sticks to make "pe-ba" sounds for the celebration of the New Year's Eve festival. "Pao zu," or "cracking bamboo," was one version, and "bian pao," or "whip," was another name for the sharp reports which sounded from these early fire lances. The thin, hollow bamboo rods were first dried and then lit at one end and brandished about like whips. As the fire reached each joint, a loud pop resulted which hopefully would frighten away any lurking devils.

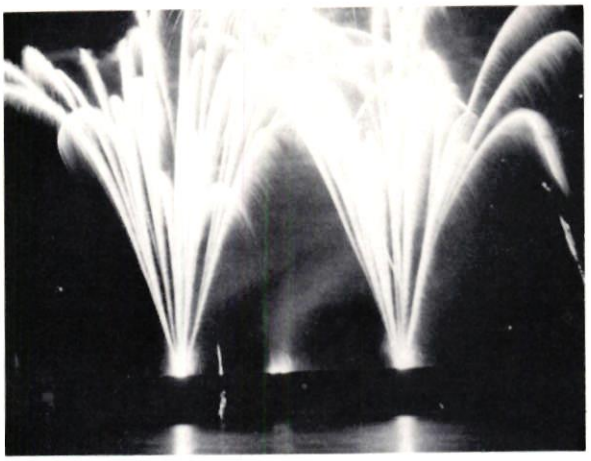
Progressing from bamboo, "Chinese fire" was later composed of saltpeter, iron filings, sulfur and charcoal—the basic pyrotechnic chemistry. By the early 1900s, Chinese crackers were made up of little cartridges of coarse paper filled with powder and damped clay, the smaller ones strung on strings with a continuous line of fuse that exploded one after another.

Fireworks were often mentioned in early Chinese sources, the description sometimes reflecting their close relationship to firearms. A Chinese volume published in 1232 described iron pots containing a burning substance which, when thrown, spread fire over half an acre. They were poetically referred to as the "thunder which shakes heaven." Marco Polo, in diaries of his travels from 1268 to 1273, commented on the throwing of fire during sieges of Chinese towns. In both of these cases, the "fires" were not firearms, but fireworks, because the explosion occurred in the air, and not on impact.

"A Vast Variety of Fireworks"

Foreign travelers in China after Marco Polo were very impressed with the many fireworks displays they witnessed. Observed one foreigner in 1798: " . . . the knowledge of gunpowder seems coeval with that of the most distant historic events. Among the Chinese it has been applied at all times to useful purposes . . . and to amusement in making a vast variety of fireworks."

An 1813 resident of China, born in France, called the Chinese "singularly ingenious fireworkers." Another early 19th century figure recounted one display in this manner: "The fireworks, in some particulars, exceeded anything of the kind I have ever seen. [They were] infinitely superior in point of novelty, neatness, and ingenuity of contrivance . . . the diversity of color, with which the Chinese have the secret of clothing their fire, seems one of the chief merits of their pyrotechny."



And Then, the United States

Sometime in the 18th century, Chinese fireworks arrived in the US. In 1889, the Unexcelled Fireworks Company of New York and St. Louis boasted in its colorful catalog that it possessed "the finest line of Chinese crackers ever imported, and (they) will be found to be very salable and satisfactory goods for the July 4th trade." From the mysterious East the company had purchased an exotic collection of "Chinese Novelties": nickel crackers, with an "extra loud report;" baby crackers, which "can be fired by the smallest child with safety;" miniature crackers, red headers, which had "the loudest report ever heard for the size of the goods;" rattan bombs, and joss sticks.

These were not all, however. The catalog advertised a colored Chinese fan in spectacular terminology. It was a revolving wheel with many colors, "mutating to a fan-shaped Battery of Colored Stars with showers of Scintillations, thus forming a beautiful and enlarged Fan of Firey Sprays." How could a wide-eyed child, or even an adult, pass up such a concoction? They could buy one for $4.00, a price which, by the way, had remained steady since 1883.

Competing with the "Unexcelled" assemblage of exotica were the fireworks advertised by the Masten and Wells Fireworks Company of Boston. Its 1895 brochure depicted such pieces as the Chinese Wheel, which revolved rapidly to produce "immense wheels of brilliant scintillations and changeable colorings." Also shown were Chinese flyers, which revolved upon an iron spindle driven into an upright post six to eight feet high. Silver wheels could be purchased for $30 per gross, and flyers for $6.00 per dozen. Whether these were actually imported from China is not spelled out, but even if not, they were based on what early China travelers had witnessed.

In 1920, Chinese firecrackers were generally available for the July 4 pageants, many in red-tissue-wrapped packages with a bright label containing a fierce dragon and fancy Chinese characters. They ranged in size from 2 to 3 inches down to skinny one-inchers.

THE MAKING OF FIREWORKS

A fireworks piece is any device which contains combustible materials that are burned or exploded to produce light, noise, or smoke. Pyrotechnic effects are based on this combustion of a solid fuel by an oxygen-containing salt, usually a metal nitrate or chlorate. China was one of the earliest inventors of this mixture because in that country saltpeter (potassium nitrate) occurs naturally as a mineral.

Different effects were procured by making compositions from different proportions of saltpeter, sulfur and charcoal; by varying the aggregation of the materials, and by using such combustibles as rosin, gum arabic, petroleum, tallow, the sulfides of mercury, arsenic and antimony, or the powder metals iron, antimony, zinc and copper.

The earliest method of producing sparks was to add small lumps of charcoal to a mixture of saltpeter and sulfur—this was the Chinese method. Later, they, as well as other peoples, added iron or steel filings for more color.

In the nineteenth century, more brilliant effects became possible with the introduction of special salts for special colors, sugar and stearin in place of sulfur, and power magnesium and aluminum. Eventually, potassium chlorate replaced saltpeter in many cases, and then was itself sometimes replaced by perchlorate for greater safety in manufacturing and in use.

Shells, Rockets, Wheels and Fountains

Some of the more common fireworks produced by China and the West alike include:

Shells consist of a spherical, papier mache case filled with stars and a bursting charge of gunpowder. The shell is propelled into the air by a mortar.

Rockets are made by pounding a charcoal, saltpeter and sulfur mixture into strong paper tubes which are "choked" by a perforated clay plug. A tapering cavity extends into the charge. When the rocket is fired, the gasses generated in this cavity push away from the walls and set the rocket off.

Wheels, Gerbes and Fountains are essentially rockets with a spark composition, fired nozzle-up from the ground or used as turning cases for wheels. Gerbes are often called "Chinese fire." They contain iron filings, while fountains contain steel filings.

Firecrackers are short tubes rolled from paper and charged with powder. Some formulae are: potassium chlorate two parts, aluminum one part and sulfur one part; barium nitrate four parts, aluminum two, and sulfur one. The tubes are crimped at the ends, and supplied with paper fuses by which they are braided together in bunches. The PRC uses chlorates. Most firecrackers are not uniform, however, with regard to powder contents, fuse paper, length, diameter and color. Sizes range from 5/8 in. to 1½ inches with a diameter up to ¼ inch. Most common is the 1½ inch size.

During the two-decade hiatus in Sino-US relations, American fireworks businesses relied almost entirely on Hong Kong, Macao and Taiwan for their purchases of incendiary displays, especially firecrackers. Since the PRC, Hong Kong and Macao are the only manufacturers of the firecracker, the loss of the PRC as a source was major. When trade relations with China were reestablished in June, 1971, fireworks companies naturally began to turn to the newest—and oldest—fireworks source in the world. It was in China that fireworks were first invented over 1400 years ago, used to create the colorful and noisy displays the Chinese called "cracking bamboo." During the past few years, China has begun to dominate the US firecracker market.

Reliance on Asian imports, as well as those from Europe, has been a cornerstone of the American fireworks business, because the art of fireworks-making in the US is a declining one. And, of course, the fact is that Asia is the only area of the world producing firecrackers. Although the US manufactures a host of rockets, flares, Roman candles, and other pieces, many argue that this country does not possess the sophistication of design that has been developed in such countries as France (the present favorite of many fireworks aficionados), the United Kingdom, Canada, Brazil, Japan, and the PRC. Asia, furthermore, has another advantage for all profit conscious companies: inexpensive labor. The most important step in making a fireworks item—packing gunpowder inside it—must be done by hand.

Who Buys From China

Several US companies have sent executives to the PRC to negotiate for fireworks imports, including Pyrotronics Corporation, of Anaheim, California. The South-Pittsburg, Tennessee-based Atomic Fireworks Company has also made the trek—six times. A large number of other companies send their representatives as far as Hong Kong or Macao, where they contact agents who arrange to bring the manufactured goods from PRC factories.

Pyrotronics estimates that 20% of its total imports annually are produced in China. These PRC purchases, which amounted to $700,000 for the three years inclusive 1973-1975, will equal the same amount for 1976 alone, in anticipation of bicentennial hoopla.

The $1 million purchases by Atomic Fireworks from foreign suppliers in the past year include $600,000 from the PRC. The balance will be imported from, among other sources, Taiwan. Liddell Fireworks Co. of Shreveport, La., and H. P. Cannon Wholesale Co., both estimate that 90% of their total sales for each of the last three years consist of PRC products.

Acme Specialties of River Grove, Illinois, figures that 30% of its imports originate in China, with the

bulk, however, contracted for through a Macao agent. Its imports include small firecrackers and all types of fireworks. Consigned Sales, Inc., located in Shreveport, Louisiana, imported only 10-15% of its total from China in 1973, but raised this to 33% in 1974 and to 50% in 1975. The total quantity from the PRC, however, the firms regard as quite small—$100,000 worth, 60% of its firecrackers of the 1½ in. and ladyfinger variety.

Because this country has such a large amount of firecracker imports, the PRC is an excellent alternative source. In the past two years, the company notes, China has almost pushed Macao out of the firecracker business.

Silvery Birdcalls, Moon-Wooing Phoenix

American importers note that China is most well-known for, of course, firecrackers. Close behind in popularity rank bottle rockets, sky rockets, fountains, missiles, cones, spinners, wheels, shells—in fact, just about everything. And importers have bought just about everything. "We handle the whole line China offers," comments an executive of American Importers, a major importer, noting that all of the company's parachutes are PRC-made. One item China has not attempted to sell to the US is the smoke bomb, discouraged by prohibitive US duty.

Fireworks from the PRC fall under the jurisdiction of the China National Native Produce and Animal By-Products Import and Export Corporation. Production centers are located in Kwangtung, Kwangsi and Hunan. In the latter province, the Liuyang and Liling districts are renowned for the "best materials" and "superior quality," according to a Chinese publication. The Hunan variety bear the Red Lantern, Flying Fairy, Panda and Golden Tripod brand names. Other firecracker brands are Horse, Tiger, Hopu Pearl, and Three Ring.

The Chinese boast that their products' main features are "sharp and resounding blasts, fragrant smoke, brilliant and attractive color" and they are "safe to handle and easy to operate." Their export catalogs advertise the following types: firecrackers of black powder, white powder and nitric flash, such as Lady Crackers, Tom Thumbs, Lightning and Golden Dragon; fireworks such as shooting, rising, rockets, revolving light, waterborne, handheld kind and others. Their appellations range from Silvery Birdcall to Twitter Glitter to Moon-Wooing Phoenix.

Bicentennial Brilliance—Every Night For Ten Weeks

Although many importers indicate that they did not order a vast amount of additional merchandise in preparation for bicentennial galas, there is no question that the US will explode more fireworks this year than in any previous year. In the nation's capital, "Happy Birthday, USA," a private, non-profit corporation funded by the national private sector and the government, is planning a July 4 weekend spectacular on a scale 25 times larger than in past years, at a cost of $1 million. According to the group's director, Larry Stinchcomb, the brilliant displays will be especially sophisticated, centering on ground and fixed displays, and flares. For the occasion, the organization has contracted with the French firm Ruggieri, which first supplied fireworks for Independence Day celebrations when John Adams was still alive.

Not only will the rocket's red glare light up the sky in Washington, D.C., on July 4 weekend, but every night for ten weeks during the summer, funded by the Marriott Corporation's Department of Civic Affairs. California Fireworks Display Co., a subsidiary of Pyrotronics Corporations, has been selected to stage that ongoing jubilee, which will most likely include a sampling of PRC-made items.

Ban on Bangs?

The noise element of this year's fireworks theatrics may be more muted in the years to come, especially in firecrackers for private use, owing to a recent ruling of the Consumer Product Safety Commission (CPSC). On March 3, the CPSC issued a tentative order "lowering the permissible explosive charge in firecrackers and establishing performance standards for other fireworks devices sold or distributed for consumer use." A final decision will not be made until next fall, thus exempting the bicentennial July 4 from the clampdown.

The Commission, by a close vote, lowered the maximum permissible powder content of firecrackers from 130 milligrams (2 grains) to 50 milligrams (0.772 grains). This limitation essentially rules out the use of all firecrackers except the very small variety commonly known as the ladyfinger.

The decision, says the Committee, will have no effect on existing state bans on firecrackers, currently in effect in 32 states, and "generally" no effect on fireworks used for organized public displays. Currently, most fireworks are divided into Class C, considered the most dangerous, which includes certain firecrackers, sparklers, fountains, bottle rockets, Roman candles and smoke bombs, and a less dangerous Class B category which includes smaller firecrackers, cherry bombs and skyrockets.

This recent decision was not as tough as the original proposal in 1973 which would have totally banned all firecrackers—certainly not a positive move for this aspect of Sino-US trade. Strong objections were raised by segments of the fireworks industry and by the State of Hawaii which, on behalf of its large Chinese-American population, claimed that firecrackers are used in religious ceremonies which are constitutionally protected by the First Amendment. A scare brought on by the CPSC's position led to the

The Chinese influence has always been evident in American fireworks displays. Here, pagodas take center stage in a 1901 gala in Buffalo, N.Y.

sharp drop in fireworks purchases from the PRC in 1974.

Reasons for the proposed total ban stemmed from publicity regarding the large number of fireworks-related injuries (3,300 in the 1974 July 4 season) treated in hospital emergency rooms. According to the statistics used by the Commission, injuries from ladyfingers and other small firecrackers were relatively few.

The CPSC considers black powder as the safest firecracker component, followed by nitrate flash, and lastly pure flash powder. The bulk of PRC products for export employ this relatively safe black powder, for instance, in 104 items in one Hunan Branch export catalog. Second in quantity is the nitrate flash—77 varieties from this branch—and third is the nitric flash—38 types.

"Thin as Weak Coffee"

What effect the impending ban on large firecrackers will have on the quantity of PRC imports depends on which importer one is talking to; the opinions range from very negative to quite promising. The complainants in the CPSC proceedings are naturally not appeased by the panacea proposed to them, that is, a partial ban instead of a total one. "It's a very discriminating action," states Tom Fotovich, of Mike's Fireworks and Toys, Inc., of Kansas City, Kansas. "It favors manufacturers over importers, since all firecrackers are imported," he points out. "The end result is to discriminate, whether purposely or not."

Taylor O'Hearn, an attorney representing two relatively large importers, Liddell Co. and H. P. Cannon Wholesale Co., who testified at the CPSC hearings, argued that the Commission had all but destroyed the business of these two firms for which firecrackers make up 40-45% of their sales. They are now considering filing a $5 million lawsuit. The attorney states his belief that the guidelines used by the CPSC to form its list of serious injuries are "as thin as weak coffee." These guidelines, he insists, are flexible 25% in each direction, rendering them virtually useless.

Other industry figures do not see the CPSC as quite so destructive of their business. A less angered opinion was expressed by Harry Lloyd, of Consigned Sales, Inc., a toy and fireworks company based in Grandview, Missouri. He is opposed to the CPSC ruling and foresees a substantial drop in sales in the next year or two. After that, back to normal, he predicts. He will increase his imports of smaller firecrackers in order to compensate for loss of the larger variety.

One company sees the ruling as a real boon. "It will help our sales," believes Larry Callen of Acme Specialties. "People will know these items are regulated for safety, and will feel happier about using them."

EXPERIENCES

The experiences of fireworks importers not only have been quite similar, but also similar to the general experiences of US importers of other China commodities.

Timing—Importers interviewed by UCBR (some of whom are wholesalers) were unanimous in their feeling that the timing of the Canton Fair is a hindrance to their business. Most fireworks are sold, of course, just prior to July 4, but must be distributed by wholesalers in April or May. The spring fair is much too late for ordering in time for these deadlines. Even the fall fair poses problems, owing to the often snail paced delivery schedules of Chinese FTCs. Many November orders have a panic-inducing habit of not arriving until May, a dangerously late date for distributing to retailers in time to make an Independence Day profit. As a result, lament several businessmen, such items must sit in their warehouses for a whole year waiting for the next Fourth of July.

Several fireworks importers attended the Fall 1975 Canton Fair, contracting for more pyrotechnical items than they had the previous year, but most indicated that this was due to a generally improving market for their goods, and not primarily to bicentennial-related

anticipations. The only marked rise that could be directly related to bicentennial needs has been some increase in exhibition or display items for town and city events.

Contracts—All contracts signed have been spot contracts, with none of the "long-term variety" attempted. Orders have been placed generally in October or November with the Peking, Hunan and Kwangtung branches. Several importers have conducted all their business with the Peking headquarters, from which point the orders have been distributed to the other branches to be filled.

Factory Visits—These have been requested by those interviewed, but none granted by the Chinese yet.

PYROTRONICS—A CASE EXAMPLE OF A FRUSTRATED IMPORTER, OR, WHY AN AGENT MAY BE HELPFUL

Pyrotronics Corporation, one of the largest fireworks importers in the US, has been attending the Canton Fair since 1973. Twenty percent of its purchases for its divisions—California Fireworks Display, Red Devil Fireworks, and Wildcat Fireworks—are made from the People's Republic of China, less than one percent of them firecrackers. "The Chinese displays are outstanding," observes Harry A. Hescox, executive vice president for Red Devil, "but dealing with China is often a one-way street."

Pyrotronics has been willing to try various means to facilitate easier and faster trade with China—both dealing direct with the Native Produce Corporation and going through the Hop Kee Company, a Hong Kong agent often employed by fireworks importers. At first, Pyrotronics tried the direct route; a member of the company attended the Canton Fair, and Hescox himself made the journey three times—in the spring and fall of 1974, and in the fall of 1975. He requested permission to visit a fireworks factory in Kwangtung last fall, but was refused.

Pyrotronics is now trying to get visas to go to Peking in August, the optimum time to purchase fireworks for the following season. "The Fair isn't suited to the July 4 rush," Hescox points out. "The April fairs are too late for July, and even though the November fair is somewhat better, we've had orders delayed until the next May."

Delivery up in the Air

Pyrotronics made two purchases of pyrotechnical materials at last fall's fair, direct from the Native Produce Corporation, and has made several others since 1973. The contracts are concluded at the Fairs, and signed by Pyrotronics president Patrick Moriarty.

"We have requested specific delivery schedules," comments Hescox. "Sometimes they are altered, and sometimes greatly delayed. At the fall fair, we request April delivery. If it doesn't come then, it's no good. However, we've had some orders arrive as late as June 10 to July 15. Then we have to wait a year to sell them."

Last year, he recalls, he refused to renew a letter of credit when the order was again late. "This leads to bad relations," he said, "but I had to do it." The company has issued L/Cs to three Native Produce branches—Peking (for shells), Kwangtung and Hunan. The L/C is issued through the branch office of its bank (formerly United California Bank, now the California Canadian Bank), and then to the bank's central office in San Francisco. From there, it is processed through a Hong Kong bank acceptable to the Chinese.

Problems are rife using this system. "The double L/C issuance becomes extremely problematic," Hescox says. "We sometimes can't understand what the Chinese are talking about. For instance, the Chinese may give an unfamiliar L/C number, and we can't find it in our records."

Trying an Agent

As a result of the difficulties of purchasing direct, Hescox decided last year to experiment with an agent. In August, 1975, he agreed to purchase one order through the Hop Kee Company in Hong Kong "to see how it would go." Pyrotronics had thus far arranged to buy $60,000 worth of pyrotechnical items through the Hong Kong agent.

Our representative is more aware of our problems than the Chinese, believes Hescox. "Here in Los Angeles, we still don't have a satisfactory method of communication with the FTCs. Now, whenever necessary, he can follow things up by going to Canton, and can advise me on the status of my order." Pyrotronics issues its L/C direct from its bank to Hop Kee—a great savings in time and paperwork. The agent receives a small commission.

When the merchandise reaches the US, it is marked up 100% for distribution to wholesale dealers, since the company does not sell directly to the public via retail outlets.

The experiment with Hop Kee has not been concluded yet. Whether it goes well or not, Pyrotronics has obviously not given up hope on working out a better direct arrangement with the Chinese, since its executives are counting on the chance to go to Peking in order to iron out difficulties and facilitate further trade. Conducting business with China can often be difficult, but Pyrotronics knows it has its rewards.

Letters of Credit—Terms of letters of credit, when handled directly with the FTC, vary considerably. Representatives of two companies note that their business has been exclusively FOB Hong Kong, while another says terms have changed with every purchase and have included CIF Seattle as well as FOB Hong Kong. Most L/C's are opened through the Shanghai and Hong Kong Banking Corporation, perhaps the most actively used of the Hong Kong banks.

Shipping—Importers hope for a delivery time ranging from February to April. Acme Specialties estimates that the lead time following contract signing has been three months, stressing, however, that it can be much longer: "We just say as soon as possible." Liddell and Cannon, familiar with pokey delivery schedules, allow six to nine months lead time, usually nine months, in order to eliminate anxieties. As is usual, fireworks commodities find their way out of Hong Kong on a number of shipping lines such as US Lines or American President Lines. Seattle appears to be the most common port of entry, with further shipment by rail to internal destinations.

Packaging—Most companies have not even tried to get their own packaging for Chinese imports. One says, "We know we can't obtain this, and we don't really need it for fireworks."

Communications and Delivery Problems—With fireworks, as with a dizzying list of other commodities, communication between US importers and FTCs is often slow, confused and sometimes breaks down altogether. To the woe of importers, the difficulties have many manifestations. Comments L. W. Lloyd of Atomic Fireworks, "My interest in China has been longstanding, since I was there in 1948. I imported direct for several years and went to the Canton Fair six times. But this last fall was the worst. Shipping instructions were wrong, and the wrong items have been sent." His company has been carrying on a serious claim with the Native Produce Corporation for four years, for the amount of about $18,000. Another difficulty: Purchases ordered direct last August for the Christmas season simply failed to arrive.

Pricing—Chinese fireworks imports are generally subject to a 100% markup for wholesale distribution. A second retail markup can jack up the price another four or five times. Some estimated wholesale prices range from 4 cents for small fountains to $6 or $7 for a single display shell.

Using Far East Agents

Importers of various products have discovered that often the way to avoid a number of pitfalls in Sino-US trade is to hire an intermediary agent. Approximately twenty agents in Hong Kong and Macao purchase for American clients, including Yuen Loong Hong, Hop Kee, Kwong Yuen, Hangkee, Oriental Export and Po Sing. The majority of the business appears to be split among the first four of these. Many of these trading outfits wear two faces: they are also manufacturers in their respective locales. A crimp in this second role, caused by Hong Kong's banning of firecrackers following riots in 1967, may have led to the expansion of their role as agents.

"It's so much easier to deal with them," says one importer, observing that most of his colleagues are not buying direct from the Native Produce Corporation. The agents arrange for financing and sign the contracts, thus eliminating many laborious steps on the American end.

Atomic Fireworks' Lloyd, in praise of the use of agents, points out that orders placed direct this past fall cost his company over $10,000 more than they would have if negotiated through an agent. "Our customers have actually bought cheaper," he noted wryly, "but I think sometimes the Chinese just shrug their shoulders at these problems."

While some importers, such as Pyrotronics and Atomic have stopped importing direct from the Chinese FTC because of the problems involved (see box), another, Acme Specialties, has just decided to test the direct route, and has no particular problems to report thus far.

One importer's observation on the fireworks importing situation will sound remarkably familiar to all businessmen who have succumbed to the attractions—and the frustrations—of the China trade: "We have to recognize that China is strict and not very flexible. As long as we remember the ground rules, everything will work out all right." This sentiment will probably continue to ring true for a while to come. 完

Chinese-made rockets advertised in Hong Kong catalog.

Women workers in the No. 2 Workshop of the Tung Kuan Factory.

BICENTENNIAL GESTURE

Visit to a Chinese Fireworks Factory

In the spirit of Bicentennial Year, knowing that Chinese fireworks will figure in celebrations throughout the US—including Walt Disney's July 4 display in New York—National Council representatives had the opportunity to visit a Kwangtung fireworks factory. The tour, during the Spring 1976 Fair, was to Tung Kuan County, site of three major factories. It was arranged by courtesy of the CCPIT.

The Tung Kuan Firecracker and Fireworks Factory is actually a series of seven workshops, each specializing in a range of goods. The visit was to No. 2 workshop, which produces small firecrackers such as ladyfingers, and the No. 6 workshop, which manufactures large pieces for display purposes. The Tung Kuan complex occupies a pivotal position in the county's economy. Its 30 m. RMB output during 1975 represented a significant one-eighth of the county's total industrial output of 240 m. RMB. Last year it produced 212,000 fireworks cases of which over 50% were targeted for export to various countries around the world. This quantity was a 10.6% increase over 1974 production.

