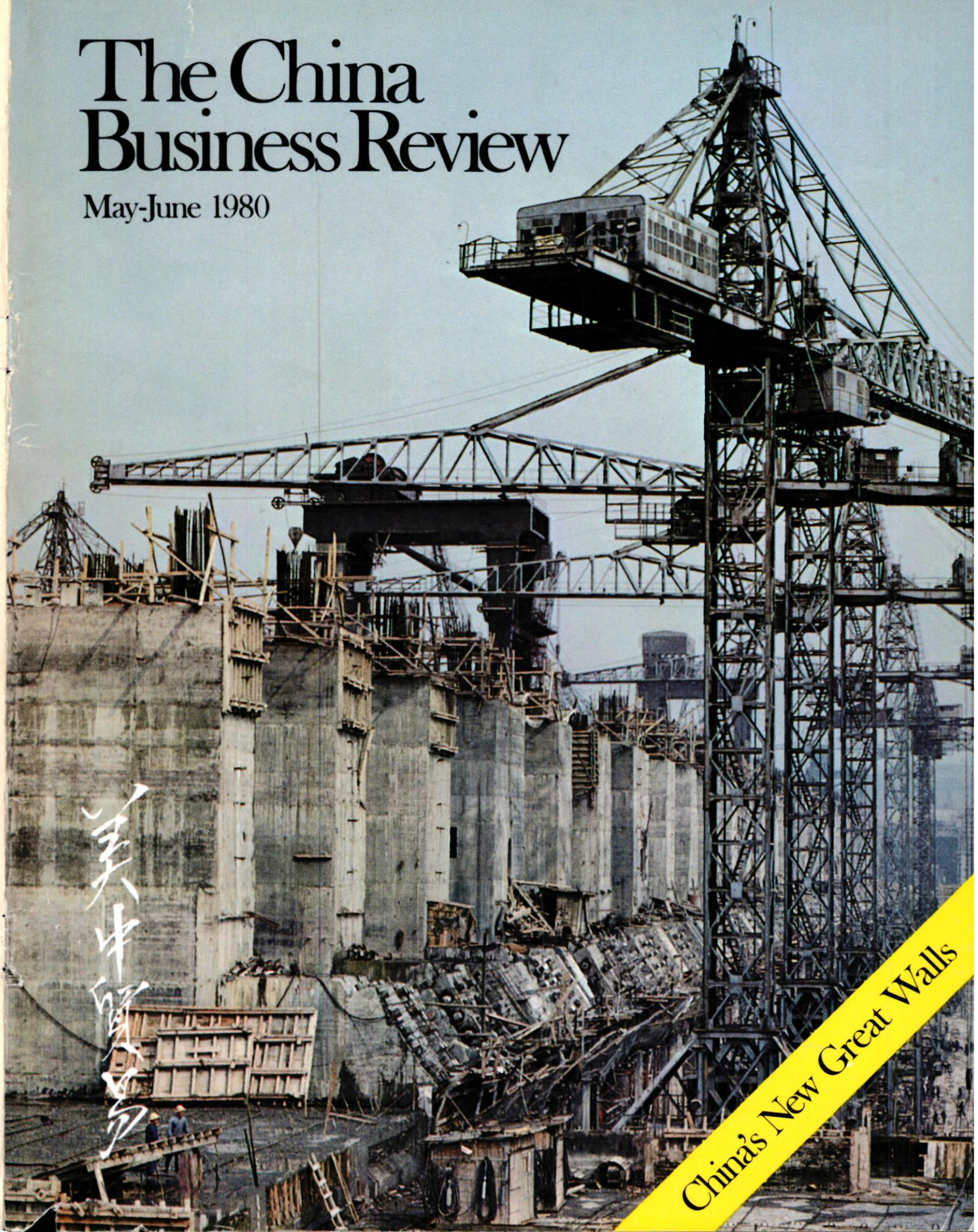
The China Business Review

May-June 1980



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The National Council for United States-China Trade is grateful to His Excellency Huang Zhen, Minister of Culture, The People's Republic of China, for the calligraphy on the front cover of THE CHINA BUSINESS REVIEW.

China Calendar

PORT CHESTER, New York, May 5–6

A seminar, on "Doing Business with the People's Republic of China," sponsored by Business International Institute, was held in the Rye Town Hilton. Conference papers covered China's modernization program, buying priorities, and marketing channels. Write Business International Institute, One Dag Hammarskjold Plaza, New York, New York 10017.

DENVER, Colorado, May 8

A conference on "Health Care in Contemporary China," presented by the Colorado China Council of the Asia Society of New York, focused on issues of health care and medical practices, both traditional and modern. Write Alice Renouf, Director, Colorado China Council, Office of International Education, University of Colorado, Campus Box 123, Boulder, Colorado 80309.

WASHINGTON, DC, May 13

The US Department of Commerce sponsored a seminar on "Doing Business with the People's Republic of China." Speakers discussed trade prospects, investing in China, and the special economic zones in China. Conference papers available from People's Republic of China Division, US Department of Commerce, Washington, DC 20230.

SAN FRANCISCO, California, May 15–16

The Federal Bar Association sponsored its second annual US-China Trade Law Conference at the Stanford Court. Program included panels on economic and political aspects of US-China trade. Conference papers available from Secretary, Federal Bar Association, 1815 H St., NW, Suite 420, Washington, DC 20006.

BUFFALO, New York, May 22

Norman Getsinger of the National Council addressed the Tri-Cities Trade Conference on "Existing/Potential Business Opportunities with the PRC," sponsored by the Buffalo World Association. Topics included Sino-American commercial relations; financial prospectives; the Four Modernizations; and businessmen's overview: beginning, present, future. Call (716) 846-4191 for conference papers.

WASHINGTON, DC, June 4

The National Council held its Seventh Annual Meeting at the Mayflower Hotel.

MIAMI, Florida, June 7

Nicholas H. Ludlow of the National Council gave a talk on the economic performance of China at a seminar sponsored by World University-Miami. Call (305) 871-3324.

KILCHBERG-ZURICH, Switzerland, June 9-10

Zentrum für Unternehmungsführung is the organizer of a conference on "China's New Economic Strategies." Topics included China's development policies, economic legislation, and foreign trade. Write Zentrum für Unternehmungsführung (Management Center), Dr. F. Haselbeck, Schulstrasse 7, CH-8802, Kilchberg-Zurich.

OCONOMOWOC, Wisconsin, June 10–11

Norman Getsinger spoke at the Construction Equipment Manufacturers Outlook Conference, sponsored by the Farm & Industrial Equipment Institute. He focused on the outlook for industrial and construction equipment sales to China. Conference papers available by writing Farm and Industrial Equipment Institute, 410 North Michigan Avenue, Chicago, Illinois 60611.

WASHINGTON, DC, June 15

Sheldon Segal, director, Population Division, Rockefeller Foundation, gave a lecture entitled "One Billion People?" The meeting was sponsored by the Washington Center of The Asia Society and cosponsored by the Overseas Development Council. Call (202) 387-6500 for transcribed lecture.

WASHINGTON, DC, July 1

A slide-lecture by Robert Bagley, a specialist in China Bronze Age art and archaeology, will be offered by the Smithsonian Resident Associate Program. Dr. Bagley's lecture on "Masterworks of Bronze Age China" will discuss the works currently on exhibit at the Metropolitan Museum in New York. Call (202) 381-5157.

WASHINGTON, DC, September

For the first time in North America a troupe of puppeteers from Fujian Province, China, will tour the US under the auspices of The Asia Society. Performances will be held in Washington, DC, during the second week of September. For further information contact The Washington Center of The Asia Society, 1785 Massachusetts Avenue, Washington, DC 20036. 完

China Wire

Finally, Exim for Sales to China

The US Exim Bank has approved its first preliminary commitment for a sale to China, of about $80 million worth of American technology for the Baoshan steel complex. The PC, arranged in May with Wean United, was concluded in agreement with the Bank of China. Without US Exim support, Wean and the other US firms involved would have been dropped from the final contract (See page 49).

According to a June 4 statement by Raymond J. Albright, Vice-president of the Exim Bank at the Annual Meeting of the National Council for US China Trade, American suppliers have notified Exim of some 35 projects which could involve potential import purchases by China of some $11 billion. Exim promises fast action where necessary, and will definitely live up to its August 1979 commitment by Vice-president Mondale to make $2 billion available over the next five years.

Up to 65 percent of the export value of a transaction can normally be supported by the Exim Bank, at a rate of 8.75 percent; but if commercial banks can provide a portion of the financing at the same rate, Exim will match the share contributed by the commercial bank, thus increasing the total proportion financed at competitive rates. Technical and economic talks were held between Exim and the Bank of China in early June.

Sino-US Trade in 1980—Over $3 Billion

Total US-China trade this year may reach between $2.7 billion and $4 billion, according to National Council projections. Almost certainly two-way Sino-US trade will pass the $3 billion level, following last year's $2.3 billion (which represented about eight percent of the PRC's total trade).

In the first three months of 1980 cotton was by far the leading US export to China, after ranking number one for all of 1979. Interestingly, although total Sino-US trade was almost $1 billion in the first quarter, the average monthly rate of imports from China was less than the rate in December last year, despite MFN effective February 1.

Last year's trade with China did not make much of a dent in total American trade: US imports from the PRC in 1979 represented 0.29 percent of US imports, exports to China 0.95 percent of total US exports, and China trade 0.60 percent of total US trade (See pages 32-33).

US Relations with China Turn a Corner

The US will, henceforth, develop relations with China on their own merits, said Assistant Secretary of State Richard Holbrooke to the National Council's annual meeting on June 4. Said Holbrooke, "The famous triangular diplomacy of the early 1970s is no longer an adequate conceptual framework in which to view relations with China." On dual-use technology, Holbrooke stated, "We do not sell arms to China, or engage in joint military planning arrangements with the Chinese. The current situation does not justify our doing so. Neither we nor the Chinese seek such an alliance relationship. Nevertheless we can and will assist China's drive to improve its security by permitting appropriate technology transfer . . ."

Latest from China—Backlash in Guangzhou

The Bank of America is among the advertizers in Shanghai's latest telephone directory, and other Western clients have ads too. But opposition to Western influence reached such a point in Guangzhou that on May 17 the municipal authorities ordered reception of Hong Kong TV broadcasts cut off, closed down commercial dance halls, and called for a halt to unlicensed commercial activities, reports CBR's Edith Terry. Foreigners were exempted from the rules, so that Dongfang residents were able to watch "From Russia With Love" on a Hong Kong channel a few days after the ban.

China Sells First Patent to Foreign Firm—Occidental Petroleum

May 13, the China National Seed Corporation disclosed that it had sold a "patent" on Chinese rice hybridization to Ringaround Products, a California based subsidiary of Occidental Petroleum, in March of this year. This was the first time China ever sold an agricultural "patent" to a foreign country, even though China itself has no patent law as yet, and is not signatory to the Paris Convention. But examples of technology being sold abroad by the PRC are beginning to mount. They include machine tools, three water impulse turbine generators (total 600 kw) manufactured by a Sichuan plant, and a pesticide applicator. If China has technology to sell, plenty of American companies will be interested in buying.

China's Difficult Choices in the 1980s

China's planners have some critical choices to make in their budget planning in the 1980s, particularly concerning the share of defense to be included in modernization. In 1980, defense will account for 25 percent of the PRC budget—18 percent direct, seven percent included in non-defense related ministries. The Chinese are now shopping for a wide variety of military support equipment in Europe and the United States, as if exchange allocations are already set for purchases in the next five years.

Already scheduled for test flights in September is China's Y-10, which is 20 tons lighter than, but very similar to, the Boeing 707 (see p. 58). Production of the Y-10, first proposed in 1970 during the Cultural Revolution as a way to reduce reliance on foreign aircraft, will be in Shanghai at a now-idle factory. If the first test flight in Xian is successful, China's F-8 jet fighter (similar to the Mirage 2000, powered by a 910 turbofan engine) is due to start serial production in Shenyang by the end of the year.

With these kinds of investments ahead, the question is: How can China pay? The nation's trade deficit during 1978 and 1979 totalled $3.1 billion, an unusually large deficit at a time when the PRC is preparing to set a Five-Year Plan in motion. China's net position on the eurocurrency market also has fallen to $400 million or so, as of December last—way down from the $2 billion in September 1978.

Allocating scarce resources, and organizing optimal use of those resources, will be a major preoccupation of China's senior officials in the months to come. NHL

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CBR Interview with Ambassador Woodcock

Ambassador Leonard Woodcock has seen the American relationship with Beijing develop and expand from an especially intimate perspective. He personally negotiated diplomatic normalization of relations with China on behalf of President Carter in 1978, and has personally witnessed the fruits of those negotiations. America's Man in Beijing now leads one of the busiest lives of any US representative abroad. CBR*'s Editor Nicholas H. Ludlow and Managing Editor James B. Stepanek interviewed Ambassador Woodcock on April 3, 1980, about life in Beijing and his view of future Sino-US economic relations.*

Impact of the Sino-US Trade Agreement

CBR: What have you seen of the impact of the Sino-US trade agreement in Beijing?

WOODCOCK: The significance of the trade agreement to the Chinese is bringing most-favored-nation treatment into action. It hasn't had that much impact to date on the interchange with regard to business. And its beneficial effect over time is going to be fairly limited.

I look for a growth of two-way trade, and that dependent very much on its being two-way. We must look at the things we are willing to buy from China as well as to sell to China. This is where MFN is helpful. But I think the growth will be slow and gradual because the big breakthroughs that possibly could take place in minerals and in oil have long lead times attached to them.

Last year our two-way trade was $2.3 billion, heavily in favor of the US. I am pleased that more and more American businesses are seeking ways in which to help balance this flow.

CBR: What kind of opportunities have you seen developing for American companies in China? What do you tell American companies?

WOODCOCK: Well, I encourage them to stay on the course. It's currently quite difficult; it takes a lot of patience. And the opportunities are somewhat limited because of China's shortage of foreign exchange. But those companies that work with the Chinese during this period certainly will stand to benefit after the corner is turned, and I'm convinced it will be in a few years from now. A company can look upon this period as a period of investing for the future.

CBR: Could you comment on the Sino-US exhibitions this fall?

WOODCOCK: So far as China's exhibition in the US is concerned, I think there are many attractive wares, in the arts and crafts categories in particular, to which the American people have not generally been exposed. That is in areas where we don't have the competition problem as we do in textiles. I'm very much hoping that the exhibition will be very successful in terms of attendance and interest. And I think it can be. And that can give a very definite upward movement to the trade by exposing areas where not too much trading now is being done.

CBR: How about the US exhibition here?

WOODCOCK: That is in November. Our emphasis there will be on heavy goods. Our exhibit will consist of high-ticket expensive items. The Chinese, in their show, will be obviously much lower in cost, which tends to emphasize the difficulty of balancing out of Sino-US trade on a fair basis. I know that the American exhibit will be very well put together and, I think, will be very successful.

Americans in China

CBR: How many American business executives and tourists are now visiting China?

WOODCOCK: Well the total number of Americans was 30,000 in 1979. Most of those were obviously tourists, but the number of business people was several thousand and included many S&T types. So, of that several thousand, several hundred would probably fall into that category.

CBR: There has also been an increasing number of state-to-province delegations. Three from Massachusetts, Delaware, and Pennsylvania have just been here.

WOODCOCK: The Massachusetts trade delegation is headed up by Lieutenant Governor Tom O'Neal. In fact, that's where I was this morning. Mississippi, Kentucky, and Alaska have been here; Ohio has received two provincial delegations from Hubei; and Michigan had a metal-working delegation. About a third of the states have been here. Seven governors came at once, representing the Governors' Conference.

CBR: How many Chinese provinces have been to the states or have begun forming relations?
WOODCOCK: Six or seven. Not all of them have been to the states.
CBR: Do you see this trend continuing?
WOODCOCK: Yes, there is a great interest on the part of the Chinese. They seem quite excited about it. And we're also developing city relationships. San Francisco and Shanghai, Philadelphia and Tianjin, New York and Beijing. There are a lot of university relationships. Twelve to fifteen, I think, are either in being or in formation. One of the difficulties is that, as you may know, Chinese universities don't have the wide range of disciplines that ours do. So that to have a balanced relationship you need more than one.
CBR: The whole Sino-US relationship is deepening on many fronts.
WOODCOCK: No question about it.

The Embassy in Beijing

CBR: How has the work at the embassy here been affected by normalization of relations?
WOODCOCK: Before normalization, our relationship with the Chinese officials was quite narrow. We always had to work through the protocol section of the foreign ministry. After normalization we began to widen our contacts and they continue to widen all the time.

Before normalization, for example, there were not too many Chinese who would come to the residence for social functions. Now not a week goes by when we don't have one or two, and sometimes three or four, Chinese counterparts to functions for visiting American delegations, or Chinese groups that are going to the US. In the governmental, educational, and cultural areas the relationship has expanded far beyond, very frankly, how I thought it would expand in a relatively short time.
CBR: Are there plans to expand the embassy?
WOODCOCK: There are plans but no apparent sense of urgency. We had on our staff, at the time of normalization, 33 Americans. There are currently 61. Four more are coming, which brings us to 65. About three weeks ago I had to notify Washington that as ambassador I could not approve any further additions to the staff because of lack of housing and lack of office space.

To put that into perspective, after Islamabad (the burning of the US embassy in Pakistan) our staff was cut down there because of the problems. It was cut to about what was said to be a bare minimum; that number was 70.

Some of our people here work a lot of hours per week because of the shortage of our staff. But we will have to wait till we can see some solutions, particularly to the housing problem. Of the present 61, we have 19 in a hotel. Many of them have been there more than six months. There is a new apartment building opening up to foreigners in a couple of months. And another one will be two or three months behind that. We have already been allocated eight apartments, but will still be fifteen short after our staff reaches a ceiling of 65. So at any given time we will have 15 people in the hotel, which is a demoralizing factor.

We submitted to the Chinese last October a request for a land site for a permanent embassy, with enough space for an American school, which is another big problem we have here, and a separate residence.. We also submitted some proposals for staff housing, but have had no response. That solution is years down the road.

As far as our consulates are concerned, in Shanghai we have been treated very well. We have an excellent building for the consulate general, and beautiful grounds. And we have been assigned adequate housing for our initial staff.

In Guangzhou, both the consulate and the housing are all in the Dongfang Hotel. They have offered us two sites, both of which we rejected as being inadequate. A building or a site on which we could possibly build our own consulate has not been forthcoming. They will be in the hotel in Guangzhou indefinitely at this point.

Facilities for Business

CBR: What kind of facilities do you have here for business?
WOODCOCK: At present we have some audiovisual equipment which we loan out. We have several officers who are available to give advice and assistance, and two secretaries. We have some storage facilities for business persons going out of the country and coming back later.

We had to close down the little office and reference library we had for business people, because of the tremendous space problems that I referred to earlier. We will assist firms by making appointments if necessary. We transmit messages for them to Chinese officials and send back a lot of messages.

We do permit firms to use our photocopy machines. In a three-month period, I think there were 70,000 copies made. An incredible number.

In Shanghai we have commercial offices. Both consulates will support business people through their regular employees.

Lately, an interesting development has been that Chinese officials have been asking our commercial staff for specific information, either about American firms or American products. Where we know the firm, we have been contacting them directly. Otherwise, we can go to the Department of Commerce to contact the firm. Hopefully, this will lead to some business.

A Typical Day

CBR: How does a typical day go for you?
WOODCOCK: There is no typical day. Visits take place all through the day and people have to be scheduled to fit in with the schedules of the visiting delegations, or whoever, so that there is no such thing as saying, "Every morning I work at my desk." It doesn't work like that.

I normally get up at 6:15, go out and get my exercise around the park, then get back and listen to Voice of America. I usually do quite a bit of reading after breakfast, before I go out front.
CBR: Is that six days a week?
WOODCOCK: Yes. Officially the embassy is closed on Saturday but most everybody is there.

I spend several hours at the desk, running through all the cable traffic and incoming-outgoing mail, all the reading that's required. Practically every evening now, at about 5:00 or 5:30, we have a briefing for American groups, either by the political section or economic section, depending on the composition of the group.

Then we have what we call a reception, which is more of a social occasion. There is a lot of interchange, which nowadays is always on a bilateral basis; that is to say, the

Chinese are always involved, where before normalization that didn't happen as often. Receptions would be for Americans only.

There has been one other big change from pre-normalization. Previously, I went to many diplomatic dinners in other diplomatic communities. Now, I almost never go anymore because the evenings are preempted by dinners with visiting Americans and other functions. That's been a big change.

There is one nice thing about the receptions; thanks to the Chinese, they last only one hour. They begin promptly at 5:30 and end promptly at 6:30, which is a blessing. And, of course, the dinners in which the Chinese are involved are not more than approximately two hours, so that in Beijing the evenings end early. They go to bed early, they get up early.

progressed to that point for me as it has for some of the embassy staff. I think it will come: to be able to say to someone, "Why don't you and your wife come to dinner?"

CBR: What do you do in your leisure time?

WOODCOCK: Well, when we have a free evening we are just happy to spend it at home. We use the time for reading and listening to music. We often watch Chinese television.

CBR: I noticed the piano there; do you play the piano?

WOODCOCK: No, but we have had some [pleasant occasions] because of that. Two American pianists, Walter Hautzig and Daniel Pollack, and violinist Isaac Stern were here to perform. When, for example, Isaac Stern heard that some of the diplomats were having trouble getting tickets to the concerts, he asked me if I would mind arranging a concert here for the diplomatic community.

". . . those companies that work with the Chinese during this period certainly will stand to benefit after the corner is turned, and I'm convinced it will be a few years from now."

Our record for banquets was 14 nights straight. That was last spring when there was a briefing or reception or dinner every night. Usually these take five or six nights every week. We try to keep Sunday clear but that isn't always possible.

At Thanksgiving time, those of us who have apartments big enough have over those who are staying here at that time from the business community or American teachers and students. Last Thanksgiving dinner we had 61. We had a wonderful time.

CBR: What other things do you do with the American community?

WOODCOCK: Well, we have now formed the American Club. It's only just begun. I spoke at the first official meeting. Their next event is a luncheon for a congressional delegation headed by Congressman Bingham. That will bring us together more. We try to keep in contact with the American community, generally.

CBR: How many people are there in the American community?

WOODCOCK: It is hard to say; there are about 50 businesses with offices and they rotate the people in and out. There are about 50 students right now and there will soon be a few more. There are more than 200 Americans in the whole country, including some living here as "foreign experts." Plus the embassy staff and their dependents, so the total would be about 300 or more.

Personal Life

CBR: What is your personal view of life here?

WOODCOCK: Well, it's been such an exciting period in the little more than two and a half years that I've been here. There is so much happening, seeing the expansion of the relationship and the deepening of our relationships. The Chinese are such a likable people. My wife and I have thoroughly enjoyed it. We don't feel any deprivations. We have really enjoyed it.

Relationships with the Chinese, certainly at my level, have always been on a formal basis. I don't mean that you can't have an informal relationship, but it has not

We were delighted to have the concert here—that too was a memorable evening.

CBR: Have you traveled much in China?

WOODCOCK: During the first year I was here, I did a great deal of traveling because there wasn't that much to do. However, beginning in July of 1978, when we began serious negotiations working toward normalization, I didn't leave Beijing for five months, except to go to the States. Since normalization, the opportunities for traveling within the country have not been very plentiful.

CBR: Do you go out for entertainment here in Beijing?

WOODCOCK: No, unless it's part of something official, not very much. Of course, we get some movies which we show here.

CBR: What things about China have impressed you most?

WOODCOCK: When you consider that China is a country about the same size as ours, with five times as many people as we have, I think they have done a remarkable job in managing themselves as well as they have. Particularly in terms of agriculture and their ability to provide as much of their own food needs as they do. That very much impressed me. The Chinese are extremely intelligent people. They have a great future.

With the apparent resources and the known resources they have in minerals, coal, and petroleum, they can solve some of the great economic problems they have. And they are recognizing the problems—a first step toward finding solutions. They are willing now to experiment with economic forms, to find better answers. I think they are pragmatic by nature and they'll find the answers.

CBR: What are your views on the future role of the National Council?

WOODCOCK: I would think there will always be a substantial role for the National Council as I see it personally. There are so many times when a nongovernmental approach can be more easily managed than a governmental approach. An institution like the National Council keeps in close touch with the US government and its programs and needs. It has an extremely useful role to play. 完

Council Activities

The Council's seventh annual membership meeting convened in Washington on June 4. The Honorable Richard Holbrooke, assistant secretary of state for East Asian and Pacific affairs, made the keynote address. Beginning the next day, a Council-sponsored Bank of China delegation commenced its tour of eight cities with the first formal meetings in the United States between the Bank of China and the IMF, World Bank, and US Exim Bank.

Presiding over the annual meeting was Council Board of Directors Chairman John C. Brizendine, president of Douglas Aircraft Company. The featured speaker, Assistant Secretary of State for East Asian and Pacific Affairs Richard Holbrooke, discussed the future of US-China relations.

Other guest speakers included Raymond J. Albright, vice president of the US Export-Import Bank; K.P. Wang, a specialist on China's mineral resources; Professor Allen S. Whiting, who discussed recent political developments in the PRC; and Dr. Amos A. Jordan, executive director of the Georgetown Center for Strategic and International Studies, who spoke on the "Potential for Dual Technology Exports to the PRC."

PRESIDENT'S REPORT

Council President Christopher H. Phillips's address to the annual meeting surveyed the year's events giving rise to the expansion of the Council's staff from 38 to 46, which now includes a staff member permanently stationed in Beijing, and summarized the fruits of his recent visit to China as guest of the CCPIT.

In addition to high-level meetings in Beijing with the State Economic Commission, State Capital Construction Commission, Ministry of Foreign Trade, and the CCPIT, Mr. Phillips held extensive meetings with municipal officials in China. The mayor of Beijing, Lin Hujia, and vice mayor of Shanghai, Han Zheyi, discussed the opportunities under China's new decentralization policies for direct trade negotiations between foreign companies and China's cities and provinces.

Even at this initial stage of expanding and strengthening contacts at the local level, Phillips encountered widespread familiarity on the part of municipal officials with the Council's objectives and activities. Phillips also reached agreement in principle with the CCPIT that two to three Council-sponsored exhibitions would be held in China during 1981–82.

NEW DELEGATIONS

The Delegations Department has arranged 14 delegations thus far in 1980 (6 from China, and 8 to China), with at least 9 more confirmed for later this year. The Bank of China delegation, which arrived the day after the annual meeting, held two meetings with Exim Bank officials in Washington and will meet with member banks in the US through July 3.

A State Capital Construction Commission delegation is arriving on July 12, led by SCCC Vice Chairman Lu Kebai. A delegation led by Vice Premier Bo Yibo will arrive on September 5, followed by a Ministry of Construction Materials delegation led by Minister Song Yangchu. The Commerce Department will host the Washington portion of Minister Song's visit, scheduled for the first 20 days in October.

The Delegations Department's newest publication, a Chinese-language guide to Texas, was issued on May 6. The series also includes a Washington, DC, guidebook, and a possible forthcoming guide to San Francisco. Stephen Markscheid, formerly a free-lance escort officer in the Delegations Department, became a permanent Associate of the Department on June 2.

Importer Services has hosted 10 delegations of its own since January, according to Director Carolyn Brehm. The most important of these was the Chinese Pharmaceutical Industry Technology Study Team, led by the vice president of the China National Pharmaceutical Industry Corporation, Cao Yuqian. Since its arrival in Washington on May 14, it has held meetings with the Food and Drug Administration, toured facilities to learn about production technology, and discussed coproduction arrangements with several US pharmaceutical companies.

ENGINEERING COMMITTEE FORMED

The Council's Exporter Services now boasts 14 active committees, the newest being the Engineering, Design, Construction, and Related Services Committee. Thirty-one Council members attended the committee's charter meeting on May 13 in Washington, where guest speaker Ambassador Holsey G. Handyside recounted the highlights of his recent visit to China's hydropower installations. The committee is not engaged in equipment sales, but will endeavor to facilitate the sale of US engineering and construction services to China. Harold Sorensen, the senior vice president of Fluor Corporation, was elected the committee's first chairman.

RESEARCH ASSOCIATE WANTED

The Council's Publications Department is seeking a Research Associate/CBR Contributing Editor to research Chinese industrial, planning, and foreign trade organizations. Knowledge of PRC language and economy, and proven ability to articulate and summarize data desired. Statistical and computer experience useful. Please send resume and samples of work to Nicholas H. Ludlow, National Council for US-China Trade, 1050 17th Street, NW, Suite 350, Washington, D.C. 20036. Principals only.

STANLEY YOUNG TO LEAVE COUNCIL

Stanley Young, Vice President of the National Council since August 1, 1977, will be retiring from the Council at the end of August. Mr. Young worked for Exxon for over 37 years in Asia and Africa, which included over 27 years of assignments in China, Hong Kong, Japan, East Africa, Thailand, the Phillipines, Vietnam, and Pakistan. Upon his retirement in early 1973 he was General Manager for Esso Pakistan. He later served a year in Hong Kong as the Executive Director of The American Chamber of Commerce prior to joining the Council.

The Board and membership of the National Council expressed their warm appreciation to Stanley Young on June 4, 1980, in the following special resolution:

"Stanley Young has assumed a great deal of the day-to-day management functions of the Council, has been a valuable speaker on behalf of the Council, has established productive working relations with the China Council for the Promotion of International Trade, and has dealt with Council members with an even hand and an openness which, combined with his business skills, have enhanced the operations of the Council on all fronts. His continued availability as a consultant is much appreciated by the Council, to the same extent that it regrets his departure as a full-time Vice President."

The entire staff wishes Stan and his wife a happy retirement, and looks forward to his continued association with the Council as friend and advisor.

The new Vice President of the Council will be John R. Dewenter, a retired naval officer with extensive management experience who has been Special Assistant to Christopher H. Phillips since December 1978. Mr. Dewenter's position will be filled by Kenneth I. Bowman, previously Research Associate in the Council's Publications Department. 完

Stanley Young

Notes from Guangzhou 47

As more and more American businesses are gaining entry to the PRC, fewer are bothering with the biannual chaos of the Guangzhou Trade Fair. US attendance continued its decline at this spring's 47th fair, with only 600–700 American representatives from about 350 companies showing up to battle the crowds and uncomfortable conditions. Last fall's fair drew roughly 700 US business representatives from about 400 American companies (*CBR*, Nov.-Dec., p. 43).

Several factors explain the lower overall turnout of 21,000 business people, down from roughly 25,000 in the fall. Since the fair is open year round, some companies are going during the more relaxed winter and summer months. Moreover, as decentralization continues, more contracts are being negotiated between fair times by local branches of foreign trade corporations and by city governments (*CBR*, Mar.-Apr., pp. 14–25). The FTCs this year hosted a record-breaking number of specialized minifairs between January and April; in some areas, such as silk, they have even urged businesses to buy now to avoid possible shortages at the main fair. Also the increase in PRC selling delegations traveling abroad has reduced the need to display all the country's wares in one show.

Forty-four categories of export goods were conspicuously absent from the shelves this year: 14 grain and oil foodstuffs, 10 textile products, 10 minerals and metals products, 7 indigenous and animal products, and 3 light industrial products. In some cases the goods were either in short supply or already represented at the minifairs; in others the Chinese, like most foreign firms, have simply found marketing easier to handle through Beijing or by telex.