The complex was established in 1956 as a joint state-private enterprise following the merger of a number of the area's cooperatives. Production began in 1957, with a total of 10,000 cases manufactured. The factory is under the control of the County's Revolutionary Committee and is supervised by the county's Light Industrial Products Bureau. Exports are contracted for by the Local Foreign Trade Bureau, which is also under the supervision of the Revolutionary Committee. The Revolutionary Committee has subunits which handle inspection, safety and other procedures. Details of the export process are handled by the Tung Kuan Sub-Branch of the Kwangtung Province Native Produce and Animal By-Products Import and Export Corporation.

Pieceworkers

The factory employs about 1200 workers on the premises, of which 91% are women. In addition, the factory draws on a much larger network of home pieceworkers located in the nearby town of 50,000 people. They receive 2 yuan a day in auxiliary income for their work.

The on-premise workers have responsibility for sawing off the fireworks casings to a prearranged length, and then priming, tapping and labeling them with Horse Brand labels provided by the Tung Kuan Sub-Branch of the Kwangtung Native Produce Corporation. Home workers take care of the next two steps: fusing and stringing the pieces. After this is done, the pieces are returned to the factory and made up into rolls of 4,000 each.

Workers in the factory receive an average monthly wage of 72 yuan, which is a high income for a rural area. Their salaries are at least partially the result of the method used to set firecracker prices. In general, various commodities receive prices either through a unilateral assignment or through negotiation between the Foreign Trade Bureau and a particular enterprise during the time that representatives of each are contracting for the year's production levels. Firecrackers are priced using the negotiation process. Because their price has been rising in the international market, the chance for negotiation within China has led to higher prices there, too, and a resultant higher income for the firecracker factory employees. 完

The National Council's representative, John Kamm, with representatives of the Ministry of Foreign Trade, CCPIT, the Native Produce Corporation and the fireworks factory.

CHINA TRADE BANKS IN THE US

THIRD COUNTRY BANKS

BOSTON

Barclays Bank International Ltd.
110 Tremont Street
Boston, Massachusetts 02108
Tel: (617) 423-1775

LOS ANGELES

Banca Commercial Italiana
555 South Flower Street
Los Angeles, California 90017
Tel: (213) 624-0440

Bank of Montreal (California)
508 South Spring Street
Los Angeles, California 90013
Tel: (213) 624-0255

Barclays Bank of California
641 South Spring Street
Los Angeles, California 90013
Tel: (213) 627-9902

The Chartered Bank of London
614 West Sixth Street
Los Angeles, California 90017
Tel: (213) 620-0380

The Tokai Bank, Ltd.
534 West Sixth Street
Los Angeles, California 90014

NEW YORK

Algemene Bank Nederland NV
84 William Street or
301 Park Avenue
New York, New York 10022
Tel: (212) 944-5500

Banca Commerciale Italiana
280 Park Avenue
New York, New York 10017
Tel: (212) 611-8500

*Banca Nazionale del Lavoro
25 W. 51st Street
New York, New York 10019
Tel: (212) 581-0710

Banco del la Nacion Argentina
299 Park Avenue
New York, New York 10017
Tel: (212) 754-0200

Bank of Montreal
2 Wall Street
New York, New York 10005
Tel: (212) 964-1100

Bank of Nova Scotia
67 Wall Street
New York, New York 10005
Tel: (212) 825-2445

Bank of Tokyo
100 Broadway
New York, New York 10005
Tel: (212) 766-3400

Barclays Bank
120 Broadway
New York, New York 10005
Tel: (212) 577-7070

Canadian Imperial Bank of Commerce
22 William Street
New York, New York 10005
Tel: (212) 825-7000

*The Chartered Bank
76 William Street
New York, New York 10005
Tel: (212) 944-5625

Credit Lyonnais
95 Wall Street
New York, New York 10005
Tel: (212) 344-0500

Credit Suisse
100 Wall Street
New York, New York 10005
Tel: (212) 422-1450

French-American Banking Corp.
120 Broadway
New York, New York 10005
Tel: (212) 964-4127

*Hong Kong and Shanghai Banking Corp.
5 World Trade Center
New York, New York 10008
Tel: (212) 938-3100

Lloyds Bank Int'l, Ltd.
(Lloyds & Bolsa Int'l Bank Ltd.)
95 Wall Street
New York, New York 10005
Tel: (212) 825-4900

National Bank of Pakistan
100 Wall Street, 6th Floor
New York, New York 10005
Tel: (212) 344-8822

National Westminster Bank, Ltd.
100 Wall Street
New York, New York 10005
Tel: (212) 943-6000

Royal Bank of Canada
68 William Street
New York, New York 10005
Tel: (212) 363-6000

*Schroder International, Ltd.
1 State Street Plaza
New York, New York 10015
Tel: (212) 269-6500

Swiss Banking Corp.
15 Nassau Street
New York, New York 10005
Tel: (212) 791-2500

The Tokai Bank Ltd.
1 World Trade Center, Suite 8763
New York, New York 10008
Tel: (212) 432-2600

PORTLAND

Canadian Imperial Bank of Commerce
504 Southwest Sixth Avenue
Portland, Oregon 97207
Tel: (503) 228-8493

SACRAMENTO

Bank of Montreal (California)
455 Capitol Mall
Sacramento, California 95814
Tel: (916) 444-6790

SAN FRANCISCO

Bank of Montreal (California)
425 California Street
San Francisco, California 94104
Tel: (415) 391-8060

Bank of Nova Scotia
315 California Street
San Francisco, California 94104
Tel: (415) 986-1100

*Banque Nationale de Paris
130 Montgomery
San Francisco, California 94104
Tel: (415) 398-1700

Barclays Bank of California
111 Pine Street
San Francisco, California 94111
Tel: (415) 981-8090

The Chartered Bank of London
465 California Street
San Francisco, California 94104
Tel: (415) 398-5151

Hong Kong Bank of California
180 Sansome Street
San Francisco, California 94104
Tel: (415) 421-3077

US BANKS—NON COMMERCIAL TRANSACTIONS ONLY

CHICAGO

*First National Bank of Chicago
One First National Plaza
Chicago, Illinois 60670
Tel: (312) 732-4000
(Date of Agreement: December 1975)

NEW YORK

*Chase Manhattan Bank
1 Chase Manhattan Plaza
New York, New York 10015
Tel: (212) 552-3255
(Date of Agreement: July 1973)

*Manufacturers Hanover Trust
New York, New York 10022
Tel: (212) 350-6917
(Date of Agreement: January 1976)

SAN FRANCISCO

*Bank of America
345 Montgomery
San Francisco, California 94104
Tel: (415) 622-8216
(Date of Agreement: October 1975)

The US banks with agreements with the People's Republic of China can handle non-commercial remittances and transactions. Such transfers may include remittances between diplomatic organizations, remittances for international organizations such as the Red Cross, insurance remittances, bank to bank reimbursements, individual remittances, and remittances for chartering and shipping. The universal acceptance of travelers checks and other conditions have led these banks to discontinue issuing travelers L/Cs. The US banks must still transfer remittances through third country banks, but their agreement with the PRC allows them to communicate with the Bank of China and its branches directly, and in turn allows the BOC to act on the advice of the US banks prior to receiving the cover.

* Members of the National Council.

JAPAN'S EXPORTS TO THE PRC, 1975

	$000/FOB			
	1975	1974	% Change	% Share of Total
Textile & textile products	**122,969**	**202,987**	**−39.4**	**5.4**
Synthetic Filament	62,291	67,314	− 7.5	2.8
Synthetic Fibers	19,681	50,499	−61.0	0.9
Artificial Fibers	8,772	15,848	−44.7	0.4
Synthetic Textiles	27,960	51,876	−46.1	1.2
Artificial Textiles	15	306	−95.1	0.0
Chemicals	**433,142**	**296,622**	**52.8**	**20.0**
Chemical Fertilizers	316,974	148,797	113.0	14.0
Ammonium Sulphate	25,685	18,408	39.5	1.1
Urea	242,397	101,805	138.1	10.7
Ammonium Chloride	48,049	28,336	69.6	2.1
Artificial Plastics	29,981	71,930	−58.3	1.3
Vinyl Chloride Resin	8,419	30,732	−72.6	0.4
Polyethylene	3,374	13,703	−75.4	0.1
Metals & Metal Products	**890,543**	**839,127**	**6.1**	**39.4**
Iron & Steel	795,207	727,860	9.3	35.2
Rods	140,078	129,391	8.3	6.2
Thick Plates	114,350	134,059	−14.7	5.1
Sheets	156,836	173,216	− 9.5	6.9
Tinned Plates & Sheets	39,228	41,371	− 5.2	1.7
Galvanized Iron Plates	15,815	9,947	59.0	0.7
Steel Strips	17,574	20,596	−14.7	0.8
Steel Pipes	200,072	140,014	42.9	8.8
Non-ferrous Metals	**48,162**	**76,748**	**−37.3**	**2.1**
Metal Products	**47,175**	**35,619**	**32.4**	**2.1**
Machinery	**697,251**	**557,452**	**25.1**	**30.8**
General Machinery	338,512	249,501	35.7	15.0
Agricultural Machinery	9,230	28,892	−68.1	0.4
Metalworking Machinery	42,578	19,640	116.8	1.9
Construction & Mining Machinery	7,077	16,202	−56.3	0.3
Pumps	46,754	29,257	59.8	2.1
Bearings	18,997	17,412	9.1	0.8
Electric Machinery	72,711	41,744	74.2	3.2
Transportation Vehicles	**267,444**	**254,740**	**5.0**	**11.8**
Automobiles	82,476	110,327	−25.2	3.6
Ships & Boats	164,079	126,511	29.7	7.3
Optical Instruments	**17,276**	**9,933**	**73.9**	**0.8**
Others	**97,739**	**88,285**	**10.7**	**4.3**
Paper & Paperboards	56,706	55,194	2.7	2.5
Synthetic Rubber	8,657	8,332	3.9	0.4
TOTAL	**2,261,646**	**1,984,473**	**14.0**	**100.0**

Source: JETRO

Electronic measuring equipment on display at the Kwangchow Fair, Fall, 1974.

ELECTRONICS IN CHINA

Bohdan O. Szuprowicz

The People's Republic of China has produced computers capable of a million operations a second, large scale integrated circuits with 10,000 elements, and color television sets. Total electronics output in the PRC is estimated at over $2 billion yearly. But what does China represent as a market for foreign electronic products? The answer is, at present a limited one, though China's purchases from abroad vary from sector to sector, and foreign export controls, not discussed in this article, may act as a limiting factor. In this sectoral report China's production of electronics components, electronics instruments, computers, telecommunications equipment, and consumer electronics is examined, along with the PRC market to date for these products.

If the goal of China is truly the advancement of its national economy "into the front ranks of the world by the year 2000" as postulated in 1975 by the late premier Chou En-lai, then it goes without saying that the development of a viable and self-sufficient electronics industry must be high up on its priority list.

While an electronics industry with its innumerable variety of products cannot be regarded as "basic" in the sense that energy resources, highly productive agriculture and steel industries are, it, nevertheless, constitutes a "sine qua non" factor in becoming a modern industrial state when all other factors are considered equal or equivalent.

Communications, for example, is one indispensable aspect of any modern economy which depends entirely on electronics. Telephone, telex, telegraph, radio, television, facsimile transmission and communications satellites are electronic products without which neither civilian nor military sectors of a modern power can function.

Electronic testing and measuring instruments are very important tools in research and development of resources and products in other industries but they also play a vital role in the maintenance and operation of various systems and plants. Computers increase productivities of industries and bureaucracies and are indispensable once industrialization of an economy begins its rapid growth.

Basic to the development of an independent electronics industry is the electronic components sector which provides the semiconductor elements with which electronic devices are assembled into useful products. This semiconductor industry has been characterized by rapid technological advances during the last 20 years. The current state of the art race among manufacturers and countries revolves about degrees of integration of electronic circuits which can be achieved on microscopic chips made up of thin layers of semiconductor materials.

Bohdan Szuprowicz is director of 21st Century Research, an international consultancy founded in 1970 specializing in market research for industrial products. The firm is currently engaged in a study of Chinese industries, markets and future business opportunities as well as the overall outlook for its economy, 1975-1985. Mr. Szuprowicz is also international news editor for Modern Data, *an electronics/computer-oriented magazine. He was educated at the Imperial College of Science and Technology of the University of London in England; and later served as consultant to numerous electronics and aerospace firms.*

Approaching Highest Performance Levels

Most recent reports from China suggest that it is already fast approaching the world's highest performance levels in development of high-capacity Large Scale Integrated (LSI) circuits. This assessment of Chinese electronic components technology comes from Mr. Koji Kobayashi, President of the Nippon Electric Company, which itself is a leading manufacturer in this industry. Mr. Kobayashi was the leader of a 15-member Japanese electronic industry mission which toured China in November and December of 1975 at the invitation of the Peking-headquartered China Society of Electronics.

The Japanese electronics executive reported that LSI circuits with a capacity of 10,000 transistor elements were being manufactured at a Peking semiconductor factory. Leading LSI manufacturing countries such as USA and Japan presently manufacture LSI circuits for practical applications with 12,000 transistor elements and INTEL, INC., a leading American LSI maker, announced a 16,000 bit LSI memory device only in February 1976.

However, the ability to manufacture a high-capacity LSI circuit comparable to the most advanced in the world does not in itself mean the capability to mass produce and test the final chips in economic quantities. The process of mass production of such elements involves photo-chemical, thin film and semiconductors materials technologies as well as precision testing equipment, most of which is under strict export controls in the West.

Countries lacking sophisticated semiconductor production technologies may still produce and demonstrate high density LSI circuits and reap well deserved scientific achievement and propaganda rewards. On the other hand they are not necessarily considered capable of mass producing such elements with sufficiently high yield rates to obtain cost reduction advantages or present a competitive threat in the global marketplace.

Indeed, Mr. Kobayashi, the leader of the Japanese electronics mission to China, pointed out that cameras used in Peking for mask-pattern reduction in the process of LSI manufacture were not specialized reduction cameras such as are currently in use by Japanese and US manufacturers, but adaptation of common camera equipment. He also said that a large computer built with Chinese integrated circuits was rated two to three times slower in arithmetic speed than the latest Japanese machines.

This introduction is designed to indicate China's state of the art position with regard to leading electronic manufacturing countries of the world. Regardless of the state of its electronic technology, however, China has become a major electronics manufacturer already placing herself among the top ten electronic producing countries of the world. The import dependence of China's electronics industry on foreign equipment appears to be a low 2% to 3% of the total value of its production estimated at over $2 billion for 1976. But although it appears to be low in trade volume, it is certainly high in technological content when compared with Chinese-made equipment.

This report is an attempt to summarize briefly Chinese achievements in major electronics industry groups such as components, instruments, computers telecommunications, consumer electronics and military applications. It will also speculate on future directions in which the Chinese electronics industry should be heading and import prospects for foreign equipment.

Development of the Chinese Electronics Industry

Although the electronics industry in China does not appear to have reached a rapid growth stage until after the Cultural Revolution, the new China was well aware of the significance of this industry to its economic development almost from the start.

As long ago as 1959, the late premier Chou En-lai is reported to have observed that "the new revolution in science, technology and industry as a result of automation was far exceeding in its significance the industrial revolution associated with steam and electricity." This was at a time when China was developing its special 12-year, long-range plan of research which was designated to raise its own technologies to the highest international standards.

Some results of those decisions already turned out to be remarkable, particularly when China "gate crashed" into the nuclear club in October 1964 and reaffirmed its presence there with a thermonuclear explosion in June 1967. What is significant here is the fact that it took China only two-and-a-half years between the first atomic and hydrogen bomb test while the USA took seven-and-a-half years, and the Soviet Union, which followed up on much available research, still needed four years for that same purpose.

While considerable sophistication in electronics was required for these achievements, even more sophistication became necessary with the launching of China's first satellite in April 1970 and concurrent development of a missile weapons system. Perhaps most noteworthy of all is the fact that these milestone achievements took place during and soon after the Cultural Revolution. This emphasizes the priority attached not only to these objectives but also by inference to the development of the electronics industry. There are reports that even at the height of disturbances during the Cultural Revolution research and development on several electronic projects at institutes and factories continued uninterrupted.

Research Institutes

Undoubtedly the role of electronics technology gatekeepers must have fallen in those days to the

several institutions concerned with research and development in electronics which came into being during the 1950s. Particularly significant to the development of electronics in China are four specific institutes of the Chinese Academy of Sciences (CAS) which were all formed in 1956. These are the Institute of Electronics, Institute of Semiconductors, Institute of Automation and Institute of Computer Technology. Noted staff members in those institutes hold advanced degrees from such well-known Western seats of learning as Harvard, MIT, Caltech, Stanford, UCLA, Carnegie, Purdue, Toronto, Berlin and Bristol (UK) in various sciences pertinent to the growth of an electronics industry.

Several other institutes and colleges specialize in what appears to be development and prototype construction work in various disciplines. These include broadcasting, long-range telecommunications, television design both color and black and white, computers or industrial automation. In addition, Peking, Tientsin, Shanghai, Tsinghua, Shenyang, Kirin and Chungshan Universities operate internal institutes specializing in semiconductor or automation research and development. Most of those locations coincide with major electronics manufacturing centers as well.

Branches of the CAS in Shanghai, Sian, Tsinan, Shenyang, Szechwan, Changsha and Anhwei additionally operate a total of 14 research institutes in the fields of Electronics, Semiconductors, Computer Technology and Automation. These regional institutes of the Academy presumably perform information dissemination functions which allow the "self-reliance" principles to be adapted in regional development of electronic devices and instruments which are in demand by local industries.

It should be borne in mind that Chinese developments in electronics are the results of specific targeted research designed to achieve possible parity with equipment and devices already invented and applied in other parts of the world. Resources are not squandered on undirected basic research. Thus, rapid advancement is possible in target areas with a considerable saving in time of development, even though actual technology transfer may not take place. Reinventing of the proverbial "wheel" does pay off when a circle has been clearly drawn in front of you.

In this context it is interesting to ponder briefly over the Chinese purchases of electronic products and equipment over the last fifteen years. In the years 1960-1975 China bought a large assortment of various electronic products from almost twenty different countries among the most advanced electronics manufacturers in the world. In most cases the purchases were in single units or small numbers and the total estimated bill for all the years is about $350 million, which is on the average $23 million per year shared by twenty supplier countries and many more manufacturers.

SPECIALIZED ELECTRONIC INDUSTRY RESEARCH

Institute or Organization	Date established
Institute of Electronics (CAS)	1956
Institute of Semiconductors (CAS)	1956
Institute of Computer Technology (CAS)	1956
Institute of Computer Technology, Shanghai (CAS)	na
Institute of Computer Technology, Shenyang (CAS)	na
Institute of Automation (CAS)	1956
Institute of Electron Optics, Shanghai (CAS)	na
Institute of Broadcasting	na
Academy of Electrical Equipment Research (MMB)	1955
Institute of Posts & Telecommunications (MPT)	1954
Chinese Society of Electronics	1956
Chengtu College of Telecommunications	na
Nanking College of Posts & Telecommunications	na
Peking College of Posts & Telecommunications	1954

(CAS) Chinese Academy of Sciences Institute
(MMB) First Ministry of Machine Building Institute
(MPT) Ministry of Posts & Telecommunications Institute

Note: Above organizations are dedicated entirely to research and development of electronic equipment and industry. There are other institutes within major universities and local cities which specialize in electronic research and development but which form only a part of their parent institutions.

Clearly, in this type of product, China is a buyer's market *par excellence;* but from the research and development point of view, these facts reinforce a suspicion that China follows a "prototype purchasing" policy. From that point of view also, the $23 million per year is a laughable cost of research and development in that industry although it is justifiable because of the rapid pace of technological development in electronics. This policy and the lack of patent protection in China presumably prevented China from purchasing some equipment it would have liked to obtain from those who prefer to "sell the milk and not the cow." Some Western suppliers would have gone along with a one time sale of a large quantity of their products but few such sales in electronics have occurred.

Development of Manufacturing

The establishment of large scale electronics manufacturing facilities in China began in 1953 with the construction of several major plants with the assistance of the Soviet Union and German Democratic Republic (East Germany). Prior to that time, the electronics industry as such was non-existent except for several assembly workshops which imported valves and components and manufactured radio receivers. Before

World War II, electronics production in China was limited to a few small plants producing simple communications equipment and providing maintenance for imported products.

Initial electronic equipment imports from the Soviet Union after 1949 were also employed as prototypes for domestic production, but this was justifiable from a business point of view because several plants were subsequently built with Soviet assistance. In 1956 the Peking Electronic Tube Plant began operation and, as of 1959, was producing 70% of China's electronic tubes. This plant was erected with Soviet assistance and equipped with Soviet production equipment. In 1958 the plant test-manufactured a germanium transistor and by 1968 its employment stood at 4,000 workers and its products included transistors, diodes and tubes.

Two radio equipment and materials plants were put into production in 1957, also in Peking, with some assistance from the German Democratic Republic. These plants, now known as No. 1 and No. 2, produce selenium rectifiers, carbon film rheostats, paper condensers and capacitors and variable resistors.

Another basic electronics plant built in 1957 was the Peking Wire Communications Equipment Plant which also was put up with Soviet assistance. It manufactures automatic telephone exchanges and switchboards and also produced transistorized computers DJS-6, DJS-7 and DJS-21. In Chengtu in Szechwan province two radio factories were built with Soviet aid, and already in 1957, claims were made that their output was on par with products on the international markets.

Associated with the growth of the electronics industry was the construction of instrument and meter capability in China. With the help of the German Democratic Republic, the Sian Instruments and Meters Plant went into operation in 1960 and in that same period the Harbin Electric Instruments Plant was built with Soviet aid. Only a part of the production of these plants is truly electronics but many electrical instruments made there were vital to the growth of the electronics industry.

These began China's electronics industry which, by 1960, grew to 60 major plants, and by 1972 expanded to 200 with an estimated total employment of 400,000 persons. In addition, there were also 500 smaller plants and workshops employing another 50,000 workers. Peking, Shanghai, Nanking, Tientsin, Chengtu and Kwangchow became major electronics manufacturing centers and are estimated to account for 66% of China's total electronics production.

Specialization, Next Areas of Growth

Since about 1971, output of the electronics industry in China appears to have been increasing dramatically, clearly doubling from year to year in certain product lines. This is particularly noticeable in the consumer electronics sector as production figures of radio and television receivers almost tripled in each case between 1972 and 1974.

Table A

USE OF SELECTED ELECTRONIC PRODUCTS

by countries at end of 1974 in order of decreasing GNP

Country	Telephones in use (millions)	Radios in use (millions)	Televisions in use (millions)	General Purpose Computer Installations	Sateliite Communications Ground Stations
USA	143.0	383.0	110.0	170,000	7(14)
USSR	16.8	55.0	52.0	12,000	2(*)
Japan	38.7	77.0	25.0	23,800	2
West Germany	19.3	21.3	19.3	16,700	4
France	12.7	18.3	14.3	13,064	4
China	1.0(**)	45.0(***)	0.331	1,000+	4
UK	21.3	41.7	18.1	13,000	3
Italy	14.1	13.7	12.6	6,000	3
Canada	12.8	22.0	9.2	7,000+	3
Brazil	2.75	32.0	9.0	1,500	4
Netherlands	4.86	9.0	3.65	3,000	1
Poland	2.18	7.9	6.1	1,100	1
India	1.6	14.0	0.075	250	2
Sweden	5.21	5.0	2.88	2,500	1
East Germany	2.37	6.1(****)	4.97(****)	850	NA

Source: Compiled by 21st Century Research from various statistics including those published by CIA January 1976; Communications News monthly; Joint Economic Committee publications and several data processing magazines. (*) Only commercial Satellite Communications Ground Stations are listed for the Soviet Union. (**) Estimate of outlets in China by Jack Craig in Joint Economic Committee paper "China: Domestic and International Telecommunications 1949-1974" (***) Sum of estimated annual production in China since 1952. In addition wired broadcasting system use of 100 million loudspeakers wired to central diffusion stations. (****) Statistics available for 1973 only.

Thus in 1974 China became the third largest manufacturer of radio receivers in the world, outpaced only by United States and Japan. In 1974 it is estimated that China produced 12 million radio receivers which was 50% more than in 1973. If this growth continues, China will outdistance Japan within a year or two and beat the USA sometime between 1978 and 1980 to become the largest radio manufacturer in the world. Clearly it has a built-in market which is still unsaturated, but no country in the world has the opportunity to obtain such massive economies of scale.

A glance at comparative use of electronic products (Table A) in various countries of the world shows that China already had 45 million radios in use in 1974 which may by now have increased to the 75 million level if production grew only by 25% per year. In addition, there is a huge population of at least 100 million wired loudspeakers which also appears to be growing by 10 to 12 million units per year. In either case, China already has one of the largest radio manufacturing capabilities in the world and most of the output is transistorized units.

The next rapid growth areas in consumer electronics, both of which can only benefit from China's huge radio industry component production base, are television and possibly private telephones which are clearly below par for a major power like China.

It is instructive to note (Table A) that other centrally planned economies like the Soviet Union, Poland or East Germany are putting much more emphasis on rapid growth of television than radio, and that each of those countries has already almost as many television receivers as radios in use. Such a ratio of television receivers to radios is not approached elswhere in industrialized countries except Italy. This may be an indication of things to come in China which obviously has the potential of being the largest television market in the world.

The overall electronics industry is too complex and contains too many product lines and disciplines to be as easily discussed as radios, televisions, telephones or even computers. To assess its proper magnitude it is best to have cost and sales figures which, for China, are not available. In the following sections of this report, electronics industry sectors will be discussed separately with the understanding that very considerable overlap must exist among those sectors and that the component sector itself is, in most cases, the input to the other equipment manufacturing sectors.