Invitations were severely restricted this year. Instead of being sent through the Washington embassy, they were mailed directly from Guangzhou, thus curtailing the embassy's previous practice of reissuing invitations that other firms declined. The new procedure allows the fair coordinators more control over just who should and shouldn't be invited to the event. But the long-distance mailings increase the lag time and margin for error. At least one American silk buyer learned *after* arrival that silk would not be available at the fair.

PRC figures indicate a limited amount of business conducted with the US. MINMETALS reports $5 million in sales to the US, including bauxite purchases totaling $21,500 (22,000 tons); barite $1,680,000 (530 million tons); graphite $240,000 (350 tons); nonferrous metals $790,000 (no tonnage reported); and arsenic $50,000. INDUSTRY reported sales of $3 million to the US, and SINOCHEM estimated a turnover of $20–25 million, most of which involved US exports to China.

Exhibiting at the fair for the first time were new trade corporations recently set up by ministries other than the Ministry of Foreign Trade, such as the China National Machinery and Equipment Import and Export Corporation (EQUIMPEX), and the Automobile Components Corporation, both under the First Ministry of Machine Building (see p. 35).

Participants at the trade fair once again scrambled for rooms at the nearby Dongfeng Hotel. Since renovations were completed early this year, the hotel boasts a new restaurant modeled after an English pub which serves Western food; a game room with an array of Japanese electronic games; and a chrome and glass shopping center featuring Chinese arts and crafts.

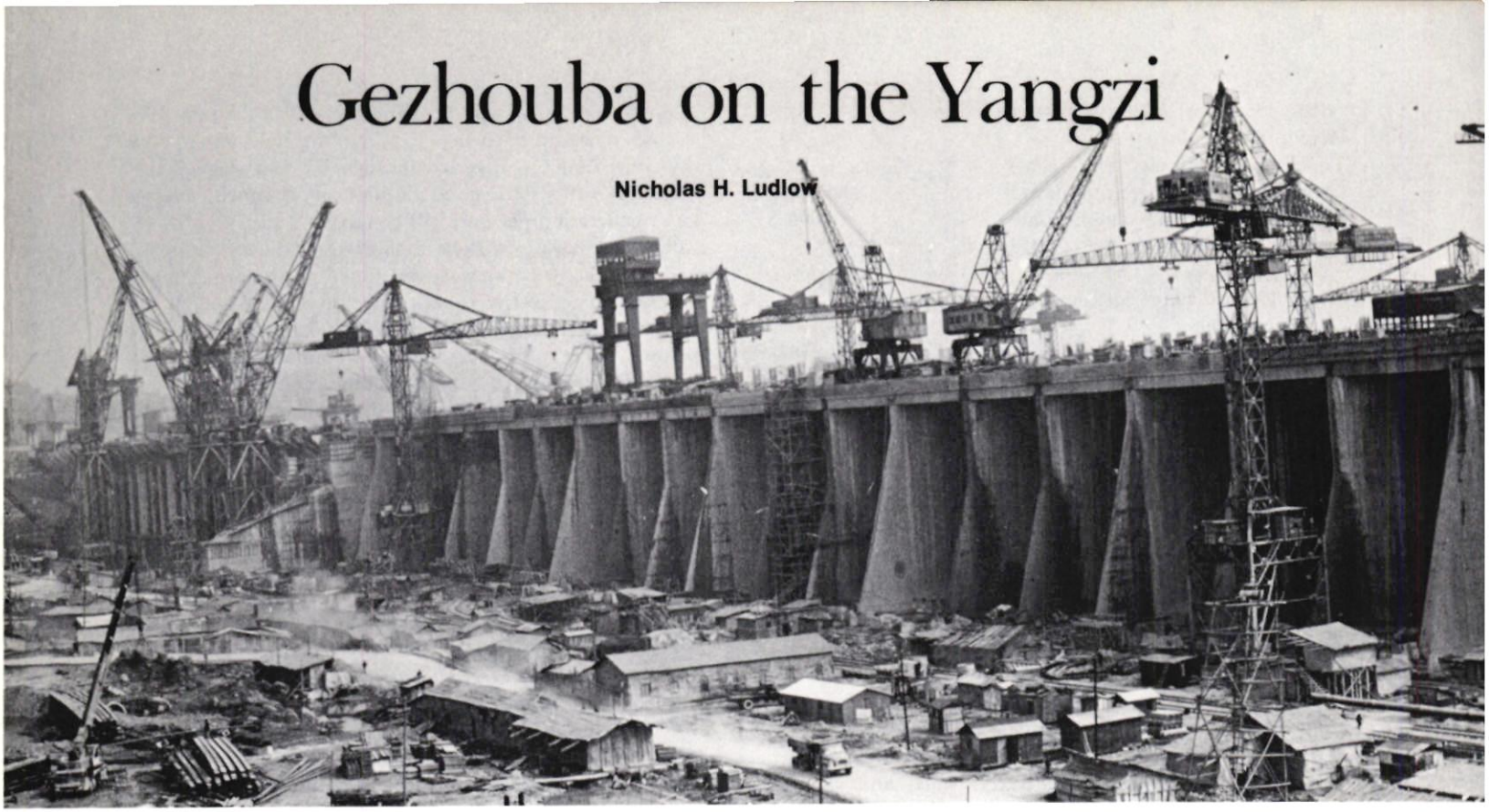
Despite the cutbacks and more modest scale of the Guangzhou Trade Fair, it still serves as an interesting—if sometimes confusing—gathering place for businesses throughout the world.

—CG 宪

The Dongfang Hotel, though jammed with visitors to the Guangzhou Trade Fair, probably hosted fewer Americans than usual this spring. Representatives from the US numbered only about 600-700.

Gezhouba on the Yangzi

Nicholas H. Ludlow



Northern face of Gezhouba spillway and power station.

At Gezhouba, near Yichang at the mouth of the Yangzi Gorges, 30,000 workers are building China's biggest hydro project, a scheme that will cost ¥3.5 billion ($2.3 billion at the 1979 year-end exchange rate) and eventually produce 14 billion kwh of electricity a year. It is to be completed in 1986 after 16 years of effort. The importance of the Gezhouba is that it is a pilot project, a preamble to the bigger Three Gorges scheme 40 kilometers farther up the Yangzi (see next story). It is the first of China's new great walls.

For planning purposes, Gezhouba and the Three Gorges project are part of the same project. Electricity from one of Gezhouba's generators will provide the power needed for construction of the Three Gorges project; and Gezhouba's housing and communication facilities will be used as the basis for the Three Gorges construction site. A railway will link the sites.

While some foreign technology is in use at Gezhouba, the bulk of the engineering and construction, and most of the equipment, is Chinese. The following description is based on interviews in March with the State Economic Commission, Ministry of Water Conservancy, Hubei Province Industry and Transport Bureau, and the Gezhouba Construction Bureau.

The Gezhouba project consists of two power plants with 2,715 megawatt capacity, three navigation locks capable of handling vessels of 10,000 dwt, a 27-bay spillway, and a silt discharge, all combined in a 70-meter-high dam stretching across the Yangzi at a point where the river widens from 300 meters to 2,000 meters at the mouth of the gorges section. Here, near the city of Yichang, the river becomes shallower, falling from a depth of 80 meters in the gorges section to about 15 meters.

The change in river conditions created two small islands, Xiba and Gezhouba, and three water channels, known as the "grand" or main, second, and third channels round which the Gezhouba project has been designed. The islands, plus the fact that the second and third channels are dry during low-water season, created an excellent environment for stage-by-stage construction of the scheme. Few people and little land have been displaced.

The main features of the multipurpose project, for which preparations began in 1970 and construction in 1974, are as follows:

General Layout

The page 14 diagram shows the general layout, with the first channel—on the far left, looking upstream—presently open, and the second and third channel sections nearing completion as of April 1980. The dam will eventually act as a highway and railway bridge.

The first stage of construction involves the second and third channels and includes a 27-bay control spillway, one of the power plants (7 units, capacity 965 Mw) in the second channel, and No. 2 and No. 3 shiplocks in the third channel, far right. The first of two second-stage cofferdams across the main (first) channel was being built in April 1980, with December 1980 as the target for diverting the river through the second and third channels.

The second stage, across what is now the main channel, consists of Lock No. 1, same size as Lock No. 2, another power plant (14 units, capacity 1,750 Mw), and another spillway.

Gezhouba Project—Basic Data

The chief specifications of the project are:

Design storage water level (meters)	66

Check flood level (meters)	67
Height of dam (meters)	70
Total storage volume (million m^3)	1,580
Design flood discharge (m^3/second)	86,000
Check flood discharge (m^3/second)	110,000
Design flood discharge for construction (m^3/second)	66,800
Check flood discharge for construction (m^3/second)	71,100
Design power head (meters)	18.6
Maximum power head (meters)	27.0
Discharge for power of 98% assurance (m^3/second)	3,410
Corresponding output capacity (Mw)	768
Installed generating capacity (Mw)	2,715
Average annual output (Mwh)	13,800
Number of generator sets (of which 2 @ 170 Mw and 19 @ 125 Mw)	21
Total concrete work (m^3)	9,800,000
Total excavation and filling work (m^3)	76,000,000

Power Plant

The two Gezhouba power plants are planned to eventually generate 13.8 billion kwh from 2,715 Mw of installed capacity. The first stage plant, on the second channel, consists of two 170 Mw (40.2 meters wide) and five 125 Mw (35.3 meters wide) units, totaling 965 Mw capacity. The second stage plant, on the main channel, will have fourteen units of 125 Mw each. The length of the plant parallel to river flow is 110 meters in the first-stage plant.

The design head of the powerhouse section is 18.6 meters with a maximum head of 27 meters.

Both plants have silt-grinding sills and discharge outlets to prevent the plants from silting up and to screen out large materials. This is an important consideration since the average annual quantity of sediment carried by the Yangzi at this point is 520 million tons.

The 170 Mw turbogenerator units are being built at the Sichuan East Generator Plant at Deyang with 11.3 meter-diameter penstocks. These turbines are China's largest, and among the world's largest of this type. The 125 Mw sets are being built at the Harbin Generator plant in Liaoning Province.

Transmission will use 500 kv lines now in experimental production in Wuhan. Presently 220 kv lines are in use.

A microwave communication system will be developed to connect with the Three Gorges project.

Power Generation Schedule

Power will first flow from Gezhouba to the Hubei Province grid in 1981, a year ahead of the original schedule. As presently planned, the program for power generation is as follows:

GEZHOUBA—POWER GENERATION SCHEDULE 1981–86

Year	Operating Units	Capacity (Mw)	Output (billion kwh)	Annual Usage (hrs)
		Stage 1		
1981	2 @170	340	1.36	4,000
1982	3 @125	715	4.65	6,500
1983	2 @125	965	4.00	5,180
		Stage 2		
1984–86	14 @125	2,715	13.8	5,083

Output per unit will be higher in 1982 than in 1986 because more water will be going through fewer units while the Yangzi is diverted through the first stage. Later, when the water is diverted through all channels, average power generation per unit will be less.

But there always will be a substantial difference in operation capacity between summer and winter. In January and February, effective capacity will be reduced to 760 Mw and power generation will be minimal. Until the Three Gorges project is in operation, Gezhouba will operate at full capacity only five months of the year, when the water is high (June–October). By providing a steady flow of water, the upstream Three Gorges project would make it possible for Gezhouba to operate efficiently year-round.

Gezhouba's 1986 target power output represents 120 percent of Hubei Province's 1980 electricity production. Even so, it is still not contemplated that there will be a national grid operating in China when the project is completed.

Navigation Facilities

Three immense single-stage locks, with a maximum working head of 27 meters, will allow vessels of up to 10,000 dwt to transfer up- and downstream. Locks 1 and 2, on the right side of the main and third channels, are the same size—280 meters long and 34 meters wide. These are almost as big as the Wilson and John Day locks in the US. Water depth above the sill will be 5 meters in both cases. A smaller, No. 3 lock, 120 meters long and 18 meters wide, on the left side of the third channel will hold smaller cargo and passenger vessels.

The lock gates are 34 meters high, 19.7 meters wide, and weigh 600 tons. They were built by Shanghai's Jiangnan Shipyard in 10 sections of 60 tons each to permit transportation up the Yangzi. Installation, using 125-ton cranes, was completed in 34 days.

Spillways and Discharge Sluices

The central 27-bay spillway is of a flat floor type with each bay 12 meters wide, on a base 37 meters above sea level. The spillway will have steel bulkhead gates of 12 x 12 meters and lower radial gates, also 12 x 12 meters.

The sluice gates, which were built at the Wuchang shipyard in Wuhan and in Shanghai, will be the biggest sluice gates in the world. In the first stage some 36,000 tons of steel gates will have to be installed.

Construction Materials

The huge size of this project is indicated by the volume of construction materials involved:

	Concrete (mil. cu. m.)	Excavation/ filling (mil. cu. m.)	Steel (1,000 tons)
Total 1974–86	9.8	76	NA
Stage 1 (1974–81)	5.8	50	37
1979	2.04	10	12
Maximum yearly	2.00+	15	22

According to Gezhouba officials, the first stage accounts for 60 percent of the concrete and 80 percent of earthworks used in the project.

The construction bureau uses high-quality cement obtained from 500 kilometers away in Hubei Province. Two types of cement are used: 600-grade plain clinker dam

cement with a strength of 300 kg/m³ at 28 days; and 500-grade slag dam cement. Both are stored in 15 1,500-ton silos. Eight plants with a combined capacity of 355,000 cubic meters/month are used for batching. In the furnace-like heat of Yangzi summer, −5°C cold air is applied to the 20–40 millimeter and 40–80 millimeter silos and 50–60 kilograms of ice-chips per cubic meter used to cool concrete.

Construction Equipment

A large amount of varied construction equipment is in use at the Gezhouba site, including some foreign equipment.

In excavation, pneumatic drills and presplit blasting methods are used. As of April 1980, twenty-four 4-cubic-meter and eight 3-cubic-meter electric shovels were in operation, the larger size made in China in Taiyuan, Shanxi. According to officials, five or six 6-cubic-meter bucket excavators are to be purchased from US sources; another source indicated that purchase of 9-cubic-meter front-end loaders is also being negotiated with foreign companies.

For underwater excavation, 350-cubic-meter/hour cutter-suction dredges are used for fine sands, and 250-cubic-meter/hour chain-bucket dredgers for sand pebbles. Two of the dredgers are Japanese. Rig platforms are used for underwater drilling and blasting, 4-cubic-meter shovel dredgers for muck loading, and 120-cubic-meter bottom-split barges for transporting excavated materials.

In addition, 250-cubic-meter/hour and 750-cubic-meter/hour chain-bucket type dredgers are used for excavation of sand-pebble aggregate with 180 cubic meter barges. Belt conveyors carry the pebbles to a 1,300 cubic meter/hour screening plant, at which five grades of aggregate are sorted—sand, 5–20, 20–40, 40–80, and 80–120 mm.

Drilling equipment includes 850 mm percussion drills and 219 mm rotary drills. Drill holes in the foundations average 10–15 meters.

Cranes used for concrete placing include six large cranes with 26-meter boom reach specially designed and built in China to lift 6-cubic-meter concrete buckets for power-house placement. The maximum crane size is 60 tons with 26-meter boom reach. Other placing is by 10–25 ton cranes with 3-cubic-meter buckets. Concrete vibrators are manual with 8,000/10,000 movements/minute frequency.

The total truck inventory at Gezhouba is about 1,300, including the following:

GEZHOUBA TRUCK INVENTORY APRIL 1980

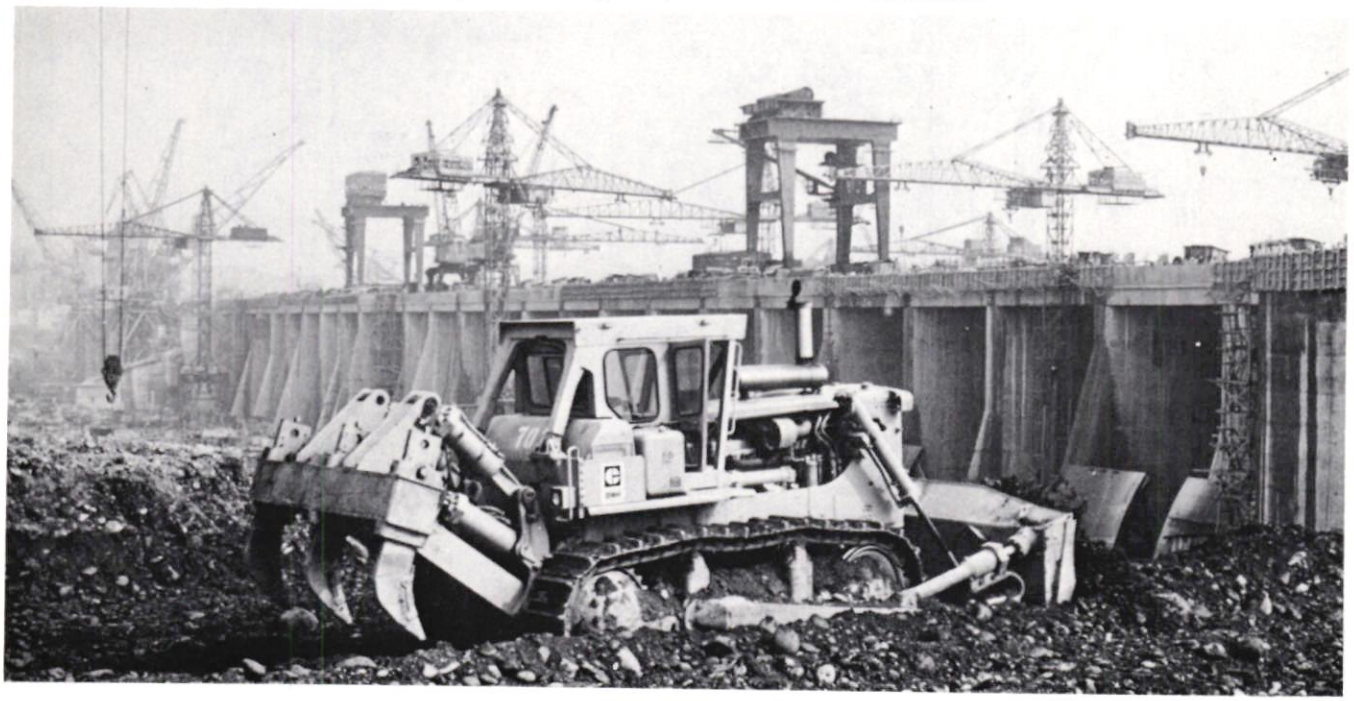
Size (tons)	Type	Number
32	Perlini	25
32	Shanghai	25
20	Perlini	160
20	Shanghai	80
12	Berliet	30
8	Isuzu	25
5+	Chinese et al	300
NA	Tatra	30+
2	Chinese	600+
TOTAL		**1,275–1,300**

Other equipment seen at the site included five 410-hp Caterpillar D9 dozers, D80A Komatsu dozers, a P&H Pneumatic Hoist Crane and other P&H cranes, plus Kato cranes.

The Perlini Trucks, which were delivered in 1975 (bought in May 1974), are the principal types in use, drivers working three shifts around the clock, with one shift given to maintenance. To supplement the Perlinis, 30 WABCO 50-ton trucks were bought in late March 1980 for use at the site to help speed up the placing of the second-stage cofferdam across the main channel of the Yangzi. In April 1980 negotiations for 36- and 45-ton trucks were also underway with foreign companies.

With the priority placed on the speeding up of electric power generation to underpin China's economic growth, the need to speed up both the Gezhouba and Three Gorges

A Caterpillar 410-hp D9 pushes earth at Gezhouba.



projects, using larger dump trucks and reliable heavy duty excavation equipment, is pressing.

Construction Schedule

The immediate schedule calls for closing off the main channel by the first of two second-stage cofferdams in December 1980, the beginning of the low discharge period. Both the upstream and downstream cofferdams will be an earth-mode type, 36 meters high, with a clay core wall and concrete cut-off wall beneath.

When closure takes place the river will be directed to the second and third channels, but because there will not be enough water in the shiplocks to transport vessels, temporary transshipment of passengers and cargo will be arranged at Yichang until May 1981 when the water rises.

The middle section of a curved longitudinal cofferdam approaching completion in the spring of 1980, to protect the second stage from flood and erosion, will be a permanent feature of the dam. This permanent cofferdam consists of cellular steel piling filled with sand and gravel erected on a concrete foundation.

Work on the second stage of the project, originally scheduled to begin in 1982, may now start in 1981, when electricity is first generated. Hence it will take four or five years to complete the second-stage powerhouse, shiplocks, and channels.

Organization

How is the Gezhouba scheme administered and organized?

The project is the responsibility of the Ministry of Water Conservancy (MOWC) and one of its units, the Gezhouba Construction Bureau (GCB), a force of 30,000 workers including 1,300 engineers and technicians.

No subcontracting is done. The GCB, with eighteen functional departments, nine administrative departments, and a research institute, handles the construction of everything including preparatory work, earth and rock excavation and filling, foundation work and concrete placing, aggregate quarrying and processing, and erection of steel structures such as sluice gates, turbines, and generators. The GCB has quality control systems, laboratories, and survey teams. Its construction research institute studies management and productivity, as well as construction techniques. For details of GCB's organization, see box.

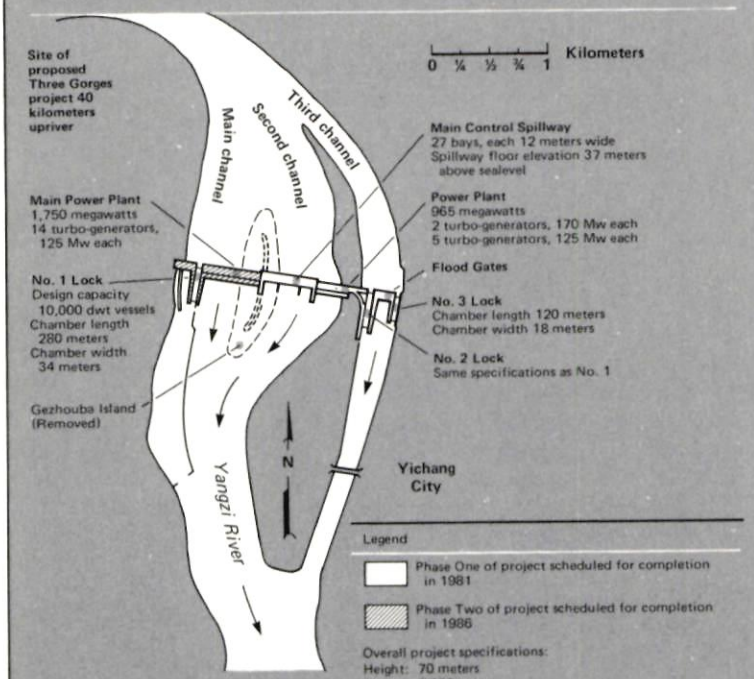
In addition, the GCB is responsible for the housing and welfare of 50,000 dependents of workers in a small city in which 1.7 million square meters of accommodations have been erected, plus hospitals, schools, and shopping facilities. This new "city," part of the city of Yichang, will serve as a base for Three Gorges workers later, and will be industrialized in the next five years to use power generated at Gezhouba. A hotel and guest house for foreign visitors are also under construction.

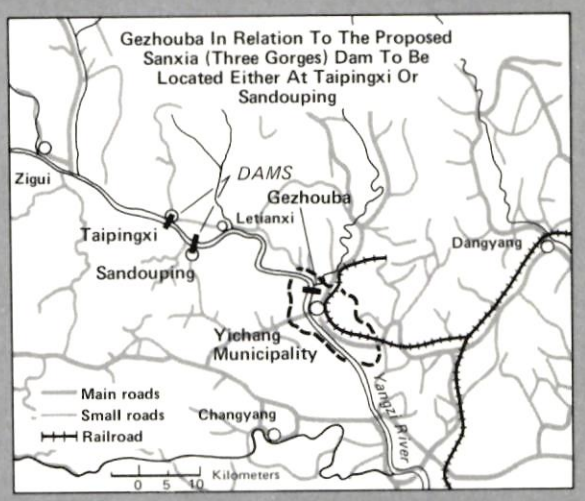
Planning and Technology Purchase Process

The Gezhouba project is included in China's national plans and budget, not as a simple item, but under a set of different accounts, such as the funds for electric power development, steel, and building materials. The scheme is the responsibility of the Ministry of Water Conservancy, which also administers the Yangzi River Authority; but, due to its size and importance, the project is overseen by

Gezhouba Dam

Yichang, Hubei Province
May, 1980





Comparison Of Three Hydro Power Installations

	Installed electric power capacity (megawatts)	Percent of 1979 National capacity	Electric output (billion kwh per year)	Percent of 1979 National output
Three Gorges (Planned capacity)	25,000	43.9	111.0	39.4
Gezhouba (Planned capacity)	2,715	4.8	13.8	4.9
Liujiaxia* (1979)	1,225	2.1	5.7	2.0
China (1979)	57,000	100.0	281.95	100.0

*China's largest existing hydroelectric dam, located on the upper Yellow River. It's five turbo generators became operational between 1969 and 1974.

Source: Ministry of Water Conservancy, Beijing.

China Business Review
May-June 1980

the State Planning Commission, the State Economic Commission, and the State Capital Construction Commission (SCCC). This oversight is carried out via the MOWC.

The SCCC has a direct involvement in that cement and building materials are the SCCC's responsibility.

Long-range, annual, quarterly, and monthly plans are made by the GCB for everything, including residential construction, and sent to the MOWC for approval. Plans for the closing work for stage two, for example, originally scheduled for 1981, were redesigned for completion in 1980, and sent to the MOWC for their approval in 1978.

The GCB sends quarterly plans for MOWC sanction, five days before the beginning of each quarter. In the last quarter the next year's plan targets are sent to Beijing. These are usually returned to the GCB and given to different departments in December, or early January, so that the plan begins in January. As part of the yearly plan there are different types of plans for different quarters—and even different months.

For day-to-day problems, the GCB has an informal, consultative arrangement with the Bureau of Industry and Transport of Yichang Prefecture, a grouping of nine counties and 3.4 million people (excluding Yichang City). This bureau, which answers in policy matters to the Hubei Provincial Bureau of Industry and Transportation (the local branch of the State Economic Commission), provides construction and other materials, such as paint, lights, and electrical parts, needed on an ad hoc basis.

Essential products, such as steel, trucks, and so on, are centrally allocated by the State Council's Bureau of Material Allocation to the MOWC, and then to the GCB.

Import of technology and equipment is carried out in two ways. The GCB may ask for special meetings with the MOWC to request major purchases from abroad. For small purchases, if one of the GCB's sub-bureaus needs replacements of equipment, the GCB can send to MOWC for approval. In both cases, MACHIMPEX has so far acted as buying agent for MOWC.

In one recent case this has led to frustration. One foreign company was told, on the one hand, that MACHIMPEX did not forward the firm's final quote to the ministry, and, on the other, by MACHIMPEX that the MOWC did not fully understand the characteristics of the company's equipment.

Companies are welcome to send materials directly to the MOWC, other ministries, the GCB, and local industry and ministry bureaus at provincial and prefecture levels.

Costs and Budget

The overall cost of the project is ¥3.5 billion ($2.3 billion), 1970 through 1986, including possible additional equipment outlays after 1986. The average yearly budget during the years of construction is ¥0.29 billion ($190 million). In 1979 the actual year's costs were ¥0.4 billion ($270 million); in 1980 the planned budget is a little less than ¥0.4 billion.

GEZHOUBA YEARLY BUDGET 1980

Category	Annual (billion yuan, dollars)	Percent
Construction materials	¥0.28 $0.19	70
Equipment, residential, administration and management	¥0.08 $0.05	20
Wages	¥0.04 $0.03	10+
TOTAL	**¥0.40** **$0.27**	**100**

Short-term needs may be met from the construction materials fund. A depreciation percentage is part of the 20 percent working capital account. Utilities such as electricity, which cost ¥0.10 ($0.07) per kwh for power used in production and ¥0.22 ($0.15) per kwh for residential and other lighting, are paid for out of the 20 percent.

The average wage is ¥50–60 ($33–40) a month according to GCB officials. However, the wage bill for the year, at the higher rate, equals ¥0.022 billion ($0.015 billion) or only five percent of the year's budget, suggesting either that some people are being paid higher salaries or that there are more people on the payroll than just the workers accredited to the site, or that wages account for less than 10 percent in fact.

As a showcase of China's present construction capabilities and a practice exercise for the massive Three Gorges project looming in China's future, Gezhouba is impressive by any standard. Thousands of visitors will be seeing the site in the next few years, visiting the first of China's new great walls—as remarkable as the original. 完

DEPARTMENTS OF THE GEZHOUBA CONSTRUCTION BUREAU April 1980

Production Sub-bureaus

1. Concrete (1)
2. Concrete (2)
3. Construction mixing
4. Excavation (1)
5. Excavation (2)
6. Installation (1)
7. Installation (2)
8. Truck transportation (1) local
9. Truck transportation (2) long-distance
10. Railway (within construction area)
11. Stone and sand (1) Yangzi
12. Stone and sand (2) tributaries of Yangzi
13. Comprehensive (prefabrication of wooden forms, steel reinforcement, etc.)
14. Repair plant (general)
15. Repair plant (vehicles)
16. Repair plant (vessels)
17. Materials
18. Water and electricity

Administrative Departments

Technical:
1. Technology
2. Management of machinery and electrical equipment
3. Production management
4. Technical safety

Administrative:
1. Planning
2. Finance

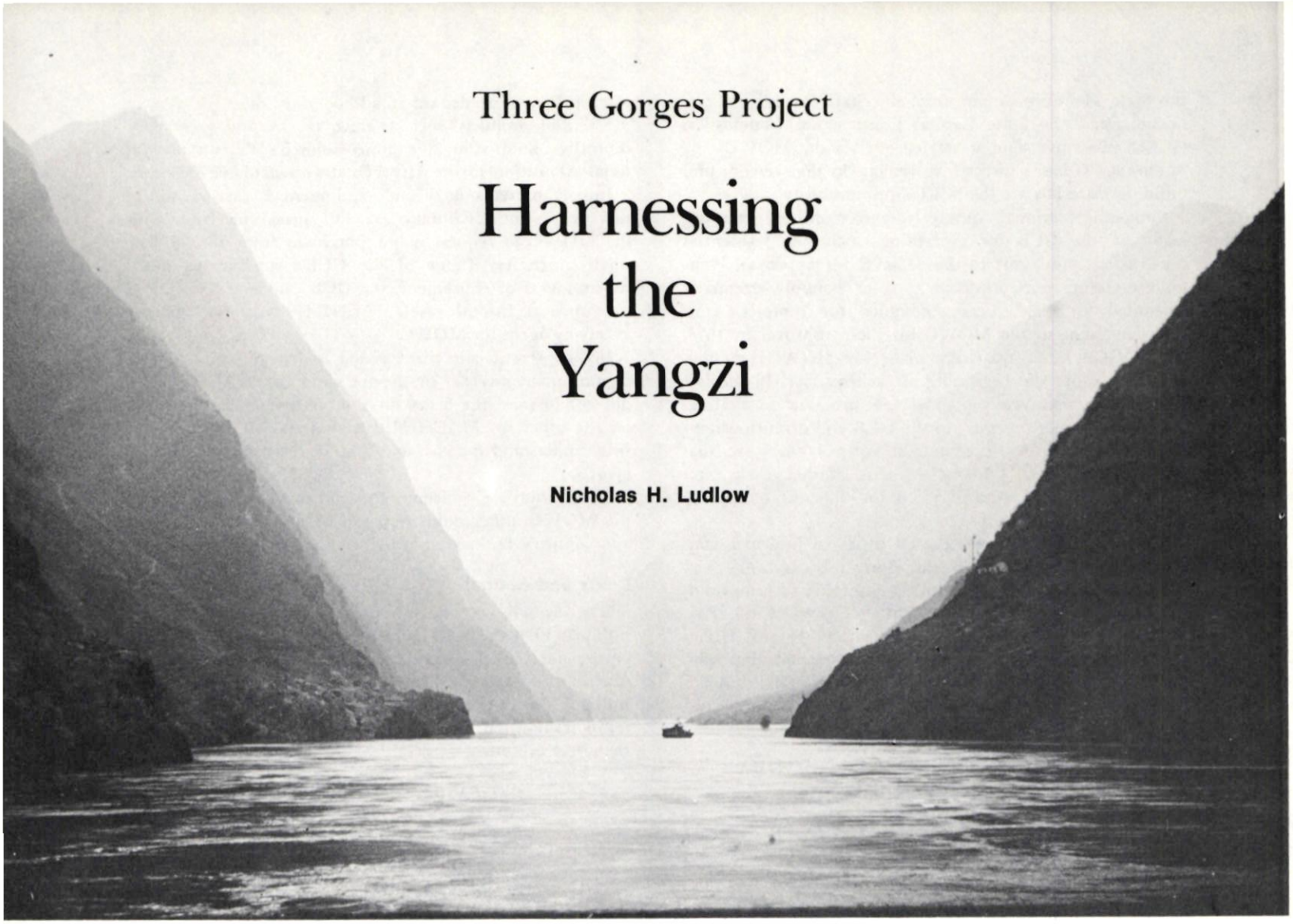
Independents Sub-bureau:
Responsible for residential construction for workers and staff and their families.