ELECTRONIC COMPONENTS

A most important factor contributing to the successful growth of the Chinese electronic industry was the early development of the components manufacturing sector. This provided not only essential parts for immediate assembly but also trained quickly a large number of technicians who could be sent to other locations throughout the country and disseminate the basic know-how for setting up local production plants.

This basic industry sector was practically nonexistent in China until the early 1950's when components production capacity was established with some aid from the USSR and German Democratic Republic. Several major plants were in production by 1958, most manufacturing radio receiving and transmitting tubes and other components which were either adaptations or copies of Soviet models. In 1971 Philip Reichers estimated that China had the capacity to produce 75 million vacuum tubes per year in about 50 plants but was still unable to make high power magnetrons or klystrons, relying for such devices on Western models and imports.

By 1971 it was estimated there were already 70 plants in China involved in manufacture of semiconductor materials and components. Of these, 15 were equipped to produce silicon and germanium monocrystals for the manufacture of diodes, transistors, integrated circuits and other components. First transistors were made in 1958 but integrated circuits did not appear until about the late 1960's and production equipment for these devices is almost certainly imported from Japan or Europe or designed on such imports by the Chinese. Thus, while China's thermionic tube technology is based on Soviet designs, the semiconductor and integrated circuit technology is based on non-communist concepts. Since the Soviet semiconductor technology is considered a few years behind that of Japan and the USA, the Chinese switch to Western sources of supply for this technology saved several years in bridging that technology gap.

Reichers also estimates that in 1971 China had the capacity to produce up to a few million integrated circuits (IC's) and several hundred million transistors and diodes. However, if one considers the threefold increase in production of radio receivers alone since 1972, the PRC's component manufacturing capacity must have increased considerably since then.

Total production of semiconductors is difficult to estimate due to a lack of data on the actual percentage and mix of military electronic products which are believed to constitute between 50% to 66% of all electronic production in China. Considering rapid technological change in nuclear, telecommunication, missile, navigation and satellite tracking disciplines, very large demand for electronic components may continue in these areas at all times.

Imports of foreign electronic components and manufacturing equipment range between $2 million to $10 million per year and, although Japan appears to be the biggest supplier, China has purchased some equipment at one time or other from all the leading manufacturing countries.

Reports of such ad hoc sales from almost 20 different countries all over the world may sometimes create the impression that a large market exists in China for

Table B

CHINA: IMPORTS OF ELECTRONIC EQUIPMENT INCLUDING VALVES TRANSISTORS, MEASURING & CONTROL INSTRUMENTS AND FURNACES 1965-1974

SITC Commodity Code 729; $ millions.

Country	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Japan	—	—	6.6	4.1	3.1	4.0	2.7	3.7	4.0	16.2
USSR	9.2	6.0	0.7	1.4	0.5	1.0	0.5	0.3	0.2	0.2
USA	—	—	—	—	—	—	—	—	0.9	3.6
France	—	—	0.8	0.9	0.3	0.5	0.2	1.3	1.4	4.7
UK	—	—	2.0	1.4	0.7	1.4	0.8	1.5	3.3	4.3
West Germany	—	—	3.8	2.1	1.2	1.9	1.2	1.0	2.9	5.6
East Germany	3.0	—	0.2	—	0.1	0.1	—	0.3	0.3	na
Italy	—	—	0.4	—	.04	—	—	0.6	0.3	0.7
Czechoslovakia	0.6	—	—	—	—	0.2	—	—	—	—
Poland	0.7	.01	—	—	—	—	—	—	—	0.2
Hungary	—	—	—	—	—	1.6	5.1	4.1	3.7	—
Switzerland	—	—	0.6	0.5	0.2	0.3	0.2	0.2	0.3	1.2
Sweden	—	—	0.8	—	.01	—	—	0.1	—	0.5
Denmark	—	—	0.4	0.5	0.4	—	0.2	0.4	1.5	1.5
Austria	—	—	0.2	—	—	—	—	—	0.2	—
Canada	—	—	—	—	—	0.1	—	—	0.1	0.1
Belgium/Lux.	—	—	—	—	—	—	—	—	0.1	0.7
Netherlands	—	—	0.1	0.1	0.1	—	—	—	—	—
Norway	—	—	—	—	.02	—	—	—	—	—
Total	12.9	6.0	16.6	11.0	6.6	11.1	10.9	13.5	15.6	39.5

Source: OECD Commodity Trade Statistics Series B and from several foreign trade statistical yearbooks of the COMECON countries. Figures are rounded to first decimal place. Additional data from U.N. Bulletin of Statistics issues for Trade in Engineering Products through 1973.

such products. However, the figures for the last ten years (Table B)* do not support such a theory because while Chinese components production increased by leaps and bounds during that period, the imports from the West and East alike continued at a relatively low and stable level. This is a clear case in which China is only interested in purchasing the latest production technology available, and there are few indications that this policy will ever change. Some hundreds or even thousands of specific transistors or tubes obtained annually from Japan are more likely for use as replacement and spare parts in Japanese equipment operating in China rather than the beginning of a market for mass imports.

ELECTRONIC INSTRUMENTS

As in the case of electronic components, the basis for China's instrument industry was established during the First Plan period with the help of the Soviet Union and the German Democratic Republic.

A Chinese Gaschromatograph (SP-2307) shown in West Germany, June, 1975. Photo: 21st Century Research

* Table B should be read in conjunction with Table C to obtain an indication of electronic component imports. On the average about 50% of the total imports shown on Table B represent electronic instruments and meters, detailed further in a section dealing with these electronic products.

Two major plants forming the backbone of this industry sector were built at that time. The Harbin Electric Instruments Plant received Soviet asistance and was put into operation to provide basic electric instruments such as ammeters, voltmeters, wattmeters, AC and DC line voltmeters, frequency and power meters and potentiometers. The other basic manufacturing unit was the Sian Thermo-technical Instruments and Meters Plant, built with the assistance of the German Democratic Republic, which manufactures precision apparatus required by the expanding chemical, oil, metallurgical, electric power and electronics industries.

In 1971 the industry was estimated to consist of about 50 major plants employing 90,000 workers with concentration of over 50% of all the manufacturing units in Shanghai, Peking, Nanking and Tientsin. About 66% of all production is estimated to come from these four centers. Western industry observers indicate a five-year technology gap in Chinese instrument designs, particularly in more specialized instruments and some high frequency products. Nevertheless, in 1960-1970 China modernized its industry by transistorizing most of the instruments and continues to introduce new units.

Because many new instrument designs show close resemblance to corresponding Western models, it is believed that in this industry sector China also follows a "prototype purchase" policy to speed up its research and development process but also to keep up with developments in the most advanced countries.

Although there was an upsurge in imports of instru-

SELECTED ELECTRONIC COMPONENTS MANUFACTURING PLANTS IN THE PRC

PEKING

North China Radio Equipment and Materials Factory

Began operations in 1957 and in 1958 made selenium rectifiers. Other products include paper capacitors, electrolytic capacitors, carbon film resistors, ceramic resistors and speakers. Employs 5,000 workers (1968).

Electronic Tube Plant

In operation since 1956 erected with Soviet aid and in 1959 produced 70% of China's electronic tube output. (Cheng 1972) In 1959 made thyratrons and 250KW oscillating tube. Also makes transistors, diodes and tubes and manufactured first germanium transistor in 1958. Employs 4,000 workers (1968).

Radio Equpment and Materals Plant No. 1

Completed in 1957 with aid of German Democratic Republic was one of first basic electronic plants in China. Makes carbon film rheostats, selenium rectifiers and metallized paper condensers (1967).

Radio Equipment and Materials Plant No. 2

Established in 1957 with imported production equipment from German Democratic Republic. Manufactures selenium rectifiers carbon film resistors, paper capacitors, steel roll capacitors, and variable resistors. Appears to have been parallel local construction to duplicate capacity of No. 1.

Yuehtang Semiconductor Equipment Factory

Makes diffusion furnaces with automatic temperature control since 1965. In 1969 made first furnace for epitaxial silicon materials. In 1970 trial-produced transistorized diffusion furnace (1971).

General Glass Factory

Designed and produced a machine for growing large diameter silicon crystals for semi-conductor production (1970).

NANKING

No. 12 Radio Elements Plant

(Kiangsu Province)

Produced sintering furnaces, vacuum evaporating machines, transistor testing instruments and other products.

Huatung Electron Tube Plant

(Kiangsu Province)

In 1967 made 100-200 CRT's per month and also produces digital indicator tubes, fluorescent lamps and spotlights. Some components are for oscilloscopes. Employed 700 engineering technicians before Cultural Revolution (1967).

Radio Appliance Factory

(Kiangsu Province)

Trial produced a dynamic frequency detectron analyzer.

SOOCHOW

Transistor Factory

(Kiangsu Province)

Built China's first small and simple hydrogen gas generator for use in semiconductor factories and in small and medium cities.

YEN-TAI

Radio Branch Works

(Shantung Province)

Trial manufactured a transistor capacity testing device.

HSIANGFAN

Electronics Factory

(Hupeh Province)

Produces diodes, triodes and silicon control crystals.

TAIYUAN

Radio Instrument & Meter Works

(Shansi Province)

Trial produced an automatic vacuum annealing furnace suitable for electronics industry.

No. 5 Radio Plant

(Shansi Province)

Trial produced a large occlusion circuit.

Table C

CHINA: IMPORTS OF ELECTRICAL MEASURING AND CONTROL INSTRUMENTS 1965-1974

SITC Commodity Code 729.5; $ millions.

Country	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Japan	—	—	6.5	1.6*	1.9	1.6	0.7	1.7	2.4	10.6
USSR	8.2	6.0	0.6	1.6	0.4	0.3	0.5	0.3	0.2	0.2
USA	—	—	—	—	—	—	—	—	—	3.2
France	—	—	0.5	0.5	0.3	0.2	0.1	0.6	1.1	4.1
UK	—	—	1.7	0.9	0.7	1.0	0.4	1.2	2.7	3.5
West Germany	—	—	3.8	2.0	0.7	1.2	0.8	0.7	2.3	4.4
East Germany	2.1	—	0.1	—	0.1	0.1	—	0.3	0.2	na
Italy	—	—	0.3	—	—	—	—	0.5	0.1	0.5
Czechoslovakia	0.6	—	—	—	—	0.1	—	—	—	—
Poland	0.7	—	—	—	—	—	—	—	—	0.2
Switzerland	—	—	0.6	0.5	0.1	0.1	0.2	0.2	0.3	1.1
Sweden	—	—	0.8	—	—	—	—	0.1	—	0.1
Denmark	—	—	0.4	0.4	0.4	—	0.2	0.4	1.5	1.5
Austria	—	—	0.2	—	—	—	—	—	0.1	—
Canada	—	—	—	—	—	—	—	0.1	0.1	0.1
Netherlands	—	—	—	—	0.1	—	—	—	—	—
Norway	—	—	—	—	0.2	—	—	—	—	—
Total	11.0	6.0	15.5	7.5	4.65	4.6	2.9	6.1	11.0	29.5

Source: OECD Commodity Trade Statistics Series B and from several statistical yearbooks of some of the countries. SITC Code 729.5 is also included in the statistics for SITC Code 729. Countries not included in the table above did not export any SITC Code 729.5 products to China during this period although they may have exported other products which are included in SITC Code 729.

Western visitor tests out a Chinese electronic desk-top calculator in Kwangchow, Fall, 1974.

ments to China during 1974 (Table C) the preceding ten years showed only a very modest sales level in the range of $10 million per year average at best. This clearly confirms that China is mainly purchasing equipment for research purposes as samples or design models and it is further strengthened when one considers the fact that at least 15 supplier countries are involved every year.

The largest single supplier country is Japan which replaced the Soviet Union in this role in 1967. Japan supplies the biggest share of the Chinese market every year, sometimes as much as 30%. Almost every year China purchases from Japan from a few to a few hundred of the simpler units of such instruments as ultrasonic sound detectors, automatic voltage regulators, radiation meters, pen-type recorders, circuit testers, frequency meters and associated spare parts.

For comparison, the US market alone for such equipment is in the order of $2 billion and that of Western Europe about $2.5 billion per year and, as a result of such low levels of Chinese purchases, it can only be judged of marginal interest to most Western manufacturers.

It is further believed that in the long run China will strive to produce more competitive instruments which it will offer for export, in particular to third world countries, which are much more interested in their ability to pay for such equipment and which in many instances, do not really need the very latest in instrument technology since they do not possess the sophistication to use and operate such equipment.

The stress on instruments in all China's exhibitions abroad is unmistakable. The several specialized instrument exhibitions organized by Western countries in China can be as well-regarded as competitive analysis of Western instrument industries as marketing events for sales to China.

Thus instruments may become one of the first Chinese electronics export items to appear on world markets. China is already making sure it exhibits many of its instruments at Chinese economic exhibitions abroad and, particularly, in third world countries such as Egypt or Pakistan. The additional rapid pace of industrialization in China requires increasing quantities of those instruments which, in turn, creates economies of scale unavailable to many of the small Western manufacturers.

ELECTRONIC COMPUTERS

Development of electronic digital computers in China appears to have been a direct result of the priority targets announced in 1956 within the 12-year plan for the development of Science and Technology. The industry itself was born that same year with the establishment of the Institute of Computation Techniques at the Chinese Academy of Sciences in Peking. Within three years additional institutes were in operation in Shanghai, Shenyang, Tsinan and Chengtu following the classical pattern of development of this new industry.

From the outset, certain industries stood out as the obvious priority industries for application of computers. These included research in nuclear physics, telecommunications, hydroelectric power generation, numerical control for machine tools, oil exploration, railroad automation and construction planning. All these industries are classical first users of automation in any centrally planned economy and, as time goes on, become the largest users of computing power. At a later date the application for central planning of the economy becomes important but it could not have been implemented in the early days of an economy for which little data was available and resources for its collection were lacking.

Early computer research and development work did not start from scratch but received some Soviet assistance in the form of basic computing hardware and technical information. There was no case for an aided program to build a computer plant because those were the early days of an industry which was in formative stages, not only in the Soviet Union, but even in the more advanced Western countries. Nevertheless, China made experimental copies of Soviet analog and digital computers by 1959 which showed at the outset its determination to develop its own computing industry as soon as it will be required.

It must be stressed here that at that time China probably did not need any computers because it could not put them to immediate use in most of its industries. Even today use of computers in developing countries is limited by development of industries in which they can be shown to increase productivity. Thus, comparison of development stages of countries by developing computer-to-labor force ratios and such are not truly indicative of a demand in the immediate coming years unless the comparison is made of equally developed economies in a competing situation.

Nevertheless, computers today have developed into a very significant segment of the electronics industries of most industrialized countries and any large economy must be viewed as a potential market for such equipment. In most Western countries computers account for at least 30% of the total electronics market. If, for comparison with centrally planned economies, one looks only at the industrial electronics markets, the computers are in the order of 65% to 75% of those electronics markets. In the United States, for example, data processing in 1974 was estimated at over $14 billion out of a total electronics market of over $43 billion and an industrial electronics market which was estimated at over $20 billion. The Federal electronics market, which includes government administrative and defense procurement, was estimated at over $12 billion. These ratios vary only slightly in other Western industrialized countries.

CHANGCHOW

Electronic Meters and Instruments Factory
(Kiangsu Province)
Designed and produced a transistorized teleprinter. Also trial-produced meteorological information recording equipment.

CHINGCHIANG

Optical Instruments Plant
(Kiangsu Province)
Trial-produced vertical line spectroscope and built China's first perpendicular measuring device for measuring dam deflections.

CHENGTU

Instruments Plant
(Szechwan Province)
Made mass spectra leak tester, thermoionic vacuum meter, thermo-vacuum meter, acidity meters. (1965)

CANTON

Scientific Instruments Plant
(Kwangtung Province)
Designed and manufactured a multi-purpose hardness meter of high sensibility and stability.

DAIREN

Talien Radio Plant No. 1
(Liaoning Province)
Made SMB-2 and SMB-2125 pulse oscilloscopes. (1964)

HANTAN

Apparatus Factory
(Hopeh Province)
Produces portable and mini-X-ray machines, metal fault detectors, silicon controlled rectifiers, and other products. X-ray machines include a 10kg portable model suitable for mountainous terrain and out-of-doors use.

HARBIN

Electric Instruments Plant
(Heilungkiang Province)
One of basic plants built with Soviet aid in First Plan period. Manufactures meters, KWH meters, Ammeters, Voltmeters, Wattmeters, Current Frequency and Power Meters, Potentiometers.

Lungchiang Instruments Plant
(Heilungkiang Province)
This plant appears to make automatic potentiometers and balanced bridges, fine scale and proportional calorimeters, thermostats and differential meters. (1965)

HONAN

Instruments Factory
(Tsinghai Province)
Manufactured directional clinometer. If this location is correct this is probably a small plant due to remote location.

HSIANGFAN

Municipal Instruments and Meters Factory
(Hupeh Province)
This is a small enterprise employing 30 workers.

PAOYING

No. 2 Radio Parts Plant
(Kiangsu Province)
Makes grain temperature telethermometers. Plant has 100 workers but lacks modern equipment.

PEKING

Scientific Instruments Plant
Developed electronic scanner microscope with 100° angstrom resolving power and 20x to 100,000x magnification. Manufactured laser rangefinder for long distance measurements. Also makes photo-elastic instruments and infrared spectraphotometers. (1970) Collaborates with Academia Sinica.

No. 2 Radio Plant
Makes signal generators, voltage regulators microphone amplifiers, sound level meters, (most transistorized). (1969)

Niuchieh Instruments Plant
Produces seismographs, vibration and horizon measurement devices, frequency power amplifiers, accelerometers, frequency analyzers and speed induction machines. (1970)

No. 8 Machine Tool Works
Built first laser lead screw automatic measuring device in cooperation with Chinese Institute of Meteorology and the Machine Tool Research Institute.

Geological Instrument Plant
Manufactured a seismograph.

No. 2 Optical Instruments Plant
Developed a spectrograph for analysis of steel and non-ferrous materials.

Analytical Instruments Plant
Makes ZHL-01 quadruple mass spectrometer which determines partial pressure of residual gases.

Instruments and Meters Plant
Manufactured a spectrophotometer for automatic reading of scientific data.

Gas Analysis Instruments Plant
Manufactures salt measurement instruments, thermo-magnetic oxygen analyzer, gas chromatograph, hydrogen analyzers, mass spectrometers, mercury diffusion plants, high vacuum valves. (1970)

Kungwai Plastics Factory
Manufactured potentiometers.

SHANGHAI

Radio Instruments Plant
Produced transistor parameter tester, noise factor tester, transistor medium frequency power gain tester (1966).

MANUFACTURING PLANTS IN CHINA

Hsinchien Electronic Instruments Plant

Makes oscillographs of various types, inserts, synchronous oscilloscopes and countertype frequency meters (1966).

Hoping Instruments Plant

Manufactures transducers for temperature measurement.

No. 2 Optical Instruments Plant

Participated in manufacture of a laser auto-aligner which measures concentricity for mainshaft installation in ships.

No. 3 Optical Instruments Plant

Involved on laser position fixing in navigation engineering construction and introduces laser technology for drawing lines in ships, measuring deformation of ship bodies, speeds and other.

Electronics and Optics Research Institute Plant

Designed and produced an electron microscope with 400,000x magnification.

Municipal Bureau of Weights and Measures

Participated in manufacture of a photoelectric interference comparator with a laser together with Chinese Institute of Meteorology and others.

Yamei Electrical Equipment Factory

Manufactures signal generators, resonance frequency meters, vacuum tube voltmeters, microwave apparatus (1966).

Laser Technology Experimental Station

Founded in 1970 it performs research on application of low and medium energy level lasers. Designs semiconductor laser instruments for industrial and medical uses.

Geological Instruments Plant

Developed computer peripherals for geological prospecting applications. Cooperates with Futan University Mathematics Department in data processing work.

No. 10 Automation Instrument Factory

Provides plant automation service.

Meter, Instruments and Electronic Communications Repair and Manufacturing Works

Designed and completed a digital programme numerical control data processing center for shipbuilding and aircraft industries.

Hukwang Instruments Plant

Made a high precision standard condenser and an alternating current box.

No. 1 Automatic Instruments and Meters Factory

Visited by Canadian participants of the Canadian Electronics and Scientific Instruments exhibition April 1974.

Balance Instruments Plant

Products include a precision vacuum metrology balance.

SHENYANG

No. 1 Machine Building Works

Designed and made an electronic surface measuring instrument with a few micron accuracy.

Municipal Thermodynamic Meter Factory

Subsidiary plant of Municipal Radio and Meter Plant. Makes oxygen meters, potentiometers, pressure gauges, thermocouples, temperature and thickness gauges (1970).

SIAN

Thermo-technical Instruments and Meters Plant

(Shensi Province)

One of the basic plants built in 1957-60 with the aid from German Democratic Republic. When started had 80,000 sq.m. space and 2,700 pieces of machinery. Makes temperature, pressure, regulating, electrical and electronic instruments. Employment in 1965 was 3,000 workers.

No. 1 Radio Factory Hung Wei Ward

(Shensi Province)

Plant manufactured a silicon controlled volt characteristics traces in 1970.

SOOCHOW

Optical Instruments Plant

(Kiangsu Province)

Began as a backyard plant and produced photo-electric automatic cutting machine for instrument making.

Testing Instruments Plant

(Kiangsu Province)

Makes electromagnetic testing stands for electronic instruments and components not in excess of 5kg in weight for vibration characteristics (1965).

SWATOW

Ultrasonic Electronic Instruments Plant

(Kwangtung Province)

Makes ultrasonic instruments which are sometimes displayed at Canton Trade Fair as CTS-1, CTS-2, CTS-3, CTS-4 (1970).

TIENTSIN

Santiaoshih Weighing Factory

Plant trial-produced an electronic balance and a check balance.

Electronic Instruments Plant

Makes audio frequency and spectrum analyzers, Analog computers of 9th and 24th order, ultra low frequency signal generators (1970).

No. 2 Electronic Instruments Factory

Makes the CDOGX 65 duplicator with 110cm wide input and 230m/hr throughput (1965).

Radio Plant

ZF-2 noise generators, XFC-4 UHF signal generators. Made TV receiver parts in 1960 (1966).

Continued on page 32

ELECTRONIC INSTRUMENTS MANUFACTURING PLANTS IN CHINA

(Continued)

Electric Meter Plant

Makes AC and DC voltmeters, 3-phase wattmeters, milliammeters (1970).

Optical Precision Instruments Plant

Made monochromator, tool edge sharpness tester, WX-3 spectroscope, electric arc generator, capacitor spark generator (1965).

Unnamed small plant

Makes oscillographs, piezo-electric crystals, ultrasonic silicon monocrystal cutters and automatic control devices.

TALIEN

Weights and Balance Plant

(Liaoning Province)

Produced a high precision weighbridge for railway industry and mining.

TATUNG

Instruments Factory

(Shansi Province)

Made X-ray analysis instrument for determining the structure of metals and also later made a SP-1 dual purpose gas chromatograph.

TSINAN

Automatic Instruments and Meters Factory

(Shantung Province)

Participated in production of a high precision vertical milling machine with Tsinan No. 3 Machine Tool Works.

TAIHSING

Instrument Factory

(Kiangsu Province)

Trial produced transisorized automatic controls for 3000 gas producers.

WUHSI

Optical Instruments Plant

(Kiangsu Province)

Manufactured an automatic correcting device.

WUSHIH

Meters and Instruments Plant

(Sinkiang)

Produced a seismograph forecasting instrument in 1968.

WUHAN

Seismograph Plant National Seismological Bureau

(Hupeh Province)

Made first phase-type distance gauge based on laser whose development began during Cultural revolution.

Electronic Instruments Plant

(Hupeh province)

GTC-1 Ultrasonic fault detector made (1968).

Municipal Thermometer Works

(Hupeh province)

Trial-produced a highly accurate isotope instrument for measuring thickness. It is fully automatic and can be remotely operated.

YUNNAN

Optical Instruments Factory

(Yunnan Province)

Participated in production of a photoelectric interference comparator.

YANGCHOU

No. 4 Radio Parts Plant

(Kiangsu province)

This is a small commune-run factory which employs 200 workers and developed a high-frequency electric seed-treating device to increase germination %.

In China the original industrial development plan appears to have been to construct about 600 major, basic industrial plants to form the backbone for development into an industrial power towards the end of this centry. Most of these were to be built with Soviet or East European aid: by the time of the Sino-Soviet rift about 291 projects had been started. (Soviet sources claim that as many as 400 plants have been started with their help). It is very likely that despite implementation changes and some delays in some industries, the grand design will continue along those general lines.

This industrial development plan suggests that China will have a need for large computers to operate those basic plants effectively and, judging by similar application of computers in comparative Soviet industries, there appears to be a potential for about 1,000 large computer systems in those basic enterprises aside from process control equipment.

In addition to industrial use of computers, there are at least 1,500 research and design and development institutes which have been identified in China, many of which are users or potential users of computers. Therefore, the total, immediate potential for such equipment is about 2,000 to 2,500 large computer systems, is large enough to make it worth while to develop a viable domestic computer industry.

Regular Production

Regular production of Chinese computers did not begin until 1962 and by 1973 the output of the industry was estimated at about 100 units per year.