Construction Research Institute:
This has a staff numbering "several hundred."

Three Gorges Project

Harnessing the Yangzi

Nicholas H. Ludlow



Waters of the Yangzi would rise over 500 feet at the proposed Three Gorges project.

In the 1980s, China's biggest construction projects will be those on the Yangzi River, in the section known as the Three Gorges—Sanxia, including Qutong Xia, Wu Xia, and Xiling Xia. In this stretch, a dam site will eventually provide China with 25,000 megawatts of sorely needed generating capacity and yearly output of 110 billion kwh. The dam and turbogenerator capacity, which will be the largest in the world, will tax the organizational, technical, and financial resources of the PRC as never before. The details given below are adapted from material supplied to CBR *in February 1980 by China's Ministry of Water Conservancy. How much foreign assistance will be sought by the PRC for project design, engineering, construction, or equipment is still unknown. But, once this project is underway, the Yangzi gorges project —and Gezhouba, the "pilot scheme" now well advanced— will bring into focus a major tourist attraction that will open up a vast, beautiful, and little-known area of China to foreign visitors.*

The Three Gorges project has been in planning for at least twenty years (see *CBR* Jan.–Feb. 1979, p. 56) but is only now in its final preparation stages. As described by China's Ministry of Water Conservancy in February 1980, the project will eventually have electrical generating capacity of 25,000 megawatts, involve 50.5–81.6 million cubic meters of open excavation and 25.6–32.1 million cubic meters of concrete, displace 1.4 million inhabitants, and inundate 44,000 hectares of farmland.

The scheme will resolve major flood control problems in the middle and lower reaches of the Yangzi. As planned, the project will take 15 years to complete and cost about ¥9.5 billion or $6.2 billion at today's exchange rate. Still to be decided is whether the final dam will be built at Taipingxi or Sandouping, but the latter seems to be favored by the Chinese.

The principal features of the project, with details of both sites, are as follows:

Power Generation

Eventual installed power generation capacity, when the dam's reservoir level attains 200 meters, will be 25,000 Mw with annual output of 111 billion kwh, equivalent to 40 percent of China's 1979 national output. The rated head for power will be 111 meters, with average head of 115.1 meters (maximum 137.0; minimum 97.6 meters). When the reservoir reaches the 200-meter level, the effective

reservoir capacity will be 37.6 billion cubic meters and regulated discharge 7,200 cubic meters/second.

Minimum power generation can begin about 8.5–9 years after a ground-breaking, when the reservoir level reaches 150 meters. At that point the rated power head will be 73.9 meters, and 23 turbogenerator units will be installed. Output per unit will then be 517 Mw with available capacity 11,900 Mw producing 62.8 billion kwh.

To reduce to a minimum the time required to produce power, generation using the cofferdam and two turbogenerator units may be possible within 7–8 years.

Generation Equipment

The 25 1,000-Mw generator units to be installed, the largest in the world, may be manufactured in China. After studying 300, 500, 700, and 1,000 Mw units, the largest size was chosen by the Chinese because it would mean a "more favorable" layout, and "with reference to the level of our own machinery manufacturing industry and the existing experience in the world."

The turbines will be of the mixed-flow type with 10-meter wheel diameters and speeds of 75 rpm. Maximum flows will be 1,050 cubic meters/second per turbine.

The cost of the power plant will be ¥3.018 billion, of which the electrical and mechanical equipment will account for ¥2.054 billion ($1.33 billion).

The powerhouse will feature a single-line penstock with a 13-meter diameter and flow velocity of 8 meters/second. The bell-shaped inlet will have its center at 134 meters and base at 127 meters above sea level. Control gates will be 10 meters wide, 14 meters high, with 10- x 15-meter emergency gates.

The center-to-center distance between adjacent turbogenerator units is 41.5 meters; corresponding widths of two monoliths at the front are 27.5 meters and 14 meters. The powerhouse is 67 meters high from the bottom of the draft-tube to the roof, and 37.5 meters wide. The transformer platform on the upstream side will be 24 meters wide or more. For the Ehv substation installations, SF_6 gas-insulated fully metal-clad switchgears will be used.

Discharge Capacity

A central feature of the project is that even at the lowest reservoir level for minimum power generation, 150 meters, the required discharge capacity is 45,000 cubic meters/second, a very high discharge level. Of this, 15,000 cubic

POWER GENERATION SCHEDULE

Years from Start-up*	Operating Units	Capacity (Mw)	Output (billion kwh)	Investment (billion yuan)
7–8	2	NA	NA	4
8–8.5	12	2.8	20	5
8.5–9	23	11.9	62.8	NA
15	25	25.0	111.0	9.5

*Including one-year preparation time.

BUDGET

The estimated cost of the Three Gorges project, using the Sandouping budget, is as follows:

Item	(Million Yuan)	Million US$
Permanent structures	6,036	4,040
Dam	(1,562)	1,046
Powerplant	(3,018)	2,020
of which, mechanical and electrical equipment	[2,054]	1,375
Navigation structures	(1,254)	839
Permanent communication facilities, buildings, and others	(202)	135
Temporary works	1,170	783
of which, river diversion	(276)	185
Other works and expenses	1,459	977
of which, construction machinery	(968)	648
Unforeseen works and expenses	866	580
TOTAL ESTIMATED INVESTMENT	**9,531**	6,380
Retrievable expenses	1,143	765
TOTAL COST	**8,388**	5,614
Investment per unit kw installed (yuan, dollars)	381	255
Cost per unit kw installed (yuan, dollars)	335	224

Source: Ministry of Water Conservancy
Note: Dollars converted at May 1980 rate of ¥1.494:US$1.

VOLUME OF CONSTRUCTION WORK

The following table lists the volume of different types of construction planned at the two dam sites.

Item	Taipingxi	Sandouping
Open excavation (1000 cu. m.)	81,620	50,530
Dam	3,460	7,560
Powerhouse	22,420	10,990
Navigation structures	27,590	25,870
Diversion works	28,150	6,110
Tunnel excavation (1000 cu. m.) (Powerhouse)	500	0
Concrete (1000 cu. m.)	25,640	32,100
Dam	15,230	22,300
Powerhouse	3,090	2,090
Navigation structures	6,090	6,150
Diversion works	1,230	1,560
Steel Reinforcement (1000 million tons)	281	298
Dam	38	50
Powerhouse	89	90
Navigation structures	146	150
Diversion works	8	8
Structural steel (1000 million tons)	300	287
Dam	20	20
Powerhouse	172	159
Navigation structures	101	101
Diversion works	7	7
Embankment (1000 cu. m.)	12,120	13,340
Navigation structures	2,120	2,780
Diversion works	10,000	10,560
Total estimated investment (billion yuan)	**9.57**	**9.53**

Source: Ministry of Water Conservancy, February 1980.

meters/second will pass through the powerhouse, with the balance going through flood discharge structures, 30 deep outlets in the body of the gravity dam. At the final stage, the 200-meter level, discharge through these outlets will be 70,000 cubic meters/second. Maximum required capacity at emergency level (203 meters) will be 91,300 cubic meters/second.

During the high-water and high-sediment season the reservoir level will be lowered to 150 meters for sediment ejection.

Gravity Dam

The dam will be 2,600 meters long at the Sandouping site, 1,000 meters of which will be devoted to power intakes, 420 meters to flood-discharge. It will be built to withstand seismic activity at 8 on the Richter scale, 2 degrees higher than the general seismic activity in the area. The dam at Sandouping will have a base at 30 meters above sea level, and have an emergency high-water level of 203 meters.

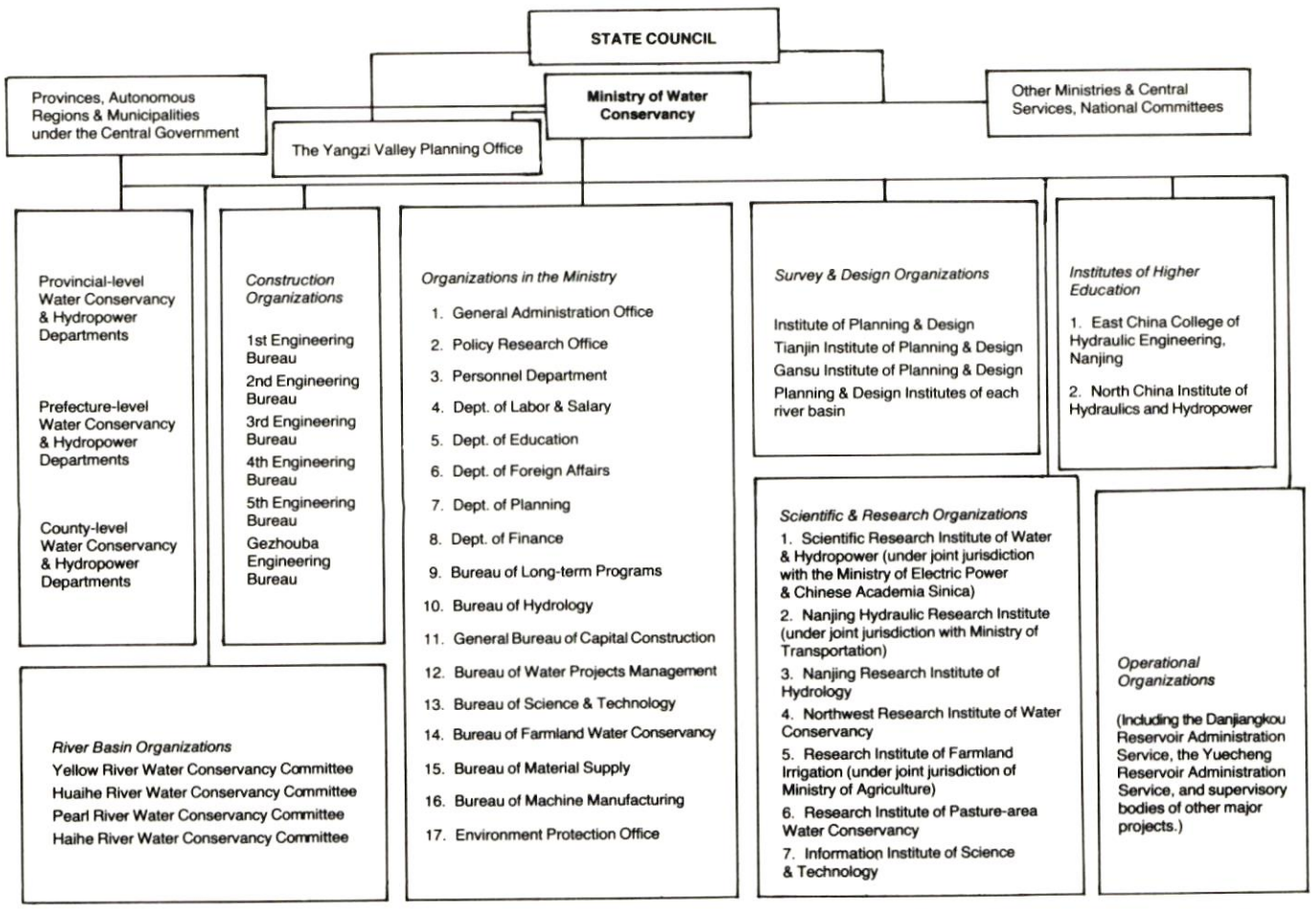
Vessels will transfer up- and downstream in double-route serial locks designed to operate from the 150-meter to 200-meter level. The lock chamber will be the same as that at Gezhouba—34 meters wide, 280 meters long with annual handling, one-way capacity of about 50 million tons. The serial lock has six steps coinciding with different reservoir levels: two steps will have a 25-meter maximum lift each, above 150 meters; below that three steps will have 22-meter lift and one 21 meters. During construction there will be a temporary inclined ship-lift.

The start-up date of the Three Gorges project has not been decided, but if it began next year (1981) completion would be scheduled for 15 years later, that is in 1996.

CHINA'S MINISTRY OF WATER CONSERVANCY

The chart below shows the organizational structure of China's Ministry of Water Conservancy, which is in charge of the development of water resources related to flood control, drainage, and soil conservation. The Ministry of Electric Power was separated from it in February 1980. The division of labor between the two ministries depends on the major purpose of a project; a hydroelectric dam, for example, is managed by the Ministry of Electric Power unless the major function of the project is flood control, in which case it comes under the Ministry of Water Conservancy.

The map on the opposite page shows China's major drainage areas. Each of the five major river basins — the Yangzi, the Yellow, the Pearl, the Huai, and the Hai — is supervised by a water conservancy committee under the ministry. The map also shows the locations of four of the water-resources projects which the US government agreed to help develop.



Source: Ministry of Water Conservancy, Beijing; March 1980

Year One—Preparation Stage

Development of a 10-square-kilometer construction site will take one year, with 23 kilometers of rail and 40 kilometers of roadway, using Gezhouba warehouses, accommodations, and communications facilities.

Years Two to Four—First Stage

In this stage the diversion channel and inclined ship-lift will be completed. Construction of part of the power plant and navigation lock will begin.

Years Five to Eleven—Second Stage

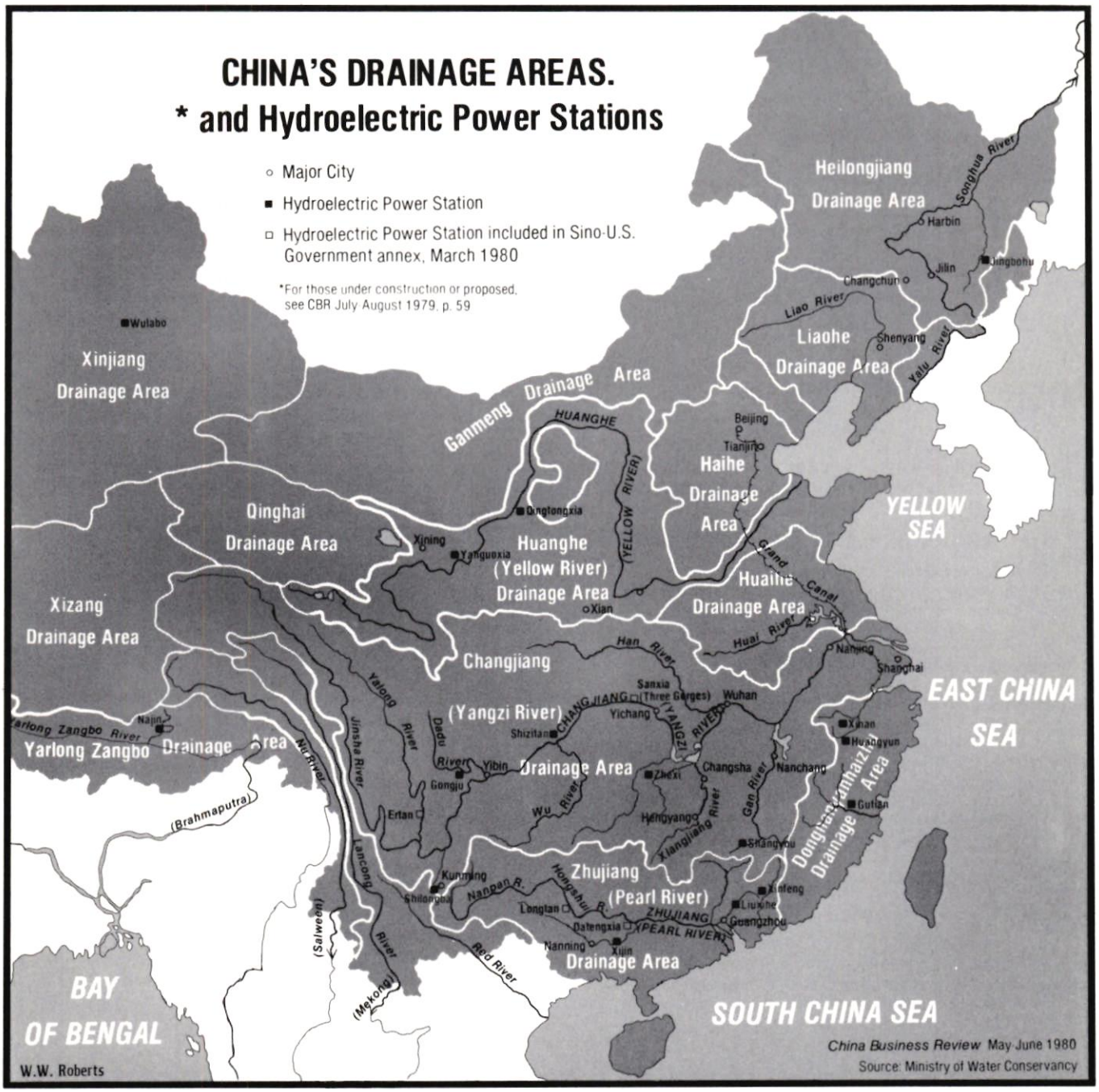
The main river cofferdams are to be complete before the flood season (summer) of the fifth year; excavation of dam foundations will begin. Between the end of the flood season in the seventh year and the tenth year the dam will be raised from 71 to 140 meters, temporary outlets built and plugged, and the 30 permanent outlets commissioned. By the summer of year eleven the reservoir level will reach 170 meters and power operation will begin.

Years Twelve to Fifteen—Third Stage

The navigation locks and powerhouse will be continued to completion.

Construction Equipment

Excavation benches 20 meters high will be blasted with 170-mm-diameter drills. Heavy bulldozers, 8-cubic-meter excavators, and 60-ton dump trucks are presently planned for earth removal.



Two concrete placement schemes are being considered. The first involves 20-ton gantry cranes; the second 14 30-ton cable ways. Concrete for the locks and ship-lift will be placed by 20-ton tower or gantry cranes.

By completion, the Three Gorges scheme will involve the displacement of 1.4 million inhabitants presently located up to the 200-meter level in the 200-kilometer gorges section, all the way from Sandouping to Chongqing. Some 660,000 mu, or 44,000 hectares, of farmland will be inundated. Resettlement of these people will represent a major emigration and resettlement operation.

In the first nine years, some 390,000 people, including 142,000 rural dwellers and 248,000 urbanites will have to be relocated, and 120,000 mu of farmland (8,000 hectares) covered by water.

One of the major achievements of the project will be to solve the problem of flood control of the middle and lower reaches of the Yangzi, 1,778 kilometers long from Yichang, where the river emerges from the gorges, to the mouth of the Yangzi, near Shanghai. At Yichang the river normally rises 10 meters between winter lows and summer highs.

The contrast in the Yangzi's seasonal flow is consider-

CHINA'S YANGZI THREE GORGES PROJECT BASIC DATA

HYDROLOGY

Yangzi River Basin Area (km^2)	18×10^5
Length of Yangzi River (km)	6,300
Basin area upstream of Yangzi Gorge	10×10^5
Length from Yangzi Gorge to mouth of the Yangzi at East China Sea (km)	1,900
Available Hydrological record-years	98 (1877–1974)
Average annual runoff (m^3)	$4,531 \times 10^8$
Average annual flow (m^3/s)	14,400
Maximum annual runoff (m^3) (1954)	$5,751 \times 10^8$
Minimum annual runoff (m^3) (1954)	$3,308 \times 10^8$
Maximum recorded flow (m^3/s)	
(Sept. 4, 1896)	71,100
(Aug. 7, 1954)	66,800
Maximum flow from historical data (m^3/s)	
(July 20, 1870)	110,000
(July 18, 1860)	92,500
(July 23, 1788)	86,000
Minimum recorded flow (m^3/s)	
(April 3, 1937)	2,770
Average daily flow (P = 95%) (m^3/s)	3,740
Average flow during flood season (m^3/s) (June to October)	24,800
Average annual sand (silt) transportation (metric ton)	5.3×10^8
Average sand content (kg/m^3)	1.2

RESERVOIR AND ECONOMIC FEATURES

Normal high reservoir elevation (m)	200
Maximum high reservoir elevation (m)	203
Design low reservoir elevation (m)	170
Minimum low operational reservoir elevation (m)	150
Total reservoir capacity (m^3)	704×10^8
Effective reservoir capacity (m^3)	376×10^8
1870 flood-regulated discharge (m^3/s)	78,000
1000-year flood (P = 0.1%)-regulated discharge (m^3/s)	58,000
Maximum head for power (m)	137
Minimum head for power (m)	97.6
Design head for power (m)	111
Guaranteed output (Mw)	7,320
Total power capacity (Mw)	25,000
Annual power output (billion kwh)	110

MAIN DAM STRUCTURES

Main Dam:	
Type: Concrete gravity	
Maximum height (m)	210
Nonoverflow section:	
upstream: vertical above (m)	100
1 on 0.3 below (m)	100
downstream: 1 on 0.9 slope	
top of dam at axis (m)	200
Spillways	
No. of bays	30
Dimension of bay (m) (width × height)	6 × 12
Entrance elevation (m)	127
Radial gate (m) (width × height)	6 × 12
Bulkhead gate (m) (width × height)	8.2 × 15.5
Downstream energy dissipation:	
Flip type	
Flip Bucket Lip Elevation (m)	80
Lip angle (degree)	30
Unit discharge at tailrace basin ($m^3/s/m$)	293
Velocity at tailrace basin (m/s)	43
Power Plant	
Generating capacity (Mw)	1,000
Generating unites	25
Turbine type: Francis	
Discharge diameter (m)	10
Speed (rpm)	75
Maximum discharge (m^3/s)	1,050
Type of powerhouse	above ground
Spacing between units (C to C) (m)	41.5
Width of powerhouse (m)	34.5
Centerline elevation at intake (m)	134
Gate (m) (width × height)	10 × 14
Bulkhead gate (m) (width × height)	10 × 15
Diameter of penstock (m)	13
Velocity through penstock (m/s)	7.92
Centerline elevation of generator (m) (turbine)	59
Navigation Structures	
Double line 6-stage lock:	
Chamber dimension (m)	280 × 34 × 5
One-way annual passing capability (metric ton/yr)	50×10^6
Sloped towing tank:	
Tank dimensions (m)	140 × 16 × 3.2
One-way passing capability (metric ton/yr)	6×10^6
Diversion System	
Diversion Channel:	
Width (m)	240
Bottom elevation:	
at dam location (m)	48
upstream section (m)	56
downstream section (m)	54
Upstream and downstream cofferdams:	
Type: Embankment	
Maximum height (m)	85

Source: Ministry of Water Conservancy, October 1979

able. During the dry season (November to May) the river's average flow at Yichang is 6,860 cubic meters/second. During the summer (June to October) when 72 percent of the annual discharge occurs, the average flow quadruples to 24,800 cubic meters/second, placing severe stress on the levees that line the lower Yangzi. These are only the average flows.

The maximum known flow in the Yangzi's history was 110,000 cubic meters/second, in July 1870; the minimum merely 2,680 cubic meters/second (March 1979), an amazing ratio of over forty to one.

Thus, control effected by the project will go most of the way toward solving flood and irrigation problems that have plagued the lives and food supplies of millions of people in the middle and lower Yangzi valley for thousands of years. It will help to stabilize agricultural production in one of China's most heavily populated regions. In addition it will permit a far greater volume of navigation to the heavily populated Sichuan Province (100 million people) than is possible now through the gorges section. 完

Private Sector Balks at US Hydro Agreement

In an agreement signed in mid-March, the US government agreed to assist the Chinese with the planning, design, and construction management of several hydroelectric power projects—and some private firms are hopping mad about it.

"The government has usurped the role that private industry had expected to take," said one representative of a consulting engineering firm, who asked that his name not be used. "We have no desire to compete with our tax dollars. Our whole program is at a standstill. We are confused over what our next step should be."

While agreeing that US government involvement of this scope in foreign projects is unprecedented, representatives of the government involved in the program strongly deny that the government has any intention of competing with the private sector.

"We have made it clear to the Chinese from the beginning that this is to be a mix of US government agencies with technical qualifications and the private sector, which also has highly developed capabilities," said Holsey Handyside, deputy assistant secretary of energy for international nuclear and technical programs, who has served as a spokesman for the US government delegation that visited China in March. "Our objective is to have the private sector involved to the maximum extent possible."

The bone of contention is an annex, signed March 15, to the US-China Protocol on Hydroelectric Power and Related Water Resource Management reached last August. In that annex, the US government agreed to aid the Chinese on four hydropower projects to which the Chinese have given high priority: Longtan and Datengxia on the Hongshui River, Three Gorges on the Yangzi River (Changjiang), and Ertan on the Yalong River (see p. 19).

The US Army Corps of Engineers will study the economic feasibility, engineering design, and construction planning for the Longtan project, as well as providing on-site assistance in construction engineering and management, if the Chinese desire. It will also undertake a study of the design and construction possibilities for regulating the silt flow of the Yangzi River and its estuary.

The US Water and Power Resources Services (formerly the Bureau of Reclamation) agreed to study design alternatives for the Ertan project, and to provide construction management if the Chinese want it. The US government also agreed to send specialists from several agencies to China to explore planning and design alternatives of the mammoth Three Gorges project on the Yangzi River and to discuss cooperation on the multipurpose utilization of water resources of both the Yangzi and the Hongshui River basins. The Bonneville Power Administration and the Department of Energy also agreed to help the Chinese with power grid technology. All the federal agencies agreed to host Chinese technicians for training and visits to analogous rivers or dam sites in the US.

For the last two years many of these projects have been under negotiation with private US consulting engineering firms. Some of these firms believe that the government, by offering to help in planning, design, and construction management, has stepped beyond its proper role and contradicted the promises it made not to compete with private enterprise.

"The government people have said that their intention is to develop a path for the private sector," one firm's China project coordinator said. "What they originally said verbally is far removed from what the protocol said."

Others in the construction and engineering business are also concerned. "We think the Chinese may be confused," said General Philip Leber of Harza Engineers, which has submitted a proposal related to the Ertan hydro project. "We feel there should be a clarification of the US government's position that there should be both government and private participation in these projects." The proper US government role, noted General Leber, who formerly worked with the Army Corps of Engineers, would be "to review and to give advice. But implementation of specific projects—engineering and so on—the private sector should do the bulk of that. . . . That thought is not conveyed in this annex." But he added, "I have no evidence to say that the government is trying to cut us out. That statement is ill-founded as far as I'm concerned."

"The US government involvement will be limited to those things which the private sector cannot do," Handyside said in a *CBR* interview. "Also, there is a good possibility that the Chinese may wish for a government-to-government umbrella relationship," he added.

Handyside observed that China's Ministry of Electric Power and Ministry of Water Conservancy are less experienced in dealing with foreign firms than their colleagues in other ministries. However, a firm that has dealt with representatives of these ministries disagrees. "They are no less sophisticated than people from the Ministry of Metallurgy or the Ministry of Communication," a company representative said. "Besides, US consulting engineering firms are prepared to

spend whatever it takes to educate the Chinese engineers."

All sides agree that the potential for business in the area of hydroelectric projects is enormous. China's estimated hydropower reserves total over 600 gigawatts, and at least twelve dams are in the construction or planning stages now.

"They are proposing to do in 20 years what the US did in 80 years," Handyside said. "If they even get the organizational structure set up in the next 20 years then in the following 20 years there will be an enormous payoff."

Leber, too, noted that "This is a very large program the Chinese have started and it will be going on for many years. There are so many sites, so many potential projects in hydropower, navigation, flood control. . . . It will take all the resources we have, both private and government, to assist them."

Handyside stressed that US government involvement is an "evolving program." The final result could vary from no US government involvement, apart from financing, to a program of construction management, with personnel from federal agencies heading up projects in which the bulk of the work is done by private US contractors.

Some in the private sector fear that the Chinese may have received the impression that the US government could underwrite part of the Chinese expense, thereby eliminating private companies from the competition. The government's position, though, is that the Chinese will have to pay for whatever consulting or training they get. An exception to this may be worked out to provide free on-the-job training for highly qualified Chinese engineers.

The Chinese expressed little interest in the US government's Reimbursable Development Program for subsidizing technological feasibility studies, Handyside said, adding that US companies were also unethusiastic about the program because of US government procurement regulations. (See *CBR* Sept.-Oct. 1979, pp. 18–19.) The government team also discussed the possibility of US Exim Bank financing for these projects, although their enormous cost dwarfs the $2 billion in loans over five years offered by Vice President Mondale.

"Essentially, there's a tremendous opportunity there," one businessman concluded. "We would like our government to help us to get the dominant share. We just don't want them competing with us." —DJ 宪

Projects in the Hydropower Annex

Hongshui River The US Army Corps of Engineers will help with mutipurpose river basin planning of the Hongshui, in Guangxi Zhuang Autonomous Region.

Longtan hydropower project Located on the Hongshui River, Longtan will be a 200-meter-high dam with a planned generator capacity of 3,000 Mw and annual generator output of 14.17 billion kwh. The major purpose of this dam will be to provide power for aluminum-processing facilities some 265 kilometers from the dam, near bauxite deposits in Pingguo County in Ghangxi. Alcoa and Bechtel have been discussing these smelter and hydro projects with the Chinese.

The transportation of turbine generators and other large equipment to the project is a major problem, since the railhead is nearly 100 kilometers from the dam site. The equipment will probably have to be transported some 150 kilometers down the river by barge. The Hongshui River is subject to monsoon flooding, with a flood crest of some 45 feet, and not navigable for six months a year. Not only must the dam be strong enough to withstand the floods, but construction of the cofferdam will have to be done in a 5 ½-month period with a 24-hour-a-day, 7-day-a-week effort between flood seasons.

Another problem is organizational: the Ministry of Electric Power is designing the project, while the eventual consumers of the power will be alumina smelters under the Ministry of Metallurgical Industry. Cooperation between the two ministries is necessary, since China plans to pay for foreign technical assistance with exports of alumina.

Datengxia Located on the Hongshui River downstream from Longtan. A major purpose of this hydroelectric dam will be to make it possible for large boats to move from Guangzhou to Liuzhou in Guangxi, five times farther than is possible now. It will also supply power for industrial purposes.

Ertan Plans call for a very high concrete hydroelectric dam on the Yalong River, in Sichuan Province, with installed capacity of about 3,000 Mw. The dam will provide power to the newly built industrial city of Dukou, at the confluence of the Yalong and Jinsha on the upper reaches of the Yangzi River. Near Dukou is a huge deposit of iron ore that also contains vanadium, titanium, and other rare metals. An iron and steel complex called Panzhihua began operations at Dukou in 1970. The Chinese recently opened their first titanium ore dressing plant, with a planned annual ore output of 50,000 tons, to process the tailings from the iron ore dressing plant at Panzhihua. Both installations will use power from Ertan.

Dravo and Harza Engineers have been discussing the Ertan project with the Chinese for several years. The US Water and Power Resources Service has also offered to help on this project.

Yangzi River estuary Heavy sedimentation in the lower Yangzi River and its estuary have prevented large ships from servicing inland river ports such as Nanjing and Wuhan. The Army Corps of Engineers which solved a similar problem in the Mississippi Delta by channeling the river to speed its flow, has offered to help the Chinese. A Dutch consortium signed a letter of intent in late 1978 for dredging the Yangzi estuary, but no final contract was ever signed. The project is being handled by the Ministry of Communications, which only recently became involved in US-China governmental discussions on water resources.

Power transmission. The Bonneville Power Administration (BPA) has agreed to analyze the power distribution needs and the design and construction of power lines. The Chinese have no national power grid as yet, but plans are underway to transmit power via super-high voltage lines in the 500 k range. Both the BPA and the Tennessee Valley Authority have experience operating 500 k lines. —DJ 宪

The Three Gorges Controversy Rages

Will the ambitious Three Gorges hydro project ever be built as planned? The debate continues between the Ministry of Electric Power, which has reservations about the project, and the Ministry of Water Conservancy and the Yangzi Valley Planning Office, which are eager to begin construction. The Chinese government has decided to set up a special review commission of technical personnel from several design institutes to check over the plans and address questions that have been raised about them.

The US government delegation of water resources experts that visited China in March toured the Three Gorges dam site and came away with a series of questions and doubts about the advisability of the project. "We suggested that if we were they, we would not make a final decision to invest the quantities of capital needed for the project unless and until we got detailed answers to some tough questions," said delegation leader Holsey Handyside of the Department of Energy. The main US objection was that the Chinese had not conducted a detailed examination of the alternatives. Among the questions raised by the team of US experts:

1. *Flood control* Might the Chinese flood control objectives be solved better by reinforcing levees downstream, by building flood storage dams, or by constructing three or four smaller vertical-rise dams on tributaries of the Yangzi?

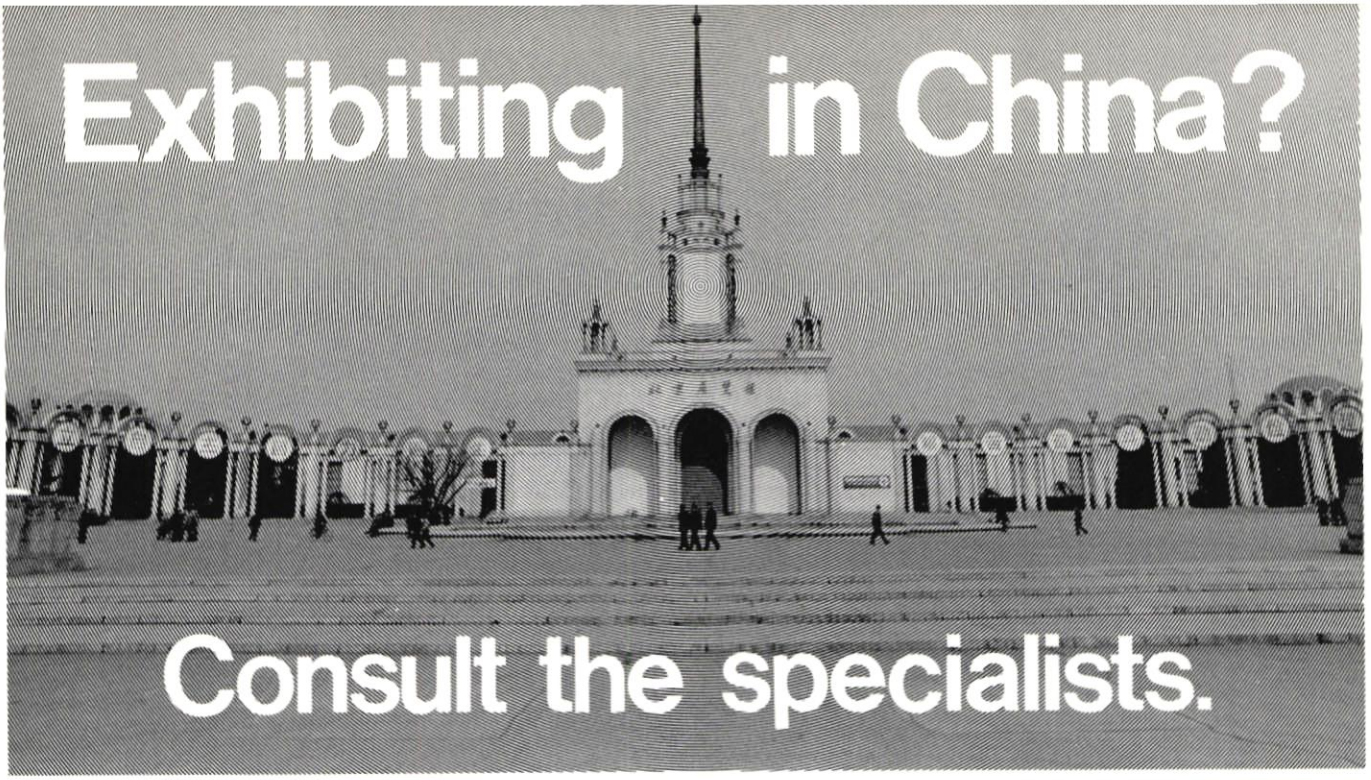
2. *Navigation* Could the Chinese speed up traffic on the river and reduce the amount of investment needed by building a series of lift locks along that section of the river rather than concentrating the locks at one site? Have the plans sufficiently taken into account the growing use of the river in the future?

3. *Hydropower* Would it be possible to obtain the same amount of hydroelectric power by building four to five smaller dams that could be completed in six years instead of fifteen years?

4. *Gezhouba* Will the Gezhouba dam's reservoir cause the Three Gorges dam sites upstream to flood, thus hindering construction or causing inefficient use of the smaller dam?

Questions of this nature are seriously troubling some Chinese officials as well. Given the huge amount of detailed technical planning that the Ministry of Water Conservancy has already put into the Three Gorges project, the decision to begin construction, or to abandon the project, is likely to be the outcome of a major political battle within the Chinese bureaucracy.

—DJ 龙



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China's Fisheries: Scaling Up Production

Jaydee R. Hanson

China is the world's third-largest fish producer and ranks first in aquaculture production. But the PRC's fish catches have leveled off—they are the same now as they were twenty years ago—and China is taking serious steps to improve both quality and output, aided by foreign technology and equipment. In this report by fisheries expert Jaydee R. Hanson, the problems of the industry in China are analyzed and the prospects for expanding foreign exchange earnings by careful cultivation of the "fruits of the sea" are assessed.

Fisheries, long one of the most neglected sectors of China's economic development, can be expected to provide a better supply of products in the future to both the Chinese domestic market and China's foreign-trade partners. The past few years have seen a renewed emphasis on rational management, resource conservation, and on modernizing the infrastructure of the industry.

The industry's potential is great. China is favored by a long, indented coastline with many harbors. A quarter of the world's trawling grounds are on China's 430,000 square miles of continental shelf with waters less than 200 meters deep. China's many long rivers and large lakes, coupled with her long history of aquaculture, give her ample resources, both natural and human, for the development of inland fisheries as well.

CHINESE FISHERIES PRODUCTION, 1949–1979

Year	Quantity (metric tons)
1949	450,000
1950	911,000
1951	1,330,000
1952	1,660,000
1953	1,890,000
1954	2,160,000
1955	2,500,000
1956	2,550,000
1957	3,120,000
1958	4,060,000
1959*	5,020,000
1977	4,700,000
1978	4,660,000
1979	4,305,000

Sources: *The People's Daily, February 23, 1957, April 7, 1958, March 28, 1960; Shi Shi Shou Ze,* No. 7, 1956; *UN Statistical Yearbook,* 1965; State Statistical Bureau, June 27, 1979 and April 30, 1980.
*No official figures were released between 1959 and 1977.

China's Fishery Resources

Until recently, no national statistics on China's fisheries production were available. On April 30, 1980, the PRC's State Statistical Bureau released fish production figures of 4.31 million metric tons in 1979 and 4.66 million metric tons in 1978. The 7.5 percent decline was attributed to the long-term consequences of overfishing, combined with the recent enforcement of aquatic protection laws. Though these amounts are significantly less than the 6.88 million tons estimated by the FAO for recent years, they are no mean totals, and place China third among the world's fishing nations. US catches for 1977 amounted to only 2.3 million tons.

The number of species available to the Chinese in their own waters exceeds 1,500, but only 40 or so of these are important commercially. Until recently, most fishing was done by trawling for a few major species such as herring, croakers, and hairtail fish. Recent developments have encouraged the use of seining for pelagic species like mackerel and tuna. As the Chinese have become more aware of the potential export earnings from these high-value fish, the emphasis of their industry appears to have changed, although the overfishing of the traditional species is certainly a factor in this shift.

Prawns, shrimp, lobster, and other shellfish have long been an important part of the Chinese fishery, and the catch of these, too, seems to be increasing, although overfishing has become a problem in the most heavily fished areas, such as the Bohai.

Geographically and ecologically, the Chinese fisheries can be divided into four distinct areas: the South China Sea Fishery, the East China Sea Fishery, the Yellow Sea Fishery, and the Bohai Fishery. Total marine production from these areas is estimated at 3.1 million metric tons for 1979.

The remaining aquatic produce comes largely from inland aquaculture and China's many rivers and lakes. China is the world's largest producer of cultured fish and is a recognized leader in this field. Grass carp, black carp, big head carp, mud carp (dace), and tilapia are the principal species raised. Expansion of aquaculture to other species and the improvement of existing technologies are areas in which China is willing to cooperate with other nations both through international scientific exchanges and in the purchase of improved technologies from Western and Japanese aquaculture ventures.

China's Ten-Year Fisheries Plan: More Conservation

The significance of international developments favoring a 200-mile fisheries zone seems not to have been lost on the Chinese. By 1977, China declared its intention to establish a 200-mile fisheries zone "when the time was right." In the meantime, it would concentrate on developing its fishing capacity.

A ten-year plan for the development of the industry (1976–1985) was drawn up with proposals to shift the concentration of fisheries from overfished coastal waters to deep-sea operations in the Yellow Sea, the East China Sea, and the South China Sea. Fishing vessels are being purchased from Japan, Hong Kong, and Norway for the short term, but the Chinese wish soon to construct their own deep-sea fishing vessels. Already, shipyards, machinery factories, cordage plants, and cold-storage facilities are being expanded or constructed.

While major emphasis has been given to mechanization, other aspects of the industry are not being neglected. A number of fisheries conferences held between 1977–79 have called for better conservation methods, the popularization of fish-breeding techniques, and the setting up of base areas for processing and marketing fish.

On April 4, representatives at a National Fisheries Working Conference deplored the fact that China ranks 100th in the world in per capita fish consumption with an average of a little more than 5 kg per person. By 1985, each coastal county in China is to build one to two state-run seawater breeding farms to supplement the seventy-seven existing ones and thereby give the population a maximum of what China's oceans can provide.

At a National Science Conference in March 1979, the minister in charge of the State Scientific and Technological Commission, Fang Yi, underscored the need for a comprehensive survey of fishing resources and an ecologically sound strategy for exploiting them. He said that it was necessary to increase freshwater production, marine fishing, fish breeding and fish processing in order to improve the diet of the nation's people. Fisheries were singled out as one of the 108 key areas for nationwide scientific and technological research.

The Chinese Aquatic Products Society was reestablished and held its first meeting in twelve years in Tianjin in July 1978. A paper presented by Fei Hongnian of the National Aquatic Products Research Institute, entitled "The Application and Prospects of Numerical Models in Studying the Ecology of China's Fish Population," represents the first application in China of computer techniques to the study of fisheries resources.

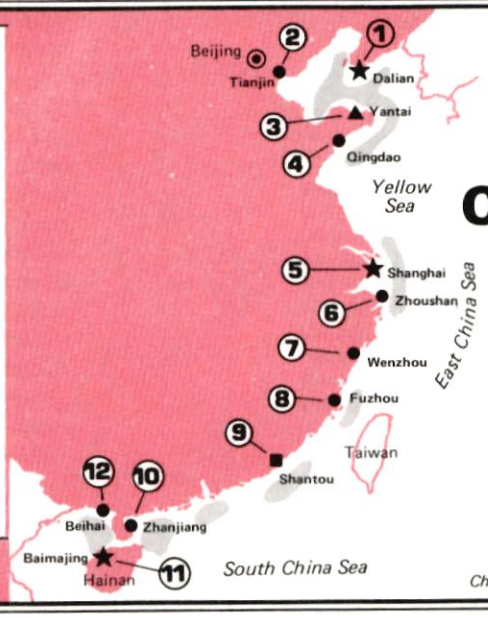
In October 1978, an editorial in the *People's Daily* declared fishing and fish breeding to be one of the most neglected sectors of the economy and deplored the disappearance of fish, an important source of protein, from the national diet. Throughout the remaining months of 1978, industry experts were very candid in their assessment of fishery problems and their causes.

At a recent joint meeting of the Fishery Resources Committee and the Ocean Fishery Committee of the Chinese Aquatic Products Society, it was acknowledged that yellow croakers, both large and small, may soon become extinct. Once the mainstay of Guangdong, Fujian, and Zhejiang fisheries, the species are threatened by increasing pollution and by overfishing on the part of localities eager to "turn a slack season into a busy season."

The policy of catching fish during the slack season meant an increase in fishing pressure during the spawning season of croakers. Guangdong's catch, which used to average 7,500 tons annually, has been reduced to negligible quantities.

China's Major Fishing Corporations

1. Lüda (Dalian) State Fishing Corporation, Liaoning Province
   Fleet: at least 150 trawlers and seiners
   Estimated annual catch: 80,000 metric tons
2. Tianjin State Fishing Corporation
3. Yantai State Fishing Corporation, Shandong Province
   Fleet: approximately 100 trawlers
   Estimated annual catch: 50,000 - 60,000 metric tons
4. Qingdao State Fishing Corporation, Shandong Province
5. Shanghai State Fishing Corporation
   Fleet: at least 200 40-meter trawlers of 600 hp, and 50 15-meter seiners
   Estimated annual catch: 130,000 metric tons
6. Zhoushan State Fishing Corporation (based in Shenjiamen), Zhejiang Province
7. Wenzhou State Fishing Corporation, Zhejiang Province
8. Fuzhou State Fishing Corporation, Fujian Province
9. Shantou State Fishing Corporation, Guangdong Province
10. Zhanjiang State Fishing Corporation, Guangdong Province
11. Nanhai (South China Sea) State Fishing Corporation (based in Baimajing), Hainan Island, Guangdong Province
    Fleet: at least 60 trawlers; number of seiners unknown
    Estimated annual catch: 30,000 metric tons
12. Beihai State Fishing Corporation, Guangxi Autonomous Region



Sources: Canadian Fisheries Mission *Report*, 1976; US Oceanographic Delegation, 1978; and author's research notes.

China Business Review May-June 1980

The Chinese Academy of Sciences, the Aquatic Products Bureau of the former Ministry of Agriculture and Forestry, and other related agencies sponsored a national forum in December 1978 on economic and scientific planning in the fisheries industry. It was reported that 300,000 tons of fish spoiled annually due to the lack of modern refrigeration facilities and techniques. More research was called for to prevent waste and to increase the output of fisheries products. The forum decided to establish a National Fisheries Institute of Economic Research.

A month later, the director of the Oceanography Institute of the Chinese Academy of Sciences, Zeng Chengkui, admitted that over the past dozen years (1966–1978) the output of aquatic products has remained steady while the quality of the products has declined. He proposed that mariculture could supplement deep-sea fishing as a means of expanding fisheries production.

In October 1978, an editorial in the *People's Daily* declared fishing and fish breeding to be one of the most neglected sectors of the economy and deplored the disappearance of fish, an important source of protein, from the national diet.

Grain Versus Fish

Freshwater fisheries also face serious difficulties. The deputy head of the State Aquatic Products Bureau, Cong Ziming, noted that the main reason for the decline in the freshwater catch lay in the destruction of fish ponds and the conversion of lakes and rivers to grain cultivation, according to a January 11, 1979, report in the *Guangming Daily*. He admitted that pollution and the construction of water projects were contributing factors. According to Cong, the amount of fish caught in China today does not even equal the level of twenty years ago. Moreover, the amount of freshwater aquatic products obtained from natural sources is about half what it was in 1954.

By February 1979, the State Council officially recognized overfishing as a serious problem and once again, as it had in 1964, promulgated regulations for the protection of aquatic resources. A circular sent to various municipalities, provinces, autonomous regions, and departments concerned demanded compliance with the new rules.

The regulations list endangered species, establish protected areas, define permissible gear and fishing methods, and instruct local governments to strengthen control over the fishing industry. Violators are to be dealt with "seriously." By November of last year, Guangdong and Shangdong provinces had also issued stern measures.

In the near future, it can be expected that those directing the development of China's fisheries will concentrate on modernization of the fishing fleet and the further development of ocean culture. China is presently the world's largest buyer of used shipping tonnage, including fishing boats.

It is unlikely that Chinese fishing vessels will venture too far from home, since fishing areas within what would become a 200-mile fisheries zone are substantial. In particular, the area of the South China Sea claimed by China represents a substantial fishing ground. Japan and other fishing nations can expect their portion of the catch in Chinese waters to decline sharply in the future, but for the short term at least, China will continue to be a major market for both new and used vessels and for fishing technology.

China's Fisheries Organization

Responsibility for fisheries matters in China currently falls under the General Bureau of Aquatic Products of the State Council (see box). The bureau is responsible for setting national policy, including production targets for each region. Meeting these targets is the responsibility of individual production units.

There are two basic types of fishing enterprises: state fishing corporations and fishing communes.

State Fishing Corporations Since the establishment of the first state fishery corporation in 1950, such state-owned corporations have gradually assumed a larger role in the Chinese fishing industry. There are seven major corporations and about twenty smaller, province-level ones. They currently account for some 20 percent of the nation's harvest. However, their role in the export market is much larger.

The state-owned enterprises often include shore processing and cold-storage facilities; ice-making plants; and boat building, repair, and maintenance facilities. With governmental assistance, the state-owned enterprises also function as important centers for the gathering of basic data on fish stocks and research into the modernization of the industry. Domestic sales from the state-owned corporations are distributed to local retail markets through marketing agencies under the Bureau of Commerce.

Domestic raw, processed, and all export products are handled by their respective marketing agencies. Exports are handled by the China National Cereals, Oils, and Foodstuffs Import-Export Corporation (CEROILS). Purchase prices vary according to the quality of the fish, with four grades in the fresh fish market.

Commune Fisheries Communes in China's 150-odd coastal counties are responsible for the bulk of the marine catch of 3.1 million tons. While perhaps 50 percent of the vessels are now motorized, a large portion of the catch comes from economical, but short-range, sailing vessels. A lack of processing and preservation technologies means that communes distant from major urban markets must salt and dry large portions of their catch at a considerable loss in potential income.

Thus, while communes catch a large part of the total yield, their economic contribution to fisheries production is less than it could be. Most commune marine fishermen, who earn workpoints in the same manner as peasants, undoubtedly earn far less than their salaried cousins in the state corporations.

Freshwater fisheries communes, on the other hand, are generally suburban. The proximity to cities permits these fishermen to market their produce fresh and to earn incomes comparable to urban workers in their area.

Foreign Assistance in Marine Fishing

The difficulty of integrating the catch of commune marine fishermen into the national marketplace and the export market may be a major factor in China's decision to expand the fishing capabilities of a dozen large fishing corporations by 1985.

Realizing the increasing value of the export of fisheries products as a means of obtaining foreign exchange, the Chinese have launched a major program for modernization of their fleets and processing capacity. Efforts to obtain Japanese assistance in developing fishing, agriculture, and processing technologies has led to purchases of numerous Japanese fishing vessels. Meanwhile, China has greatly expanded its own vessel construction program.

Japan's Taiyo Fisheries Corporation has signed several fishing compensation agreements with the PRC. It is assisting in the development of fisheries in Zhejiang and Guangxi provinces and the Bohai Gulf. Taiyo has already obtained guarantees from the Bank of China for the export of 30 shrimp trawlers under a compensation trade formula to help the Beihai Fishing Corporation of Guangxi Province to modernize its operation. In exchange for the vessels, valued at ¥960 million ($4.8 million) each, Taiyo will receive an unspecified amount of shrimp.

The Taiyo plan for modernizing the Zhejiang facilities calls for the organization of a large pelagic fishing fleet, a new fishing port, and the establishment of processing, cold storage, and other facilities at a cost of ¥200,000 to ¥300,000 million ($830–1,250 million). An earlier agreement involved Taiyo in a prawn-fishing venture in the Bohai.

Marubeni Corporation's Hoko Fishing Company has reached agreement with Beijing authorities to modernize fishery facilities in Guangdong as part of a ten-year development plan. The project is estimated to cost more than ¥100 billion ($415 million at current exchange rates), with the Japanese firms providing all of the necessary equipment and training to catch and process 300,000 metric tons of aquatic produce annually. Equipment sold by Hoko includes fishing boats, refrigeration and processing plants, port and harbor facilities, and transportation equipment. Payment will be made in marine products.

At least five other agreements involving a purchase of up to 150 trawlers are being negotiated or have been signed with Hong Kong, Norwegian, US, and Philippine businessmen.

Prawns for Dollars

With an annual production of some 1.5 million tons of fish from aquaculture, China ranks first in the field. However, most of this production comes from carp species, which are favored by Chinese but do not have a large export potential. The rationale for developing the aquaculture of other economic species was perhaps best expressed by Yang Haiqun in the October 18, 1978, *People's Daily:*

CANNED CHINESE FISHERIES PRODUCTS REGISTERED WITH THE US FOOD AND DRUG ADMINISTRATION

As of December 1979

CEROILS Branch	Factory and FCE Number	Item	Can Size*
Shanghai	Maling Canned Food Factory No. 06186	Long-tailed anchovy, fried	511 × 315 × 106
Guangdong	Kwangtung (Guangdong) Cannery No. 06188	Fried dace packed in oil	514 × 214 × 113
		Fried dace with salted black bean (without packing media)	514 × 214 × 113
Zhejiang	Hangchow (Hangzhou) Canned Food Factory No. 07091	Cuttlefish in soy, seasoned and whole	307 × 202
		Fried fish (such as black carp, sliced in soy sauce with vegetable oil)	400 × 201
		Mackerel in oil	415 × 301 × 104
		Mackerel fillet in oil	497 × 207 × 102
		Mackerel in tomato sauce	203 × 308
		Marine eel in tomato sauce (sliced)	400 × 113
		Smoked marine eel in peanut oil (sliced)	400 × 113
Dalian	Luta (Luda) Canned Food Factory No. 07377	Baby clams (whole) water and salt added	307 × 206
		Chinese mackerel in tomato sauce	606 × 400 × 108
		Mackerel in tomato sauce	600 × 400 × 108
		Marine carp in tomato sauce	606 × 405 × 108
		Marine eel in oil	400 × 113
		Sardines in tomato sauce	606 × 405 × 108
		Top shell in soy sauce	301 × 303

*The notation "511" means 5-11/16 inches, for example, and "301" = 3-1/16 inches.
Source: FDA; data as of December 1979.

"The cultured prawn, crab, clam, oyster, scallop, seaweed, and pearl are all aquatic products for export at high rates of foreign exchange. The export of one ton of prawn will bring back in exchange 56 tons of wheat."

The building of one or two state breeding farms in each coastal county is planned by 1985. Twenty-five new prawn, oyster, clam, sea slug and eel breeding centers have already been established in Liaoning, Shandong, Jiangsu, Zhejiang, Shanghai, Guangdong, and Fujian.

The raising of high-value fish in suspended nets, known as net culture, is already the subject of experimentation in Zhejiang. Groupers raised by this method in Hong Kong sell live for as much as US$100 per kilo. Elsewhere, intensive culture of traditional pond fish is producing impressive yields, albeit at a high cost. Each hectare of a new pond may cost ¥3,000 ($2,010). China is reportedly going to import new technology and equipment to increase net culture and pond fish output.

Trafalgar Housing Company of Hong Kong has already signed a compensation agreement for prawn farming. Several Japanese companies have either already signed similar agreements or will do so soon. Though the US does not have a large aquaculture industry, it is well developed in the culture of several species—especially catfish and trout—and the US could presumably arrange similar compensation agreements in exchange for technical advice.

Exports

Since the founding of the People's Republic in 1949, exports have been important to the Chinese fishing industry. Exports to the Soviet Union reached an all-time high in 1958 when China exported 18,700 tons of fish valued at 10,620,000 rubles ($12 million). Since then, Japan and Hong Kong have been China's largest markets for fisheries products. While the total quantity of Chinese exports to each has not grown appreciably, the value has grown considerably. This is due in part to the rising value of fisheries products, but largely to increased exports of

JAPAN FISHERIES PRODUCTS IMPORTS FROM CHINA, 1977–78

(quantity in metric tons and value in million US$)

Item	1977 Quantity	1977 Value	1978 Quantity	1978 Value
Live fish (mostly eels)	19	3.9	25	10.4
Fresh or frozen:				
Spanish mackerel	1894	2.4	1373	1.7
Prawns, etc.	3749	32.9	9205	89.0
Clams	9285	6.3	6957	6.6
Other	8700	0.7	3950	8.2
Salted, smoked:				
Herring roe	397	4.1	700	8.9
Jellyfish, trepang	335	1.5	1117	6.4
Other	31	0.2	60	0.3
Seaweeds	722	0.5	1412	1.2
Canned and prepared: (largely crustaceans and mollusks)	7850	10.8	9514	1.2
TOTAL	**32982**	**63.3**	**34313**	**133.9**

Source: Japanese Import Statistics

CHINESE FISHERIES EXPORTS TO HONG KONG, 1975–78

(thousand US $*)

Type of Fish	1975	1976	1977	1978
Freshwater fish	41,296	50,254	53,165	53,734
Marine Fish	5,870	5,915	6,251	6,786
Prawns	11,678	18,576	9,163	10,675
Oysters	757	1,175	1,176	899
Squid, cuttlefish, octopus	2,123	2,873	1,424	3,240
Other crustaceans, mollusks	2,634	2,995	3,028	2,117
Fish fry, sharkfin, and aquarium fish	273	365	1,529	2,961
TOTAL	**64,631**	**82,153**	**75,736**	**80,412**

*Trade statistics were converted into US dollars according to the following year-end exchange rates: 1975, 5.0251; 1976, 4.6403; 1977, 4.6040; 1978, 4.6296; and 1979, 4.9350 (Hong Kong dollars per one US dollar).

Source: *Hong Kong Trade Statistics*, various dates.

CHINA'S GENERAL BUREAU OF AQUATIC PRODUCTS

Formerly under the Ministry of Agriculture and Forestry (1970–78) this bureau is now directly under the State Council, reflecting the greater emphasis currently placed on fisheries in the PRC.

Director: Zhang Zhao
Director General: Xiao Peng
Deputy Directors: Bao Guangzong, Cong Ziming

Regional Bureaus under the General Bureau:

1. Guangdong Aquatic Products
   Director: Zhang Jizhang
2. Shanghai Aquatic Products Bureau
   Director: Xiao Lin
3. Qingdao Aquatic Products Bureau
   Director: unknown

Research Institutes of the Bureau of Aquatic Products:

1. Nanhai (South China Sea) Aquatic Products Research Institute, Guangdong (which engages in marine products research)
   Deputy Director: Dong Guangsheng
2. Zhujiang (Pearl River) Freshwater Fisheries Research Institute, Guangzhou (location Of UN Aquaculture Technician Training Program, specialized in carp culture)
   Deputy Director: Chong Lin
3. Yangzi River Freshwater Breeding Institute, Shazi, Hubei
   Director: unknown
4. Donghai (East China Sea) Aquatic Products Research Institute, Shanghai
   Director: unknown
5. Institute for Fisheries Mechanizations, Shanghai
   Director: unknown
6. Institute for Fisheries Economics, Tianjin
   Director: unknown

Societies:

1. China Aquatic Products Society (nongovernmental agency responsible for all-around development of the industry with special emphasis on aquaculture)
   Director: Zhang Chao
2. China Fishery Society (nongovernmental agency coordinating marine fishing concerns. Between 1956 and 1975 this body was party to "unofficial" fishing agreements between China and Japan.)
   Director: Xiao Peng

high-value crustaceans, fresh clams, oysters, fish roes, and a generally higher quality product than was available in earlier years.

China greatly increased seafood exports to the US in 1979, as the following table indicates:

US IMPORTS OF CHINESE AQUATIC PRODUCTS, 1978–79
(quantity in metric tons and value in thousands of US dollars)

Item	1978 Quantity	1978 Value	1979 Quantity	1979 Value
Frogs	—	—	37	143
Fresh, chilled frozen finfish	671	846	810	1,159
Salted, dried, pickled, and smoked fish	71	353	52	203
Canned finfish	43	75	100	187
Fish roe, fishballs, and other fish preparations	18	113	13	109
Mollusks and crustaceans:				
Clams	8	17	17	18
Oysters and oyster juice	30	101	13	115
Abalone and scallops	1	7	1	22
Shrimps, crabs, and lobsters	20	141	1,363	14,934
Shellfish, nonspecified	92	528	99	516
Pastes, seaweeds, and other preparations	71	198	91	251
Shells and fish not for human consumption	7	89	3	71
Gelatines, hormones, and medicinal preparations	23	189	313	441
Coral, pearls, and other decorative items	—	905	—	684
TOTALS*	**1,056**	**3,563**	**2,915**	**18,856**

*Source: US Department of Commerce. Columns will not add exactly due to rounding

Prawns dominated US sales, accounting for nearly $15 million, or 79.2 percent of China's exports of aquatic products to the US in 1979. China's frozen shrimp, with a few exceptions, have proved to be of high quality and are not subject to special inspections for contamination as are those of Taiwan and five other major exporting nations. A number of canned Chinese fisheries products have FDA approval and more should be approved soon. At present, Chinese canned goods seem to be imported largely by Asian-American food concerns, but with better labeling and an increased variety of products, more Chinese canned fish should find its way onto supermarket shelves. Chinese scientists plan to visit the US in 1980 to gain an overview of the US seafood industry and marketing methods.

The bulk of China's seafood trade will almost certainly remain with Hong Kong, Japan, and other Asian nations—markets that share the Chinese cultural preferences in aquatic products—as these have obvious locational advantages for trade with China and, perhaps more importantly, are willing to pay comparatively high prices for products considered "exotic" in the West.

Nations fishing in Chinese waters should expect to decrease their efforts near China as it moves to implement some form of 200-mile fishing regime. This is not an insignificant event—in 1976 Japan harvested, in waters within what could become a Chinese fishing zone, four times the amount of fish it imported from China.