Some Chinese computer scientists in attendance at the Chinese Economic and Trade Fair in Cologne, West Germany, in June 1975 indicated that the DJS-17 small computer which was shown there was now being produced in Peking in "large numbers."

The leading technological gatekeeper in the computer industry in China is the Institute of Computer Technology in Peking which is part of the Chinese Academy of Sciences. It developed and built its first computer in 1958 which was based on Soviet URAL-1 designs. Today the Institute is developing third generation large scale integrated circuit computers such as the Model 111 and faster large systems in the range of 1,000,000 operations per second. (IBM's 370 Series introduced in 1971 can handle 2.4 million instructions per second—370/168).

Some of the interest shown by the Institute of Computing Technology may be an indication of things to come in Chinese computing in the future. According to some reports there is work going on on computer assisted instruction systems for teaching purposes, information retrieval systems development and use of APL language for interactive problem solving. These are all indications of development towards time-sharing use of large computers which would be a logical development in the Chinese economy.

The Institute designs computer prototypes as well as peripherals and there are some reports about the development of a Chinese disk drive. At present Chinese computers use only magnetic tape drives as peripheral memory and paper tape as input in most cases. While this is consistent with use of computers in many other socialist countries, magnetic disks offer random access to data, and terminals provide manipulative capabilities and convenience which far surpass the paper tape systems in ease of use.

American scientists who visited the Institute in 1972 reported a strong interest in development of a Chinese "supercomputer" which would compare with the present Control Data CDC STAR or Burroughs B 6700 class machines. There was also previous interest on the part of China in super-computers when rumors in the West in 1965 suggested China tried to obtain the large IBM STRETCH computer by way of France for her intensive nuclear program at the time.

The Institute of Computer Technology in Shanghai is another major computer hardware developer as is the Computer Technology Research Center at the Tsinghua University in Peking. The latter, as a technological university, appears to stress practical applications of data processing in automation of plants and processes and has developed several small computers for such special applications as numerical control of machine tools.

The institutes work closely with radio or telecommunications factories which manufacture computers in larger quantities. The best known computer manufacturer in China is the Peking Wire Communi-

CHINESE DIGITAL COMPUTER CHARACTERISTICS

Year	Model	Word Length	Maximum Memory	Rated speed of operations Ops/sec
1958	"August 1"	na	na	5,000 (URAL-1)
1962	DJS-1	na	2K	1,800
1963	DJS-2		2K to 4K	10,000
1964	Unidentified	na	4K to 16K	50,000
1965	109 C	48 bits	32K	115,000
1965	Unidentified		1K to 2K	10,000
1965	Unidentified	na	na	6,000 Solid State
1965	DJS-7	21 bits	4K	3,000
1966	DJS-6	48 bits	16K to 32K	100,000
1966	DJS-21		4K	60,000
1968	C 2	32 bits	8K	25,000
1970	Model 111	48 bits	32K	180,000 IC's
1971	Model 709	48 bits	32K	110,000
	TQ-3	24 bits	8K	80,000
	TQ-11	36 bits	16K	50,000
1973	DJS-17	24 bits	8K	100,000
1974	DJS-11	48 bits	130K	1,000,000
	Unidentified	na	na	920,000
	Unidentified	na	na	1,000,000
1975	DJS-18	48 bits	65K	150,000
1976	DJS-130	16 bits	32K	500,000

Source: Various fragmentary reports in many different sources.

CHINA: IMPORTS OF OFFICE MACHINES, COMPUTERS AND CALCULATORS 1965-1975
SITC Commodity Code 714; $ millions.

Country	1965	1967	1968	1969	1970	1971	1972	1973	1974	1975
Japan	—	0.5	—	0.1	—	—	—	0.4	1.3	0.7(1)
USA	—	—	—	—	—	—	—	—	0.2	.16(2)
France	—	0.1	0.5	—	0.1	—	—	—	0.5	
UK	—	1.6	0.3	0.1	—	—	0.1	0.2	0.2	
West Germany	—	—	0.4	—	0.1	—	—	0.2	0.2	
East Germany	0.3	—	—	—	—	—	—	—	—	
Italy	—	0.1	0.1	—	—	—	—	0.1	0.1	
Czechoslovakia	0.2	—	—	—	—	—	—	—	—	
Norway	—	—	—	—	—	—	0.2	—	—	
Denmark	—	—	—	—	—	—	—	—	0.1	
Austria	—	—	0.8	—	—	—	—	—	—	
Total	0.5	2.3	2.1	0.2	0.2	0.0	0.3	0.9	2.6	0.9

Source: OECD Commodity Trade Statistics Series B and UN Bulletin of Statistics for Trade in Engineering Commodities. Additional data from JETRO in Japan. 1966 omitted on purpose due to lack of data for that year. Countries not appearing in above list did not export any SITC 714 products to China during the period above.
(1) Results are for 5 months of 1975 only; (2) Results are for 3 months of 1975 only

cations Plant No. 738, the only known factory in the PRC to use modern manufacturing techniques such as machine insertion of components, automatic back panel wiring, automatic core testing and computerized circuit testing.

Other noted computer manufacturers in China include the Shanghai Radio Plant No. 13 which specializes in process control machines and Peking Radio Plant and Tientsin Electronic Instruments Plant are Peking Radio Plant No. 1, the Shanghai Electric Relay Plant No. 3 which makes small digital machines. also involved in manufacture of digital and analog computers.

It is believed that at least 50% of all computers made in China are used for military applications such as nuclear and missile programs and in weapons systems design and shipbuilding.

During 1975 the Shanghai Radio Plant No. 13 announced that it is also building large general purpose computers at the rate of two units per year. These operate at one million operations per second and may be the largest computers in production in China. The plant also builds large numbers of small machines which operate at 110,000 operations per second and perhaps the DJS-17 models already displayed at Canton and Cologne.

Computer Imports

As far as imports of Western computers into China are concerned, it must be stated in all honesty that, despite great expectations, these imports have been disappointing. China clearly has the intention of building its own viable computer industry and, apart from limited "prototype purchasing," does not appear to be in the market for Western computers.

The suggestion by the Joint Economic Committee Report in 1972 that about 50 digital and analog computers valued at about $25 million have been purchased by China is not encouraging when one considers that this happened over a period of over ten years and involved several countries.

In the mid-sixties the British computer industry became excited when Marconi-Elliott sold an ARCH 1000 process control computer to the China National Technical Import Corporation for an ammonia plant in 1965.

A sale of an ELLIOTT 803 computer for a medical research organization in China followed in 1966, and in 1967 ICL delivered two large machines—the ICL 1903 and the ICL 1905—to unknown Chinese end users. However, since then there have been no more significant British sales of computers made in China.

More recently, China purchased a couple of French computers from the stands of the French National Exhibition in Peking. These were the Honeywell-Bull HIS 61/60 computer which went to People's Bank of China and an IRIS 50 made by Compagnie Internationale d'Informatique.

During 1975 Compagnie Generale de Geophysique sold China a seismic exploration system equipped with two Control Data CDC 170 computers for which export licenses have yet to be approved. But these were not individual computer sales but rather a complete plant of which computers were but a part.

Raytheon computers were likewise incorporated in a seismic survey system sold by GeoSpace. Since 1972 through March 1976 China purchased almost 100 plants from eleven different countries, many of which include process control computers as part of the overall sale.

Some of those sales are beginning to show up in international trade statistics. For example, in 1973 Japan shipped computer equipment to China for a total value of $157,000 while in 1974 this figure increased tenfold and included at least 15 small processors. On the other hand, trade statistics for the last 10 years show only a negligible amount of shipments of computing and office machines to China from all countries.

It seems that, judging from past performance and the progress China has been making with its own computer industry and integrated circuit design and production, it is rather unlikely that any large or even significant market for computer imports will ever develop in China.

During the next few years as the industrial plants purchased by China recently are being shipped, there will be an increase in sales of western computers that are included in those plants. If one assumes that each of the 100 or so plants will include at least one or 1.5 computers, as is more likely, then the total over the next two to three years may reach about 150 units. However, in most cases the manufacturers of this equipment will not be selling their computers directly to the Chinese but to the major contractors supplying complete plants to China.

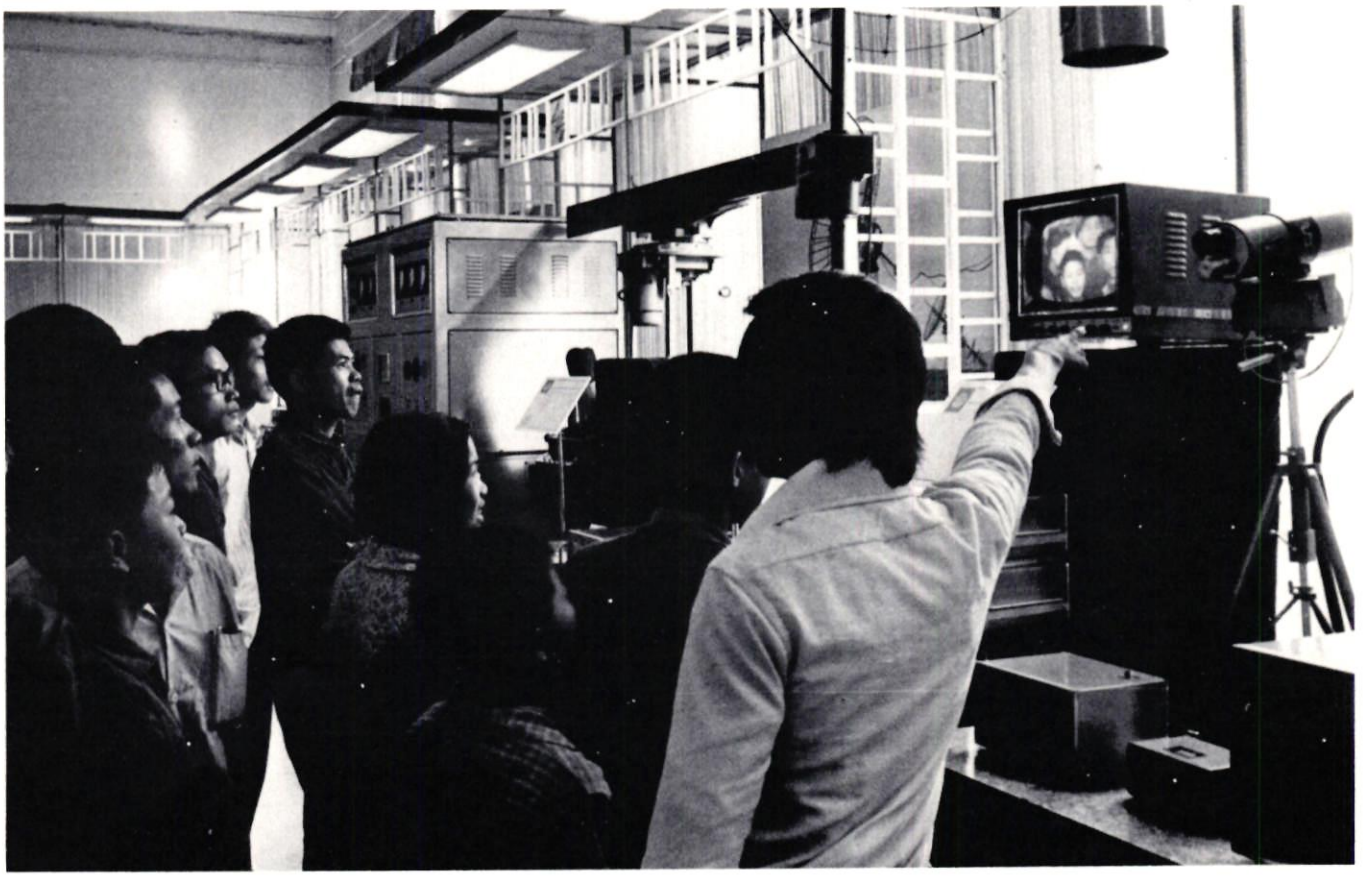
It is also very likely that the Chinese could not exploit a modern computer unless it is a part of an operating system delivered on a turnkey basis within a complete plant. This is so because a considerable cost in the use of computers is availability of proper software to operate such systems. One of the major problems China must face in the future in developing its own computer industry is indeed the accompanying software to operate the machines. Training programs and software design are immense, even with one's own computers, and therefore, because of the nature of its society, it is unlikely that a computer hardware market will develop in China.

TELECOMMUNICATIONS

One of the priorities of the Chinese Fourth Five-Year Plan, 1971-1975, was a significant effort made to establish a modern telecommunications system required to support China's increasing role in the international arena but also to iron out many inefficiencies within a rapidly growing economy. The telecommunications program commands some scarce resources in China and presumably has a first claim on electronic equipment and foreign currency.

The primary responsibility for expansion of tele-

Chinese visitors to the Kwangchow Fair watch themselves on a domestically-produced closed circuit TV.



SELECTED COMPUTING EQUIPMENT MANUFACTURING PLANTS IN THE PRC

CANTON

Adding Machine Plant

(Kwangtung Province)

Made first electric adding machine in China with 10 digits which also has a square root function (1966).

CHANGCHOW

No. 2 Radio Plant

(Kiangsu Province)

Made MOS circuit portable electronic calculator and pocket calculators. Made also an IC computer capable of 120,000 calculations/second.

CHENGTU

No. 8 Radio Factory

(Szechwan Province)

Is sole designer and manufacturer of Model 76 electronic calculator.

PEKING

No. 1 Radio Plant

Major analog and hybrid computer maker, DMJ-16B may have Soviet design; DMJ-3 solves equations of 20th order and has widespread use (1966). Makes also DMJ-2 which is solid state computer. Latest is HMJ-200 hybrid computer, first of its kind in China.

No. 3 Radio Plant

In 1965 made small 10,000 ops/sec transistorized computer. 1976 DJS-130 Model 500,000 ops/sec.

Wire Communications Plant

Manufactures DJS-6, DJS-7, DJS-21 solid state computers. Also made DJS-1 and DJS-2 vacuum tube machines in early 1960's. This plant began operations in 1957 with Soviet aid and produced automatic switchboards (Soviet model 47). Makes 30 digital computers/year (1973). Is the only plant in China using insertion of components, automatic back panel wiring and computerized circuit testing.

Electronic Instruments Plant, Peking University.

Trial manufactures computers since the Cultural Revolution, made DJS-11 and in 1973 first 1,000,000 ops/sec IC digital computer which took 3 years to design. Develops also thick film storage devices and announced in June '75 that two types of storage units are produced.

Department of Electronics, Tsinghua University.

Made MDJ-1611 electronic calculator and improved this with production of MDJ-161 II model which uses MOS IC modules and has square roots and chain multiplication and division.

Institute of Mathematics, Academia Sinica.

Developed new calculator "Great Wall 203" in Sep 74 which is claimed 150% faster than similar foreign models.

Institute of Computing Technology, Academia Sinica.

Made very large computer for use in nuclear energy, rockets, space flight and national economy. Made models 109C and 111. Has 1,200 employees and 10 laboratories.

SHANGHAI

No. 13 Radio Plant

Manufactured TQ-16 multipurpose digital computer appears to be 100,000 ops/sec.

Electric Relay Plant

Made first generation analog computers SJ-1 in 1966 but this model most closely resembled Western analog types.

Heat Engineering Instruments and Meters Institute

Designed, manufactured and produced first process control computer for China oil refining industry in joint program with Shanghai Oil Refinery.

No. 3 Radio Factory

Produces small third generation computers for industrial process control and uses integrated circuits. Models TQ-3 and TQ-11.

Hutai Small Light Bulb Plant

Trial produced an electronic computer in 1970 and experimented with manufacture of TV transmission devices.

Door Handle Street Plant

Aggregate of small plants, established computer section under guidance of Shanghai Institute of Computer Technology and Futan University Computer Science Department. Makes 3rd generation computers.

Institute of Computer Technology

Developed in 1972 from Shanghai Municipal computer center, now has about 300 members. Made C2 second generation large computer and in 1972 the 709 IC computer. A large new computer of 1,000,000 ops/sec was announced in Shanghai in 1975.

TIENTSIN

Institute of Radio Technology

Produced a small general purpose digital computer DJS-130 which can perform 500,000 ops/sec and uses integrated circuits. Shown at Canton Trade Fair Spring 1975.

Electronic Apparatus Plant

Made China's first 24 digit medium size analog computer, 1967.

Electronic Instruments Plant

Made FM-8 vacuum tube 9th order analog computer in 1966 and developed 24th order analog computer (1970).

communications in China rests with the Ministry of Posts and Telecommunications which also operates several institutes and plants engaged in design and production of communications equipment. On the other hand, most electronics industry manufacturing appears to be controlled by the Fourth Ministry of Machine Building, about which very little is known.

Telecommunications equipment is produced in at least 60 plants, and the total workforce in 1972 was estimated at 100,000 employees. Major centers of production coincide with many centers of general electronic production and are located in Peking, Shanghai, Nanking and Tientsin, which together are believed to account for over 66% of all telecommunications manufacturing.

Many small plants manufacturing components or specific equipment lines are known to exist in major industrial centers such as Harbin, Chengtu, Changchun, Tantung, Hangchow, Fuchow and Canton.

Industry observers believe that China is generally ten years behind the United States in manufacture of communications equipment for the civilian sector although it is believed it is lagging by far less in its military communications equipment production.

The telephone system of China is the major telecommunications service for local and intercity communication. Although it is estimated to have only about 1,000,000 telephone outlets, this appears to be adequate to meet the needs of the state and industry for which it is primarily intended. It seems that personal radios and perhaps television will become available sooner than a telephone. Over 80% of Chinese cities are equipped with automatic dial systems and Peking alone has 170,000 telephones. Direct dialing also is available between Peking and Tientsin and no doubt will be extended between all major cities.

Facsimile Transmissions

The telegraph represents a relatively small portion of overall communications in China because it is hampered by the complex nature of written Chinese. One way to overcome this has been the use of a four digit code, but this procedure requires time-consuming decoding at the receiving end. This explains consistent attempts to develop an automatic converter for coded transmissions as well as much experimentation with facsimile transmission.

Facsimile transmission has been on the minds of the Chinese from the very beginning and wire transmission services have been put into operation on domestic and international circuits since September 1957. The first facsimile transmission equipment was manufactured as long ago as 1955 but such systems are only now being approved for production. One has recently been tested by the Ministry of Posts and Telecommunications and is supposed to be in production at the Changchow Electric Equipment Works in Kiangsu Province.

The most advanced unit, announced in 1972, was a high-speed facsimile transmitter capable of transmitting a full page of a Chinese newspaper in 3.7 minutes. Despite these constant efforts, however, China purchased a facsimile transmission system from Fujitsu in Japan during 1974. There appears to be a considerable future in China for facsimile transmission and the problems are probably due to insufficient telephone circuits or their reliability rather than lack of design or suitable transmitting equipment.

China now has four satellite ground stations and is able to launch its own satellites. Satellite communications, even within continental China, offers a very effective way of providing a communications service

CHINA: IMPORTS OF TELECOMMUNICATIONS EQUIPMENT 1965-1974
SITC Commodity Code 724; $ millions

Country	1965	1967	1968	1969	1970	1971	1972	1973	1974
Japan	—	—	—	0.1	0.3	0.1	1.6	1.1	0.5
USA	—	—	—	—	—	—	1.9	4.2	2.7
France	—	1.1	—	0.5	—	—	—	1.1	3.7
UK	—	0.8	0.6	0.4	1.0	0.4	1.0	2.6	2.0
West Germany	—	1.3	0.3	0.8	0.2	0.5	0.7	1.1	0.8
East Germany	0.3	0.4	na	—	—	—	—	0.1	—
Italy	—	—	—	0.1	0.1	0.2	0.1	—	—
Switzerland	—	0.1	—	—	—	—	0.4	0.1	0.1
Sweden	—	—	—	—	—	—	—	0.1	—
Canada	—	—	—	—	—	—	0.1	0.4	0.1
Total	0.3	3.7	0.9	1.45	1.6	1.2	5.8	10.8	9.9

Source: OECD Commodity Trade Statistics Series B and from U.N. Bulletin of Statistics for Trade in Engineering Commodities through 1973. 1966 is omitted on purpose as no data was found for that year in above sources. Only countries which exported equipment to China are included. Other countries did not export any SITC 724 products to China during above years.

TELECOMMUNICATIONS EQUIPMENT SALES TO CHINA 1972-1975

Date	Description of equipment sold to China	Supplier	Value (million)
Jan 1972	Satellite Communications Station	RCA Global Communications	$ 2.50
Aug 1972	Satellite Communications Station	RCA Global Communications	5.70
Sep 1972	Ground Satellite Station	Kukosai Denshin Denwa	—
Sep 1972	TV Studio Equipment	Central Dynamics Ltd(Canada)	0.035
Oct 1972	Earth Satellite Station(Hughes)	Western Union International	4.00
Feb 1973	Hong Kong/Canton telephone cable	Pirelli General Cable Works	—
Mar 1973	Microwave Network Equipment	Nippon Electric Company Ltd	0.037
Apr 1973	Color TV Studio Equipment	Rank Organization	0.47
May 1973	Submarine repeaters & terminals	Fujitsu and others	3.90
Jun 1973	Color TV Studio Equipment	Rank Cintel Ltd	0.20
Jun 1973	TV Camera	Marconi Communications Systems	—
Jun 1973	Color TV Relay Vehicles(PAL)	Toshima	0.714
Sep 1973	Color TV Relay Apparatus	Kannematsu Gorsho	0.30
Nov 1973	Telecommunications Test Equipment	Wiltron (USA)	0.084
Nov 1973	Marine Communications Equipment	Marconi Marine Co Ltd	—
Nov 1973	Satellite Earth Station Equipment	Comtech Laboratories, Inc	0.381
Jan 1974	Color TV Broadcast Vehicle	Pye TVT Ltd (UK)	.57
Apr 1974	Marine Communications Equip.	Marconi Marine Co Ltd	—
Apr 1974	Submarine Cable for Telephone	Kokusai Denshin Denwa	12.0
May 1974	Multiplex Radio Equipment	Northern Electric Co.	0.15
Jun 1974	Facsimile Transmission System	Fujitsu Ltd	.053
Jun 1974	Instrument Land System	Plessey Navaids	1.9
Spt 1974	Laser Facsimile System	Matsushita Graphic	.690
Oct 1974	Coaxial Cables with microwave	Fujitsu Ltd. C. Itoh & Co. Furukawa Electric Co. Asahi Trading Co.	1.33
Dec 1975	Satellite Reception Equipment	Nippon Electric Co.	.066

Source: US-China Business Review.

throughout the PRC at a relatively lower cost and in less time than construction of a comprehensive wired network would take. It is clear that China is indeed proceeding with expansion of wired and microwave communications but the availability of satellite communications provides a shortcut in investment particularly for television transmission from Peking to outlying provinces.

China did not begin to produce automatic switching equipment for long-distance telephone communications until 1969 and use of microwave equipment for civilian communications is in development stages. These facts together and availability of satellites and ground stations clearly point to the possibility of developing a nationwide telecommunications systems with the latest telecommunications concepts in mind.

Wired Communications

In wired communications a national network of wideband trunkline has been put into operation since 1969 and Peking is connected with most provincial capitals. International communications are being improved by coaxial cable between Canton and Hong Kong and an undersea cable between Shanghai and Japan.

China manufactures some carrier multiplexing equipment with 12 channels and a telegraph multiplexer is made capable to obtain 16 telegraph channels on a single voice grade telephone line. More recent products are believed to have been transistorized. Although some Time Division Multiplexers (TDM) are in use, the prevalent equipment is of the Frequency Division type (FDM). This type of equipment is capable of 24 channels but latest models manufactured by the Peking Telecommunications Scientific Research Institute are claimed to have the capability to develop 60 channels and appear to be in production.

China manufactures its own teletype terminal although it is claimed to be an adaptation of various types of foreign designs. Greatest influence on teletype terminal design in China is from the German Democratic Republic with its model 55 and later Siemens of West Germany with its model 68 with a tape perforating attachment.

China's production of the electrostatic telegraph

printer was considered a great achievement in 1969. It is equipped with a memory storage device and converts punched 4-digit code into Chinese characters at speeds up to 1,500 characters per minute, 75 times faster than manual decoding.

Expansion of television coverage in China is probably going to be the most interesting development in the future because of its unexplored potential for use as an educational and control tool. However, this expansion does not appear to offer much potential for Western imports because the Chinese should be able to develop most of the equipment themselves.

Thus the telecommunications expansion, while on the one hand providing unusual opportunity to observe new applications of advanced tools in a large society, does not appear to offer opportunities for many sales of Western technology beyond those already made. Recent imports brought a large amount of new technologies to China and the problem now being faced is the reproduction of this technology and introduction of its use on a massive scale.

CONSUMER ELECTRONICS

Because the priority of China's electronics industry for many years was to supply the PRC's military, nuclear and space development with needed equipment, consumer electronics production took a back seat and annual output of radios and television receivers was rather low. It was estimated to represent no more than 5% of China's total electronics production. Most of such output was in the form of small quantities of radio receivers or phonographs at large plants otherwise occupied with production for the telecommunications industry but which could spare suitable facilities. In time, some small regional plants and workshops also began producing small batches of radio receivers and loudspeakers.

Since about 1971 manufacture of radio and television receivers has increased by leaps and bounds, and in 1974 China became the third largest radio manufacturing country in the world (Table D). With an existing base of an estimated 140 million loudspeakers in the wired broadcasting system (assuming that all the manufacture of loudspeakers was for that purpose only) this indicates that a major decision was taken. This huge radio production provides China with significant economies of scale and may also indicate a policy to export transistorized radios to the world at large as soon as domestic demand is satisfied to a tolerable level.