Overall, the modernization of China's fishing industry can be expected to yield higher-quality products accompanied by a modest increase in total production. The real benefits will be in a wider selection of quality fishery products for both domestic and overseas markets. 完

Importer Spotlight

A Noble Idea Pays Off

The trendy and traditional blend at Noble Traders.

Handwoven straw boxes dangle from a silken cord. Curved, elegant fingernail guards, trimmed in ancient art, adorn a silver chain. At the Noble Trading Company, ways Western and things Chinese blend easily into a fashionable, successful enterprise that remains unique in an increasingly competitive market.

Three Noble People—which names the retail business and describes the innovative trio who started it all—has opened a side door to the lucrative arena of US-China trade. Its secret: translating what the Chinese do best into what American women want most. Just three and one-half years ago Ruth Noble Groom and Leslie Schweitzer decided to take up Washington attorney Martin Klingenberg's offer to connect them with the proper Chinese authorities if they could think of something to import. The women soon latched onto the idea of marketing Oriental antiques, and later handcrafted jewelry, in the US.

Today, 12 buying trips and several million dollars worth of receipts later, the three partners not only sell Chinese clothing and artifacts adapted into fashion accessories for their own business, but they also market these items for other companies who half-willingly entered the world of Chinese arts and crafts.

The idea is based on countertrade—where the seller agrees to purchase goods from the buyer equal to a percentage of the sales contract value. In China a countertrade arrangement may mean the difference between a ministry closing and canceling a deal. So American businesses, only now realizing the full extent of China's hard-currency needs, are learning that the best way to sell heavy equipment, for instance, may be to buy some handmade artifacts in return.

Usually the agreed-upon amount is minuscule—maybe $100,000 worth of Chinese jewelry in a million-dollar deal, Groom says. But the impact is potentially large.

Groom points out that in the short term, the currency has a beneficial effect on the Chinese economy, which craves hard cash to finance the country's industrial growth. In the long term, however, the deal sometimes brings on undesired results. If an American firm with little specific knowledge of Chinese goods makes an indiscriminate buy, she explains, the deal may damage overall US demand for the crafts as the company accepts "poor-quality goods and dumps them on the market." Both sides lose out in the process.

To those three noble people, this state of affairs just didn't make sense. "American businessmen are among the best," says company president Groom, "but something happens to them when they go to China. They become weak negotiators. We wouldn't make a buy on items we couldn't make money on. But they would."

This perception sparked Noble's countertrade idea. Late last year the company decided to arrange a purchase program to help protect the US market for its stock-in-trade, aid American businesses, and make some money as well. The procedure is disarmingly simple. Once the US firm and PRC ministry have determined the transaction is in order, Noble Traders investigates the possibility of making that purchase in arts and crafts. Groom says the firm then offers Noble's proposal while the proper Chinese ministries and foreign trade organizations work out the details.

For a $4,000 flat fee, plus 15 percent of the goods' cost exclusive of duty, the Noble traders head East to sort through China's vaulted treasures, land the deal, and market the goods through a nationwide merchandising system. Only after Noble pays back the firm's initial investment do the two companies split the profits 50-50.

Twenty-four months later, if Noble hasn't returned the investment and turned a profit, the confident traders take full responsibility for the goods. Offers Groom optimistically, "There's no way to lose."

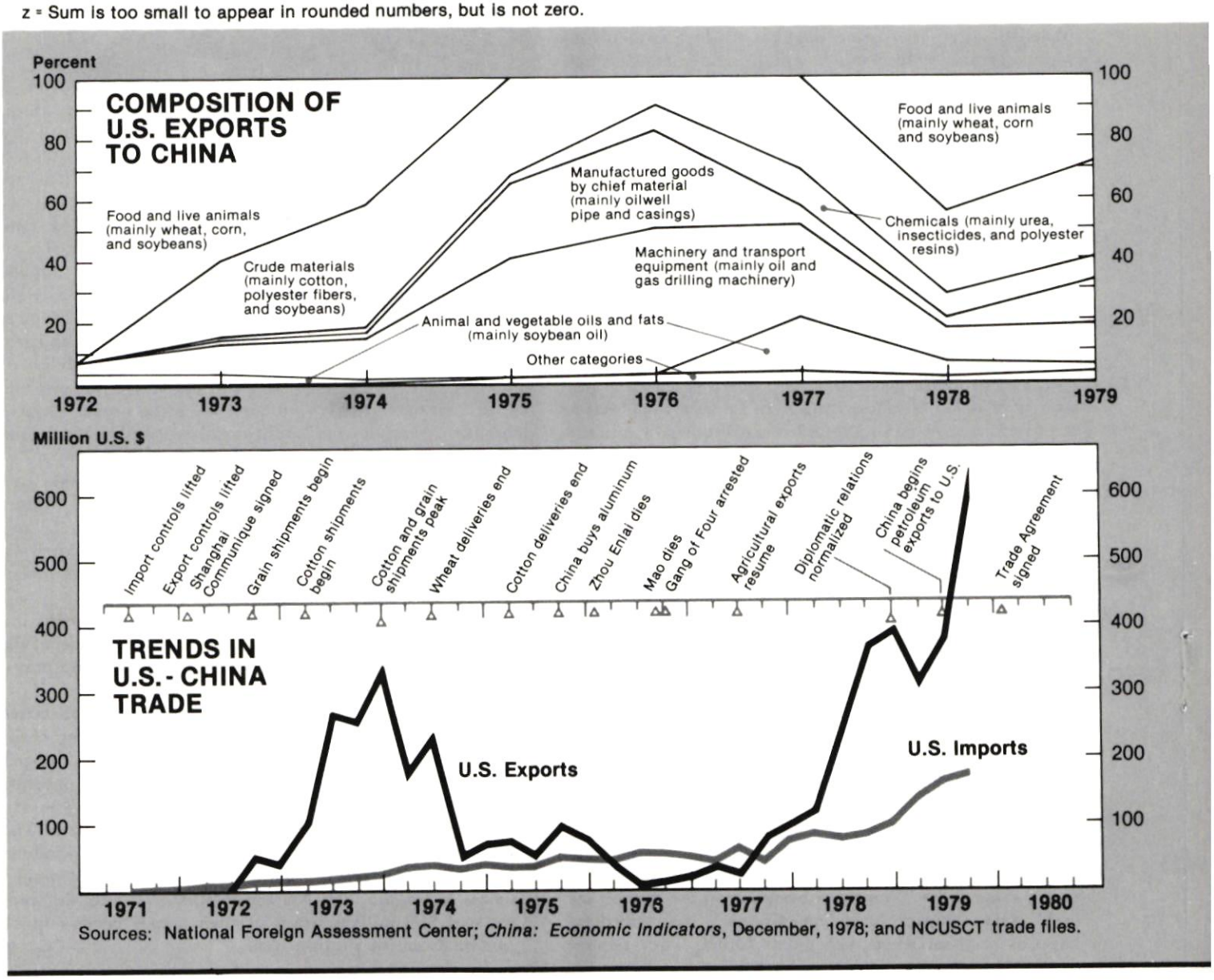
So far, fortune has smiled kindly on the two attractive women and their "inscrutable," as Groom calls him, chairman of the board. Of the four trade programs arranged to date (including two involving machinery and one textiles), Noble already has sold all of one company's goods. Regular business continues on the upswing as well. The company's antique and original wares adorn the windows of some of the nation's finest stores, including Bloomingdale's, I. Magnin, and Neiman-Marcus. Last year the traders sold $1.8 million worth of their trendy goods—up 40 percent from the previous year. —CG 完

U.S. - CHINA TRADE, 1972-79

Commodity Category	1972 U.S. Exports	1972 U.S. Imports	1973 U.S. Exports	1973 U.S. Imports	1974 U.S. Exports	1974 U.S. Imports	1975 U.S. Exports	1975 U.S. Imports
Food and live animals	59.08	4.20	410.08	5.97	329.70	13.45	0.02	14.26
Beverages and tobacco	0.00	negl.	1.36	0.65	2.72	2.83	0.00	1.77
Crude materials, inedible, except fuels	0.00	12.29	171.90	14.62	328.08	16.33	100.13	17.59
Mineral fuels, lubricants, and related products	0.00	0.00	z	0.42	0.23	0.11	0.20	0.00
Animal and vegetable oils and fats	2.20	z	19.21	0.73	7.54	0.37	0.01	1.91
Chemicals	z	2.08	7.85	8.23	10.18	18.36	5.28	15.94
Manufactured goods by chief materials	0.00	7.46	9.08	21.01	18.59	42.74	73.75	79.37
Machinery and transport equipment	2.25	0.07	68.76	0.37	106.75	0.09	118.80	0.30
Miscellaneous manufactured articles	0.00	6.06	0.86	11.16	2.71	19.23	4.97	25.62
Items and transactions not classified	0.00	0.00	0.00	0.79	0.35	1.16	0.47	1.57
TOTAL	63.53	32.16	689.10	63.95	806.85	114.68	303.63	158.33

*Free alongside ship (f.a.s.) and free on board (f.o.b.) data differ in that the former excludes loading costs.

z = Sum is too small to appear in rounded numbers, but is not zero.

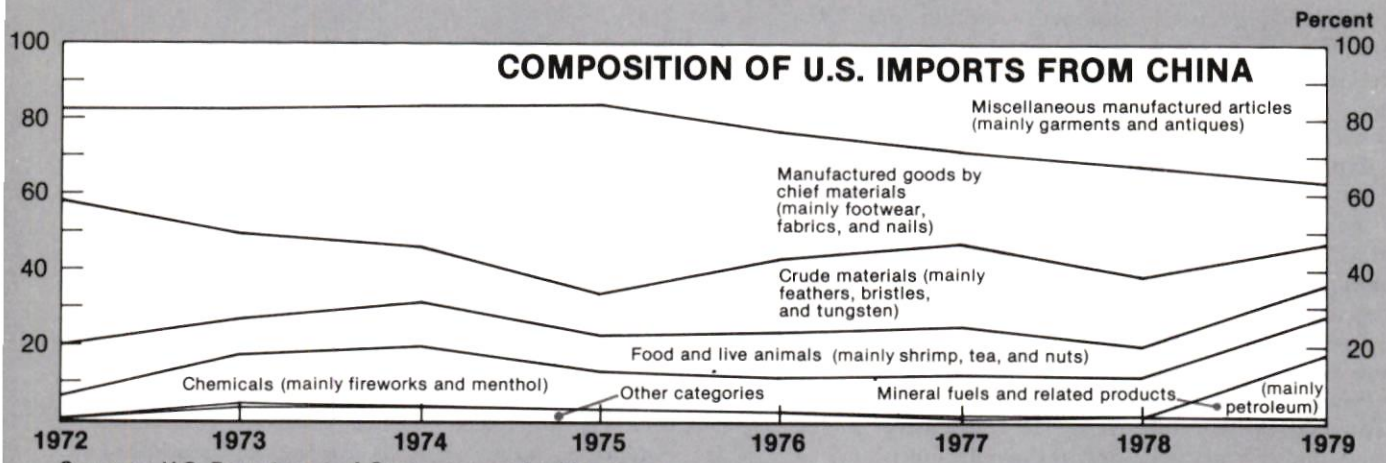


Sources: National Foreign Assessment Center; *China: Economic Indicators*, December, 1978; and NCUSCT trade files.

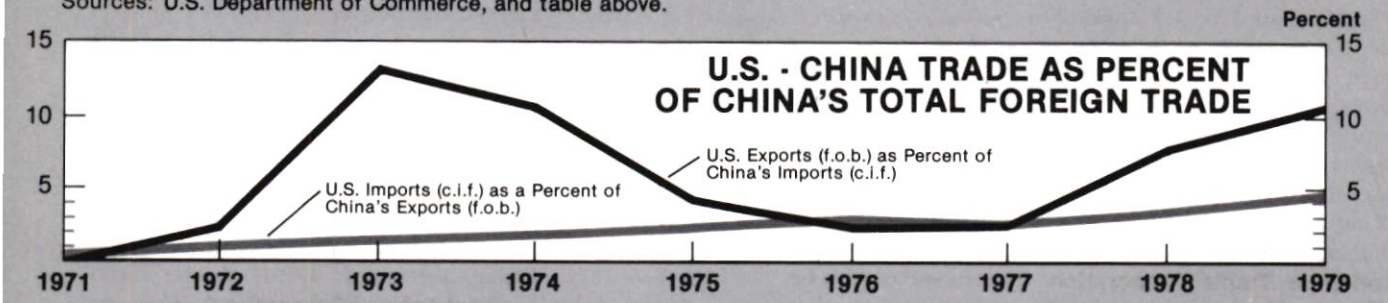
Million current U.S. dollars, exports f.a.s., imports, f.o.b.*

1976		1977		1978		1979			
U.S. Exports	U.S. Imports	U.S. Exports	U.S. Imports	U.S. Exports	U.S. Imports	U.S. Exports	% Change	U.S. Imports	% Change
0.00	23.82	0.03	25.72	362.25	25.99	488.27	34.8	51.40	97.8
z	0.35	0.00	0.32	0.00	0.61	0.09	—	0.77	26.2
13.02	38.49	52.35	44.05	223.90	57.99	531.81	137.5	66.04	13.9
0.11	z	0.06	0.95	1.77	z	0.67	-62.1	96.44	—
0.00	2.43	31.99	0.06	37.78	3.26	42.04	11.3	3.43	5.2
10.44	18.03	19.60	21.79	60.49	34.23	125.17	106.9	59.79	74.7
43.30	68.32	10.84	49.56	25.30	95.10	243.93	864.2	93.38	-1.8
65.12	1.33	51.88	0.55	93.01	0.48	228.72	145.9	1.12	133.3
3.38	47.49	4.54	58.01	13.71	105.38	55.20	302.6	215.47	36.4
0.02	1.64	0.03	1.66	0.04	0.91	0.60	1,400.0	4.44	387.9
135.39	201.92	171.32	202.66	818.24	323.95	1,716.50		592.28	

Sources: Office of East-West Policy and Planning, U.S. Department of Commerce; *U.S. Trade Status with Communist Countries*, 1974-80; and NCUSCT trade files. Because of rounding, components may not add up to the totals shown.



Sources: U.S. Department of Commerce, and table above.



Sources: Table below, and NCUSCT files.

CHINA'S TOTAL FOREIGN TRADE

(Million U.S. $)	1972	1973	1974	1975	1976	1977	1978	1979
Exports, f.o.b.	3,150	5,075	6,660	7,180	7,265	7,955	10,003	13,686
Imports, c.i.f.	2,850	5,225	7,420	7,395	6,010	7,100	11,113	15,688
TOTAL	6,000	10,300	14,080	14,575	13,275	15,055	21,116	29,374
Trade Balance	300	-150	-760	-215	1,255	855	-1,110	-2,002

Sources: National Foreign Assessment Center; *China: International Trade*, 1977-78; U.S. government estimates differ from official PRC trade data released by Xinhua, April 30, 1980.

China Inc.

You Can't Tell the Players Without a Program

A new crop of foreign trade corporations (FTCs) has shown up for spring training, meaning increased opportunity for mixed signals as well as new talent for China trade scouts to discover. Many of the new players are pinch-hitting for industrial ministries; others are spin-offs of existing FTCs; and still others are apparently free agents. Key players in the new lineup:

• **Foreign Trade Consultancy and Technical Service Corporation.** Established by the Ministry of Foreign Trade itself, this new body will eventually act as a consultant both to Chinese end-users and to foreign companies doing business in China, and will reportedly publish a bimonthly magazine to disseminate scientific, technical, and industrial information within the PRC. Additionally, it seeks to work with foreign companies to establish technical service centers using Chinese personnel.

• **China National Machinery and Equipment Import and Export Corporation (EQUIMPEX).** Under the First Ministry of Machine Building, which is primarily responsible for civilian equipment production, it handles: complete industrial equipment; machine tools; presses; metal forming, forging, foundry, and woodworking machinery; cutting and measuring tools and fasteners; electric equipment; automobiles; bearings; heavy-duty machinery and mining equipment; general-purpose machinery; scientific instruments; meters; cameras; and cinematographic machinery. EQUIMPEX will engage in cooperative production and compensatory trade, and its expanded role allows the First Ministry of Machine Building to purchase both single items of equipment and packages rather than having to go through MACHIMPEX or TECHIMPORT. EQUIMPEX is not expected to compete with MACHIMPEX in purchasing equipment for other ministries.

Deputy Managing Director: Mr. Xing Beijun. Manager, Import Department: Mrs. Wang Shuyuan. Address: 12 Fu Xing Men Wai Street, Beijing. P.O. Box 2118, Beijing. Cable: EQUIMPEX BEIJING. Telex: 22186 EQUIP CN.

• **Container Traffic Corporation.** Established under the Ministry of Communications, CTC will promote the use of containers in China's foreign trade, Xinhua News Agency announced. The release noted that the ports of Shanghai, Tianjin, Qingdao, and Huangpu handled a total of 32,700 containers in 1979, a threefold increase over 1978. The Ministry of Communications' China Ocean Shipping Company (COSCO), which has four container vessels, has opened a route to Australia and another from Shanghai and Tianjin to Hong Kong. By the end of last year, the Ministry had 2,070 one-, two-, and three-ton containers.

• **China Metallurgical Import-Export Corporation.** Under the supervision of the Ministry of Metallurgical Industry, this corporation was established early this year to handle compensatory trade, joint ventures, and the import and export of metallurgical technology, equipment, and products. It trades in minerals, metals, machine parts and components, metal castings, valves, trucks, and truck parts. Address: 46 Dongsixi Dajie, Beijing; telex: 22461 MIEC CN; cable: 2250 BEIJING.

• **China Nuclear Energy Industry Corporation.** Set up last year under the aegis of the Second Ministry of Machine Building, this corporation exports air filters, vacuum valves, dosimeters, radioactive detection elements, and optical instruments.

Deputy General Manager: Mr. Liu Junfu, Address: P.O. Box 2139, Beijing.

• **Automobile Components Corporation.** Newly established within the First Ministry of Machine Building's General Bureau of Automotive Industry, it will deal with technical affairs and may be involved in a revamping of China's automotive parts industry.

• **China National Electronic Technology Import and Export Corporation.** Set up by the Fourth Ministry of Machine Building, this new corporation will handle direct import and export of electronic products and equipment. Export responsibilities include planning, pricing, purchasing, staging of exhibitions, and the provision of technical services and spare parts. The corporation is headquartered in Beijing but will open branches in Guangzhou, Shanghai, and Tianjin. Exports include electronic components; semiconductors; communications, navigation, broadcasting, and TV equipment; and computers. Liu Yin, vice minister of the Fourth Ministry of Machine Building, is chairman of the board of directors. Address: 49 Fuxing Road, Beijing. Cable: 0022. Telephone: 810910.

• **China National Aerotechnology Import-Export Corporation.** Under the Third Ministry of Machine Building, which specializes in aircraft construction, it exports signal flares, electric detonators, tachometers, parachutes, general-purpose aircraft, and crop-dusting equipment. Address: P.O. Box 1671, Beijing. Telephone: 442444. Cable: CAID.

• **China Avionics Technology Corporation.** This corporation was announced in conjunction with a 26-member delegation going to the UK in July, headed by Chen Shaozhong, vice minister of the Third Ministry of Machine Building, and including the deputy general manager of the CATC, Sun Haoqing.

• **Corporation of Shipbuilding Industry.** Also called the Industrial Shipbuilding Corporation under the Sixth Ministry of Machine Building, this corporation will soon establish an office in Hong Kong to promote PRC ship exports. Its exhibition at the spring Guangzhou fair included materials on tanker, cargo, and passenger ships, as

well as pleasure boats, and marine engines. General Manager: Liu Qing.

• **North China Industrial Corporation.** Under the Fifth Ministry of Machine Building, the corporation exports measuring tools, bearings, calipers, optical instruments, hydraulic presses, dynamite, and other products. Previously under MACHIMPEX, apparently this body sent its own representatives to the spring Guangzhou fair. Address: P.O. Box 2137. Cable: NORINCO, BEIJING.

• **China National Machine Tools Corporation.** Identified through advertisements in the *Beijing Review,* it offers single- and multipurpose machines, indexing-table and indexing-drum machines, multispindle vertical drilling and boring machines, and transfer lines. Address.: San Li He, Beijing. Telex: 22341 CN.

• **Beijing Computer Company.** This company purchases low-level technology computer kits from American firms for resale to universities.

• **China Precision Machinery Corporation.** This corporation also exhibited at the spring Guangzhou fair, and handles exports of rubber seals, mountings, blanket pipe castings, screws, nuts, pins, rivets, hard hats, measuring and cutting tools, circuits, and TVs. The chief engineer, Zhen Huaijin, is a director of the Chinese Society of Aeronautics and Astronautics.

• **China National Light Industrial Products Corporation.** A spin-off from the Tianjin Branch of the China National Light Industrial Products Import and Export Corporation, this organization was established in early January to concentrate on paper goods, stationery, rubber and canvas footwear, Chinese and Western musical instruments, and sporting goods. Address: 172 Liaoning Road, Tianjin. Cable: STASPORT. Telex: 22506 TJLP CN.

In addition to these 15 corporations, the Ministry of Coal Industry and Ministry of Chemical Industry have recently set up their own import-export corporations, according to members of the Chinese nonferrous metallurgical delegation which visited the US in May. But their names, commodity specialities, and addresses are not known as yet. —KIB 充

NEW AND OLD FTCs

The Foreign Trade Corporations (FTCs) under the Ministry of Foreign Trade once exercised monopoly control over product categories which are now also traded by foreign trade corporations recently established under ministries. The following ministerial corporations have the authority, independent of the FTCs, to initiate negotiations and sign foreign trade contracts:

Ministry	New Ministerial Trading Corporation	Old FTC with Overlapping Jurisdiction
First Ministry of Machine Building	EQUIMPEX	MACHIMPEX, TECHIMPORT
First Ministry of Machine Building	Automobile Components Corporation	MACHIMPEX
Second Ministry of Machine Building	China Nuclear Energy Industry Corporation	INSTRIMPEX
Third Ministry of Machine Building	China National Aerotechnology Import-Export Corporation	INSTRIMPEX
Fourth Ministry of Machine Building	China National Electronic Technology Import and Export Corporation	INSTRIMPEX
Fifth Ministry of Machine Building	North China Industrial Corporation	MACHIMPEX
Sixth Ministry of Machine Building	Corporation of Shipbuilding Industry	MACHIMPEX
Eighth Ministry of Machine Building	China Precision Machinery Corporation	INSTRIMPEX, MINMETALS
NA	China National Machine Tools Corporation	MACHIMPEX
NA	China National Light Industrial Products Corporation*	INDUSTRY
Ministry of Chemical Industry	China Chemical Construction Corporation	TECHIMPORT
Ministry of Communications	Container Traffic Corporation	MACHIMPEX
Ministry of Geology	China National Geological Exploration Corporation	MACHIMPEX
Ministry of Metallurgical Industry	China Metallurgical Import-Export Corporation	MINMETALS
Ministry of Petroleum	Yanshan Petrochemical Corporation**	SINOCHEM, TECHIMPORT

* Probably under Ministry of Light Industry.
** In addition to this corporation, a special Import-Export Corporation under the Ministry of Petroleum is under consideration.
Sources: National Council Representative in Beijing, Richard Glover, and National Council Director of Importer Services, Carolyn Brehm.

48 US BANKS WITH FULL CORRESPONDENT RELATIONS WITH THE BANK OF CHINA
May 1980

Atlanta
Trust Co. Bank

Birmingham
First National Bank of Birmingham

Boston
First National Bank of Boston

Charlotte
North Carolina National Bank

Chicago
Continental Illinois National Bank and Trust Co. of Chicago
First National Bank of Chicago
Northern Trust Co.

Columbia
South Carolina National Bank

Dallas
First National Bank in Dallas
Mercantile Bank
Republic National Bank of Dallas

Detroit
Manufacturers National Bank of Detroit
Michigan National Bank of Detroit

Sources: National Council representative in Beijing, Richard Glover; and National Council financial files.

District of Columbia
American Security Bank, N.A.

Honolulu
Bank of Hawaii

Houston
First City National Bank of Houston
Texas Commerce Bank, N.A.

Los Angeles
California First Bank
Crocker National Bank
Security Pacific National Bank
United California Bank

Memphis
Commerce Union Bank

Minneapolis
First National Bank of Minneapolis

New York
Allied Bank International
American Express International Banking Corp.
Bankers Trust Co.
Chase Manhattan Bank, N.A.
Chemical Bank
Citibank, N.A.
European American Bank and Trust Co.
Irving Trust Co.
Manufacturers Hanover Trust Co.
Morgan Guaranty Trust Co. of New York
Republic National Bank of New York

Philadelphia
First Pennsylvania Bank, N.A.
Girard Bank
Philadelphia National Bank
Provident National Bank

Phoenix
Valley National Bank of Arizona

Pittsburgh
Pittsburgh National Bank

Portland
First National Bank of Oregon

San Francisco/Oakland
Bank of America National Trust and Savings Assn.
Bank of California, N.A.
Central Bank
Wells Fargo Bank, N.A.

Seattle
Pacific National Bank of Washington
Rainier National Bank
Seattle First National Bank

The Dawning of Coal's "Second Golden Age"

Dori Jones

Although China's petroleum and hydroelectric power resources are plentiful, the nation must still rely on coal as its most important energy source. . . .

Many countries are readjusting their energy policies and shifting their energy priorities from oil to coal. . . . Some people believe, as we enter the 1980s, that coal's second golden age has come. From this we can see that the vigorous development of coal in order to fulfill daily growing energy needs not only is the only way to go, as determined by China's concrete situation, but is also a common trend for all nations solving energy problems for the 1980s or for an even longer period of time.

—Renmin Ribao, March 20, 1980

As China's offshore oil development program settles into its first phase, the spotlight is shifting to China's coal development priorities, and US coal companies, long on the periphery, are moving in from the wings.

The Chinese, as well as foreigners, are realizing that coal provides more certain opportunities for financing China's future development than oil. China has verified coal reserves of some 600 billion metric tons and estimated reserves of some five trillion tons. Raw coal output in each of the last two years has exceeded 600 million tons, third after the Soviet Union and the United States.

Although China's oil reserves are extensive, oil will be needed largely for export and for the domestic petrochemical industry. Both nuclear energy and hydroelectric power take many years to develop. As a result, coal—long scorned in the rest of the world as a dirty, inefficient source of energy—remains China's number one mineral priority and the heart of its future energy program.

At a national coal conference in late February, China's newly-appointed Minister of Coal Industry, Gao Yangwen, stressed the need for new technologies and advanced equipment to modernize all aspects of coal production. He said China will cooperate with technically advanced foreign countries to develop coal mines through compensation trade or joint ventures. Gao also announced that a research institute will be set up to help develop coal gasification and liquefaction plants by 1990. In the 1980s, the Chinese coal industry will try to increase (from 17 percent at present to 30 percent by 1985) the proportion of coal output that is cleaned, and will adopt new technologies to fully use low-energy coals and oil shales.

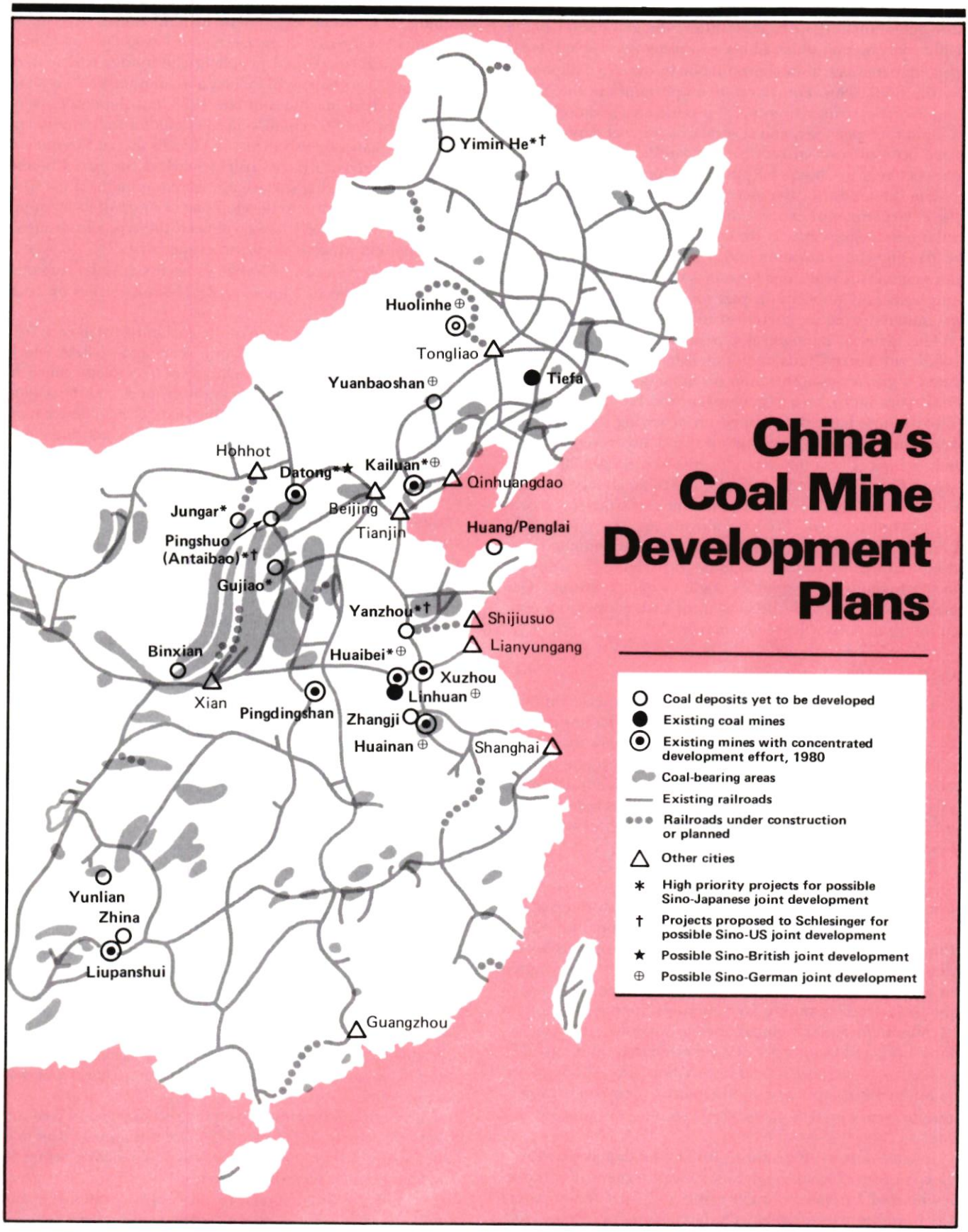
The coal conference concluded in mid-March by encouraging both increased production and readjustment of the industry. Concrete steps were announced to speed up tunneling in some 36 mines where extraction has progressed faster than tunneling, to accelerate 103 safety projects, to open some 20 new pits, and to increase output capacity in old mines.

Despite the focus on readjustment, the coal ministry leaders stressed that "the coal industry should by no means slacken production." However, China seems to be doing just that. In a communiqué issued April 30, 1980, the State Statistical Bureau listed China's 1979 coal output as 635 million tons. (The Chinese measure coal production in raw or run-of-mine coal. Using a conversion factor of 1:0.7, the 1979 figure would equal 444.5 million tons of clean coal.) China's coal production increased over the 1978 total of 618 million tons by 2.8 percent, indicating a sharp slowdown in production after high gains of over 12 percent in 1977 and 1978. This slowdown is a deliberate policy of China's economic readjustment: the original target for 1979 production was 607 million tons, a *decrease* in production from the previous year. One unconfirmed US press report has said that China is again planning for a reduction in coal output this year: a target of 605 million tons for 1980.

To make up for the slow or negative growth in coal output, China aims to cut coal consumption by 15 percent in 1980 by improving conservation, according to Yuan Baohua, vice chairman of the State Economic Commission.

Another aspect of readjustment seems to be a lowering of the unrealistic long-range production target set by the previous minister of coal, Xiao Han, in 1978. At that time, Xiao announced that coal output would double by 1987, which would have meant annual production of more than one billion tons of raw coal in that year. In a March speech in Hong Kong, Xu Dixin, a top economist and a member of the National People's Congress, noted that "it is not improbable that coal production will increase by another 100 or 200 million tons" by 1990. This would mean a total of 735–835 million tons by 1990, well below the original 1987 target. A year ago the Chinese were still aiming for annual production of two billion tons of coal by the end of the century; lately they have not mentioned this goal.

Much of the increase in production over the next ten years will come through construction of new mines. Some 22 new mines with a total capacity of 9.5 million tons were put into operation in 1979—fewer than the 27 mines with capacity of 14.2 million tons as originally planned, but still a large in-



Sources: For coalfields: "Chinese Coal Industry: Prospects Over the Next Decade," National Foreign Assessment Center, February 1979; for railways: *China Reconstructs,* October 1979; all other information: Chinese media, private sources.

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crease. Some 20 pits under construction now are due to go into operation in 1980. New mine development at seven of the eight coal bases on which China is focusing (see Table 1) is expected to increase annual production by over 75 million tons by the mid-1980s. Four large open-pit mines in the North and Northeast may eventually produce an additional 100 million tons per year, and several smaller coal deposits that have been discovered recently may add another 50 million tons per year to China's output (see Table 2).

The remainder of the increase in output will come from the enlargement of existing mines; in 1979, ten mines were enlarged, raising capacity by 4.49 million tons. The ministry is stressing the renovation and transformation of old mines once again this year. Smaller mines which received so much emphasis and publicity in past years are no longer being promoted during the current readjustment period.

The focus of mine-development priorities seems to rest solidly on North China, although some Chinese have advocated a greater concentration on mine development in the coal-short South, such as in Guizhou and Yunnan provinces. The Chinese have also stepped up surveying for coal. They announced that they have surveyed and discovered over 600 billion tons of coal deposits, of which some 200 billion tons are in Shanxi Province alone. Of the total, about 30 billion tons are immediately available for mine construction, according to Minister Gao. "We have already selected a number of mining areas with rich coal deposits and good mining conditions that we are prepared to mine with friends from abroad in the form of compensatory trade or joint ventures," Gao noted in April. "With the growth of such cooperation, our country's exports will greatly increase."

US Companies: Latecomers

These comments bode well for US and other companies interested in China's coal development. Until a few months ago, almost all foreign involvement in China's major coal mine development schemes was Japanese, German, or British. US coal-related business with China was limited to the sale of coal-mining equipment, and the Chinese preference for other mine development models created a bias against US-made equipment.

Recently, though, there have been indications that a breakthrough may come in the near future. In the last few months, four American firms—Peabody Coal Co., Utah International, and Consolidated Coal Co. in cooperation with Kaiser Engineers—have submitted three separate proposals for the development of a huge open-pit mine in the Datong region of Shanxi Province. This new mine site, located southwest of the main Datong mining area and overlapping the counties of Shuoxian and Pinglu, is variously known as Antaibao, Pingshuo, and Datong #4. It is expected to produce up to 20 million tons of coal a year when finished. Although the Japanese have expressed strong interest in this mine project, discussions with US firms seem to have progressed further.

In addition to these three firms, Occidental Petroleum Corporation's Island Creek Coal Co. and a group of companies headed by Newco Engineering and Coal Development Co. have been negotiating with the Chinese for coal development projects since early 1979, as have some construction engineering firms.

If a US design and construction project for surface coal mine development materializes, US coal mining equipment manufacturers stand to gain tremendously. Long handicapped by the Chinese emphasis on long-wall underground mining, US mining equipment manufacturers have made only modest inroads in the China market so far. Joy Manufacturing Co. succeeded in selling continuous coal miners and shuttle cars worth $6 million and another $1.25 million in coal loading machines in late 1978, but these sales were dwarfed by the $500 million in sales of long-wall equipment by German and British firms. WABCO's sale of $26 million worth of heavy-duty coal trucks marked the first Chinese interest in importing surface mining equipment. If the Chinese chose a US firm to develop one or more of its open-pit mines, as seems likely, they will need the type of advanced equipment in which US companies specialize.

Why have American companies been such latecomers in the development of China's coal? The answer lies on both sides of the Pacific.

After careful observation of the coal industry in each foreign country, the Chinese several years ago realized which countries were superior in each type of technology. Since 96 percent of their coal mining is underground, and the majority of that is mined by long-wall methods, the Chinese naturally turned first to the West Germans, British, and Japanese, among non-socialist countries. Because of US laws designed to prevent destruction of land, American coal companies do not use the long-wall method for underground mining, but rather the room-and-pillar method. The Chinese bought five continuous miners from Joy in November 1978 to begin experimenting with room-and-pillar extraction, but in general they consider this method expensive and wasteful except for smaller, less advanced mines.

Two years ago, when the Chinese chose an open-pit lignite mine in the Northeast to develop, they also selected German firms to help them, because of the German capability in mining lignite. But for open-pit mining of hard coal—and perhaps even lignite—the Chinese have concluded that US technology is the best. Antaibao is an open-pit site with bituminous coal, as is a newly discovered huge deposit in Inner Mongolia near Jungar. These two mine sites are likely to be the focus of US participation in China's coal development.

Jungar has proven reserves of 14.6 billion tons and potential reserves of up to 30 billion tons, of which some 11 billion are exploitable. The Chinese believe that 3 billion tons can be produced by strip mining, and they plan to produce 40–50 million tons a year at Jungar. They will begin building a 155-kilometer rail line from the minesite to Hohhot, the regional capital, this year.

Although no foreign companies have yet submitted proposals on the Jungar mine, at least one US firm has visited it. Chinese Premier Hua Guofeng, in his talks with Japanese Prime Minister Masayoshi Ohira in December 1979, singled out Jungar as a project for Japanese participation. Hua also told Ohira that the Chinese have sought British and Yugoslavian cooperation for Jungar, so the competition seems to be wide open.

Although the Chinese have only recently found coal deposits for which they prefer US help, it is equally true that American coal companies have only just recently begun to consider China a lucrative market.

Lacking the huge capital of oil conglomerates, US coal companies have tended to concentrate on domestic coal development. A visit of Chinese coal ministry officials and engineers to the US in September-October 1978, sponsored by the National Coal Association, opened the eyes of many US companies to the possibilities in the China market. Interest was also sparked by a visit to China by energy secretary James

Table 1: CHINA'S EIGHT HIGH-PRIORITY COAL MINES: EXPANSION AND NEW-MINE CONSTRUCTION

Name of Mine Complex, Location	Type of Coal	Type of Mine	Reserves in billion metric tons (raw coal)	Annual Capacity in million tons (raw coal)	Area (in square kilometers)	In Operation	Under Construction	Foreign Interest
Datong, Shanxi	bituminous; good coking quality, but most used for power generation	underground; beds gentle, average 2.2 meters thick	6.8 in 15 minable seams	23.02 in 1978; 24.05 in 1979; goal: 40 by 1985, eventually 70	1,900	13 pairs major mine shafts; 20 fully mechanized faces	2 new pits to be developed (5 million tpy* each)	**British:** contract for feasibility study for one mine, 1978; negotiating on one other; **Japanese:** Mitsui Mining Co. promise to help develop Datong, 3/80
Huainan-Huaibei, Anhui	coking coal	underground; thick seams of varying quality	over 2.2 (each)	1975; 20; new district: now: 3 goal: 17	over 100	Huainan: 11 mines; Huaibei: 10 modern mines, beneficiation plant	7 mines, with capacity 14.1 million tpy;* also 5 coal washing plants; power plants; 2 power transmission stations	Huainan: imported tunneling, hoisting, and transport equipment; **Germans:** 9/78 interest in developing
Kailuan, Hebei	bituminous (steam and coking coal), fertilizer coal	underground; seams 1–6.5 meters thick, variable in dip	up to 4	21.58 in 1979; 25 in 1975; to raise capacity by 10 million tpy*	2 districts, 42 million	8 mines (3 million tons from hydraulic mining); half of production mechanized	5 mines: expansion or renovation to raise capacity by 6.6 million tpy;* under construction: Qianjiaying mine, with 4-million-tpy* capacity	**Japanese:** 12/79 high-priority mine cited: Qianjiaying; **Germans:** 9/78 interest in developing; drilling & blasting equipment from Salzgitter
Liupanshui, Wumeng Mts. Guizhou	coking coal	surface	NA	present: 10 goal: 11.8	20,000	21 pairs of pits	2 mines: 1.8 million tpy*	NA
Pingdingshan, Henan	coking coal	underground	NA	over 10	NA	13 mines, highly mechanized	NA	All Chinese development
Xuzhou, Jiangsu	NA	underground	old & new district: 2.4	14.8	45 million	13 old mines, 2 new mines	3 mines, capacity 2.7 million tpy*	**Germans (?)**
Yanzhou, Shandong	fertilizer coal or gas coal for export	underground	NA	NA	3,700 (4,000 including Caodeng)	3 mines (2 million tpy*)	4 mines as of 2/80, to produce 11 million tpy*	**Japanese:** 3/79 proposal ($600,000): Geological survey, new mine construction, expansion of Nantun mine; 12/79: three mines cited for possible Japanese aid
Huolinhe, Jilin	See Table 2							

* tons per year

NA = no information available

Table prepared by Dori Jones

China Business Review

R. Schlesinger in October 1978, when the Chinese proposed several joint projects, including design and construction of Antaibao and Yimin He surface mines, as well as construction of underground mines, coal preparation plants, and mining machinery plants. At the same time, though, these exchanges began to spur fears among some American coal companies of competition with Chinese coal exports in third-country markets, such as Japan.

Since then, some of the larger US coal companies and some with extensive international experience have jumped into the China market feet first. They have realized that it can be easier, quicker, and cheaper to develop a coal mine outside the US, unrestricted by the myriad of environmental and other regulations that hamper US coal mine development.

American construction and engineering firms realized the benefits available in China's mine development first. Kaiser's contracts to do feasibility studies for two iron ore mines, and Fluor's contracts to begin work on a giant copper complex testify to this point. The big engineering firms have the international connections needed for procurement, while the coal companies have the technical expertise in coal mine development. In one case, a construction and engineering firm has paired with a US coal company to submit a proposal for developing a major new Chinese coal deposit.

But the China market is new to most US coal companies, many of which have had minimal international experience. They see the Antaibao project as an experiment, testing the waters. Will the financial terms be too stiff? What exactly is involved in "joint ventures"? And—most important—if the Chinese insist on compensation trade, or repaying the American companies with coal, will it be possible to market this coal in the US? (See "Coal Compensation Trade," pp. 45-46.)

Japanese: In First, Best Financing

As in other areas of business with China, the Japanese companies were among the first to begin discussing coal development with China since China's turn to the non-socialist industrialized countries. Japan is still the only foreign country with an integrated, overall scheme for trade with China.

The Japanese government has announced two major governmental loan packages for China, both of which will directly boost China's coal export capacity. One is a $2 billion, 15-year loan at 6.25 percent from Japan's Export-Import Bank, announced in May 1979, the other includes long-term, extra-low-interest (3 percent) loans of up to $1.5 billion through 1986, offered by Japan's Overseas Economic Cooperation Fund (OECF) in December 1979.

The first portion of the Japanese Exim loan package was a $546 million loan agreement signed in Japan in May 1980. The funds are to be used for two oil exploration projects and three coal development projects in Shandong and Shanxi Provinces—presumably at Yanzhou and Gujiao. It is expected that the loan will be dispersed within two-to-three years.

The OECF loan funds will be used to build six port, railway, and hydropower projects in China—including two railways and two ports directly needed for coal transportation. The Exim loan funds are to be used for development of such resources as coal, oil, and copper. Press reports have stated that China has allocated $1–$1.5 billion of the $2 billion loan committed by Japan's Exim Bank for development of coal and copper mines.

When Prime Minister Ohira visited Beijing in December, the two governments reached a basic agreement on joint Sino-Japanese development of Chinese coalfields and oil resources using the Exim funds. The agreement was made more concrete during a visit to China by the Japan-China Association on Economy and Trade in February, when Coal Minister Gao Yangwen listed eight major coal mines as "top priorities" for possible joint development. He also listed four other coal mines as "long-range priority" projects. In addition, the Chinese have reportedly selected two copper mines and several oil development projects that will make use of Japanese Exim funds.

The eight "top priority" coal mines have estimated reserves of 5.27 billion tons, and the Chinese expect them to produce some 23 million tons per year if full-scale production is reached by the mid-1980s. Much, if not all, of this added capacity the Chinese plan to ship to Japan, starting in 1982. The eight top mines listed are:

- Baodian and Jiangzhuang in the Yanzhou district, Shandong Province;
- Panzhou #2 in Anhui Province;
- Xiqu, Malan, and Zhanchengdi in the Gujiao district, Shanxi Province;
- Qianjiaying in the Kailuan district, Hebei Province;
- Yiminhe, in Heilongjiang Province.

The four "long-range priority" coal mines listed by the Chinese are expected to produce another 31 million tons per year by 1990 or so. They are:

- Xishigou and Tonglan, both in the Gujiao district of Shanxi Province, to be developed under a compensation trade formula;
- Jining #2 mine in the Yanzhou district, Shandong Province; and
- Jungar, in Inner Mongolia.

Even this specific list of mines is no guarantee that the Japanese will win out in the competition with other countries for development of these coal mines. The Japanese, unlike the Germans, have yet to sign a firm contract for even a feasibility study of a coal mine.

The total of 12 coal mines is probably a list from which a smaller number of actual Sino-Japanese joint development projects will come. Also, since the Japanese Exim Bank loan, like the OECF loan, is purportedly untied, some of these coal projects may be financed by Japan but awarded to companies in other nations.

Japanese interests first began discussing coal mines with China in September 1978, and the Japanese press gave a great deal of publicity in the spring of 1979 to proposals for joint Sino-Japanese development of a coking coal mine at Gujiao and several steam coal mines in the Yanzhou district. China's economic readjustment brought these and other negotiations to a halt, and only in December was further progress noted.

In late March 1980, Mitsui Mining Co. announced its commitment to help the Chinese develop Datong coal deposits at a cost of some $80.6 to $121 million, in exchange for shipments of 1.2–1.3 million tons of steaming coal each year for ten years. But this arrangement, like previous ones, seems to be a proposal, not a contract.

In addition to coal mine development, the Chinese have asked for Japanese assistance in the development of coal liquefaction. In February, Vice Minister of Coal Wang Xinsan proposed construction of a coal liquefaction plant at the Yimin He mine in Heilongjiang, which is scheduled to produce 10 million tons of coal per year. He also proposed liquefaction in Japanese plants of coal produced at Qingdao in Shandong Province and at Chengpo on Hainan Island.

Table 2: CHINA'S COAL MINE SITES YET TO BE DEVELOPED

Name of Mine, Location	Type of Mine	Type of Coal	Reserves in billion metric tons (raw coal)	Annual Capacity in million metric tons (raw coal)	Area in square kilometers	Characteristics	Foreign Assistance	Railroads and Other Auxiliaries	Date Announced
Huolinhe, Jilin	open pit	lignite	12.9	initial: 3 by 1985: 20	5.4 million	Shallow depth, thick seams	Design by Orenstein & Koppel and by Krupp–Demag; imported excavators, bulldozers, hoisting equipment, and WABCO trucks	Under construction —400-km railway from Tongliao —power plant —several factories	9/78
Yuanbaoshan, Liaoning	open pit	lignite	NA	20	NA	NA	Germans (?)	NA	NA
Jungar, Inner Mongolia	open pit	bituminous (steam), gas coal	proven: 14.6; potential: 30–36, of which 11 are exploitable	40–50 by 1990s	1,723	25–40 meters thick seams	Japanese: very interested, 12/79, also British, Yugoslavians	To be built: 155 km railway to Hohhot	12/79
Antaibao, (aka–Pingshuo or Datong #4), Shanxi	open pit	bituminous	NA	initial: 7–8; eventual: 20	NA	Many seams, 3–5 meters thick; hard overburden	US: 3 development proposals submitted by US firms; Japanese also interested, cited as #13 of projects listed in 12/79	NA	Presently part of Datong district, but may become separate
Yunlian, Sichuan	NA	anthracite	over 2.4	NA	NA	5–7 meter thick seams	NA	NA	1/6/80
Binxian, Shaanxi	NA	steam	9.1	NA	1,170	8–15 meter thick seams	NA	NA	2/28/80 Can develop soon
Zhina (Zhijin, Nayong counties), Guizhou	(close to surface)	mainly anthracite, also other types	over 15	NA	1,500	Many thick seams, average thickness 10 meters	NA	Guiyang-Kunming railway crosses southern part	7/28/79; plans being made to excavate
Yimin He, Heilongjiang	open pit	lignite	12, of which 5 recoverable	10	3–5.2 million	Thick seams, suitable for mechanized mining	Japanese: high-priority area cited 12/79; Germans bidding	Possibility of coal liquefaction plant with Japanese assistance	4/19/79; preparing to begin mining
Huang and Penglai counties, Shandong	NA	NA	NA	NA	300	NA	NA	NA	4/19/79
Zhangjiao, (Fengtai and Yingshan counties), Anhui	NA	rich-coke coal for coking and power	2.2	4	97	12 coal seams	NA	NA	12/25/79
4 areas, **Xinjiang**	NA	fine quality steam coal	4.46 (among which are 500 million tons coking coal)	NA	NA	NA	NA	Near Nanjiang Railway	12/9/79
Gujiao, Shanxi	underground	coking coal	NA	10 over 10 years	NA	NA	**Japanese:** 12/79: 5 mines cited for possible joint development	NA	1979

NA = no information available

Table prepared by Dori Jones

China Business Review

Germans: Geological Snags

Back in September 1978, the German government signed a trade protocol with China which contributed to the China trade euphoria. Today, after all the fanfare, little is heard of these plans, and one major project has run into geological problems.

The 1978 protocol guaranteed West German coal-mining and processing equipment manufacturers sales of at least $4 billion and specified German participation in the complete development of two open-pit lignite mines and of five underground mines, as well as the expansion of a sixth. Similar to the Japanese agreement last December, the German protocol was accompanied by an offer of buyer's credits from German banks. The two open-pit mines, in Northeast China, each designed to produce 20 million tons of coal a year, were to be developed by the Germans at a cost of some $1.7–$2 billion. The five new shaft mines were to have a combined capacity of 20 million tons per year, with the sixth to be expanded from 3 to 6 million tons per year.

Following the signing of this protocol, the Germans announced contracts for some $1.2 billion worth of coal mining equipment from German and British companies. At least half of this total was to be for open-pit lignite mining equipment, some of which may never have actually been ordered (see below). More concrete contracts were concluded for some $300 million worth of German long-wall equipment — 27 sets with supports, 6 sets without supports, and 30 long-wall face supports — and $30 million worth of coal shearers, all for underground mining.

China's reordering of priorities early last year seems to have slowed down progress on the underground mines included in the protocol, said to be located in the Kailuan district and in the Huainan-Huaibei-Linhuan region. The Chinese ordered tunnel-boring machines worth $8 million and drilling and blasting equipment for use in Kailuan worth $13 million in early 1979, before the reassessment. Montan Consulting GmbH, a subsidiary of Ruhrkohle, reportedly received an order in May 1979 for plans for one coal mine to produce 4 million tons per year, but that project does not seem to have progressed.

One of the two open-pit lignite mines, Huolinhe in Jilin Province, is still a high priority but has run into another type of problem: an excessively hard overburden. The Chinese reportedly began working closely on Huolinhe with two German groups—Orenstein & Koppel, and Krupp in cooperation with Demag and Rhein-Braun Consulting—over two years ago. The Ministry of Coal Industry ordered feasibility studies from both, but has still not decided on the proper design for the mine. The Germans recommended use of bucket-wheel excavators with blasting, but since the rock of the overburden is too hard, the Chinese feel that bucket-wheels are not suitable, according to one coal ministry representative. The Chinese agreed to drill more holes and send rock samples to the Germans.

In the meantime, preparation of the mine site at Huolinhe has already begun, and a 400-kilometer railway connecting it to the city of Tongliao is nearing completion. The Chinese proceeded to order West German equipment even though the design questions have not yet been settled. Orenstein & Koppel delivered ten 135-ton hydraulic excavators early last year. Together with the 75-ton WABCO dump trucks sold in September 1978, the excavators have been put to use at Huolinhe, moving surface material and building a trench for access to the pit. At the time of the September 1978 protocol, Krupp and Demag announced letters of intent with the Chinese for $630 million worth of open-pit mining equipment, such as bucket-wheel excavators, stackers, conveyor installations, storage-yard facilities, and a maintenance shop with foundry. Just how much of this equipment, if any, was actually delivered is unclear.

US firms interested in Chinese coal development may stand to benefit from the Germans' impasse. According to a coal ministry representative, the Chinese may decide that German technology is unsuited to the conditions at Huolinhe and choose to use big shovels and American engineering technology instead.

British: No Coal to Newcastle

The British have run into another snag as far as participation in China's coal development project is concerned: they are highly reluctant to accept coal as payment.

At the same time that the Germans were announcing their protocol, in the fall of 1978, the Chinese asked the British to help develop two new major underground coal mines in the Datong region. A consortium of the National Coal Board and Powell-Duffryn reportedly signed a $250,000 contract to prepare a feasibility study for the development of the two mines, to bring their production to 10 million tons per year. The Chinese underlined this commitment with orders from British mining equipment manufacturers for some $200 million worth of long-wall roof support systems, belt conveyors, hydraulic supports, coal-cutting machines, flameproof electric motors, and coal-winning power loader machines between September 1978 and January 1979. But nothing has been heard about follow-up contracts for the development of the two mines near Datong.

Last year, when China began to insist on compensation trade, Britain refused to consider taking payment in coal, although the National Coal Board offered consultancy advice on how China should market its coal. Some Chinese coal was exported to Scotland last year and caused a political ruckus, so Britain's caution is understandable.

After a year on the rocks, Britain's Datong project seems to be moving again. A team of engineers from the Coal Board and from mining equipment companies visited China recently to discuss details on the development of the two mines, as well as consultancy on other projects in China.

In addition, teams from both Canada and Australia visited China last year and returned optimistic about opportunities in coal development. The Chinese have also talked with Romanian, Yugoslavian, French, and Spanish coal experts, showing them mine sites for development. Of these, the most concrete result so far has been a Sino-Romanian agreement to cooperate on building a coking plant in Shanxi, signed in September 1979 by Vice Minister Xu Zailian during a visit to Bucharest. More recently, an official Spanish trade mission visited China in March and was "offered" four coal mines with combined estimated reserves of 3.2 billion tons to consider developing in exchange for steam coal imports.

In general, the Chinese are looking everywhere for assistance in coal mine development, but they are selective and knowledgeable in their decisions. They see the advantage of cooperating with advanced foreign companies in terms of speeding up development of their coal mines and in development of new mines specifically for export. After a year of reassessment, some contracts may be signed soon, but the engineers in the coal ministry's design institute will clearly review foreign recommendations closely and will not hesitate to reject plans they consider unsuitable. 完

Coal Compensation Trade

We may consider importing foreign technical equipment for coal mining. We may sign long-term contracts with them and pay them in coal. This does not mean external borrowing.
—Deng Xiaoping, September 1975

Since the time when Vice Premier Deng Xiaoping put forth his then-maverick idea about compensation trade in coal in 1975, the Chinese governnent has endorsed wholeheartedly the idea of repayment for foreign technology in product, especially in areas such as raw material and coal extraction. China's newly appointed Minister of Coal Industry Gao Yangwen has on several occasions said the ministry is prepared to mine new sites with "friends from abroad" in the form of compensatory trade or joint ventures.

So far, though, the only compensation trade arrangements made by the Chinese have been in manufacturing, mainly in light industry. The application of compensation trade to such an area as coal mining raises many questions, such as:

• **Given growing domestic industrial needs, will China have enough coal to export?** The Chinese exported about five million tons of coal in 1979—less than one percent of their output—mainly to Japan, North Korea, Pakistan, and Romania. Although they will continue to rely on coal as their major energy source, they have selected certain mine sites to develop solely for export and are optimistic about being able to produce surplus coal for export in future years.

• **Since coal can be produced and exported only after several years, but involves large capital outlays up front, is compensation trade the most economic method of financing?** Because of the time lag between initial design and final production, additional financing may be needed to cover the initial outlay. Moreover, how can one determine the amount of coal that must be exported in future years to repay investments made today, given inflation and possible price fluctuations? Some Japanese coal development companies have suggested repayments in coal from other mines to begin at the same time as the first equipment deliveries. Given China's poor transportation network and shortages of coal in some parts of China, this solution may not be feasible.

• **Can China coordinate its foreign trade bureaucracy well enough to carry out under one contract equipment imports and future coal exports, even when these activities are handled by different entities?** At present, the foreign trade corporations MACHIMPEX and TECHIMPORT are responsible for imports of machinery and technical assistance contracts for large projects. Exports of coal and other minerals are handled by MINMETALS. Although all these are under the aegis of the Ministry of Foreign Trade, they each have separate accounts and have no experience cooperating on compensation trade projects.

The Ministry of Metallurgical Industry (MMI) has found its own solution to this problem, which the Ministry of Coal Industry may emulate. MMI formed a corporation called China Metallurgical Import-Export Corporation in early 1980 to handle both imports and exports of mining equipment, technology, and products. The Ministry of Coal Industry has its own "corporation," the China Coal Industrial Technique and Equipment Corp., which has been dealing with US companies in coal mine development projects, but it is not known whether this organization is empowered to authorize exports of coal.

• **Given the fact that the US is a net exporter of coal, what would an American company do with the coal it received as repayment? Will it be possible for a US coal company to market China's coal?** The US companies that have submitted proposals for coal mine development think it probably will be possible. Some have experience in marketing coal in East Asia, and both Japan and Southeast Asian countries are seen as potential markets.

"It would depend entirely on market conditions at the time," noted William Hartman, vice president of Peabody Coal. "I think there would be no aversion to a US company selling Chinese coal simply on the basis of nationality."

But other observers are not so certain. What appears to be the most promising market for Chinese coal—Japan—may cover all its coal needs through long-term government-to-government arrangements, thus possibly shutting out imports of Chinese coal through third parties, such as US companies.

The Japanese market is especially promising for steam coal. Japan is planning to convert many of its power plants to coal in response to skyrocketing oil prices and in line with the recommendation of the International Energy Agency. Development of mines in foreign countries with Japanese financing is an integral part of the Japanese plan to assure stable supplies of steam coal imports. The government estimates that steam coal import needs will increase from about one million tons in fiscal 1978 to 22 million tons in 1985 and 53.5 million tons in 1990. Japan is counting on China for about 30 percent of its steam coal imports in the future. This would mean imports of some 6.6 million tons of Chinese steam coal by 1985, ten times the amount agreed to for 1980, and over 16 million tons by 1990.

Japan's Coal Needs: Sewed Up?

But will Japan want to buy Chinese coal from US companies? The Japanese signed a long-term trade agreement with China in February 1978 to buy 5.15–5.3 million tons of steam coal during 1978–82 in exchange for Japanese mining technology. In the first two years of the agreement, the Japanese imported 150,000 and 180,000 tons of steam coal—within the range specified in the long-term agreement for those two years. This year, though, the Japanese asked to import 900,000 tons of steam coal, well above the total of 500,000–600,000 tons called for in the agreement.

Only 660,000 tons were made available, so clearly Japanese demand is outstripping Chinese supply at present. However, China and Japan reached a new long-term general agreement in April calling for Chinese exports to Japan of around 10 million tons of coking and steam coal by 1985.

In a recent Chinese proposal for joint development of coal mines, the Chinese listed coal mine projects which they said would produce 23 million tons of coal for export by 1986. Of this, 7.5 million tons would be steam coal—nearly a million tons more than the needs projected by the Japanese government. The Chinese added another four mines for possible development with Japanese assistance over the long term, noting that exports from all 12 mines could reach 54 million tons per year by 1990 or so. If the same percentage of these exports is steam coal, this will mean some 17.8 million tons of Chinese steam coal will potentially be available for export by the 1990s, 1.8 million tons more than the Japanese projected.

The Japanese are skeptical of these claims. But if they are true, Chinese export levels under the Sino-Japanese development scheme would more than satisfy Japan's needs for steam coal through 1990. However, some of the 12 coal mines listed for possible joint Sino-Japanese development will probably be developed in cooperation with companies from other countries.

Rising Demand Worldwide

Chinese coal is beginning to appear increasingly attractive to many countries other than Japan. K.P. Wang, an international energy consultant, formerly with the US Bureau of Mines, noted recently that demand for energy of all types is growing rapidly in many countries, and marketing Chinese coal should not be a major problem.

Demand for both coking coal and steam coal in the developing nations of Southeast Asia is likely to grow over the next ten years. South Korea and Taiwan will also face a growing need for steam coal, and they may look to third parties such as US companies to buy Chinese coal. Hong Kong is building two large coal-burning power stations; the owner of one, Hong Kong Electric, has already signed a ten-year contract for Chinese coal, and the other, China Light, is expected to do the same. India has discussed importing Chinese coking coal.

Europe is also a potential market for Chinese coal, despite high transportation costs. Denmark has agreed to buy 200,000 tons of Chinese coal in 1980 and 1981. A power plant in Ireland that will come on stream in 1983–84 will probably import some 250,000 tons of Chinese coal per year. The Spanish government sent a delegation to China in March to discuss the possibility of importing 4 million tons of Chinese steam coal in exchange for coal mining technology. West Germany imported Chinese steam coal for the first time in December 1978, and despite opposition from its miners' union, a Scottish utility ordered 100,000 tons of steam coal from China last year.