Once the drive to expand radio and television receiver production began in 1971, all major administrative regions in China appear to have jumped on the bandwagon and sponsored the establishment of local manufacturing facilities. Reports in 1975 suggest that already 260 different types of transistor radios were being manufactured in China, which provides as wide a choice as anyone may wish for worldwide sales.

The production of television receivers, while still very low by Western standards, also increased dramatically to an estimated 115,000 units in 1974 from only 15,000 units a year in 1970. A report in November 1975 indicated that Shanghai alone was able to produce 100,000 television sets and over 100,000 CRTs per year as well as all required television broadcasting equipment.

Originally television cathode ray tubes (CRTs) were produced with Soviet supplied equipment which is known to have a capacity of 150,000 CRTs per year. China clearly reached that capacity and must be establishing new television CRT plants to continue expansion of production of television sets.

This explains Chinese visits to color television equipment manufacturing plants and purchases of color TV broadcasting equipment abroad during the last few years. It is also widely believed that any increase in television receivers production will be in the manufacture of color sets of which about 5,000 units per year were already made in China in 1974.

Once television production is well under way and a broadcasting system firmly established in China, the same argument may be applied to the export of television receivers. In this case China may even dispense with black and white television, as the color television receiver is in much greater demand and its high price creates an opportunity for anyone with an economy of scale production line to reap significant profits. While color television is an inevitable development in all the

Table D

PRODUCTION OF RADIO AND TELEVISION RECEIVERS IN SELECTED COUNTRIES FOR 1974

Country	Television Receivers	Radio Receivers
USA	15,279,000	43,992,000
Japan	13,207,000	18,026,000
USSR	6,570,000	8,753,000
West Germany	4,700,000	5,953,000(1)
France	1,680,000	3,500,000
Italy	2,200,000(1)	2,150,000(1)
UK	2,700,000	1,367,000(1)
China	115,000	12,000,000(2)
Canada		2,524,000
Poland	896,000	1,419,000
Romania	451,000	602,000
East Germany	453,864(3)	1,497,088(3)

Source: Handbook of Economic Statistics 1975 CIA Research Aid A(ER) 75-65, p. 120. (1) Data available for 1973 only; (2) Total output of loudspeakers in China was 24,740,000 in 1974 only a part of which must have gone into the complete radio sets while others were used extensively in the wired broadcasting systems and television receivers; (3) From Statistischec Jahrbuch DDR 1974 but the production figures are for 1973.

SELECTED TELECOMMUNICATIONS EQUIPMENT

AMOY

Maritime Electronics Instruments Factory

(Fukien Province)

Manufactures transistorized shoal detectors for fishing ships.

ANHWEI

Anhwei University 21st July Factory

(Anhwei Province)

Makes 14" B&W television sets since 1971. In 1974 made 400 units.

Provincial Broadcasting Appliances Factory

(Anhwei Province)

Makes large screen B&W television sets with projection system and 9" transistorized television receivers. Trial produced CRT's.

CANTON

Broadcasting Equipment Plant

(Kwangtung Province)

Manufactures television receivers (1960).

Wire Communications Equipment Plant

(Kwangtung Province)

Began operations in 1956 and produces telephone equipment (1960).

Shukuang Radio Equipment Plant

(Kwangtung Province)

Made a prototype precision amplifier for the study of biophysics.

CHENGTU

Radio Factory

(Szechwan Province)

Plant was built in First Plan period with Soviet help as one of major basic electronics factories. Its products were claimed to be of international standard soon after it began operations.

South West Radio Appliance Factory

(Szechwan Province)

Built with Soviet aid as one of 32 major projects which formed the backbone of China's machine building industries in 1949-1959 period.

CHANGCHOW

Radio Factory

(Kiangsu Province)

Manufactures transistorized receivers such as sensitivity interference units with optical dial readouts.

No. 3 Radio Factory

(Kiangsu Province)

Uses silicon transistors in the manufacture of transistor radios.

Electric Equipment Works

(Kiangsu Province)

Trial produced facsimile transmitter. The Ministry of Posts and Telecommunications appraised the device in May 1975 and production has begun.

CHANG-CHUN

Electrical Equipment and Communications Supplies Plant

(Kirin Province)

Manufactures telephone and other communications equipment (1969).

FUCHOU

Radio Plant

(Fukien Province)

First established in 1958 for the manufacture of common radios, this plant successfully test-produced a helium mass spectra leak detecting instrument used to detect small cracks in vacuum chambers (1965).

HANGCHOW

No. 1 Radio Special Equipment Factory

(Chekiang Province)

Output increased 49% over 1974 production in 1975.

Radio Factory

(Chekiang Province)

Produced transistor equipment for relaying simultaneously interpretations in 8 different languages to 500 sets of earphones.

HARBIN

Radio Factory

(Heilungkiang Province)

Manufactures TV receivers and radio transmitters (1960).

No. 7 Radio Plant

(Heilungkiang Province)

Produces digital indicators, TV transmitters, oscilloscopes and microwave diodes.

LIUCHOU

Municipal Electric Sound Equipment Factory

(Kwangsi Province)

Manufactures 426,000 loudspeakers and broadcasting equipment parts (Sep 75).

NANKING

Wire Communications Equipment Plant

(Kiangsu Province)

Makes MK-10 Soviet model carbon particle type transmitter for telephone companies (1966).

Radio Equipment Factory

(Kiangsu Province)

Made 60,000 Panda tube radios/year. Made 40,000 Panda transistor radios per year (1967). Also manufactures the Chungshan pocket transistor radio and B-302 Panda brand transistor radios as well as B-802 Hsiungkou brand receivers. Since 1960 made Panda brand TV receivers (1967).

PEKING

Wire Communications Equipment Plant

In operation since 1957 when it was built with Soviet aid. This plant became the first up to date factory

producing telephone exchanges and was one of the major 32 projects forming the backbone of China's industry in 1949-1959 period.

Tungfeng No. 1 Radio Plant

Produced low cost transistor radios.

No. 2 Radio Appliance Factory

Tungfeng Television Plant

Organized by merger of neighbourhood workshops, this plant now makes B&W TV sets and Radio + TV sets. Latest is Kunlun Color TV + Radio set with 19" screen.

Broadcasting Equipment and Materials Plant

Makes model SGB-5 industrial closed circuit TV units; copied from Soviet 120KW transmitters. Also makes Mu-tan brand radio receivers. Developing VHF transistorized multichannel transmitting equipment (1969).

SHANGHAI

Marine Meter Plant

Makes radar for ships. Built in 1956 (1970).

People's Radio Equipment Factory

Manufactures TV sets and has over 500 employees. Is considered a small plant.

No. 2 Radio Plant

No. 3 Radio Plant

Manufactures model 27A transistorized radio receivers and "MEITO" brand 28B transistor portable units (1965). Also made transistorized short wave radios (1965).

No. 11 Radio Plant

Provides plant automation equipment.

No. 19 Radio Plant

Assists in automation in industry developed system for utensil industry production.

No. 21 Radio Plant

Makes plant automation equipment.

No. 27 Radio Plant

No. 29 Radio Plant

Has a work force of 300.

Chinling Radio Plant

Huaihai Electric Lamp Plant

Over 350 workers are capable of making cathode ray tubes (CRT's).

Changkiang (Yangtse) Radio Plant

Identified June '74.

Wire Communications Plant

Manufactures Telephone Equipment (1957).

Telecommunications Equipment Factory

Cooperates with Shanghai City Research Institute of Radio Technology. Produced FDH Microphone Amplifiers and SX-2 microphones (1966).

No. 4 Telecommunications Equipment Factory

Trial produced a 1000 line electronic telephone exchange (1972).

Postal and Telecommunications Equipment Factory

Manufactures model BD 055 teleprinter and also terminals and amplifiers for 12 and 16 channel telephone lines 1964.

Huatang Electric Switch Plant

Makes remote control telecommunications equipment for telemetering application (1965).

Sound Recording Equipment and Materials Plant

Produces L301 "Chungsheng" brand transistorized magnetic tape recorder (1966).

SOOCHOW

Telecommunications Instruments Works

(Kiangsu Province)

Developed telephone relay equipment for railway which can be used for wire and radio communication between train engineers and dispatchers.

Municipal Electronics Plant

(Kiangsu Province)

Manufactures various types of TV and radio receivers.

Radio Factory

(Kiangsu Province)

Portable lifeboat radios for distress communications.

TIENTSIN

Broadcasting Equipment and Materials Plant

This plant was damaged by fire in Jan 69. Lost warehouses and insulation materials (1969).

Weitung Radio Factory

TAIYUAN

Shansi Telecommunications Equipment Plant

(Shansi Province)

Makes teletype equipment and 3 channel wave (carrier) equipment. Also makes automatic crossbar switchboards (1958).

TZU-PO

No. 5 Radio Plant

(Shantung Province)

Makes sonar equipment for surveying water depth and locating fish schools (1972). Made model "70-1" units.

WUHAN

Radio Antenna Factory

(Hupeh Province)

TV aerials for multi-set usage. It is a small enterprise.

WUHU MUNICIPALITY

Kuanghua Glass Works

(Anhwei Province)

Developed 2.5" and 5" CRT's.

Table E

MAJOR MARKETS FOR ELECTRONIC PRODUCTS 1974

Country	Total market in 1974 (billions $)	Chinese output as percent of that of other country
USA	43.617	4.6%
Japan	14.370	13.9%
USSR(1)	8.0-10.0	22.0%
West Germany	7.547	26.5%
UK	4.175	47.9%
France	4.119	48.5%
Canada(2)	4.000	50.0%
East Germany(3)	3.000+	66.0%
China(4)	2.000+	—
Italy	1.593	130.5%
Poland(5)	1.500	133.3%
Czechoslovakia(5)	1.500	133.3%
Sweden	1.039	192.5%
Netherlands	1.015	197.0%
Belgium	.959	208.5%
Spain	.762	262.2%
Switzerland	.596	335.6%
South Korea	.580	345.0%
Denmark	.466	429.2%
Norway	.323	619.2%
Finland	.308	649.0%

Note: Additional significant manufacturers include Brazil, Hungary, Hong Kong, Malaysia, Mexico, Singapore and Taiwan. **Source:** Electronics, Annual Market Surveys, December 1975, 1974, 1973 and estimates for other countries. (1) Estimate based on planned budgets and consumer electronics production extended by average unit prices in the Soviet Union as published in Krasnaya Znamya 1976. (2) Estimate based on assumption of 3.4% GNP similar to USA. (3) Based on planned targets for 1971-1975, plan and growth rates given by East German industry; Electronics 1972. (4) Value of electronics production assumed 1% of GNP in 1974. (5) Estimates include conversion using official currency rate.

countries of the world China, which has to develop its own broadcasting and manufacturing facilities, does have the potential to supply both to Third World countries in particular and its timing could be right.

Imports of consumer electronics into China appear to be negligible from a commercial point of view. However some color TV receivers, vacuum cleaners, and refrigerators from Japan are shipped to China every year. The quantities involved suggest that these may be private and diplomatic sales, but in some cases larger quantities indicate equipment for use by Chinese industry or public organizations. Most television equipment in particular is for public use at this time and it is likely that use is being made of available foreign equipment for training and development purposes in preparation for China's own production which is soon to come.

Irregularities of shipments and quantities do not suggest that a future market in these commodities is likely to develop. Rather, China must be regarded as a future competitor or supplier of Western manufacturers.

CHINA AND WORLDWIDE MARKETS

When judged by the total value of electronics production and even by conservative estimates, China is already among the ten leading electronics manufacturing nations in the world. It is clearly moving rapidly up the scale and will most likely become one of the top leading electronics manufacturing nations in the world. It should be but a few years before China challenges the USSR and West Germany. (Table E) Because of a vast domestic captive market, China can become a manufacturer of virtually any electronic product because it possesses the potential for economies of scale.

In addition, the electronics industry, while it requires a constant influx of the latest technology, is also rather unique in that it needs a very large amount of labor input. This labor is easily available in China and, in addition, the industry offers a training opportunity for persons with little or no education without requirements of extensive preparation.

The lesson of Japan cannot be unnoticed by China in this respect, except that Japan was forced into the electronics industry in order to use its labor force which could not be otherwise employed in developing non-existing natural resources. China has the advantage here of abundant resources as well as labor which puts it potentially ahead of Japan in this industry. However, until agricultural productivity increases sufficiently neither China nor any other country will be able to spare large numbers of agricultural workers and put them to work in electronics, or any other industry for that matter.

On the other hand, because the potential for electronics is not yet realized to any significant degree among China's masses of consumers, China also has the opportunity to use her electronics industry only as required for absorption of additional surplus labor released from other sectors when productivities increase. After all, many consumer products, while in demand, are not necessities of life and could be dispensed with until such time that labor policy changes.

This also creates the possibility of China becoming an irregular and unpredictable exporter of electronics products in the future. Probably the best course of action is for Western manufacturers to make arrangements with China to manufacture electronics components and assemblies on contract and according to specifications for sale and distribution in the rest of the world. Since China does not have extensive marketing networks nor experience this seems to be a logical step to follow although she would probably prefer to market her own. As for exports to China, as long as "prototype purchasing" policy is maintained these will be small but consistent to keep up to date with the latest developments. 完

EXHIBITORS AT THE FRENCH INDUSTRIAL, SCIENTIFIC AND TELECOMMUNICATIONS INSTRUMENTS EXHIBITION PEKING MARCH 19-27, 1976

A

Adamel-Lhomargy
(Division d'Instruments S.A.) **Creusot-Loire S.A.**

Adret Electronique

B

F. Brambilla S.A.

C

Callisto

CAMECA
(Compagnie d'Applications Mecaniques a l'Electronique, au Cinema et a l'Atomistique) **Thomson—CFS** (Francois de Thomson—Brandt)

C.G.C.T.
(Compagnie Generale de Constructions Telephoniques) **ITT Corp.** (USA)

Chauvin-Arnoux

C.I.I.
(Compagnie Internationale pour l'Informatique) **Generale d'Electricite S.A.**

C.I.T. Alcatel,
Generale d'Electricite S.A.
Generale d'Electro-Metallurgie S.A.

C.G.R. Ultrasonic,
(Financiere Electrique de Banque S.A.) **Thomson—Brandt S.A.**

CODERG,
Pizon Bros. S.A.

COMEF,
Appareillages Mecaniques S.A.

Comelim

Compteurs Schlumberger,
Division Controle Industriel
Schlumberger Ltd. (USA)

Compteurs Schlumberger,
Department Instruments
Schlumberger Ltd. (USA)

Compteurs Schlumberger,
Department Nucleaire
Schlumberger Ltd. (USA)

Controle Bailey

CORECI

C.S.E.E.
(Compagnie de Signaux et d'Entreprises Electriques)
Telecommunications, S.A.

E

Electronique Appliquee

Engins Matra

Europrim

F

F.R.B. Connectron

G

Giravions Dorand (Girdel)

H

Honeywell Bull,
Honeywell Information Service Inc. (USA)

I

Intercontrole

Intersmat

Interechnique,
Groupe COMEF,
Grands Moulins de Strasbourg S.A. and **Industrielle et Financiere de l'Artois S.A.**

J

Jobin-Yvon
(Division d'Instruments S.A.), Group COMEF, **Nord S.A. Cie. du.**

J.P.B.

L

L.M.T.
(Le Materiel Telephonique) **ITT Corp.** (USA)

Logabax,
Exploitations Electriques et Industrielles S.A., and **Generale des Enterprises Electriques et Industrielles S.A., Cie.** (Belgium)

L.T.T.
(Lignes Telegraphiques et Telephoniques), (Jeumont S.A.), (Le Materiel Telephonique), **ITT Corp.** (USA), and **(Trefimetaux G.P. S.A.) Kawecki Berylco Industries, Inc.** (USA)

M

Massiot-Philips,
Philips' Gloeilamper Fabrieken, N.V. (Holland) and **Francaise Philips, S.A.**

MATRA Division Optique,
Engins Matra S.A.

Mecaserto

MECI,
Groupe REGULATION **Hestair Ltd.** (U.K.)

Millipore,
Millipore (USA)

N

Nachet

O

Olivier,
(Davum S.A.) **Saint-Gobair-a-Mousson S.A.**

Opticam-Angenieux

Otic-Fischer et Porter,
Groupe REGULATION

P

POUYET
(Societe d'Exploitation des Etablissements Henri)

PRODERA
(Production et Developpement Radioelectrique)

PYRAL S.A.

R

Regulation,
Groupe CEFAR

RIBER
(Societe Francaise d'Ultravide et d'Instrumentation)

R.T.C.
(Radio Technique Compelec) **Radiotechnique S.A., La**

S

SAGEM
(Societe d'Applications Generales d'Electricite et de Mecaniques) **Signaux et d'Enterprises Electriques S.A.**

SAMES
Tuzini—Ameliorair S.A.

SAPHYMO STEL
(Thomson-CSF) **Francaise de Thomson-Brandt S.A.**

S.A.T.
(Societe Anonyme de Telecommunications) **Signeaux et d'Enterprises Electriques S.A., Cie. de**

SECRE
(Societe d'Etudes et de Constructions Electroniques)

SEFRAM

SETARAM
(Societe d'Etudes, d'Automatisation, de Regulation et d'Appareils de Mesure), Groupe COMEF, **Fabrication d'Instruments de Mesure.**

Siden Telec
(SIDETEL)

SOPELEM
(Societe d'Optique, Precision Electronique et de Mecaniques)

S.T.P.I.

T

Tekelec Airtronic

Thomson C.S.F.,
Francaise de Thomson-Brandt S.A.

TRINDEL
(Travaux Industriels pour l'Electricite S.A.)

T.R.T.
(Telecommunications Radio-electriques et Telephonieque) **(Francaise Philips S.A.** (Philips, N.V. Holland)

U

Ultraflux

* Bold face indicates ultimate parent company; names in parentheses are immediate owners.

Discussing a Council conference in LA, co-sponsored by the Ports of Los Angeles and Long Beach, March 25, l. to r.: Steven Chao, China Native Products Inc.; Melvin Searls, Council V.P.; Clifton Moore, LA Department of Airports; Louis Jobst, LA Overall Economic Development Program; Christopher Phillips, Council President; Albert Yee, California State University; and George Driscoll, Council Business Advisory Services Director.

NATIONAL COUNCIL ACTIVITIES

- Industry Committees Launched
- Light Industry Group Tours the US

EXPORTERS COMMITTEES OFF TO GOOD START

The National Council launched its exporters committees finally on April 7 in Houston, Texas, with the inaugural meeting of the Petroleum Equipment Committee. Over thirty industry representatives from a variety of petroleum-related member companies attended this meeting. Later, on April 26 and 27, Mining and Construction Industry Committees met in Chicago, also well attended. These and later committees will form the basis of the Council's export oriented programs and exchanges with the PRC.

LIGHT INDUSTRIAL GROUP TOURS US

The Fifth National Council-sponsored Chinese commercial delegation to visit the US in just over a year concluded an eight-week expedition across the country on April 19. The mission, from the general merchandise division of the China National Light Industrial Products Import and Export Corporation, visited New York, Boston, Chicago and San Francisco. Its major purposes were to pay reciprocal visits to many long-term customers, study the US market to ascertain American needs, familiarize mission members with popular designs and US price structure, and gain an understanding of US lifestyles.

The mission brought with it sample goods, including toys, athletic equipment, school supplies, toiletries, gloves, shoes, flashlights, glassware, houseware, alarm clocks, musical instruments, and small leather items.

Sales Problems—Although the mission made sales, it faced a tough market here, owing to several factors: the high duty rate for many of the items; the nature of some Chinese products, which could not be really competitive with those presently offered from other foreign sources and in the US domestic market; old-fashioned design, especially in stainless steel flatware; the interest of many buyers in items distinctly Chinese or having Chinese motifs, and not in the Western imitations brought by the Chinese (for example, buyers would have preferred a Chinese style toy car rather than a Volkswagen); FDA safety regulations on toys, which put a big damper on toy sales. The Chinese, however, are now aware of US safety requirements.

Biggest Sales—Despite the difficult market conditions the group faced, they did make sales in shoes—boots, children's shoes, and athletic shoes; work gloves, plush toys, alarm clocks, canvas handbags and flashlights. US importers, department store buyers and manufacturers had high praise for the quality of the Chinese merchandise, particularly the shoes, hand-sewn leather balls, beautifully packaged fragrant soaps, and pigskin work gloves.

After Business Hours—Five or six company negotiating sessions per day managed to keep the group extremely busy, but they still had some time to visit shoe and sporting goods factories, department stores, shopping centers, private homes—and, in typical American style, to grab a hamburger at McDonald's.

San Francisco proved to be the highlight of the trip. Although delegation members were denied the chance to ride the famous trolley because of the recent strike, they were able to relax on a Muir Woods nature walk and picnic hosted by Francis Leong of Royal Cathay Trading Company. Formal welcomes were extended by the San Francisco Chamber of Commerce, the US-China People's Friendship Association and the leaders of the Chinatown business community, and evenings consisted of banquets hosted by the delegation's many customers.

Delegation Members—Kao Feng, Deputy Managing Director of the Corporation, now well known to Council members, led the delegation. He was on his third trip around the US since last September. With him this time were Li Hao-jen, deputy leader of the delegation and Vice-Manager of the Corporation's Export Department; Tsou Hsueh-chuan, from the Corporation headquarters in Peking; Chin Fang, of the Native Produce Corporation's Shanghai branch, which manufacturers shoes; Hsu Yuan-tang, from the Shanghai branch; and Wu Chia-chi, from the Tientsin branch. Council escorts were Jay Henderson and Suzanne R. Reynolds. 完

Delegation members Li Hao-jen (far l.) and Chin Fang (r.) with Li Wen-chun of the Liaison Office and Suzanne Reynolds of the Council at Chicago shopping center.

Relaxing at a picnic and nature walk in San Francisco's Muir Woods.

Minmetals delegation, hosted by Julian Sobin, at Paul Revere's statue, Boston, February, 1976.

The Bicentennial Begins Here . . .

Appropriately, 1976 began with the first visit of Chinese commercial officials—from Minmetals, led by Mr. Chang Yu-pin—to Massachusetts. Hosted by Julian Sobin, President of Sobin Chemicals, and greeted with letters from the Governor of Massachusetts and Mayor of Boston, the group visited Concord (below), and the Old North Church (right). Lower right, at Milton's Museum of the American China Trade.

NOTES FROM THE FAIR
Canton 39: Why do they keep coming?

The 39th Chinese Export Commodities Fair in Kwangchow was characterized by some as a return to the atmosphere of 1972, with an initial crush of eager buyers, but business as a whole very slow. For American firms, business transacted was worth only about half that at the Fall Fair. No major sales by US companies were reported. The number of firms from the US was down about 10 percent from the last Fair—to about 350. Individual Americans attending, about 600 in all, numbered about the same as at the last fair. About 30 percent of the US firms present were new to the fair, many of them introduced to the Chinese by the National Council. The decline in attendance and business was due in part to supply shortages and to China's sales efforts at mini-fairs and delegation visits to the US, which, for many buyers, made an extra trip to the PRC unnecessary or too costly. The generally low level of business at the Fair followed a year in which China's foreign financial obligations amounted to over 20 percent of her exports to non-communist nations. Biggest disappointment to buyers: the retreat on private labels by CHINATEX.

The 39th Chinese Export Commodities Fair was a mere ten days old. The young staff member of the fair authority's First Liaison Office surveyed the newly-arrived contingent of foreign guests and sighed. "Why do they keep coming?" he said. "We have so few goods left to offer them." In this remark lies an accurate characterization of the Spring 1976 Kwangchow Fair: Record numbers of foreign firms vying for increasingly scarce, often miniscule quantities of Chinese goods.

Fortunate US firms—chiefly "old friends" for whom the Chinese had reserved supplies—found themselves paying considerably higher prices than those that prevailed at last Autumn's fair. Complaints about price were rare, however. In the words of one disgruntled textile buyer, "Under the present circumstances, I'll take whatever they offer, whenever they offer, regardless of price." New friends trying to gain a foothold in popular lines often went away empty-handed.

Attendance in the first week reached record levels, spurred on by the knowledge that those who came early stood the best chance of obtaining supplies. Doubling-up was a common occurrence, and hundreds of foreigners found themselves being lodged in inner-city hotels far from the fully-booked Tung Fang.

Reasons for the Shortages—Last Year's Sales Drive

Several reasons can be cited for the serious shortages in evidence at the Spring Fair.

In the first place, the bulk of China's exports originate, directly and indirectly, in the agricultural sector. While squeezing an exportable surplus from this sector is never an easy task, it is particularly difficult during the Spring Fair season, when corporation purchasing teams are forced to work with the "tail-end" of the previous year's harvests. Secondly, China's FTCs have apparently become the victims of their own success in their drive to substantially increase sales of exchange-earning commodities.

Coupled with the trade offensive was a movement to selectively relax standard selling terms and conditions. The most significant development on this front was the proliferation, beginning in late 1975, of private label agreements under which the FTCs agreed to produce goods to the foreign wholesaler's specifications and attach a foreign-designed, foreign-registered private label.

It is now apparent that the FTCs misjudged the amounts of commodities available for export and consequently oversold. An increase in reported late deliveries for goods contracted during the Autumn event tends to bear out this conclusion. The effect of this misjudgment on China's overall export strategy remains to be seen.