Finally, Vice Premier Kang Shien told a US National Coal Association delegation which visited China in October–November 1979, that the State Council is considering a new approach to compensation trade in order to encourage coal mine development with foreign technology: package deals that allow payment in both coal and oil. Given the potential difficulties in marketing Chinese coal, this approach may well be the most lucrative for US companies interested in coal mine development in China. —DJ 党

CHINA'S MINISTRY OF COAL INDUSTRY

Minister: Gao Yangwen 高扬文

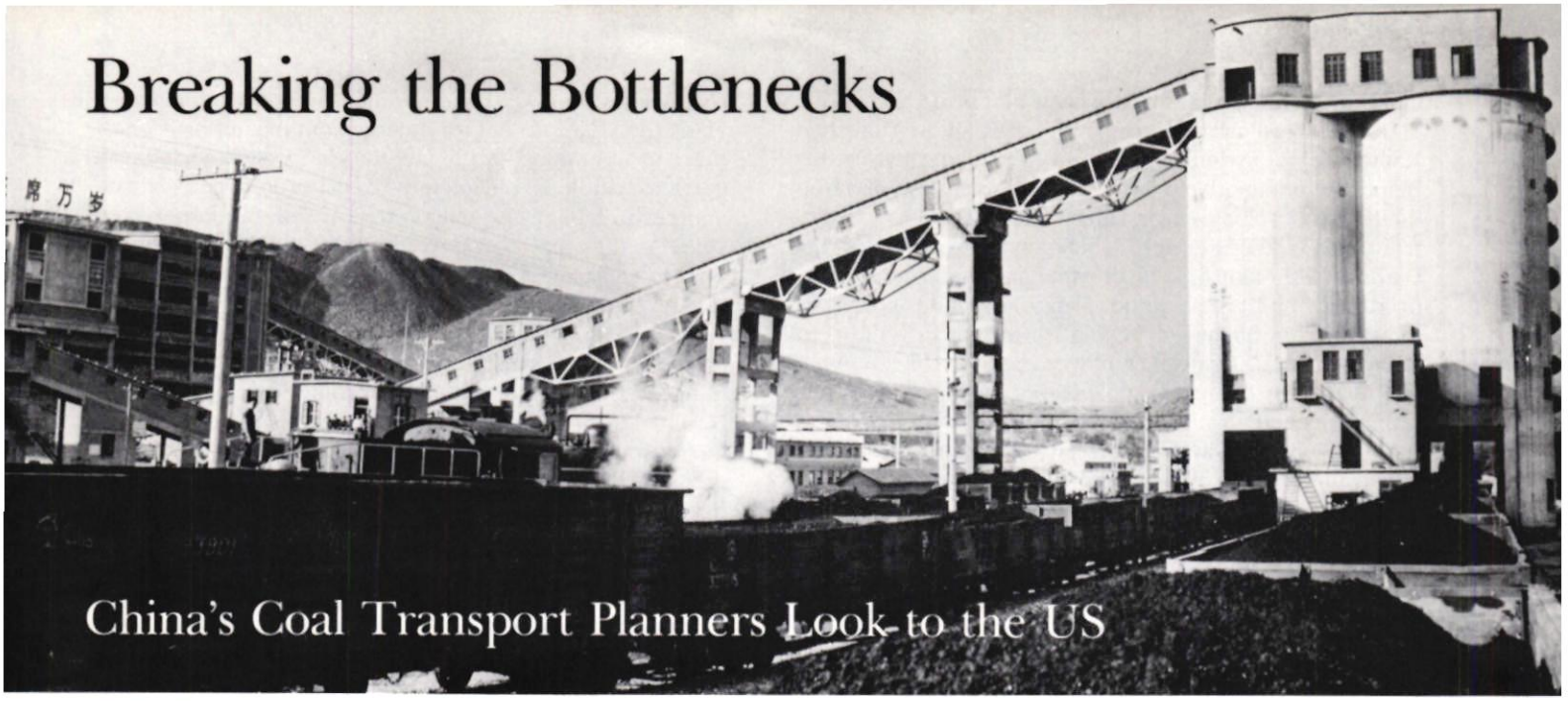
Vice ministers	Areas of responsibility
Wang Xinsan 王新三	Senior vice minister; overall responsibilities; assistant to Minister Gao.
Zhong Ziyun 钟子云	Senior vice minister; overall responsibilities.
Xu Zailian 许在廉	Planning: International Department: supply of foreign machinery for new projects.
Zou Tong 邹桐	Production and operation. (Visited US as head of National Coal Association–sponsored delegation, late 1978.)
He Bingzhang 贺炳章	Science and technology; education; International Department: science and technology; in charge of research institutes.
Jia Huisheng 贾慧生	New mine construction.
Li Kuisheng 李奎生	Surface operations, including construction of new open-pit projects; supply and purchase; training of workers; labor relations; finance. (Visited US in February 1980 as part of State Economic Commission coal transportation delegation.)
Zhang Chao 张超	Safety and local small coal pits; production.
Zhao Zishang 赵子尚	Unknown.
Yang Yifu 杨一夫	Unknown.

Corrections, CBR, March-April, 1980

Contrary to what is stated on p. 48, par. 3, Young and Rubicam has not signed any agreements with the Shanghai or Guangzhou Advertising Corporations. Nor has Young and Rubicam ever met with the GAC.

On p. 6, par. 1, line 6 should read, "9.6 percent in light industry and 8.5 percent overall." On p. 16, par. 3, the word Commission should replace Corporation in line 6. On p. 18, line 5 of par. 1 should read, "in command of foreign . . ." On p. 33, par. 4 the Symbol ¥ should substitute for ¥ in line 5. On p. 41, Jim Stevens assisted Dori Jones in preparing the table. On p. 51 TRANSPUB is incorrectly mentioned as a service of the CCPIT; TRANSPUB is an independent organization.

Breaking the Bottlenecks



China's Coal Transport Planners Look to the US

Credit—Xinhua

Coal cars loaded in silos at Huaibei, East China.

At Hancheng County in Shaanxi Province, people said that there were many strange things happening and that coal was being transported in a roundabout way. . . . More than 10 lorries are used to carry coal from the mine to the Hancheng railway station, which is about 10 li from the mine. After loading the coal on a freight train, the coal is then sent back to the electric power station in the neighborhood of the mine along a railway section about 10 li long.

—Xinhua, December 30, 1980

The most serious barriers to China's plans to export coal are the bottlenecks caused by poor transportation of coal. The Chinese media have carried numerous reports complaining of huge stockpiles of coal at mines and at railroad stations, while other parts of China faced shortages of coal.

Although China's railway workers were praised for efforts to "crash transport" in July 1979 some 400,000 tons of coal accumulated at various coal mines in Shanxi Province, the stockpiles continued to grow. In November—"energy conservation month"—a *People's Daily* article reported that over 10 million tons of coal had been stockpiled because of limited railroad transportation capacity. The bulk of this stockpiled coal was produced by locally run mines. Most of it was still at the mines while some 2 million tons of it was at train stations, awaiting transshipment. Over nine months some 315,000 tons of coal was burned up "due to natural causes" after being stockpiled a long time. Other Chinese media reports complained of cargo mishandling at seaports and of damaged railroad freight cars.

China's insufficient infrastructure has hampered coal and other mineral development. Some 44 percent of China's coal output is mined in areas with only 7 percent of its reserve base. Much of China's untapped coal reserve is in relatively remote areas, such as the cold, barren Northeast, the deserts of the Northwest, and the mountainous Southwest. The need to build railroads and power stations to service these new mining areas may cause investment costs to soar.

The ideal solution to the bottlenecks in coal transportation, a *Beijing Review* article reported, will be to build power plants at mine mouths and transmit electricity, rather than bulky coal, to other provinces. In the meantime, the Chinese aim to build, expand, and refurbish their railroads and ports to cut down on stockpiling and to allow for opening of major new coal mines for export.

A central part of the problem in coal transportation has been the lack of coordination between ministries. The Ministry of Coal Industry builds and operates coal mines; the Ministry of Railways is responsible for rail transportation; and coal ports are under the aegis of the Ministry of Communication. In an effort to get these ministries to cooperate to solve this problem, the State Economic Commission (SEC) recently organized and sent a "coal transportation" delegation to the US which included six representatives from the SEC and three people from each of these three ministries—one of the few multi-ministry delegations ever sent to the US. This delegation, hosted by the National Council, was led by SEC Vice Chairman Guo Hongtao and included a vice minister from each of the three ministries. The group spent the month of February 1980 examining US coal-handling capability from coal mines to river and ocean ports.

Unit Trains for China's Coal

The major interest of the delegation was in unit trains, which are long (up to 250-car) trains with large (usually 100-ton) rail cars that carry only coal and run directly from mine to port or power plant without picking up additional cars. The Chinese hope to adopt this approach for the transport of coal from Beijing to the coal port of Qinhuangdao and from the coal-producing area of Yanzhou in Shandong Province to the port of Shijiusuo (see map). These two railroads and two ports are four of the six projects slated for joint Sino-Japanese development, to be financed by loans of up to $1.5 billion through 1986 as promised by Japan's Overseas Economic Cooperation Fund in December 1979. These loans have an interest rate of 3 percent and a long repayment period and are not "tied" to purchases of Japanese equipment and technology. Some observers expected the Chinese to feel obligated to purchase Japanese equipment for the projects anyway, but members of the SEC delegation said that a major purpose of the trip was to examine US coal-

handling technology with these particular projects in mind.

In order to allow use of unit trains, the Chinese Ministry of Railways plans to double-track and electrify the heavily-used Beijing–Qinhuangdao railway to transport coal exports from the Kailuan coalfields near Tangshan in Hebei Province and from the coalfields in northern Shanxi Province, including Datong. Although Shanxi Province is China's largest coal producer, the Chinese do not plan to use unit trains on the railways from Shanxi to Beijing, according to Ministry of Railways Chief Engineer Zhu Siben, because the mountainous terrain of Shanxi would not permit building of long sidings needed to allow unit trains to pass rail traffic at stations along the way. Sidings on that line can accommodate only trains of up to 50 cars. The Yanzhou–Shijiusuo rail line will be built primarily for use by unit trains.

The Chinese are also building two new railways specifically to service soon-to-be-developed mine sites in remote areas. They are a 400-kilometer railway connecting the Huolinhe coal area to the city of Tongliao in China's far Northeast, and a 155-kilometer railway connecting the Jungar coal area to the city of Hohhot in Inner Mongolia (see map).

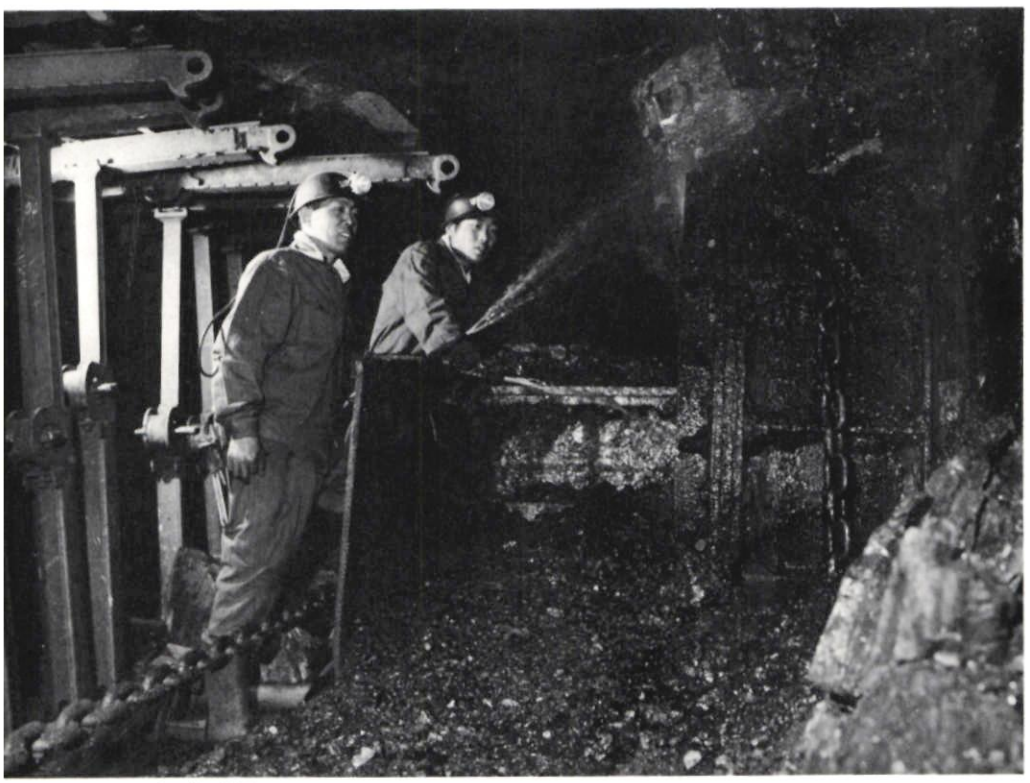
The railway ministry representatives on the SEC delegation expressed special interest in US-produced air brakes needed to stop heavy unit trains. They also discussed the possibility of the manufacture under license of couplers and other rail car parts in China.

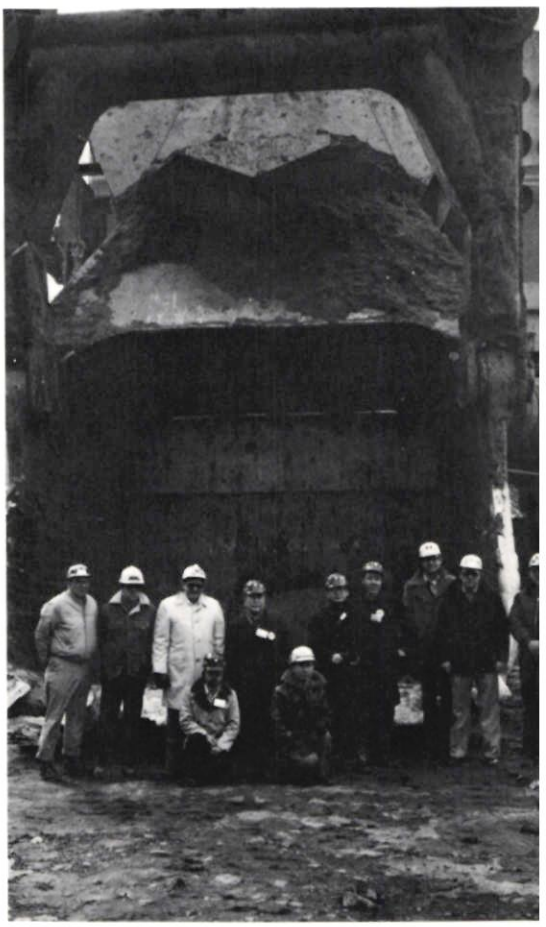
Improving China's Coal Ports

The Ministry of Communications group examined such US coal ports as Norfolk, Duluth, Conneaut, and St. Louis with an eye to the technology that could be used in the new coal wharfs they will build at Shijiusuo and Qinhuangdao. Plans for Shijiusuo call for enlargement of the small wharf there to accommodate 100,000-ton-class vessels, including a berth to handle 10 million tons of coal exports per year and another to handle five million tons of iron ore imports per year. At the large coal port of Qinhuangdao, the Chinese plan to construct a new wharf with the capacity to load 20 million tons of coal a year.

Because Shijiusuo is essentially a new port, the Ministry of Communications' Institute of Water Transportation Planning and Design, which attended technical seminars given by National Council members in China in April, will be able to incorporate the latest in coal-handling technology in their design of Shijiusuo. The Ministry of Communications group, headed by Vice Minister Tao Qi, expressed interest in the "loop" layout of rail tracks at some US ports, which allows for quicker unloading of rail cars, and in US stacking/reclaiming equipment. For unloading rail cars at ports, the Chinese examined the use of rotary dumping and compared it with the bottom-dumping method, which they now use. Rotary dumping greatly increases unloading speed and uses cheaper cars, but the machinery is expensive. Moreover, Chinese rail cars, many of which are wooden, might not be suitable for rotary dumping.

The Ministry of Coal Industry representatives observed the use of giant silos for loading large quantities of coal into rail cars at the mine site and the use of conveyor belts for short-distance transport of coal. They also examined the setups of stockpiles and the scales used on conveyor belts and on rail tracks. Slurry transport of coal was of little interest to the delegation, principally because of its high cost. —DJ





Credit—Xinhua

Above: No. 4 mine at Pingdingshan colliery in Henan Province. Right: Coal Ministry officials at Peabody Coal Company's River King Mine pose before giant 140 cubic yard Bucyrus Erie shovel, February 1980.

The Way Ahead

Great activity, one or two surprises, but few breakthroughs have characterized a month or more of mark-ups and negotiations in several Chinese policy areas:

The World Bank On May 15 the People's Republic of China was recognized as China's representative in the World Bank, thus supplanting Taiwan in the IBRD, IDA, and IFC. The three institutions, the International Bank for Reconstruction and Development, the International Development Association, and the International Finance Corporation, are collectively known as the World Bank.

The announcement came within a few weeks of President Robert S. McNamara's visit to the PRC; there, bank spokesmen earlier said, McNamara simply was explaining the terms and conditions of membership to the Chinese. No decisions have yet been released on the question of Taiwan's debt obligations. As of the end of last fiscal year, Taiwan owed $185.6 million to the World Bank and $14.55 million to IDA, according to a World Bank spokesman.

Exim Extension of US Exim credits to China seems imminent; in fact, a Bank of China delegation on its way to Washington at press time could be sewing up the deal now. Already Exim has made a preliminary commitment to cover Wean United's proposed $50-100 million share in the Baoshan cold-rolling mill project near Shanghai. (The Pittsburgh firm would supply steel-making equipment to the $500 million project, which is being led by a German consortium.) Carl Leik, Exim's China loan officer, expressed confidence that Exim has sufficient funds to cover the project.

Financing for China nonetheless has been a big question for Exim, which until now has been operating under the 1979 budget level of $3.75 billion. A joint House-Senate conference committee recently agreed to inch Exim's budget up to $4.1 billion despite White House pressures to limit spending. Earlier, committees of both Houses passed bills authorizing a $5 billion ceiling, but the Administration let it be known that regardless of the congressional ceiling, Exim would be held to $4.1 billion worth of spending.

OPIC After running headlong into objections from the National Association of Insurance Brokers (NAIB) and encountering months of delays, bills to extend Overseas Private Investment Corporation (OPIC) credits to China finally may have broken the log-jam. At press time a subcommittee of the House Foreign Affairs committee was conducting hearings on its bill while the Senate Foreign Relations Committee searched for a possible mark-up date. Recently the NAIB toned down its demands that no law be passed until China's July 8, 1979, law on joint ventures be clarified to ensure that American firms may compete for cargo insurance. Committee staffers do not anticipate further problems for the bills.

GSP Under the 1974 Trade Act, one of the last steps to be taken before the US can extend GSP to China is for the PRC to join the General Agreement on Tariffs and Trade (GATT). Now China wants GSP and wants to join the GATT, and will take steps to do so. Known abroad as generalized preferential tariffs, and in the US as the Generalized System of Preferences (GSP),

RMB:Dollar Rates as of May 13, 1980

	RMB/US$	US¢/RMB
April 10		
Bid	1.5513	64.4621
Offer	1.5435	64.7878
Median	1.5474	64.6245
April 24		
Bid	1.5142	66.0415
Offer	1.5066	66.3746
Median	1.5104	66.2076
April 29		
Bid	1.5066	66.3746
Offer	1.4999	66.6711
Median	1.5033	66.5203
May 3		
Bid	1.5141	66.0458
Offer	1.5065	66.3790
Median	1.5103	66.2120
May 8		
Bid	1.4974	66.7824
Offer	1.4900	67.1141
Median	1.4937	66.9478
May 10		
Bid	1.5019	66.5823
Offer	1.4945	66.9120
Median	1.4982	66.7468
May 13		
Bid	1.4944	66.9165
Offer	1.4870	67.2495
Median	1.4907	67.0826

FORWARD RMB RATES

Bank of China premium for purchase of RMB based on dollar equivalent spot rate.

Time forward (Months)	Premium* (Percent)
1	1.2
2	2.4
3	3.5
4	4.0
5	4.5
6	5.0

* Forward sales of RMB began on August 1, 1975. The rates are seldom changed, the last occasion being November 1, 1978; the above rates were in effect as of May 15, 1980.
Source: Standard Chartered Bank, Ltd., New York.

these extra-low (or zero) tariff rates are designed to help developing countries export their goods to the developed world. Japan, Canada, Australia, New Zealand, and the nine-member European Economic Community already admit Chinese goods under GSP. However, certain sensitive categories of goods, such as textiles, are not accorded GSP treatment.

Textile Agreement An uneven week of negotiations between Chinese and US officials here ended roughly where they began. Despite major concessions on both sides, several sticking points remained when the Chinese reached their noon, May 14 deadline and promptly left the room. US Chief Textile Negotiator Reiter Webb related that the US had offered final quota figures more than 10 times higher than the base figures, but the Chinese team held out for an additional 3½ percent. (The base figures, which were the US side's starting position, are based on China's textile exports to the US during the year ending February 28, 1979.)

Within days of the departure, the Carter Administration decided two of the toughest issues itself. All embargoed Chinese apparel in bonded warehouses would be released June 2, the first day of new quotas; and quotas on embargoed goods for the coming year would reflect the levels of the previous 12-month period.

Since the Chinese withdrew their concessions made during this round of negotiations, the US side similarly withdrew its concessions. Hence, both sides must begin the next round of talks, if and when they occur, where the third round of formal negotiations left off in May, 1979.

Aviation Agreement At press time negotiators and technical personnel from the CAAC had arrived in Washington and opened a follow-up round of talks to the bilateral negotiations of April. In Beijing, a State Department spokesman said, the two sides "agreed in principle to a number of things"—including allowing more than one US airline to service the PRC. The Chinese still insist, however, that all US flights to China be matched by an equal number of CAAC flights here. Marvin Cohen, chairman of the Civil Aeronautics Board, told *CBR* that the negotiating teams hope to determine air routes and resolve differences over price, frequency, and capacity during current talks. The disagreements basically boil down to the difference between the two economies, Cohen says. "Our international aviation policy is to allow the marketplace to adjust capacity and allow the passengers to select the carrier. The Chinese come from a totally planned economy, so they prefer a standard agreement on price, frequency, capacity, and to plan it all out subject to government approval."

Consular Agreement The US and China are "so close" to initialing a consular treaty, says a State Department spokesman, that final details are being handled from the US embassy in Beijing. Yet neither side has a firm date for the closing ceremonies in mind. Remarks the spokesman: "When you get down to the last few proposals, it (the negotiation) becomes like an end game in chess. The fewer pieces you have to play with, the longer it takes."

Maritime Agreement The two sides have been "two-thirds of the way" toward signing a maritime agreement ever since the State Department delegation returned from China in March. And they're likely to stay a while at that point. Still to be settled are the questions of cargo quotas and port access. According to a State Department spokesman the US is urging a "flexible" quota to assure US carriers of roughly one-third the amount of cargo under agreement. Also the US wants some guarantee that Western trade can be conducted through most Chinese ports. No timetable for negotiations has been set. As the spokesman explains, "Neither side wants to be the first to propose further talks. If you seem too eager you're not in the best negotiating situation." —CG 完

Update

CHANGES AT THE TOP

Recent key appointments and dismissals made by the 5th plenary session of the 11th Central Committee of the Chinese Communist Party and the 13th session of the Standing Committee of the 5th National People's Congress (NPC) in February (see also CBR Mar.-Apr. 1980, p. 42), were the following:

- Vice Premier Ji Pengfei was named to replace Jin Ming as secretary-general of the State Council.
- Gao Yangwen, a former vice minister of the Ministry of Metallurgical Industry, was made Xiao Han's replacement as coal minister. Coal output rose only 3.2 percent last year, leading to speculation that Xiao was sacked for poor performance, but Xiao has been named a vice chairman of the State Economic Commission with special responsibility for energy matters, a key position in Beijing's new power structure.

BUREAUCRACY BLOSSOMS

A new State Machine Building Commission, with Vice Premier Bo Yibo as chairman, has been established to "improve the organization of the machine-building industry so as to strengthen unified leadership." (CBR, Mar.-Apr. 1980, p. 45). Under a broad mandate, the new commission will "map out a unified plan, effect reasonable readjustments, [and] integrate production for military and civilian purposes." The latter task is of crucial importance: in recent years a number of China's machine-building ministries have expanded to supply both areas, leading to duplication of some products and shortages of others.

The State Council announced in mid-February a decision to establish a General Administration of Customs to "unify the work of customs units and composition of personnel." This is an attempt by the central government to organize trade statistics on an SITC basis and to monitor transactions carried out by increasingly independent provincial and municipal governments, to say nothing of industrial ministries. Also in the works: a China National Commodities Inspection Corporation.

A State Computer Administration, an offshoot of the Fourth Ministry of Machine Building, has also been established, to coordinate development within China and oversee purchases from abroad. According to Business China, the new body has signed an assembly cooperation agreement with Sperry Univac, in a deal facilitated by the China International Trust and Investment Corporation. (China bought its first large-scale used computer system from O.P.M. Leasing Services of New York in March of this year, an IBM 370/138 J with twenty-five peripheral devices.)

The Ministry of Electric Power will centralize the planning, regulation, and accounting of China's four major existing grids—North China (Zhangjiakou, Beijing, Tianjin, Tangshou), Northeast China (Liaoning, Jilin, Heilongjiang), East China (Anhui, Jiangsu, Shanghai, Zhejiang), and Northwest China (Gansu, Qinghai, Shaanxi)—which are currently under direct Ministry leadership.

SCIENCE AND TECHNOLOGY

Science organizations are continuing their recovery from the ravages of the Cultural Revolution. On December 4th, the State Scientific and Technological Commission announced establishment of two new subgroups: a "specialized automation section" and a "specialized academic section for measuring and testing techniques, apparatus, and meters." The former is headed by Sun Youyu, a vice minister of the First Ministry of Machine Building; the latter is under the direction of Cao Weilian, a vice president of the China Electrical Engineering Society.

The Chinese Scientific and Technological Association (STAPRC) held its second National Congress in mid-March. The Congress elected Zhou Peiyuan chairman, and adopted a constitution. One particularly noteworthy item: the namelist of officials is given in the order of the number of votes each received.

The Chinese Academy of Sciences on March 6th formally inaugurated the Institute of Systems Science, which will work closely with the Institute of Mathematics of the Chinese Academy of Sciences. Mathematicians Guan Zhaozhi and Wu Wenjing were named "responsible persons" of the institute, which has more than 80 research personnel working on studies of control theories, operations mathematics, operations management, basic mathematics, mathematical physics, statistics, and other subjects. The mandate of the institute is to "study control theories in national defense and economy, conduct comprehensive research on large systems, and study basic theories of frontier mathematical subjects."

LEGAL AFFAIRS

In late February the China Council for the Promotion of International Trade (CCPIT) set up an Office of Legal Counsel to act as an agent in litigation and arbitration cases involving economic, commercial, and maritime disputes between foreign or Chinese counterparts. The new office will also provide consultation on questions relating to economic, commercial, and maritime laws and practices. Xinhua News Agency reports that "Reasonable fees are charged for services in accordance with work done and efforts made, and actual costs are to be borne by the client."

On the domestic front, legal offices are springing up all over China. In January, the

legal advice office in Harbin, the capital of Heilongjiang Province, was reopened for the first time in 21 years. Since reopening, its 12 lawyers have defended 16 people in court and answered 150 inquiries.

On January 30 the Beijing Lawyers' Association (CBR, July-Aug. 1979, p. 80) announced plans to increase its membership from 58 to approximately 100 during the first half of 1980 "to meet the growing demand for legal assistance." The Beijing Legal Advisory Office, the "work organ" of the association, charges fees for legal services and assistance, but the lawyers are paid by the government and the fees go to their collective, the Lawyers' Association. Free service is offered to those who can prove that they are natives of Taiwan.

SOCIETIES

Societies in China play the important role, among other functions, of bringing people together from different ministries and government offices that might otherwise be working at cross-purposes. Virtually all societies are state-funded. The principal new organizations, with their dates of establishment and other details:

- Chinese Nuclear Society. Vice Premiers Wang Zhen and Fang Yi attended its first congress and concurrent seminars on atomic energy and the "four modernizations," convened in Beijing on February 22. Wang Ganchang and Jiang Shengjie, both vice ministers of the Second Ministry of Machine Building, spoke to the 350 delegates attending the 6-day seminar, as did Professor Xu Guanren, director of the Atomic Energy Institute under the Chinese Academy of Agricultural Sciences. Suggestions raised at the meeting included establishment of a "nuclear technology application company." Xie Jialin, deputy chairman of the preparatory committee for the Chinese Particle Accelerator Society, addressing the meeting, revealed that China's state plan calls for the construction of three accelerators: a 50 GeV proton synchrotron accelerator, a heavy ion accelerator for the Lanzhou Modern Physics Institute, and an electron synchrotron radiation accelerator for the Chinese Science and Technology University.
- Chinese Radiation Protection Association. Over 120 people attended its inaugural meeting, in Taiyuan on March 6-13, held concurrently with the "First Academic Report Meeting on Radiation Protection."
- Chinese Scientific and Technological Papers Society. Mao Yisheng was elected chairman at its first annual national meeting held on March 3-7 in Shenyang, Liaoning Province.
- China International Law Society. Established on February 5 after a four-day meeting of jurists and academics, the society elected Huan Xiang, vice president of the Chinese Academy of Social Sciences, as its first president.
- China Space Flight Society. Late last year it held a symposium in Qingdao, Shandong Province, on remote-sensing technology, attended by over 160 representatives from 86 research, teaching, and production organizations.
- Chinese Finance Society and Chinese Accounting Society. Both were established in January at a conference on finance in Foshan, Guangdong Province. Former Vice Minister of Finance Rong Zihe was named president of the Finance Society, and Vice Premier Bo Yibo honorary vice president. Vice Minister of Finance Wang Bingqian was elected president of the Accounting Society, and a vice minister of the State Planning Commission was designated as honorary vice president.
- China Optical Society. Established late last year in Beijing, a noted optical scientist, Wang Daheng, was elected its first president; Yan Jici, vice president of the Chinese Academy of Sciences, was named honorary chairman.
- Chinese Grassland Science Society. Established in early January at meeting in Beijing attended by more than 190 grassland and educational workers from every province in China, it elected a Beijing Agricultural University professor, Jia Shenxiu, as the society's first president.
- China Enterprise Management Association (CEMA) (see CBR, July-Aug. 1979, p. 7). CEMA held its first annual meeting in Beijing during February 28–March 8.
- Chinese Society for the Study of the Distribution of Means of Production. Set up March 1 by the State Bureau of Supplies and the Academy of Social Sciences, it will study problems involved in the distribution of industrial materials and equipment and will send delegations abroad. Its president is Yu Xiaogu, deputy director of the State Bureau of Supplies; Yuan Baohua, vice minister of the State Economic Commission, is honorary president.

PROVINCIAL TRADE ORGANIZATIONS

Heilongjiang's foreign trade department will undergo reforms in 1980 to facilitate direct contacts with foreigners, according to a January provincial radio report which noted that "The business of importing and exporting various commodities, except for some products directly handled by the state, will be undertaken by the province. . . ."

Tianjin's General Foreign Trade Corporation, or Import-Export Corporation, as it is also known (see CBR, Mar.-Apr. 1980, pp. 16–17), is located at 57 Hubei Road, Tianjin. Cable address: JINTRA TIANJIN; telephone number 34872. It had two booths at the spring Guangzhou fair, selling Tianjin-produced rubber and cloth shoes, glassware, cosmetics, and handicrafts, among other items.