Future of the Fair: No Changes Yet

Supply problems encountered at the fair added fuel to rumors, current in Hong Kong prior to opening day, that China was planning to change the semi-annual Kwangchow event into an annual trade affair. Observers pointed to the FTCs' rapid adoption of mini-fairs in specific commodity lines as obviating the need for a twice-yearly marathon fair. At least one American firm reported conversations with FTC officials which confirmed this speculation. But Fair representatives repeatedly denied that any rescheduling plans were in the works.

Effects of the Current Political Climate

The Spring 1976 Kwangchow Fair was held against the background of the greatest political turmoil that China has experienced since the end of the Cultural Revolution. Pre-fair assurances that the current campaign against rightist tendencies would have no effect on either industrial production or foreign trade were badly undermined by the publication of an article criticizing Teng Hsiao-ping's foreign trade policy which appeared in the April edition of the theoretical journal *Red Flag*. According to this article, Teng Hsiao-ping deserved to be criticized for advocating, in the summer and autumn of 1975, that China should step up exports—particularly of valuable mineral resources—in order to earn foreign exchange necessary to import the newest and best foreign technology.

At least one FTC official remarked, in confidential conversation, that the current political situation had resulted in a drop of 10-15% in the output of corporation producer units. For the most part, however, it did not appear that supply shortages evident at the fair were traceable to the political campaign.

The campaign against rightist tendencies has had an unmistakable impact on standard selling practices of the foreign trading corporations. This impact was particularly evident in two areas: (1) A retreat to the pre-1975 policy regarding the granting of private labels to patrons of the light industrial and textile corporations and (2) A return to stated preference for contracts denominated in RMB, though only in regard to the Textile Corporation.

The political campaign had no effect, however, on the cordiality which characterized Chinese dealings with foreign firms. Business negotiations were essentially free from all political overtones.

LIGHT INDUSTRY: Mini-Fair Cancelled for Lack of Supplies

In conversations with National Council representatives, members of the Light Industrial Corporation trading delegation attributed the early sell-out in bamboo, willow and straw woven wares to low stocks resulting from high selling activity at last August's Tientsin Willow, Straw and Maize Goods Fair, the Autumn Kwangchow Trade Fair and a recently-held Straw and Willow Products Exhibition in Hong Kong. Stocks in this line are now so depleted, the Council was told, that it has been decided to cancel the previously scheduled Willow, Straw and Maize Goods Fair for 1976.

Another department hard hit by tight supply was the Leather Goods Department. Prices in this line rose by 35% over last Fall. Shoes and leather goods were a best seller during the visit of the LIPC to the US early in 1976.

Despite three mini-fairs held in Kwangchow for Hong Kong and Macau buyers of jewelry, porcelain and ivory and jade carvings since January, quantities of goods in these lines were generally adequate to meet demand. Prices here were generally stable, with some items rising by a mere 5%.

Corporation officials now maintain that most of the good buys in antique wares from the Kwangchow warehouses have long since taken place. No plans exist for a mini-fair in this line.

A Norwegian firm reportedly sold 40,000 tons of pulp and linerboard to the PRC in the third week of the Fair. No US or Canadian sales had been made.

MINMETALS: New Branches, Contracts in Dollars, etc.

In addition to shortages in chromite and tin, corporation officials admitted that supplies of wolframite, antimony regulus, refractory bauxite, high grade talc, mercury, graphite flakes and green marble were exceptionally tight. When supplies could be had, prices in these lines were typically 15-20% higher than Autumn levels. Tungsten was very tight too.

Generally available were rare earth oxides, high purity metals and non-ferrous metals. Niobium in rods, powder and ingot has been added to the list and standing in line are barium and titanium—on show, but not yet available. Fluorspar and magnesite were unavailable.

According to one Chinese official, China will possibly join the International Tin Council in 1977. It has had an official liaison with the Council this year. The PRC's lowered tin sales to the US in 1976 may reflect ITC members' concern over Chinese export policies.

Several US firms brought quantities of hardware from MINMETALS, including screws, nuts, bolts as trial orders. The corporation is known to be considering a mini-fair for hardware goods.

MINMETALS continues to denominate sales contracts in currencies other than the RMB; at present, these include Deutschemarks, Hong Kong and US dollars, French and Swiss francs, Swedish krona and pound sterling. Doubt was expressed concerning the future of the pound; an FTC official stated that it was still used, subject to negotiation. The problem was aggravated because of the continued use of pound sterling for market quotations.

MINMETALS has recently opened two new branches in Hopei and Kiangsu provinces.

CEROILFOOD: Shrimp Prices Up, Supplies Down

The major Chinese product of interest to US foodstuffs importers remains frozen shrimp. Nearly a dozen US firms made the trek to Kwangchow in pursuit of sizable quantities at reasonable prices; few left satisfied. CEROILFOOD complained to Council representatives that shrimp prices offered at the Autumn Fair were much too low and, as a result, the corporation suffered "big losses." Accordingly, prices were up by 35%. No explanation was offered, however, for the extremely low quantities available to American buyers. Several major buyers were offered quantities less than 20 tons; in no instance were requirements met.

Although no reported rejections of Chinese shrimp had occurred in the nine-month period prior to the Spring Fair, American buyers remain concerned over the high roe-count in Chinese Spring shrimp. China continues to sell almost exclusively on a C&F basis; in the rare instances where the corporation sells CIF, claims are assessed on a shipped-quality basis, not on an arrived-quality basis. No noticeable progress has been made on convincing the People's Insurance Company to initiate rejection insurance policies.

Mushrooms, honey, nuts and peppers were in short supply; prices of these commodities edged upward by 2 to 5%.

High grade jasmine tea was in demand (PRC production was placed at 21,000 tons in 1975). Teabags were also available. Ginger was in demand, but buyers were reluctant to order China's unsorted and ungraded product.

CHINATUHSU: Bright Spot of the Fair

Sales of Chinese feather and down products provided US buyers with one of the few bright spots of the fair. Contracts were concluded with several million US dollars. Moreover, the bulk of the purchases were of raw and semi-processed feathers and down, a fact which signals the end of a virtual embargo of such products initiated last Autumn and carried through the Shanghai Feathers and Down Fair of this January. Prices of commodities in this line rose by a staggering 50-60%.

The Fur and Carpet Departments of CHINATUHSU, which had recently staged mini-fairs in northern Chinese cities, predictably reported low quantities of goods for sale. Some improvement in supplies of fur were noted, along with overall price hikes in the range of 20-80% since January. Chilis were also in short supply. Although tea, bristles and forestal produce were generally available at attractive prices, there was little interest on the part of US buyers. Major US purchases of fireworks had been effected at the Autumn Fair.

The corporation has made no changes in its full slate

of mini-fairs to be held over the next twelve months. Next on the schedule will be a Forestal Products Mini-Fair, tentatively slated for August/September in Kwangchow.

CHINATEX: 1976 is Fully Booked, Swing Away From Private Labels.

A number of items were in short supply this fair, due to higher demand and the fact that, prior to the fair, several buyers placed orders in Peking and other cities, and specialized trade fairs were held in Kwangchow, Shanghai, and Peking for buyers from specific markets. But several new customers were invited to Canton. CHINATEX recognized that these buyers were finding supplies tight. Cashmere stocks were completely depleted during the Fair.

In the future, the FTC may consider turning down requests from such new customers if supplies are unavailable. For now, however, it is difficult to ascertain "which customers want to buy which specific products"—an indication that the FTC invites new buyers in the hope that they may find goods on display that they previously had little or no interest in.

CHINATEX is not currently accepting orders for 1977, but will do so in June and July. 1976 is fully booked.

Chinese officials said it was now considered "usual practice" to sew in Chinese labels with the name of the buyer attached if the buyer so wished; a very significant change, representing a reversal of previously achieved understandings concerning foreign designed labels. The official said that the reason for this policy was that the Chinese factories wished to preserve the honor and reputation of their products. "The label is a symbol of the quality."

The policy of using Chinese brand names and labels with the foreign buyer's name sewed on was not new, according to one official. This had been the policy since 1972, but "exceptions" were made in 1975.

CHINATEX now prefers to denominate contracts in Renminbi, though some contracts are still being denominated in US dollars. According to a CHINATEX official, the currency used in textile contracts is considered to be a matter "subject to negotiation."

The import department was represented at the fair. They were making purchases of chemical fibers.

A decision has not yet been reached on whether or not the Dairen Silk Fair will again be held this year. The Shanghai Garments Fair will probably not be opened to international buyers. Both this fair and the Kwangchow Fair are specifically tailored to meet the needs of individual markets (Japan in the case of Shanghai, HK in the case of Kwangchow).

Silk piece goods priced 3-5% above the Fall Fair, with supplies very limited. Cotton piece goods were available, but prices were up 10-15%. Wool piece goods were up 20-25%, with supplies limited. Finished garments were up 20%, and sold out after the first week. Crepe was up 15%. Cashmere fiber prices were up over 20% in the last four weeks. Woolen wear was up 10% over the past Fair with all categories of knit wear suffering from zero supply.

Regarding visits to factories, some progress was made in terms of allowing buyers to see CHINATEX producer units. Speed in obtaining counter-samples remains a serious concern. One buyer reported sending counter-samples a full 18 months before the season needed.

An FTC official indicated that last year's surge of textile exports to the US was an extraordinary occurrence caused by an upturn in the economy which the domestic industry was unprepared to meet; they did not envisage supplies continuing to increase at anywhere near the pace of last year, and cited tight supplies as evidenced at this fair.

SINOCHEM: Old Tigers With Big Appetites

General availability of chemicals this fair was limited. Moreover, some chemicals with low value according to SINOCHEM "were not worth selling to the States." Two other reasons were cited in explaining why the volume of transactions with US firms might not be large this fair: In some products, US buyers with interest were discouraged by the high Chinese prices; and secondly, strict FDA regulations for pharmaceuticals were hindering this area's expansion. But SINOCHEM noted that considerable business was being done with subsidiaries of US firms located in third countries, and said, "We wish to expand business with the US through all channels."

Contracts continued to be denominated in US dollars. Use of four specific currencies in transactions with US firms this fair was mentioned by FTC representatives: Renminbi, US dollars, Deutschemarks, and Swiss Francs. The Chinese noted that the US dollar showed signs of continued strength, and that this would enhance its use.

Regarding the oil industry, it was pointed out that China's domestic demand came from two quarters, referred to as "old tigers with big appetites:" 1) The petrochemical industry, specifically plastics and chemical fertilizer, and 2) agriculture. With respect to the latter sector, it was mentioned that the current five-year plan placed emphasis on rapid mechanization. "Considering the development of these two sectors, production of crude oil—while increasing rapidly—still lags behind."

SINOCHEM has undergone reorganization of branch responsibilities. Its new catalog contains most of the relevant changes and lists between 200 and 300 new products. The two new branches open for business, Hopei and Kiangsu, conform to the general trend of developing these provinces into autonomous foreign trade centers. General purchases by US firms were up over the same period at the Autumn Fair. Interest was high among US firms in raw pharmaceuticals.

MACHIMPEX: Giving Warranties; Canning Plant?

MACHIMPEX had 10,000 dwt ton cargo ships up for sale at this Fair, up from the 3,000 dwt ton ships for sale last time. There was some interest by US firms in Chinese machinery. One major American company bought a 120 hp, 1,500 RPM marine diesel engine with a twelve month warranty. If this trial shipment works out, the firm may place big orders since the quality of the Chinese product was reported high, and the price low compared to those in the US. The same firm was also considering a trial purchase of a Chinese generator.

Two new branches of MACHIMPEX have been established in Kiangsu and Hopei.

Later at the Fair, a US packaging firm was invited to Peking to discuss the possible sale of a complete canning plant.

There was no representative from TECHIMPORT present. 完

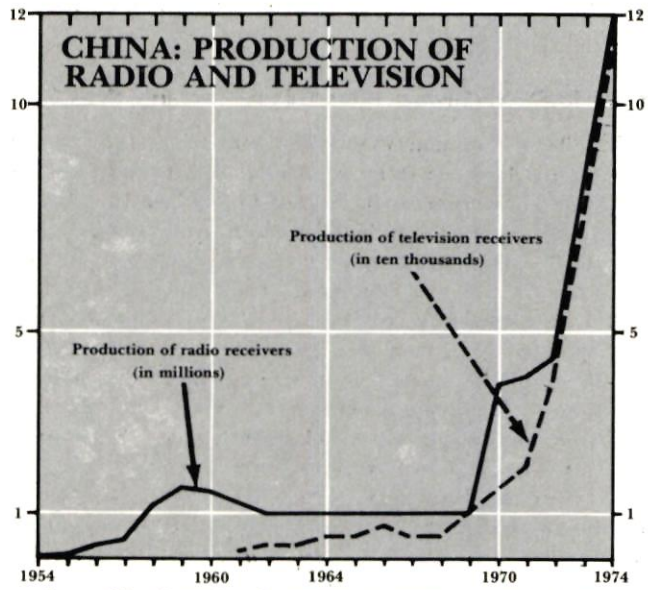
EXPORTER'S NOTES

Briefly

- **Chinese Machine Tool Group Interested in US Equipment**
- **China's Oil—New Book Projects the PRC's aggregate imports of US petroleum equipment could reach $1.5-2 billion during 1975-1985**
- **New US magazine is aimed at promoting those oil equipment sales to the PRC**
- **And Major China Oil Conference in Houston, June 23, attracting plenty of attention**
- **New studies on China's construction and movie industry; China's Grain Figures**

CHINESE MACHINE TOOL TEAM

Machine tools for the production of power generation equipment seemed to be the focal point of a visiting Chinese machine tool group's interest in April. During a visit to **Sunstrand Machine Tool,** of Belvidere, a division of Sunstrand Corporation in Rockford, Illinois, the delegation, from China's Techimport, expressed interest in a five axis numerical control machine tool, model OM-3. This machine, valued at approximately $750,000 per unit, is the same one that Rolls-Royce used to cut turbines for the Spey aircraft engines. Because of Peking's purchase of the Spey technology from the UK last year, the company feels the delegation's interest in the OM-3 could be related to the establishment of Spey production in China. The order, expected to include between three and five machines, may be delayed until COCOM clearance is received. The Russians, reportedly, have a standing order for nearly 10 units contingent upon permission from the OEA, but sources close to the negotiations feel that chances for such approval are slim. At Cincinnati's **G. A. Gray Company,** a subsidiary of Warner Swasey, quotations were requested on large horizontal spindles, boring, drilling and milling machines plus one vertical turning unit. Although the Chinese did not reveal in what area they planned to use the machinery, company officials feel that it would probably be for stationary gas turbines used in power generation. The breadth of the machinery involved in the Gray quotation is sufficient to produce large turbines. The machinery involved, which would represent a multi-million dollar sale, also requires US government clearance. While most of the equipment should present few problems, the horizontal turning unit may, since it could possibly be used for ordnance purposes. Another company, hosting the delegation for a full day's visit, also indicated that they had expressed interest in over a million dollars of extremely large machinery for the manufacture of power generation units. The delegation's visit to **Fellow's Corporation,** subdivision of Emhart Corporation, of Springfield, Vermont, included stopovers at **Philadelphia Gear** to inspect 88-16 horizontal gear cutting machines, and **Pratt & Whitney's** Connecticut plant to observe the Horizontal "Z" 10x36 horizontal gear cutting machine. The horizontal cutting machine is normally employed in putting splines or gears at the end of shafts. It is capable of cutting pieces of any length up to 10″ in diameter. Aircraft engines and gas turbines are the standard product of the Horizontal "Z." The vertical cutting machine can handle jobs with internal diameters of 106″ and external diameters of 88″, and is occasionally used in the production of power generation units. The Chinese also indicated an interest in a smaller vertical gear cutting machine, the model 70-15. **In Need of Help?** One of the senior executives who visited China with an NMTBA exchange delegation last Fall, assessed the Chinese machine tool building capabilities as "in need of help" and considerably behind the West in gear cutting equipment. He added that one of China's current high production gear shaping machines is comparable to Fellows' model 6-A which was phased out of production some years ago and is now considered obsolete. In Shanghai a cutter spindle backoff machine of 10″ diameter was seen which appears to be much less efficient than current American tools with its 400 strokes per minute as compared to its US counterpart's 1300 strokes per minute. **Economies of Production** . . . The executive allowed that the Chinese have quite respectable production in the planer and gear grinding fields, although these techniques have been generally replaced by milling and gear cutting in the West. Another American machine tool executive pointed to the Chinese production of a fully numerically controlled machine tool which is advanced by any standard and suggested that the reason for their importing such a large amount of machinery was one of the economies of production rather than scarcity of know-how. Other officials indicated that one reason for China's lack of larger machine tools was the huge electric



Source: China: Domestic and International Telecommunications 1949-1974, paper by Jack Craig pp. 304 and 306 of JEC Print July 1975

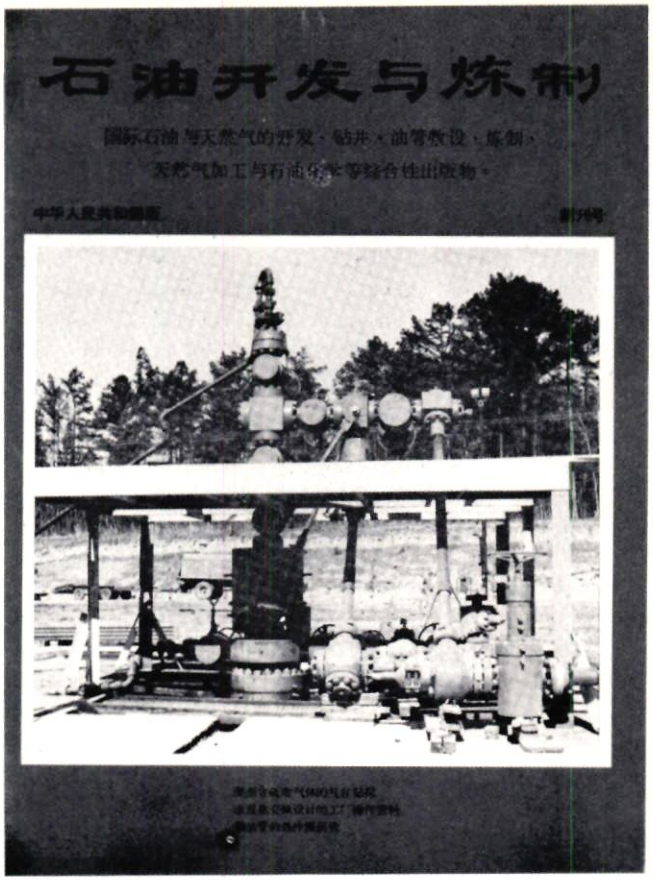
power requirements such machinery necessitates; hence, when China's electric generation facilities are more fully developed, her machine tools will expand accordingly. The **general impression** of tool producers who met with the Chinese delegation here at NMTBA invitation, seemed to be that the group was well-versed in the American machine tool market and was clearly here to buy. One aspect of the trip has been the damper placed on negotiations by export controls. American sellers expressed resentment over the handicap they are saddled with vis-a-vis European producers who, in theory operating under identical restrictions, in fact have a much easier time obtaining export licenses. In addition, American executives argue European suppliers are already aided by previously established trade relations with China as well as generally lower minimum interest rate requirements set by their governments (that is, about 5% against 9½%).

PEKING

Latest from Peking is that at least two major US firms in the heavy technology and electronics fields have recently given well-attended technical seminars in China, both exchanges the result of long correspondence with the CCPIT's technical exchange departments. Recent US visitors to the PRC have included George Lewis of Hydril, and Bernard Brownstein of Delaware Steel Co., Bala Cynwyd, Pa.

OIL

New Book—China's Petroleum Industry: Output Growth and Export Potential (Praeger, $20.00 pp 244) by Chu-yuan Cheng, Professor of Economics at Ball State University, provides an excellent, up to date and comprehensive look at all the facets of China's oil industry and trade. Any oil executive interested in the PRC should obtain this as a standard reference. Of particular interest is the section on China as an oil equipment importer. Cheng estimates that China may look to the US for some $1.5-2 billion worth of oil-related equipment in the next ten years. **New Oil Equipment Magazine for PRC.** . . . is a new Chinese language magazine published by the Houston based Gulf Publishing Company and WJS Inc. for distribution in the PRC beginning June. The 48-page magazine, to be published bimonthly in Hong Kong from translations of other GPC publications, will include articles on exploration, seismic surveying, oil and gas drilling, production, refining, pipelining, onshore and offshore techniques, petrochemicals, chemical fertilizers, and plastics. Ads cost $900 for a full B&W page, $1500 for a cover slot, sold only as six inserts through a year's issues. Only full page ads are accepted. First print will be 3,000, all in simplified, modern Chinese. For full details write or call John Sykes, Sales Manager, Box 2608, Houston, Texas 77001, Tel (713) 529-4301. **And a Major Conference on China's Oil, June 23** . . . in Houston, sponsored by the National Council is attracting worldwide interest. Details, if you haven't had them already—from George Driscoll at the Council (also see China Trade Events). A comprehensive workbook will be available to participants. Cost per person $100. Co-sponsoring the program are the Houston Chamber of Commerce, the Petroleum Equipment Suppliers Association, and the Houston World Trade Association. **Mineral Resources of**



New oil equipment magazine published in Chinese by Gulf Publishing Co. and WJS, Inc. (Trial Issue).

China is a comprehensive report on the production and reserves of the PRC's mineral resources. The survey has a 22 page introduction, 72 pages on structural geology, 60 on coal, 29 on oil and gas, and 269 pages on metalliferous deposits, plus a comprehensive alphabetical index with more than 1,000 place names, their Chinese characters, province, longitude, latitude, tectonic units, and minerals listed for each location. Deposits are described by type, metal districts, and an appraisal of their reserves. There are special sections on iron ore; heavy metals; and light, noble, and rare metals. The book, reproduced on six Microfiche sheets, costs $9.00, or as six Microfiches with Xerox copies, unbound, is $40.00, from the Geological Society of America, Publications Sales Department WM, 3300 Penrose Place, Boulder, Colorado 80301.

ENERGY

Power to the Communes? . . . China's energy output has grown much faster than PRC agriculture production, according to an article by Vaclav Smil in this March's *China Quarterly (CQ)*. From 1952 to 1972, Smil reports that energy production in China grew an impressive 8.9% p.a., trailing only Thailand's record among third world nations. But the PRC's farm output has grown only 2.3% p.a., one of the poorest performances of all LDCs, according to Smil. Conclusion: in the next decade China will boost energy subsidies to increase and cheapen power at the commune level. Smil also states that China's per capita energy consumption in 1973, 444 kilograms of coal equivalent, is about the same as America's was in the 1850s.

STUDIES: CONSTRUCTION EQUIPMENT MOTION PICTURES

Building Blocks for China. . . . "Construction Equipment: A Market Assessment for the People's Republic of China" is the Commerce Department's latest synopsis of Chinese demand for foreign construction machinery. The 21-page report concludes that equipment sales to China are likely to continue growing for the next ten years. China's needs, says Commerce, will have to be met, at least partially, on the international market to the tune of $60-75 million a year by 1985. Available through the GPO in Washington, D.C. for 65 cents. **Electric Shadows** . . . or *Dianying* is both the Chinese word for motion pictures and the title of a book by Jay Leyda (MIT, $6.95). The book is "an account of films and film audience in China" and stands as a chronicle of the wisdom its author garnered during a five-year tenure as foreign film archivist in Peking from 1959 to 1964. In over five hundred pages of text and appendices, Leyda presents a complete history of film production and distribution in China, 1900 through 1966, with special emphasis on the political and social undercurrents of a film industry in turbulent times.

GRAIN

What was that Figure? . . . Vice-minister Yang's assertion in Rome last November that China's 1974 harvest was 274.9 m mt has been removed from copies of his speech in Chinese publications. The high output figure may have involved a soybean component. Experts in the US have estimated that 15-20 m mt tons of the 274.9 m mt represented soybean output (see R. M. Field in March, 1976 CQ); however, such calculations presume a large increase in China's soybean productivity, a fact unconfirmed in recent Chinese press accounts. The May-June cutbacks announced in China's soybean exports to Japan, suggest that China's soybean crop was not as high as 15 million tons in 1975. (In 1974 China bought $140 million worth of soybeans from the US.) **Light Rain so Far** . . . Hopes for another increase in agricultural production in China are contingent upon sufficient April precipitation. So far this year rainfall in China, especially in the Northern plain regions, has been unusually light. It is still too soon to compare the 1976 crop with last year's when a strong first and a disappointing second crop held down increases. **Mechanization** . . . is the reason why Chinese grain production was able to exceed 250 million tons in 1974, in the eyes of Ben Stavis, of Cornell University. Stavis, in a note in the latest CQ, adds that an average increase of 1.95% p.a. has kept per capita grain consumption equivalent to the 1957 300 kilograms/per capita level, while agricultural diversification has broadened the scope of the Chinese diet.

AIR LINKS UP

AIR Reaches New Level . . . McGraw-Hill, the giant American publishing house, has signed an option agreement effective May 1 to purchase an interest in The *American Industrial Report*, the Chinese language magazine published by China Consultants International Ltd. and distributed in China through FTCS. AIR, with a circulation of 15,000 and a readership in China claimed at 250,000, supplies the Chinese with information on industrial, technical, scientific and engineering areas of the American economy. Ad rates are $1,680 per B&W page and $2,080 for 4-color pages. For details, call or write Bill Donnett at 3286 M Street, NW, Washington, D.C. 20001 (202) 338-2388, or any McGraw Hill office in the US or abroad. 完

POSITION AVAILABLE

Well-established China division of medium-sized marketing consulting organization seeks Project Director. Each project director has responsibility for directing the team which is assigned to advise and assist our client's approach to the China Market. *Qualifications required:* MBA from leading business school; 3-5 years experience of marketing capital goods in Asia; Thorough knowledge of Chinese business practices; Must have personally initiated, negotiated, and signed transactions in Asia. *Preference given to candidates who have:* Engineering background and technical work experience; Done business in China; Previous experience in market consulting; Speaking ability in Mandarin Chinese and other Asian languages. Excellent salary, profit sharing, fringe benefits, relocation expenses, etc. Incentive scheme based on performance and new business brought in. Please reply to: John Waters, F.P. Healy & Co., Inc., Management Consultants, 630 Third Avenue, New York, New York 10017.

IMPORTER'S NOTES

Briefly

- **Textile Imports from PRC down 32% in first quarter, China taking orders for 1977.**
- **Rabbit Imports to be Inspected?**
- **Great Wall Vodka finally Available in US, Has Send-Off from Canton.**
- **Chinese "Year-Round Valentine."**
- **US Residents Can Tour PRC via Iran Air.**

FOODSTUFFS

Promotional Letter Mailed from China . . . The China Trade Corporation, which has an exclusive agreement to import Great Wall Vodka to the US, has begun its promotional campaign direct from Kwangchow. Using an envelope which prominently sports a "Youyi" (friendship) emblem and colorful Chinese stamps, the company recently sent out a promotional letter extolling the virtues both of Chinese vodka and of friendship with the Chinese people. After almost four years of effort, the vodka hit the stores in the Virgin Islands in March and will soon be available throughout the US. **Rabbits to be Inspected?** . . . Portions of the US rabbit processing industry have expressed concern over what they feel is a two-fold threat posed by China. On the one hand, they are worried by increased imports of Chinese frozen rabbit meat, which jumped 840% from 1971 to 1974—from 80,298 pounds to 755,397 pounds. One industry figure claims that the PRC is now offering up to 2.5 million pounds a year to the US. The Chinese product is not presently subject to federal inspection, but this situation may be altered in the near future. The US House of Representatives has passed a bill that would make such inspection mandatory, and the Senate Agriculture Committee has a similar bill under consideration. **Meanwhile Meat Ban Denounced** . . . The Japanese, however, are dealing with the opposite situation. The government of Japan, which restricts imports of Chinese pork, beef and mutton due to possibility of foot and mouth disease, is being challenged on that stance by the Association for the Promotion of International Trade. JITPA wants an end to the ban, arguing that China has proved that there is no such disease among the country's hoofed animals. **Chinese Coffee** . . . Coffee from Yunnan Province is now attracting attention at a Berkeley, California, coffee specialty center. It retails for $2.95 a pound and has struck those who have tried it as "very strong and rich."

LIGHT INDUSTRIAL PRODUCTS

Improved Leather Styles . . . Chinese leather goods have recently shown marked improvement in styling, quality, and sophistication, according to one old hand at importing from the PRC. **Shoe Import Restrictions Threat Alleviated** . . . The China National Light Industrial Products Corporation, which recently sent a delegation pushing shoes and other leather goods to the US, will apparently not benefit from an important trade decision by President Ford. On April 17, he decided against imposing higher Column I tariffs or other restraints on shoes made abroad. Overriding the position of the US International Trade Commission, which told Ford that the domestic footwear industry is suffering serious injury from increased imports and should receive some clearcut relief, the President said his announcement is "based on evaluation of the national interest," including the possibility that higher prices for consumers would have resulted from the imposition of import restraints. The Chinese are unhappy with Ford's decision because it means competition from countries eligible for the lower Column I tariff will remain as high as before.

TEXTILES

Textile Imports Down 32% . . . US imports of Chinese cotton cloth fabrics, at $11.1 million for the first quarter of 1976, were down 32% from the previous quarter by value, thus allaying the exaggerated fears of those earlier sounding the alarm at the rate of increase of textile imports from the PRC. China, which may have almost more business than she can handle, is now taking orders for 1977. Apparel imports remain steady. Some industry leaders have gone on record as saying that the PRC fills an important niche, with its good quality and reliability, and is not out to disrupt the American market. A few industry observers note that there is actually a shortage of all-cotton textiles being produced domestically as the US converts its looms to blends, suggesting that the Chinese influx may not be as bad as some think. Other observers point out that the general demand for print fabrics, including Chinese print cloth, has appeared to drop slightly in the last few months, perhaps because American wardrobes are becoming filled with prints. **Meanwhile at ATMI** . . . President Ford told the National Convention of the American Textile Manufacturers Institute in late March that, "Some of the largest producers in the world of textiles are not a party to the multifiber arrangement and I am aware that there is considerable concern in the United States textile industry today about rapidly rising imports from some of these nations. I can assure you that I share your desire to avoid disruption of our domestic textile market from any source. The matter is presently in review at the Cabinet level and I am taking a personal interest in the problem and following these deliberations very closely. I can assure you that I am genuinely committed to finding the most appropriate way of dealing with the problem to insure that our domestic market is not seriously disrupted and that our objectives under the multifiber arrangement are met." **Re-export Not a Factor** . . . A few industry figures have raised the question as to whether a significant amount of greige goods imported from the PRC are processed in the US and then re-exported to other parts of the world, including South America and Europe. If the proportion is high enough, they note, then the impact of vast quantities of Chinese textiles on the American market might be somewhat diffused. Discussions with representatives of Cranston's and Lowenstein's, two big names in the textile industry, reveal, however, that re-export of any textile imports, including those from China, is a minor factor in overall sales. Lowenstein's converts some PRC gray goods to finished products for marketing in Europe—something under 5% or half a million yards per year, they estimate—but regard

this quantity as extremely minimal. Cranston's re-exports even less. The amount is "peanuts," says a company executive. **Computerized Inventory in Peking** . . . For those importers with textile shipments delayed three months or so, whose communications with the PRC have been erratic at best, and who have come to expect anything but a straight answer, it may be some solace that Chinatex headquarters in Peking has computerized inventory control of sorts, which issues printouts of stock and output on a regular basis. The printouts indicate, among other things, that China's 65/35 blends output is increasing. Recent visitors to China consider PRC polyester/cotton blends to be of excellent quality. **Cotton Availability Down** . . . Early reports from the Canton Fair confirm what various companies had already begun to encounter earlier this year (see last UCBR): China's supplies of cotton cloth have dropped sharply. According to a Fair official interviewed by the Journal of Commerce, the PRC is very well versed regarding the current political and economical situation here.

NATIVE PRODUCE

Separating the Goose . . . The Feathers and Down Fair held last January in Shanghai, which attracted a number of US buyers, may serve to help imports of that commodity to this country. But quality differences remain. UCBR has received information from one Native Produce representative detailing the ways in which the PRC's methods of down collection have created a problem on the US market. According to US regulations, a garment labeled "goose" must be 90% goose; if not, the item must be labeled "waterfowl plummage," a designation which cuts the price in half. Unfortunately, Chinese down is often mixed with other types of feathers, due to accidents in the process of collection. China may be improving, however, since new state geese farms are being established. **No Such Down Problems in Japan** . . . Japan has no regulations like those on the American books, so its companies were able to bypass this issue during recent Fair negotiations. While American firms labored over goose content matters, the Japanese were free to discuss questions of styling. China may therefore find an eager market in Japan, but in the US area the regulations problem must be faced, as well as competition from other countries which have already adapted to the US situation by carefully dividing geese from other fowl incollection areas. Romania and Poland fall into this latter category. **But Down to Order** . . . American customers who require down products designed to specifications have a number of chances to fulfill their needs: If the needed specifications are general enough, there is a good chance the FTC will be able to provide them. If the company places a large enough order, the chances are also good that the FTC will be able to accommodate American requests. **Down Sizing** . . . By providing the FTC with a countersample, US customers may find the Chinese willing to make sizes, styling and sewing accommodations. In the case of down, sewing is especially important, because the down can easily escape from an improperly stitched garment. **Future Down Fairs** . . . The Chinese currently project that a Feathers and Down Fair will be held each year, although not necessarily in Shanghai. During last January's Fair, the Japanese were the largest segment represented. **Be My Valentine** . . . In February, Bloomingdale's was pushing a Chinese rainbow-colored wheat straw box, somewhat heart-shaped, as "a perfect year-round Valentine." **Wicker Moves Quicker** . . . Sales of wicker baskets from the PRC have been moving briskly because of the novelty of the product, low pricing, and the continued popularity of the natural look. Delivery problems, however, continue to loom large.

Minmetals delegation members at Pfizer International Inc. during their tour.

SHIPPING

Another Option T.A.T. . . . While some importers have been exercising the T.A (Train-Air) option, as they have heard it called (see last UCBR), others have been using the T.A.T. (Train-Air-Truck or Train) system, as *they* have heard it called. T.A.T. is a surcharge quoted over and above CIF; it works out to approximately one yuan per garment on larger orders. Representatives of China Travel Service (CTS) in Hong Kong, who handle the merchandise when it goes through that city, report that in recent months they have noticed a sharp increase in the number of foreign buyers who are employing this option. CTS acts as agent for both the rail and air transportation departments of the China National Foreign Trade Transportation Corporation, unloads the cargo from Kowloon-Canton railway cars and places it aboard competitively priced airlines.

TOURISM

Tour China With Iran Air . . . Iran Air has been approached by the Chinese to handle tours from North America to the PRC. The tours will be cultural in nature, and restricted to people "the Chinese can exchange ideas with," according to Lloyd Tackling, Area Manager for Iran Air in New York. Iran Air officials in Teheran are in close contact with Luxingshe representatives in Peking, and pass on information to the New York office. Luxingshe has recently approved the program submitted by the airline. News of the upcoming tours has spread by word of mouth, and Tackling has been receiving many interested calls. Thus far, he has a number of groups (generally 10-30 people) planned: a Miami Metropolitan Museum art and architecture group, a Monmouth Hospital (N.J.) physicians group, the American Farm Association, New York ophthalmologists group, an interior design delegation, and a group of Chinese-Americans. For those interested in further information, Tackling can be reached at (212) 949-8218.

CHINA ECONOMIC NOTES

From Chinese Media Reports

AGRICULTURE

Agricultural Improvements Everywhere in China Chemical fertilizer, it is reported, can now be produced in all 26 provinces and autonomous regions. According to NCNA in April, construction in the last five years of 28 large and medium-scale plants as well as over 700 small chemical fertilizer factories has increased chemical fertilizer production 250% over 1971 output. Also, cement works have been widely constructed. Some 2,800 small cement producing facilities have been erected in the last five years, reaching 80% of all counties in China. Steel used in farm machinery and on water-control projects rose in 1975 250% over the 1970 level. **Machinery, too,** has been made available to the Chinese rural sector with annual production of irrigation equipment, tractors and hand tractors increasing 330% and 800% respectively during 1971-75. (No units of measurement given). Other tools more widely produced are internal combustion engines, combine harvesters, processing equipment for farm produce, and plant protection machinery. To handle these and the 1,800 other types of farm machines used in China, farm machinery repair factories now exist in 96% of all Chinese counties. **Agricultural Construction Projects**—A campaign by nearly 130 million rural Chinese has been launched to attack farmland capital construction projects, according to an April NCNA report. The drive, something of an annual event in China, this year includes digging ponds, building dams and reservoirs, sinking wells, digging irrigation and drainage ditches, building pumping stations, transforming arable land and making preparations for spring farming. According to NCNA, this winter's efforts resulted in improved irrigation facilities on 3.3 million ha; new drainage facilities on 1.6 million ha; 6 million ha. of newly leveled fields; 1.3 million ha. of newly terraced fields; 1.5 million ha. of improved low-yield land; 330,000 ha. of reclaimed land. **Sugar**—The *Peking Review* announced in February that Kwangtung province is being transformed into China's sugar producing base. The Province has at least 28 sugar-cane plantations, 300 to 600 ha. in size, there were also 100+ units under 60 ha. in size. In 1975's harvest, model production teams reported per-hectare outputs of 150 tons.

ENERGY

Development of Generators—Development of generators 200,000 and 300,000 kilowatt in size has helped to lift Chinese power generation about 700% above 1965 output by 1975. According to NCNA in February, one of the 300,000 class machines is a thermal unit incorporating water cooling for both stator and rotor, high temperature and high pressure, and interreheating systems. One of China's largest reported power facilities is the 375,000 kilowatt Laiwu (Shantung) power plant with its three 125,000 kw steam turbo-generating units. China's largest power equipment construction complex in S.W. China has capacities to produce 200,000 kilowatt thermal units and 210,000 kilowatt hydroelectric units, according to NCNA, March 18.

TECHNOLOGY

Chinese Facsimile Transmission Equipment has been put in operation on a trial basis between Peking and Canton, announced NCNA recently. The hardware, a 60-channel high-speed super group facsimile apparatus using laser techniques, is capable of transmitting a 21 cm x 29.7 cm, black and white drawing, and additional information in six minutes. Apparently, the machinery is to be used to transmit the *People's Daily* for same day publication throughout China as well as for other purposes. Chinese facsimile production also includes 12 channel basic group facsimile apparatus and single-channel document facsimile apparatus. **China's Laser Progress**—*Laser Focus* (March 1976) published the impressions of Dr. Bloembergen, a Harvard University applied physics' professor, on China's laser effort. They were 1) easy availability of helium-neon lasers, with one emitting 10 milliwatts in a single spatial mode; 2) glass-laser technology a minimum of 3-5 years behind West; 3) fabrication and intensive study of double-heterostructure diode lasers of gallium arsenide without many optical semiconductor devices; 4) broad spectrum of optical materials, but a shortage of dyes for lasers and for saturable absorbers; 5) demonstration of bright red and blue pulses, converted with an ammonium-dihydrogen phosphate crystal from frequency quadrupled neodymium-yag output at signal and idler frequencies with efficiency of 10% claimed, but only 1% upconversion efficiency in going from green to ultraviolet; 6) priority funding for lasers and semiconductor devices without visible work in high resolution laser spectroscopy, nonlinear spectroscopy, infrared fiber, and thin film techniques integrated optics. **Medical Care**—And medical care in China will be improved through the industrial development of medical apparatus using ultrasonic, electronic, laser, radioisotope and other techniques, according to *Ta Kung Pao* 3/4/76. Chinese products include laser ophthalmological units, surgical lasers to cut tissue and bone and halt bleeding, automatic blood cell counters, and high-resolution color scintillation scanners for diagnosing cancer. **Missiles**—*Aviation Week and Space Technology* reported in February that the PRC is developing an ICBM with a range of 6,000 nautical miles to add to the array of 3,500 nautical mile range CSS-X-3 missiles already deployed.

MINING

Miners' Health in the PRC—has been improved by new mechanical ventilation systems which provide each miner with 4 cu. m. of fresh air per minute, according to NCNA in March. **Mining Has Priority Over Aeronautics**—According to a representative of Perard engineering of Ripley, England, who was in China in early 1976, the PRC is investing more cash in the development of its mining program than in its aeronautical industry. The Perard representative, Mr. Albert Walter, was in China inspecting mining machinery sold by the company now being used in a 2.8 meter coal seam, producing 40-50,000 tons a month on average, and up to 70,000 tons. 完

INTERNATIONAL CHINA NOTES

BUYING REPORTS

Steel—On April 5, Japanese industry sources reported the Chinese, abruptly and without explanation, suspended negotiations for emergency purchases of 1,500,000-2,000,000 tons of steel material from Japan. Though the talks had been deadlocked over the problem of the interest rate on deferred-payment credits to be furnished by the Export-Import Bank of Japan, there is some speculation that the suspension may be in retaliation to recent Japanese moves to curtail imports of Chinese crude. In a later development, sources from Japan report that China eventually reduced the regular steel imports from two million tons down to only 1.2 million tons for the first half of 1976. The sources speculate that the political climate in Peking was behind the reduction and that it will be temporary since China's industrial development is vital to its economy. Steel trade talks for the last half of 1976 will be held in Peking; and China reportedly wants to begin at the earliest possible date. **Sugar**—Over $3.5 million worth of Philippine sugar was scheduled for shipment to China during March and April, bringing the total so far this year to almost $12 million according to Philippine sources. **Synthetic Rubber Plant**—A contract for a synthetic rubber plant valued at ¥8 billion has been awarded to four Japanese companies—Japan Synthetic Rubber, Japan Gasoline, Mitsubishi Corporation, and Toko Bussan—according to Japanese sources on April 7. **Dynamometers**—Froude Engineering in Worcester, England, is currently manufacturing £350,000 worth of dynamometers for China. **Vinyl Chloride Resin**—Under an agreement with Sinochem, Japanese PVC makers will export to China 3,700 tons of vinyl chloride resin for loading in May. The two sides also agreed tentatively on additional sales for loading in June and July. The Japanese had expected to receive an order for 10,000 tons for loading during the April-June period. **Wheat**—China signed a contract with Canada in late February for 950,000 long tons, or 35.4 million bushels. The sale is the fourth under a 3-year agreement signed in October 1973 and brings the total up to just over 4 million long tons, still short of the minimum of 4.8 million called for in the contract to be shipped in 1974-1976. The wheat is to be shipped between April and December with 25% cash payment due at loading time and the remainder due in 18 months at current interest rates. During its visit to Peking in early 1976, the Australian Wheat Board Team negotiated the third tranche of sales under a three-year wheat agreement specifying shipment of 1.5-1.8 million tons up to the end of March 1977—up from 1 million tons in the second tranche April 1975 to March 1976. At about the same time, Australia announced the sale of 700,000 tons of wheat to China. **Benzene**—Japan concluded an agreement in March to export 17,100 tons of benzene to China during the July-September period at a price 22% higher than that negotiated at the Fall 1975 Canton Fair for the January-June period. **Deer Antlers?**—According to a report from Scotland, the Chinese have ordered 1,500 sets of stag deer antlers and soup made from the stag's more private parts from Baxter's of Speyside.

BASF Know-how—West Germany's BASF will provide the technical know-how for a 50,000 metric-ton-per-year 2-ethylhexanol plant in China to be built by the PRC at a cost of $23 million, according to a March 29 report. **Microscopes**—After 60 hours of negotiations in March, Techimport agreed to buy two scanning electron microscopes valued at £120,000 from Cambridge Instruments of the U.K. Both instruments are S410 models capable of providing ultra-high magnification of specimens in three dimensions with viewing capability from any angle. One was purchased for a metallurgical factory in Shanghai and the other for a plant in Shenyang which conducts iron ore refining and metal milling. CI has sold 13 scanning electron microscopes to the PRC since 1974. **Photographic Equipment**—China has received 50 one-piece, 450-gallon tanks for use in high-speed processing of color photography. The tanks, which are part of a new water washing and chemical process developed by Technicolor, were sold by Dewey Waters and Co., Ltd., of Bristol, UK, according to a February report. The contract price was £14,500. **Aluminum**—Twenty-thousand metric tons of aluminum from Alcan Aluminum's Kitimatt smelter complex are headed for China. The purchase was made on a spot basis and is the latest of several Chinese purchases from Kitimatt in recent years. Alcan supplied 47,000 tons of the over 300,000 tons of aluminum purchased by China in 1975. **Computer Software**—The Canadian-based Taskmaster Computing Systems has been awarded a contract from China for its Taskmaster package. The Taskmaster is computer-aided construction software which stores details of a projected building or other structure in a database. It will be used in conjunction with the Tequila program from Somel of France which can be interfaced with the Canadian package. The French program analyzes the fabric of a building and lists and costs the material required. The Chinese project will use both packages in the construction of a large petrochemical plant in Peking. The sale was actually a subcontract from Speichim of France which is handling the design and construction of the plant, according to industry sources in April. **Ammonia Synthesis Converter**—Nippon Kokan of Japan has sold China a 385-ton, Kellogg-type, multi-walled ammonia synthesis converter, according to industry sources in February. The converter, which is capable of producing 1,000 tpd ammonia, is made of high strength steel (NKK-Hiten 62) with design maximum inner pressure capacity of 225 kg/cm² G. **Pipeline Equipment**—A representative of Proline Pipe Equipment, Ltd., of Canada headed for Peking again in February for talks with Machimpex aimed at expanding its equipment sales to the PRC. The firm made its first sale to China in the Spring of 1975 of pipeline tape, coating and wrapping machines, cradles and tar kettles, due for delivery February 1976. **Television Broadcasting**—Link Electronics of the UK has been approved as a potential supplier of television broadcasting and studio equipment for the PRC. The Chinese are believed to be in the process of evaluating TV equipment for color service and assessing the PRC transmission system. And, according to a February 18 account, members of a trade delegation visiting the firm's facilities in early 1976 were particularly interested in Link's Series 110 broadcast color camera. **Polyester Centrifuges**—Krauss-Maffei AG of West Ger-

many has an order from the PRC for nine high-yield decanter centrifuges to be installed in the polyester fiber plant under construction in the Northeast of China by Technip SA and Speichim of France. The plant's capacity will be 88,000 tons p.a. **Auto-Parts Plants**—A delegation of Chinese engineers, led by Jen Chung-hao, arrived in Japan January 20 for a month-long visit hosted by JCEA and devoted to the automobile and autoparts industries. According to Japanese industry sources, the Chinese discussed imports of auto parts and auto parts manufacturing plants in meetings with officials of Toyota Motor Company and its affiliated firms, including Nippon Denso, and displayed "great interest" in Japan's technology. **Aircraft**—China is reportedly interested in buying from Shin Meiwa Industry of Japan about 12 PS-1 flying amphibians for shore patrol and sea rescue worth about $200 million. The PS-1 is a large amphibian flying craft similiar to the four-engine turbo-prop anti-submarine flying boat developed by Shin Meiwa. It has four GE T64-IHI-10 small turbo-prop engines and has a maximum speed of 340 miles per hour. It has an empty weight of 54,900 pounds and gross weight of 75,200 pounds. A sticking point may be the high price—5,000 million yen (about $16 million) each. **Mobile Cranes**—In early February the Rauma-Repola Lokomo works in Tampere delivered its first consignment of Lokomo A 331 mobile cranes ordered by the PRC. The company's contract, its first with China, calls for 40 mobile cranes with lifting capacities of 25 to 36 tons and lifting heights of 26 to 32 meters. **Oil Equipment**—Under terms of a trade agreement between Romania and the PRC covering 1976-1980 and a separate accord for 1976, Romania will sell oil drilling equipment to China to be used for intensified efforts to develop its petroleum reserves over the next five years, according to a February report from Bucharest. Under the agreement, Romania will sell to China machine building equipment, trucks, diesel electric locomotives, railroad cars, ball bearings, chemical and metal goods and various spare parts. **Ship From Liberia**—The Liberian flagship *Island Skipper*, formerly owned by Primo Transport Company of Monrovia, will now be sailing under the Chinese flag and under its new Chinese name of *Changming*. The 14,800 dwt ship was built in Japan in 1958 and was delivered to its Chinese buyers in Japanese waters earlier this year. **Petrochemical Plant**—Eurotecnica of Italy signed its first contract with China late in December 1975 for a 50,000 ton/year linear alkyl benzene plant said to be worth about $30 million. Eurotecnica will provide engineering equipment procurement and supply, erection supervision, training and start-up services. Technology will be provided by UOP. The plant complex, which is expected to be completed in three years, contains four units: kerosene feedstock desulphurization, n-paraffins extraction (Molex process); dehydrogenation to n-olefins, and alkylation with benzene. Start up will be in 1979. **Smelting Equipment**—China's interest in smelting and refining locally produced copper concentrate is reflected in its discussions of ore concentration with Furukawa Mining Company of Japan. The Chinese are also reported to be interested in pollution free copper smelting technique developed by Onahama Smelting and Refining Company and Mitsubishi Metal Corporation's electrolytic refining process to produce high quality copper metal. **Koike Gas Cutters**—China has ordered two numerically controlled gas cutting machines and 20 portable gas cutting machines from Koike Sanso Kogyo Co. in Tokyo. The machines will be used for shipbuilding and are valued at $200,000, acording to a March report.**—Development of LNG Reserves**—The PRC has requested bids from French and Japanese companies on the construction of a gas processing facility, including pipelines, for the development of its natural gas reserves in Szechwan Province, according to a March report.

SELLING REPORTS

Oil to Asia—China has offered crude oil to Thailand in unlimited quantities according to an April report. It is also willing to set up storage facilities in Bangkok and to help modify refinery facilities if necessary. Industry sources in April report Mobil is negotiating with Chinese trade officials in Hong Kong for crude oil purchases. However, stumbling blocks to the agreement are the oil's high paraffin content, which requires an expenditure of $2.00-3.00 per barrel for de-waxing, plus China's insistence that the oil should be distributed in Singapore, thus adding to transport costs. Esso Eastern is also having preliminary talks with China Resources Company, the Hong Kong agent for China National Chemicals Import and Export Corporation. **Tung Oil**—Indications from China are that its tung oil supplies in 1976 will be tight; no bulk offers have been made from China since January, according to a March report. **Oil and Japan**—There are several probable reasons behind recently reduced Chinese oil exports to Japan, according to a dispatch from Tokyo in late March. Among them: China's increased oil exports to Romania and North Korea, only slight increases in the yield of Taching oilfield, and China's apparent shift toward stockpiling oil. There have also been rumors of explosions in Taching oilfields in February although these have been discounted by sources in Peking. Japanese sources believe the domestic-political situation may have been a significant factor. Toa Oil of Japan has decided not to import Chinese oil after next year, citing as its reasons for the decision that the company is mainly engaged in oil refining, and Chinese oil is not fit for the gasification-desulfurization system which the company uses at its refineries. According to industry spokesmen in Japan in April, oil imports from the PRC will be down 2.2 m. tons due to the bottlenecks in harbors, and growing domestic demand in China. During the first week of March, the Importers' Conference of Chinese Petroleum in Japan concluded an agreement with the Chinese to import 2,100,000 tons in 1976, the same as last year. The price of the January-March shipments will remain at the October-December rate of $12.30 per barrel, with pricing for later shipments to be negotiated. And on March 23 the International Oil Trading Company of Japan announced it will import 4 million tons of Chinese crude in 1976. The contract price was set at $12.30 per barrel for January-June shipments with the price of remaining shipments to be negotiated later. Under terms of the contract, the company has the option to import an additional 2 million tons if Japanese demands increase. **Oil Coke**—Japan's Toyoda Tsusho will import 20,000 tons of oil coke annually from China, according to an April 7 report from Japan. The company will supply the oil coke to Osaka Gas Company and Toho Gas Company. **Coal**—According to a

March 31 account, Japan's Power Resources Development Corporation will import 100,000 tons of Chinese fuel coal in 1976. **Tin**—London's *Financial Times* has estimated China's 1975 tin exports at 15,000-16,000 tons. For the first 11 months the US accounted for 6,250 tons of that amount, up from 3,336 tons for the same period in 1974. According to a London report, China expects its tin exports for 1976 to drop back to normal levels—around 10,000-12,000 tons a year. **Silk**—On April 7 the Chinese broke off the second round of negotiations with Japan on exports of silk yarn and fabrics. Though the Chinese gave no explanation for their action, the negotiations, which began March 24, had been stalled over the establishment of a formula for setting China's import quotas. Japan wants to curb imports of raw silk, silk yarn and silk fabric from China and South Korea and had proposed to base the quotas on actual imports the past year. Under this formula, the Chinese imports would have been around 120,000 bales in raw silk, down 25% from last year's 162,000 bales. **Steam Coal**—According to a March coal journal, Japan will purchase 1.2 million mt of steam coal beginning in 1980 for its new thermal power plant at Matsushima. The target price is $33 to $36 per metric ton, c.i.f. Japan. The Chinese won the contract over Australia, the USSR, and the US. According to Japanese sources, the Australian coal had too much silica ash, the Societ coal had too much foreign matter, and the US coal was too expensive. **What did China export to Japan last year?**—Japan's Ministry of Finance quotes 9.1 million kl, other sources quote 8.3 m. tons. According to JETRO, affiliated with MITI, that 9.1 million kl represented 7.84 million metric tons on a Customs Clearance Basis. (Taching oil is 0.8576 metric tons to the kiloliter.) In 1975 Chinese oil, worth $740.1 million CIF, represented 48.3% of all Japan's imports from the PRC, up 80.3% from the $410.5 million of 1974 when it represented 31.6% of Japan's China purchases. The 1974 metric ton figure was 3.89 million tons. **China Firm in Philippines**—A petition to sell machinery such as lathes, shapers, milling and grinding machines filed by the PRC-owned, Hong Kong-based Oriental Machinery Limited (OML) with the Philippines government has touched off a debate over whether trade reciprocity exists between the two countries. Under Philippine law, the nationality of a foreign company is determined by the nationality of those who own and control at least 60 percent of the capital, and proof of reciprocity may be submitted from the country of domicile only when the nationality cannot be established under the rules of the law. In this case, the Philippine Government believes the proof of reciprocity must come from China which, thus far, has not granted reciprocity to the Philippines. But the Philippines' Justice Secretary, citing provisions in the Trade Agreement signed by the two countries on June 9, 1975, has said, "By special arrangement under this clause, the People's Republic of China may in all likelihood allow a Philippine government-owned entity to establish a branch or office in China for bilateral trade purposes." **Chinese Oil to Romania and North Korea** . . . 500,000 tons of Chinese oil were shipped to Romania during the latter part of 1975, sources report. Romania has supplied the PRC with oil rigs. And NCNA announced the opening of an oil pipeline to North Korea on January 3 and 4. No details of the length or type of pipeline were given. In 1975 China is thought to have supplied North Korea with 1.5 million tons of oil, out of total oil imports of 2 million tons. The USSR supplied the balance. **Oil Negotiating Tactics?** . . . Late word from Tokyo has it that the reduced oil shipments from China represent negotiating tactics on the part of the Chinese. Japanese companies, completing a large de-sulphurization project for ME oil, are now cool on Chinese oil.

MISCELLANEOUS

Okinawa Seeks Balance—Okinawa, citing its one-sided trade with the PRC, has asked China to buy fertilizer, agrochemicals, iron reinforcement bars, etc. The request was made during a visit by a Chinese delegation to the Japanese island March 21-23. **Sino-Japanese Trade**—Japanese businessmen anticipate a decline in trade between Japan and China as a result of the political situation in Peking; however, at a conference in early April, the top leaders of the Japan Federation of Economic Organizations expressed the belief that the decline will be temporary since China will have to continue to develop its industries and modernize its agricultural sector if it is to feed its 800-900 million people. **Preference for Denmark**—On March 18, the Copenhagen press quoted Chinese promises to grant Denmark preference over other countries "when China has to strike bargains in the shipping sector for machinery and electronics equipment, in the chemical industry, and for certain factory installations." The statement by Li Chiang, China's Minister of Foreign Trade, was made to a 39-man trade delegation from Denmark in Peking. **Philippines Trade**—The Philippines Government is optimistic about reducing its deficit in trade with China, which last year amounted to US$19.4 million. The deficit was incurred primarily because of heavy buying for crude oil, partially refined petroleum, and rice. The Philippines' rice harvest is expected to reduce the need for rice imports, and copper and sugar exports to China are expanding. According to an April report, crude coconut oil, logs, lumber, plywood, carpets and copper concentrates make up the bulk of China's imports from the Philippines. **Copper, Nitrates from Chile**—Chile is preparing for negotiations with the PRC in Santiago later this year according to South American sources in Peking. One subject of the negotiations will be a $57 million 5-year loan which China suspended after the September 1973 military coup. At the time of the suspension, only $5 million had been used and the Chileans hope to revise the original agreement to extend it over an additional period of time and to increase the amount to $100 million. The negotiators will also discuss Chilean products which China may purchase. Chile is selling copper and nitrate. According to the report, China would like to increase these imports and expand its purchases to other Chilean products. **Trade With West Germany—Coal, Mining Equipment**—Chinese officials have been holding discussions in West Germany on the possible sale of large quantities of coal and the purchase of West German mining equipment. According to an April report, the participating German companies have offered to handle coal transportation and the expansion of port facilities in China. **Russia's View of the Chinese Economy** . . . is not so rosy, as revealed in a recent issue of the Soviet journal, *Problems of the Far East*. The article, on China's Fourth Five-Year Plan (1971-1975) puts total PRC

industrial output in 1975 at Yuan 215 billion ($107 billion), coal production at 365 million tons, oil output at only 56 million tons, iron production at 26 million tons and steel production at 25 million tons. Other figures given are machine tools—76,000 units, vehicles—92,000, cement—23 million tons, mineral fertilizer—30 million tons, cotton textiles—9.0 billion meters, and sugar—2.5 million tons.

AIR AND SEA

Containerization, Parts—A delegation of British engineering experts from Britain's Engineering Industries Association returned in mid-March from their second visit to the PRC in five months, optimistic about the opportunities for UK engineering and products in the PRC, particularly for containerization projects, aviation (aircraft and ground systems), sophisticated transmission systems and marine engineering. Representatives from the British Aircraft Corporation met with the CAAC officials about the possible sale of Super 111s and the Concorde. China already has 35 Tridents in its fleet. Among other members of the mission were representatives from Jones Cranes, which has supplied cranes to the Shanghai Port Authority, and F. Bamford which introduced to the Chinese its advanced design controllable pitch propellers, its computerized propeller design facilities and nylon bladed propellers. A third mission from ETA is being planned for late 1977.

Charters—The Chinese, who have been in the charter ship market consistently according to industry sources, have booked what is considered to be an unusually large ship for them—a 43,330 dwt ship giving delivery in the Black Sea for a time-charter trip to China beginning April 15-25. The daily rate is reported to be $3,100. Also, according to a March report, China has hired an 11,000-ton ship for three to six months at a rate of $2,700 a day. **Somali Registration to be Phased Out** . . . Unconfirmed reports have it that Somali will phase out foreign ship registration at Mogadishu by October of this year.

FOREIGN AID

Brickworks in Guyana—China is helping Guyana with construction of a clay brick works on the west bank of the Demerara River according to an April 2 Chinese report. **Bamboo Weavers**—On April 3, the first 14 graduates in bamboo weaving received their diplomas from the Handicraft and Industrial School established in Ethiopia with the assistance of Chinese bamboo weaving experts. The school was established under an agreement on technical cooperation between China and Ethiopia signed in 1974. **Brickworks in Egypt, Too**—Under an agreement signed on April 13 China will build a brick factory in Minya Province in Southern Egypt. The factory, which will produce 50 million bricks a year, will be built at a cost of $2 million to be repaid interest-free in installments after a five-year grace period. **And Military Parts**—On March 26 President Sadat of Egypt disclosed China's gift to Egypt 6 months prior of 30 engines and spare parts for its Soviet-built MIG-19 and MIG-21 aircraft. **Aid for Laos**—According to an April report, the PRC has sent to Laos an unconditional consignment of aid, including 150 lorries, 10,000 tons of rice and 10,000 tons of fuel, 8,000 bicycles, 674 sewing machines, 3,000 tons of cement, 258 drums of coal tar, and textiles, medicine and other commodities. **Sri Lanka**—On January 28 China and Sri Lanka signed an agreement under which China will make available an interest-free loan of 22.9 million Rps in convertible currency to be provided in two installments in the first half of this year. The loan is repayable over a period of five years, including a two-year grace period, and can be repaid in goods or convertible currency. **Stadium for Morocco**—The PRC will help Morocco build a 60,000 seat, Olympic-size stadium, according to a March report. The stadium to be built four miles from the Moroccan capital, will include a large number of open-air and indoor facilities complete with an electronic computing system.

RMB. DOLLAR RATES AS OF MAY 1976

Date		*RMB:$*	*US¢/ RMB*	*Change %*
February 12	Bid	1.9516	51.2400	
	Offer	1.9418	51.4986	
	Median	1.9467	51.3689	+0.10
March 2	Bid	1.9613	50.9865	
	Offer	1.9515	51.2426	
	Median	1.9564	51.1142	+0.05
March 12	Bid	1.9691	50.7846	
	Offer	1.9593	51.0386	
	Median	1.9642	50.9113	+0.40

Source: NCUSCT based on data supplied by the Chartered Bank.

EXHIBITIONS AND EXCHANGES

Denmark—The Denmark-China Joint Commission held its second session in Peking March 14-15. At the invitation of the CCPIT, a trade delegation from Denmark, led by the Chairman of the Danish Committee for the Promotion of Exports, visited in Peking March 16-23. **Agriculture Mission to the Philippines**—An agricultural delegation from China, led by Yang Li-kung, met with President Marcos of the Philippines on March 19 during a visit to the island country. The purpose—to consider an exchange of grain-growing technology and see the masagna 99 rice program. **Ideal Home Fair**—China sources report the first Chinese pavilion at London's Ideal Home Exhibition attracted 500,000 visitors during the 26-day event which closed on April 3. The exhibition will move to Glasgow and then to Birmingham for month-long exhibitions in each city. **PRC Science Group to Zaire**—Chin Li-sheng, Deputy Secretary-General of the Academy of Sciences in China, headed a scientific delegation which left China for a visit to Zaire on March 25. **Lyons Fair**—The 800 sq. m. Chinese pavilion at the 58th Lyons International Fair, which opened on March 21, displayed primarily light industry products, textiles and handicrafts made in Peking. **Minmetals to UK**—British sources report a delegation from Minmetals, led by Chi Kuang-chuan, spent most of the month of March in Britain meeting importers and users of tungsten. **Cairo Fair**—China participated in the Ninth Cairo International Fair March 7-27. According to Chinese reports, about 400,000 Egyptians visited the Chinese exhibit. **Australia**—An Australian group from the Australia-China Business Cooperation Committee arrived in Peking on March 22. Members of the group represented five industry categories—minerals and metals, finance and services, textiles and apparel, ma-

chinery and hardware, agriculture and rural products. And the Australian delegation to the China Australia Joint Trade Committee arrived on April 4 for the third session of the committee. **Law of the Sea Conference**—The fourth session of the UN Conference on the Law of the Sea, which opened in New York on March 15, was attended by a twelve-member Chinese delegation led by Lai Ya-li. **Ethiopia**—A delegation from Ethiopia, led by the chairman of its Government Economic Committee, visited China in mid-March. **Visit to Sweden**—Li Suo-yao led a CCPIT delegation to Sweden the first week of March to study that country's ship auxiliary-machinery capability. **British 48**—The British 48 Group has been invited to hold an advance technology exhibition and seminar in Peking in October. The Chinese especially requested displays of electronics and test systems in television, radar, high precision testing and monitoring and control in industry. **Aero-engine Conference**—A six-member delegation from China's Society of Aeronautics led by Wu Chunghua, attended the third International Aero-engine Conference in Munich, arriving on March 5. **Insurance Group**—The Vietnamese Insurance Company hosted a delegation from China's People's Insurance Company February 27-March 11. **Tungsten Group from Bolivia**—The Tungsten Producers' Association of Bolivia met with China's Vice-Minister of Foreign Trade, Chai Shu-fan in Peking during the group's February 9-12 visit. **Canada**—Canada's Assistant Deputy Minister of Industry, Trade and Commerce led a delegation to China, arriving on February 15, to attend the third session of the Sino-Canadian joint trade committee. **Mali**—Mali's technical counsellor of its Ministry of Finance and Commerce led a trade delegation to the PRC, arriving on February 19. **Zaire**—A trade delegation from Zaire visited the PRC in February, returning home on the 27th. **Weathermen to Australia**—Chinese weather researchers spent three weeks in Australia in February studying tropical cyclone and flood forecasting. **Plasma Study Group**—On February 6 a Chinese plasma study group left for a meeting in Japan with the Plasma Research Institute of Nagoya University. **Science Group in Mexico City**—A mission from the Chinese Academy of Sciences left Mexico City on February 25 after a month's stay during which the group studied remote sensing techniques in accordance with the 1975 China-Mexico protocol on Scientific and Technical Corporation. **Trade Fair in the Philippines**—Plans are under way for a Chinese trade fair in Manila in October, according to an April report. A March 28 dispatch from Peking announced the departure of a trade delegation from the PRC's Ministry of Foreign Trade for the Philippines. **Exhibit in Kobe**—Press reports from Japan reported the opening of a PRC exhibit in Kobe City on March 28. The exhibits were mainly produced in Tientsin and included industrial and agricultural displays and arts and crafts. **Science Delegation to Thailand**—On March 5 a delegation from the Scientific and Technical Association of China left for home following a three-week visit to Thailand at the invitation of the Scientific Society of Thailand. **British Concrete Makers**—At the invitation of the Chinese Architectural Society, a delegation from the British Concrete Society arrived in Peking on March 19. On March 24 the group left for a tour of other parts of China before returning home. **French Exhibit in China**—Thirty-thousand people attended the French exhibition of industrial and scientific communications and telecommunications in Peking according to China sources. The exhibition was held March 19-27. **Japanese Chemicals Mission**—Representatives of the ammonium sulphate and urea industry in Japan, led by the Chairman of the Ammonium Sulphate Industry Association, visited China March 16-21 at the invitation of the China National Chemicals Import and Export Corporation. **Leipzig Fair**—According to reports from China, the Chinese pavilion at the 1976 spring Leipzig Fair, March 14-21, received more than 400,000 visitors. **Large Dams Commission**—A delegation from China attended the Twelfth Congress of the International Commission on Large Dams which opened on March 29 in Mexico City. Twenty-five hundred delegates from 65 countries were present. **Offshore Facilities: Netherlands**—China's Vice Minister of Foreign Trade, Yao I-lin, met with the Netherlands' technical off-shore facilities mission during the group's visit to Peking in mid-March. **Algerian Transport Mission**—A maritime transport delegation of the Algerian Government toured Peking, Tientsin, Nanking, Shanghai during its visit to China which ended on March 21. **Belgian Chemicals**—A delegation from Belgium's Association of Chemical Industry arrived in Peking on March 15 to meet with representatives of the CCPIT, the China National Import and Export Corporation and other concerned departments, as well as China's Vice-Minister of petroleum and chemical industries, Tao Tao. On March 21 the Belgians left Peking for visits to Tientsin, Shanghai and Canton before heading for home. **Sino-Yugoslav Committee**—China's Vice-Minister of Foreign Trade, Chen Chieh, led a Government trade delegation to Belgrade, Yugoslavia, for the first session of the Sino-Yugoslav Joint Trade Committee which began on March 24. **Bank of China**—A five-member delegation from the Bank of China, led by its Vice-Chairman of the Board of Directors, left Peking on March 30 for a tour abroad to include Canada and Mexico. **Yugoslav Tools in Peking**—The Tools Association of Yugoslavia along with the Fedelektro Export-Import Enterprise of Sarajevo conducted a tools exhibition in Peking April 1-10. The exhibition represented 14 Yugoslav machine-tool manufacturers and displayed various kinds of drills, cutters, spiral drills and electrical tools. According to Yugoslav sources, China buys up to $1 million worth of machine tools from Yugoslavia each year. **UN Commission**—A delegation from China attended the 32nd session of the United Nations Economic and Social Commission for Asia and the Pacific in Bangkok, Thailand. The delegation returned home on April 6. **Railroad Know-how**—On March 8, a Chinese delegation arrived in Britain at the invitation of Hawker Siddeley to discuss the purchase of railway locomotives. The Chinese are reportedly interested in a know-how agreement with Brush Electrical for the manufacture of diesel electric freight traction equipment in 2,000 to 6,000 hp, an agreement which might also involve GEC and Alfred Herbert. **Malaysia at the Fair**—Malaysia sent a 171-member trade mission to the Canton trade fair in the hope of buying about 50 million ringgit worth of goods, according to Malaysian pres reports. **Bangkok**—The Chinese Trade Fair in Bangkok, Thailand, which opened on March 25, occupied the entire Bangkok Bazaar (40,000 sq. ft.) with more than 1,000 exhibits. The Fair is believed to be the largest ever held in Thailand and according to one report, the displays of over 5,000 items ranged from farm tractors to lace doilies, and included

a large oil exhibit. The Chinese and Thais have held discussions on the sale of Chinese crude oil, but Thailand's refinery is still unable to handle the heavy wax properties of the Chinese crude. **Offshore Conference**—A Chinese delegation attending the first Southeast Asia offshore conference in Singapore met privately with the British delegation to discuss the possible purchase of Rolls-Royce engines for oil exploration and drilling, according to a British report on February 22. **Oil for Machinery**—Italian industrialists have discussed with Peking the exchange of industrial machinery and products for Chinese oil, according to a February 16 report. **Arts and Crafts in Wellington**—A Chinese arts and crafts exhibition opened in Wellington, New Zealand, on February 11. **Saskatchewan**—Saskatchewan's Premier Allan Blakeley visited China in May with hopes of boosting sales of Saskatchewan potash to China which, according to the March report, have dropped in recent years. **Egypt**—According to an April 6 report from Cairo, a high-ranking Egyptian delegation is expected to visit China soon to discuss military and trade cooperation. **Steel Group visits Britain**—A five-member team from the PRC's Anshan Steel Co. spent two weeks in England studying British steelmaking methods. According to an industry journal, the group exhibited particular interest in the installations being built by Gibbons Brothers Ltd., at Redcar. The Gibbons plant is the first major plant in Europe to adopt the Coaltek process for preheating and pipeline charging of ovens. **Agricultural Equipment Exhibition**—Japan will hold an agricultural equipment exhibition in China sometime in 1977. **Animal Health**—At the invitation of the PRC's Ministry of Agriculture and Forestry, an Italian veterinary delegation, led by Italy's general director of veterinary service of the Ministry of Health, arrived in Peking on February 14.

AGREEMENTS

Albania—On February 7 China's Minister of Foreign Trade, Li Chiang, led a delegation to Tirana in Albania to sign a 1976 goods exchange and payments agreement with the Albanian Government. **Nigeria**—An agreement has been signed by Nigeria and China for the development of three rice projects covering about 1,000 hectares in Nigeria, according to an April report. **North Korea**—On February 9, in Pyongyang, China and North Korea signed a 1976 protocol for goods exchange. **Algeria**—China will assist Algeria in breeding silkworms, popularizing grain and market garden production, and establishing a fish-breeding center under terms of three agreements initialed in Algiers on January 24. **West Germany**—On March 13, West Germany announced agreement with China on technical and scientific cooperation. The agreement is significant, particularly in that it represents a departure from China's policy to extend its network of scientific and technical cooperation agreements to include a free-market economy, and also because of the nature of areas selected for cooperation and the extent of direct contribution to Chinese industrial development entailed. The agreement provides for: an exchange of delegations in coal research and technology, preparing the way for long-term cooperation in coal mining and processing techniques as well as in automation based on data processing; a further and more specialized exchange of visits by foundry and steel technology experts to follow up the cooperation already begun with the supply of a big cold strip mill and a continuous casting plant for the enlarged steel complex at Wuhan; an exchange of delegations during the next six months on oil and natural gas extraction and processing; the initiation of joint research projects in the use of atomic energy; and the implementation of the Chinese decision on the offer of free participation for a trial period in the West German/French Symphonie telecommunications satellite, conveyed to China by West Germany's Research and Technology Ministry; and an intensification of the exchange of experience taking place between the two countries in the medical field, principally pharmacology, acupuncture, microsurgery and cancer research. **Ghana**—On March 3 Ghana and China signed an agreement and protocol under which the two countries will exchange 14 million cedis worth of goods each. Ghana will buy Chinese cotton yarns, chemicals, ferrous and non-ferrous metals, textile machinery, building materials and paper. China will buy Ghana's timber, both logs and processed; cocoa beans and products; coffee and tobacco leaves. **Cambodia**—Cambodia and China signed an economic cooperation agreement in Phnom Penh on March 11. **Romania's Agreements**—Romania and the PRC signed a marine shipping agreement in Peking on April 8. And under the new 1976 trade agreement between the two countries, China will import from Romania drilling rigs, lorries, diesel-electric locomotives, wagons, bearings, and machinery and will export machine tools, chemicals, ferroral toys, metallurgical coke, rice, food products, cotton, textiles and other commodities. **Hungary**—A trade and payments agreement signed by Hungary and China on March 6 calls for increased trade between the two countries, with Chinese purchases from Hungary to include various types of machines, machine tools, telecommunications equipment, portal cranes, lorries.

INSURANCE

Insurance follow-up . . . appropos UCBR's article on the People's Insurance Company of China (PICOC) in our last issue, it has been learned that the premium income of PICOC is estimated at $100 million, of which about 50% is reinsured abroad. The ten outward treaties of the PICOC are Marine Cargo quota share, Marine Cargo first surplus, Marine Cargo second surplus, Marine Cargo third Surplus, Marine hull facultative obligatory cover, Marine cargo retrocession treaty, Fire retrocession treaty, Aircraft facultative treaty, and Godown retrocession treaty. The over-all loss ratio of the PICOC is thought to be between 50% and 60%. Since all internal properties are not insured, further growth of PICOC's premium income is contingent upon increased foreign trade.

CORRECTION

In UCBR Vol. 3 No. 2: p. 6, the caption should have read 6,000 ships; p. 7, in italics, February 1975 should read April 1976, and Irwin Heine is a consultant to, not a member of, the National Maritime Council; p 11, left column, "for 24,000-50,000" read "24,000-25,000 dwt;" p. 15 right column, line 25 should read "(about three million dwt);" p. 16, Ocean Transport should read "Ocean Tramping;" and p. 17, right column, line 33 should read "1985." On page 31, the oil figure should have read 9.1 million kls. UCBR apologizes for these errors. 完

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FULL MEMBERSHIP

Membership in the National Council for United States-China Trade is open to American firms interested in doing business with the People's Republic of China. The principal categories of membership are (1) corporations or business entities with sales or gross income equal to or greater than $50 million for the fiscal year immediately preceding the date of application for membership, for whom the annual dues are $2,500; (2) those with sales or gross income of between $20 million and $50 million for the fiscal year immediately preceding the date of application for membership, for whom the annual dues are $1,000; and (3) those with sales or gross income of less than $20 million for the fiscal year immediately preceding the date of application for membership, for whom the annual dues are $500.

IMPORTERS AFFILIATE MEMBERSHIP

In a special effort to assist smaller American firms interested in importing goods from China, the National Council has a special category of affiliated membership. Companies engaged primarily in importing, and having sales or gross income of less than $10 million in the year immediately preceding the date of application for membership, may join the National Council upon payment of annual dues of $250.

Importers in the National Council constitute a special committee whose activities are designed not only to acquaint importers and potential importers with Chinese manufacturing, sales and trading practices, but also to aid the Chinese Foreign Trade Corporations in understanding the import regulations, consumer tastes and other market conditions in the United States.