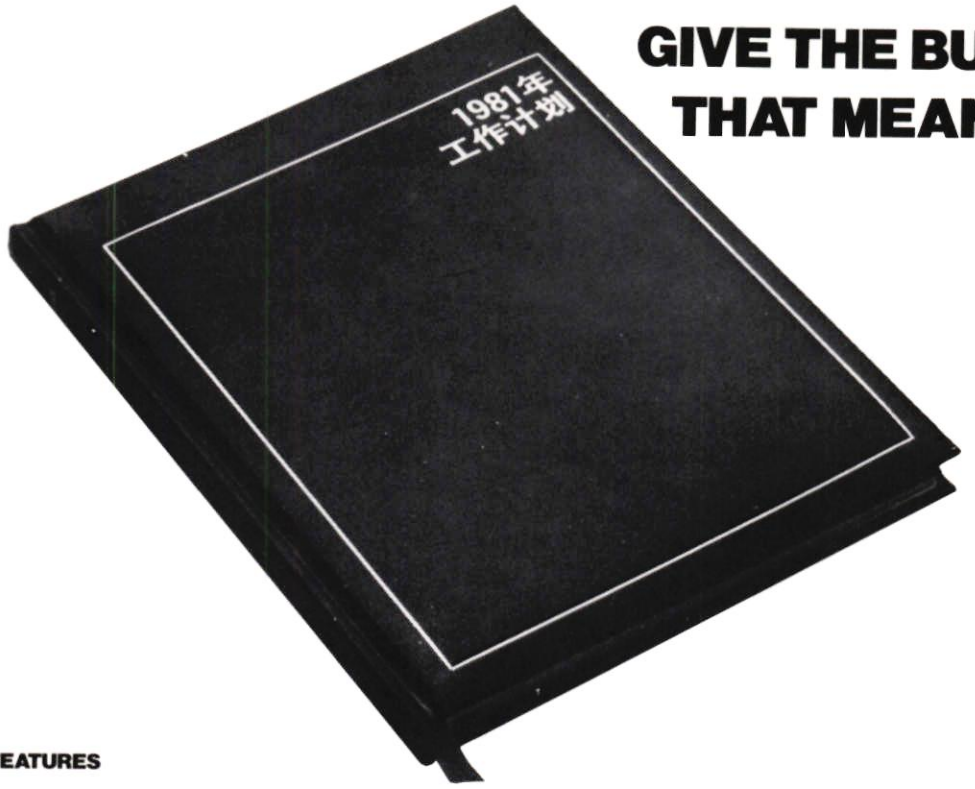
MORE ON ADVERTISING

Information continues to emerge about Chinese advertising corporations (CBR, Mar.-Apr. 1980, p. 48). Two new outfits eager to put your name in lights:

Nanjing Advertising Company, 199 Zhongshan Road, Nanjing, Jiangsu Province. Cable: 4242.

Jiangsu Broadcasting Station, 132 East Zhongshan Road, Nanjing, Jiangsu Province. Cable: 2330.

Japanese and Australian billboards now face Nanjing's biggest square. According to a Chinese source, they are "very interesting and attractive." Watch this space! —KIB 完



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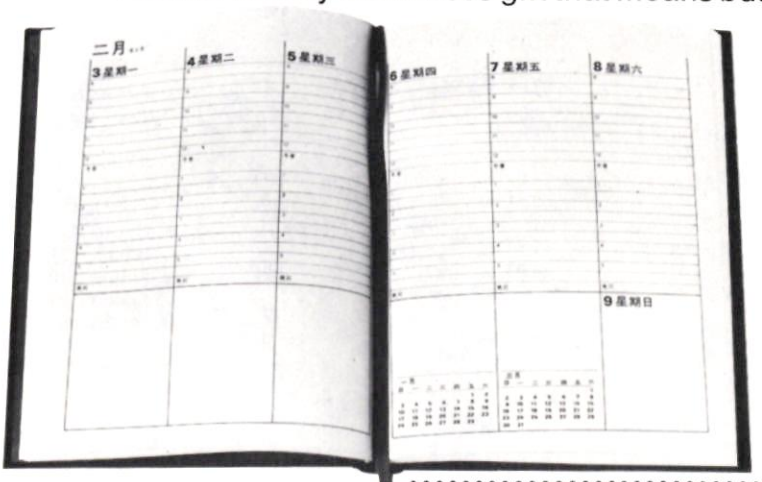

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Official PRC Statistics 1978–79*

KEY INDICATORS	1978	Percent Change	1979	Percent Change
Total gross industrial and agricultural output value (billion yuan, 1970 prices)	¥569.0	12.3[1]	¥617.5	8.5[1]
	$338.3	**23.6**	**$398.6**	**17.8**
Gross value of industrial output (billion yuan, 1970 prices)	¥423.1	13.5	¥459.1	8.5
	$251.5	**24.9**	**$296.4**	**17.9**
Of which: Heavy industry	¥242.4	—	¥261.1	7.7
	$141.1	**—**	**$168.6**	**17.0**
Light industry	¥180.7	—	¥198.0	9.6
	$107.4	**—**	**$127.8**	**19.0**
Gross value of agricultural output[2] (billion yuan, 1970 prices)	¥145.9	8.9[3]	¥158.4	8.6[3]
	$86.7	**19.8**	**$102.3**	**18.0**
National income[4] (billion yuan, current prices)	¥315.0	12.0	¥337.0	7.0
	$187.3	**23.3**	**$217.6**	**16.2**
Profitability (percent of state-owned enterprises run at varying degrees of loss)	24.0[5]	—	23.7	—
Retail prices[6]	—	—	—	5.8
Population (year-end, million)	958.09	1.2	970.92	1.3[7]
FOREIGN TRADE (billion yuan)				
Total trade (fob/cif)	¥35.54	30.4	¥45.5	28.0
	$21.13	**43.6**	**$29.4**	**39.1**
Exports (fob)	¥16.79	20.2	¥21.20	26.3
	$9.98	**32.4**	**$13.69**	**37.2**
Of which: Heavy industrial products, excluding mineral products	¥4.27	—	¥6.76	58.3
	$2.54	**—**	**$4.36**	**71.7**
Light and textile industrial products	¥7.87	—	¥9.54	21.2
	$4.68	**—**	**$6.16**	**31.6**
Farm and sideline products	¥4.64	—	¥4.90	5.7
	$2.76	**—**	**$3.16**	**14.5**
Imports (cif)	¥18.75	41.2	¥24.30	29.6
	$11.15	**55.5**	**$15.69**	**40.7**
Trade balance (exports minus imports)	−¥1.97	—	−¥3.10	—
	−$1.17	**—**	**−$2.00**	**—**
Tourist revenues[8]	¥0.452	—	¥0.696	54.0
	$0.269	**—**	**$0.449**	**66.9**
INDUSTRIAL PRODUCTION (million metric tons unless otherwise indicated)				
Steel	31.78	33.9	34.48	8.5
Rolled steel	22.08	35.2	24.97	13.1
Pig iron	34.79	38.9	36.73	5.6
Coke, machine-made	32.37	—	33.54	3.6
Coal	618.0	12.4	635.0	2.8
Crude oil	104.05	11.1	106.15	2.0
Natural gas (billion cubic meters)	13.73	—	14.51	5.7
Electricity (billion kwh)	256.55	14.8	281.95	9.9
Timber (million cubic meters)	51.62	3.9	54.39	5.4
Cement	65.24	17.2	73.9	13.3
Plate glass (million standard cases)	20.0	—	23.3	16.3
Sulfuric acid	6.61	23.0	7.0	5.9
Soda ash	1.329	23.4	1.486	11.8
Caustic soda	1.64	18.3	1.826	11.3
Ethylene (thousand MT)	379.9	25.5	435.0	14.5
Plastics (thousand MT)	679.0	29.6	793.0	16.8
Chemical pharmaceuticals (thousand MT)	40.7	15.6	41.7	2.5
Calcium carbide	1.238	—	1.407	13.7
Outer rubber tires (million units)	9.36	—	11.69	24.9
Equipment				
Power generating equipment (million kw)	4.838	52.1	6.212	28.4
Machine tools (thousand units)	183.0	−8.0	140.0	−23.5
Motor vehicles (thousand units)	149.1	18.9	186.0	24.8
Internal combustion engines (million hp)	28.18	2.8	29.08	3.2
Locomotives (units)	521.0	77.8	573.0	10.0
Railway passenger wagons (units)	783.9	—	856.0	9.2
Railway freight wagons (thousand units)	16.95	165.0	16.042	−5.4
Steel ships, civilian (thousand tons, probably dwt)	861.0	35.7	809.0	−6.0
Consumer Goods				
Bicycles (million units)	8.54	14.9	10.09	18.1
Sewing machines (million units)	4.86	14.6	5.87	20.8
Wristwatches (million units)	13.51	22.4	17.07	26.4
Television sets (thousand units)	517.0	—	1,329.0	157.1
Radio sets (million units)	11.68	—	13.81	18.2
Cameras (thousand units)	178.95	—	238.0	33.0
Light bulbs (million units)	760.3	—	850.0	11.8
Chemical fibers (thousand MT)	285.0	50.2	326.0	14.4
Cotton yarn[9]	2.38	8.0	2.63	10.5
Cotton cloth (billion linear meters)	11.029	8.6	12.15	10.2
(billion square meters)	10.286	—	11.43	11.1
Woolen piece goods (million meters)	88.84	—	90.17	1.5
Silk (thousand MT)	29.69	—	29.749	0.2
Silk textiles (million meters)	610.35	—	663.45	8.7
Machine-made paper and paperboard	4.39	16.4	4.93	12.3
Detergents (thousand MT)	324.0	26.1	397.0	22.5
Sugar	2.27	25.0	2.5	10.1
Salt	19.53	14.2	14.77	−24.4
AGRICULTURAL PRODUCTION (million metric tons unless otherwise indicated)				
Grain	304.75	7.8	332.115	9.0
Cotton	2.167	5.8	2.207	1.8
Oil-bearing crops	5.218	30.0	6.435	23.3
Of which: Peanuts	2.377	—	2.822	18.7
Rapeseed	1.868	—	2.402	28.6
Sesame (thousand MT)	322.01	—	417.0	29.5
Sugar cane	21.117	18.9	21.508	1.9
Beet root	2.702	10.0	3.106	15.0
Jute, ambary hemp	1.088	26.4	1.089	0.1
Silkworm cocoons				

KEY INDICATORS	1978	Percent Change	1979	Percent Change
(thousand MT)	228.0	5.6	271.0	18.9
Tea (thousand MT)	268.0	6.3	277.0	3.4
Reforestation (million hectares)	4.497	−6.2	4.489	−0.2
Of which:				
Shelterbelts	—	—	—	29.3
Aquatic products	4.655	−1.0	4.305	−7.5
Total output of pork, beef, and mutton	8.561	—	10.624	24.1
Agricultural Inputs				
Chemical fertilizer (calculated on the basis of 100 percent effectiveness)	8.693	20.1	10.654	22.6
Of which:				
Nitrogenous fertilizer	7.637	—	8.821	15.5
Phosphate fertilizer	1.033	—	1.817	75.9
Potash fertilizer (thousand MT)	21.0	—	16.0	−23.8
Chemical insecticides (thousand MT)	533.0	16.6	537.0	0.8
Tractors (thousand units)	114.0	14.8	126.0	10.5
Hand tractors (thousand units)	324.2	1.2	318.0	−1.9
Electricity consumed in rural areas (billion kwh)	25.31	—	28.27	11.7
Application of chemical fertilizer per hectare of farm land (kilos, calculated on the basis of 100 percent effectiveness)	89.0	—	109.0	22.5
Machine-ploughed farm land (percent of total farm land)	40.9	—	42.4	—
Agricultural Capital				
Stock of large and medium-sized tractors (thousand units)	557.0	—	667.0	19.7
Stock of hand tractors (million units)	1.373	—	1.671	21.7
Stock of power-driven drainage and irrigation machines for rural use (million hp)	65.575	—	71.221	8.6
Storage capacity of 84,000 large, medium, and small reservoirs (billion cubic meters)	—	—	400.0	—
Stock of hogs (million head)	301.29	3.3	319.705	6.1
Stock of large animals (million head)	93.89	0.1	94.591	0.7
Of which:				
Cattle (million head)	70.71	—	71.346	0.9
Stock of sheep and goats (million head)	169.89	—	183.142	7.8
CAPITAL CONSTRUCTION				
Total investment in capital construction (billion yuan)	¥47.90	31.3	¥50.00	4.4
	$28.48	**44.6**	**$32.28**	**13.3**
Of which:				
National Budget	¥39.50	34.0	¥39.50	0.0
	$23.48	**47.7**	**$25.50**	**8.6**
Budgets of provinces, localities, and enterprises	¥8.40	20.0	¥10.50	25.0
	$4.99	**32.0**	**$6.78**	**35.9**
Number of large and medium-size projects under construction	—	—	1,187.0	—
Number of large and medium-size projects completed	99.0	—	128.0	29.3
Investment by type of activity (percent of total):				
Non-production projects[10]	17.4	—	27.0	—
Production projects	82.6	—	73.0	—
Total fixed assets of capital construction units (billion yuan)	¥35.60	37.0	¥41.80	17.4
	$21.17	**50.9**	**$26.99**	**27.5**
Proportion of total fixed assets of capital construction units in working order (percent)	74.3	—	83.7	—
Residential building[11] (million sq meters)	90.2	—	120.0	33.0
Of which:				
Housing for industrial workers and staff	37.69	35.6	62.56	66.0
Annual increase in production capacity:				
Steel	1.12	—	2.1	87.5
Iron ore	—	—	4.62	—
Coal	11.51	—	39.93	246.9
Crude oil	9.996	—	8.0	−20.0
Natural gas (million cubic meters)	—	—	1.83	—
Power-generating capacity (million kw)	5.05	—	4.65	−7.9
Chemical fertilizer (thousand MT)	—	—	820.0	—
Chemical fibers (thousand MT)	—	—	83.0	—
Cement	1.89	—	2.74	45.0
Sugar (thousand MT)	120.0	—	225.0	87.5
New cotton spindles (thousand units)	—	—	540.0	—
Seaport handling capacity	—	—	9.41	—
New trunk and branch railway lines (km)	806.0	—	875.0	8.6
TRANSPORTATION AND COMMUNICATIONS				
Total value of posts and telecommunications (billion yuan)	¥1.165	—	¥1.255	7.7
	$0.693	**—**	**$0.810**	**16.9**
Of which:				
Letters	—	—	—	8.6
Telegrams	—	—	—	5.9
Long-distance calls	—	—	—	10.8
Passenger transport (billion passenger km):				
Railways	109.1	—	121.4	11.3
Highways	52.1	—	60.3	15.7
Waterways	10.1	—	11.4	13.3
Air	2.8	—	3.5	25.3
Cargo Traffic (billion metric ton–kilometers unless otherwise indicated)				
Railways	533.3	17.0	558.8	4.8
Waterways	377.9	36.8	456.4	20.8
Highways[12]	27.4	9.2	26.8	−2.2
Air (million metric ton–km)	97.0	27.8	123.4	27.2
Oil and gas pipelines	43.0	—	47.6	10.8
Major seaports (million MT)	200.5	25.3	212.57	6.0
Domestic Trade				
Total value of commodities purchased by commercial departments (billion yuan)	¥174.00	11.1	¥199.24	14.5
	$103.45	**22.3**	**$128.62**	**24.3**
Of which:				
Manufactured goods	¥128.00	11.0	¥140.56	9.8
	$76.10	**22.2**	**$90.74**	**19.2**
Farm and sideline produce	¥46.00	11.3	¥58.68	27.6[13]
	$27.35	**22.6**	**$37.88**	**38.5**
Total value of retail sales (billion yuan)	¥152.75	8.3	¥175.25	14.7[14]
	90.81	**19.2**	**$113.14**	**24.6**

KEY INDICATORS	1978	Percent Change	1979	Percent Change
EMPLOYMENT AND WAGES				
Workers and staff (year-end national total, million persons)	94.99	4.2	99.67	4.9
Of which:				
Workers and staff in state-owned units	74.51	3.5	76.93	3.2
Workers and staff in urban collectively owned units	20.48	6.9	22.74	11.0
New jobs created (million)	—	—	9.026	—
Number of workers who retired or left the labor force for health or other reasons (million)	—	—	4.346	—
Commune per capita cash income derived from collective economy (yuan)	¥74.00	—	¥83.40	12.7
Total wage bill	**$44.00**	—	**$53.84**	**22.4**
(billion yuan)	¥56.90	10.5	¥64.70	13.7
	$33.83	**21.6**	**$41.77**	**23.5**
Of which:				
Total wages of workers and staff in state-owned units	¥46.90	10.1	¥53.00	13.0
	$27.88	**21.2**	**$34.22**	**22.7**
Total wages of workers and staff in urban collectively owned units	¥10.00	12.4	¥11.70	17.0
	$5.95	**23.7**	**$7.55**	**26.9**
Average wage of workers and staff in:				
State-owned units[15] (yuan)	¥644.00	7.0	¥705.00	9.5
	$382.88	**17.8**	**$455.13**	**18.9**
Collectively owned units (yuan)	¥488.28	5.1	¥514.50	5.4
	$290.30	**15.7**	**$332.15**	**14.4**
Productivity (gross value of industrial output (GVIO) per worker and staff in state-owned enterprises, yuan)	11,081	—	11,790	6.4
Of which:				
Increase in 1979 GVIO per worker and staff contributed by:				
Higher labor productivity (percent)	—	—	62.0	—
Increase in size of labor force (percent)	—	—	38.0	—
SCIENCE AND EDUCATION				
Total number of scientists and technicians working in state-owned units (million)	4.345	—	4.705	8.3
Institutions of higher learning	598	50.3	633	5.9
Students in institutions of higher learning (thousand)	856.0	38.1	1,020.0	19.2
New enrollment in institutions of higher education (thousand)	402.0	48.9	275.0	−31.6
Students in TV colleges (thousand)	—	—	280.0	—
Students in factory-run and spare-time colleges (thousand)	550.0	—	580.0	5.5
Students in secondary technical schools (thousand)	889.0	30.7	1,199.0	34.9
Middle school students (million)	65.48	—	59.05	−9.8
Primary school pupils (million)	146.24	—	146.63	0.3
Kindergarten children (million)	7.87	—	8.79	11.7
Students sent abroad for study	—	—	1,762	—
CULTURE				
Cultural centers	2,700	—	2,892	7.1
Film projection units (thousand)	110.0	—	122.0	10.9
Art troupes	3,100	—	3,482	12.3
Public libraries	1,256	—	1,651	31.4
Radio stations	93	—	99	6.5
TV stations	32	—	38	18.8
Circulation of national and provincial newspapers (billion copies per year)	10.94	3.8	13.08	19.6
Magazine circulation (billion copies per year)	0.76	36.3	1.18	55.3
Books published (billion copies)	4.26	29.1	4.07	−4.5
HEALTH				
Hospital beds (million)	1.85	4.5	1.932	4.1
Professional medical workers (million)	2.46	5.1	2.642	7.2
Of which (thousand):				
Doctors of traditional Chinese medicine	250.0	—	258.0	3.2
Senior doctors of Western medicine	350.0	—	393.0	12.3
Junior doctors of Western medicine	420.0	—	435.0	3.6
Nurses	—	—	421.0	—
Barefoot doctors attached to rural production brigades (million)	1.60	—	1.575	−1.6

Note: Values in yuan are accompanied by dollar equivalents based on 12-month average exchange rates of ¥1.682 per US dollar in 1978 and ¥1.549 in 1979.

*Official 1977 statistics issued by the State Statistical Bureau were published by Xinhua on June 27, 1979, and appear in the Jul.-Aug. *CBR*, pp. 42–45.

[1]Original plan target 10.4 percent in 1978, and 7.0 percent in 1979.

[2]GVAO includes the output value of farm products, forestry, animal husbandry, sideline occupations, fisheries, and the output of brigade-run industries.

[3]Original plan target was 6.2 percent in 1978 and 4.4 percent in 1979.

[4]National income includes five components calculated on a net basis to eliminate double counting: industry, agriculture, construction, communication/transportation, and commerce. The first two components are obtained by deflating GVIO by approximately 66 percent, and GVAO by approximately 75 percent. The method used to calculate the other components has not been published; however, it is known that under China's national income or "net domestic national product" accounting methods, items are only included if they contribute in some physical sense to "real" output; hence, the net value of commerce excludes passenger transport.

[5]Report by Chairman Hua Guofeng to the June National People's Congress. See *CBR*, Jan.-Feb., 1980, p. 68.

[6]Retail prices are measured by a weighted index of state retail prices, negotiated prices, and an index of rural market prices. The latter index reportedly declined by 1.5 percent in 1979.

[7]The 1979 birthrate was 17.9 per thousand, the death rate 6.2 per thousand, and the natural population growth rate 11.7 per thousand.

[8]China received 1.9 million tourists in 1978 and 4.2 million in 1979, an increase of 121 percent.

[9]Equivalent to 14.67 million bales in 1979, and 13.28 million bales in 1978.

[10]Such as workers' housing and urban public facilities.

[11]Includes new housing built with central and local government investment funds. Home construction by communes and other collective units is presumably excluded.

[12]Transport by state-owned vehicles only.

[13]Of this increase, 23.1 percent is attributed to price increases, and only 4.5 percent to the increased volume of purchases; thus, the government paid an additional ¥10.61 billion ($6.86 billion) in 1979 for the same quantity of farm sideline produce as purchased in 1978.

[14]¥3.52 billion ($2.27 billion) of this increase is due to increased prices, and ¥18.98 billion ($12.25 billion) to increased sales volume.

[15]No explanation is given as to why the official per capita wages of workers in state-owned units, ¥644.0 in 1978 and ¥705.0 in 1979, are substantially larger than the figures one obtains (¥629.4 and ¥688.9, respectively) by dividing the total wage bill in both years by the number of workers.

Source: State Statistical Bureau, *Communiqué on the Fulfillment of China's 1979 National Economic Plan*, released by Xinhua, April 30, 1980.

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COMPANY NAME _____

ADDRESS _____

_____

_____

PHONE _____ TELEX _____ CABLE _____

BANKER _____

MY COMPANY IS PRIMARILY ( ) IMP ( ) RTL ( ) MFR ( ) WHL ( ) EXP ( ) AGT

IT DOES APPROX US$ _____ IN TOTAL SALES ANNUALLY.

MAIN PRODUCT LINES:

1. _____ 2. _____

3. _____ 4. _____

Business Digest

Meeting the Competition Along with trade decentralization comes a plethora of trade shows in China's provinces. The box opposite lists some of the scheduled events, with contacts. However, there is one show touring Chinese cities with foreign products placed there—not by foreign companies—but by the Chinese themselves, alongside China's own products. The idea of the show: to help China's engineers emulate foreign products by letting them see what the competition has to offer. Company products represented at the show, which was sponsored by the State Economic Commission and the Ministry of Foreign Trade, included a Xerox model 660; Singer, Pfaff, and Maimin sewing machines; Eveready and Duracell batteries; Del Monte catsup and sliced pineapples; Remy Martin cognac and Johnny Walker Black Label scotch; Lindt chocolates; Adler and Olympia typewriters; Akai, Pioneer, and Sansui sound equipment; ITT and Sony color TVs; Pabst canned beer and Pilsner lager (West Germany); Raleigh and Taiwanese bicycles; Spam, Nestle's, and Libby's products; designer blouses and fabrics from France, Japan, and Hong Kong; and Cross pens.

Service, Please During the past six months, the idea of service has finally gotten through to China: in November and December a number of Japanese companies agreed, or were negotiating, to service the many thousands of Japanese trucks, cars, and buses in use in the PRC, including Toyota (repair factory in Beijing), Isuzu (parts depot in Nanjing), Hino (parts depot near Beijing), and Nissan and Mitsubishi Auto (parts and service centers in various cities). Seiko has a watch-repair facility on Beijing's Wangfuching, and Kodak has opened film-processing centers in many Chinese hotels. China's Ministry of Foreign Trade recently established the Foreign Trade and Consultancy and Technical Services Corporation expressly to maintain and service imported equipment with the help of foreign companies. Top priority is now the establishment of nationwide centers to service photocopy machines by well-known US manufacturers.

Top left: Pabst Blue Ribbon tours the provinces. Unbenownst to US manufacturers, the Chinese throng to see their products on display in a SEC-organized road tour. Above: A 50-ton WABCO truck heads to Gezhouba in the wake of a recent deal.

Emulation, Continued... The May 9 article by Jay Mathews of the *Washington Post,* describing how China has tried to reproduce a Boeing 707, is a reminder that China has been trying to reproduce things for decades. But the earnest intent of China's design research facilities in carrying out a principle attributed to Zhou Enlai: "First, use; second, criticize; third, convert; fourth, create," seems rarely to have gotten past stage three. Most emulation remains at the laboratory stage; the Boeing "708", for example, never flew because among other things, the Chinese could not determine the precise center of gravity. Other examples:

Pesticides Among the Western pesticides reproduced by the Chinese, Dow Chemical's Nitrapyrin (N-Serve) is an interesting case. China could not produce it in commercial quantities, nor reproduce its purity, owing to the pesticide's complexity. But the incident caused grave concern in an industry that tests over 20,000 compounds a year to find one that is commercially viable.

Petrochemical processes A research program has been underway since 1966 at the Fushun Petroleum Research Institute to reproduce a dehydrogenization process used in heavy oil cracking; only four plants in the world use this patented American process. In 1977 the project was still underway, af-

ter many catalysts and models had been tried and failed, and after all the related patents and trade magazine articles had been meticulously studied. The program to recreate the process is scheduled to continue through 1985.

Light industry products A delegation member passing through the Shanghai Industrial Exhibition saw a suitcase looking like his own Samsonite. So similar was it, in fact, that he tried it with his own key. The key fitted perfectly. China has also been trying to reproduce Hasselblad cameras, among other consumer products.

Transportation equipment Boeings were not the first. China has also copied the Australian Nomad STOL aircraft, following a 1974 Australian exhibition in Beijing where the plane was featured. By June 1978, the copy was operating on internal routes,with the unique exterior of the aircraft reproduced in detail. Jane's guide, *All the World's Aircraft,* contained the plane's specifications. Needless to say, Australia sold no airplanes.

Is this what China used to call "self-reliance"? In fact, reverse engineering, besides wasting enormous amounts of time and energy, results in more dependence on foreign things. This is the opposite of real self-reliance, which hinges on top-grade technical education.

Foreign Trade Ministry as Publishing House In July the Ministry of Foreign Trade's Science and Technology Bureau will publish in the United States, with the "assistance" of Li May Associates (better known as CHINATRANS), a monthly 4- to 8-page newsletter to be called the *China Trade Review*. Costing somewhere between $150 and $300 a year, it will be written in Beijing by the ministry. The MOFTs's Economic Research Institute is also considering making available to foreigners in June an international trade tabloid, an unclassified English version of what is now circulated every few days among the PRC's trade organizations.

A third MOFT publication is also heading for the presses. Called *Foreign Trade and Technology Review* and scheduled to begin publication in January 1981, the new bilingual marketing magazine will introduce foreign scientific and industrial goods and services to end-users in China. It will be published and distributed by China's Foreign Trade Science and Technology Service Corporation in a joint venture with China Publications, a new company formed by Victor Kiam, the president, I-yao Chan, and Robert Chiu.

Companies in China

Talks in China in October led to a late 1979 order for **Extel** teleprinters by INSTRIMPEX. The teleprinters were delivered in May and Extel personnel will be on hand to coordinate the integration of the new equipment into the network.

Singer Company's factory-level agreement to produce sewing machines under license in China is now awaiting approval of higher-ups. The deal provides for product payments equal to about five percent of total production. All the machines would be produced for export, unless a royalty agreement for domestic sales—already approved in principle by Beijing—is worked out. Singer has also received an invitation from China National Aerotechnology Import and Export Corporation to send a team to Beijing to discuss the purchase of airplane training simulators.

CTI's container manufacturing facfactory near Guangzhou is about to begin production. CTI has the exclusive right to purchase the first five years' production, or a minimum of 50,000 20-foot containers, at a fixed price. Wages for the 450 Chinese workers, too, are fixed for five years.

Begging Space in Beijing

The Beijing Hotel, progressively booked up as permanent foreign company office space, has drawn the line on large-space occupiers. Companies finding themselves out in the cold are now competing for scarce accommodations at high rents. SmithKline and Bechtel Corp. are occupying guest houses at the old American legation, despite rents in excess of ¥1,000 ($670) per day. WJS has found accommodations in the Nationalities Palace, and space has even been booked in the International Club.

—NL/KE

FORTHCOMING EXHIBITIONS IN CHINA, 1980

Agriculture

Guangzhou July 6–16. Wing Group Ltd., 3601 West Devan Avenue, Suite 300 N, Chicago, Illinois 60650; Telephone: (512) 583-2644. Exhibition also includes industrial and commercial products.

Automotive

Guangzhou June. Citroën.

Books

Shanghai May 1981. French book exhibition.

Construction Machinery Materials

Guangzhou July 8–17 and July 21–30. Asian Consortium Exhibition Ltd., 734 King's Road, Hong Kong; Telephone: 5-636137; Telex: 60559 ACEX HX.

Electronics and Electrical

Beijing May 26–July 10. Beijing Centre for the Exhibition of Samples of New Foreign Products, Box 2812, or Hall No. 2, People's Palace, Beijing; Telephone: 556022. Exhibition also includes food packaging and technology.

Wuhan June. NV Philips, the Netherlands.

Guangzhou August 14–24. US-China Trade Consultants; Clapp and Poliak, 475 L'Enfant Plaza, SW, Suite 4110, Washington, DC 20024; Telephone: (202) 554-1127.

Beijing August 25–September 13. Best Engineering, Room 806 David House, 8–20 Nanking Street, Kowloon, Hong Kong; Telephone: 3-303110; Telex: 37460 HX. Exhibition also includes scientific instruments, textile machinery, mechanical equipment, mining and oil drilling equipment.

Guangzhou September. *Wen Wei Po,* Hong Kong. Machine tools also included.

Shanghai December. French exhibition also includes instruments and telecommunications.

Beijing Tentatively scheduled for January–February, 1981. Clapp and Poliak, 245 Park Avenue, New York, New York 10017; Telephone: (212) 661-8410.

Guangzhou November 20–December 4, 1980. Great Sincere Technology Exchange Co., Ltd., 7th floor, Fung Woo Bldg., 279-281 Des Voeux Rd., C., Hong Kong; Telephone: 5-457087; Telex: 74045GSTCL HX. Exhibition includes mini-computers, hotel supplies, and light industrial equipment.

General

Beijing November 17–28. US Department of Commerce, Washington, DC; Telephone: (202) 377-4810. Includes agricultural machinery, power generation equipment, textile machinery, petroleum exploration equipment, and transportation equipment.

Shanghai May 1981. New Japanese products and samples.

MachineTools

Guangzhou July 11–24. AdSale, P.O. Box 20032, Hennessy Rd., Post Office, Hong Kong.

Marine Industries

Guangzhou June 16–28, 1980. China Industry and Trade Consultants, Room 1504, 33 Lai Chi Kok Road, Kowloon, Hong Kong; Telephone: 3-817952; Telex: 76045 CMICO HX.

Medical Products

Guangzhou June 9–22. May Lee International, Broadway, Suite 1617, New York, New York 10004; Telephone: (212) 425-4347.

Tianjin September–October. West Germany. Exhibition includes medical and pharmaceutical equipment.

Packaging Equipment

Shanghai November. Includes pharmaceuticals.

Tianjin Possibly in late 1980.

Telecommunications

Shanghai No date. UK exhibition.

CHINA: 1980 SALES AND NEGOTIATIONS THROUGH MAY 1

The following chart contains recent reports of sales and negotiations exclusive of those listed in previous issues.

The total value figure for sales includes only those deals which are listed as contracts or deals signed/won/secured/concluded. All others are counted as negotiations.

Company/Country	Product/Plant/Technology	Value Million US $ (local currency if known*)	Status Date Announced
Agricultural Commodities			
(Thailand)	Barter agreement: 5 million–6.3 million barrels of Chinese crude oil for 100,000–200,000 tons maize, 100,000 tons rice, 20,000 tons each of mung beans and black matpe for August 1980–July 1981	NVG	Agreement 11/79†‡
Archer-Daniels-Midland Co. (US)	Joint venture to make edible soy products	NVG	Negotiation 4/30/80
Agricultural Technology			
Corn States Hybrid Service, Inc., Corn States International, Ltd. (US)	Construction of 2 seed-corn plants in Jilin Province and Heilongjiang Province	NVG	Contracts signed 3/80
Chemical Plants and Equipment			
(Hong Kong)	Joint venture for cellophane factory in Fujian Province	NVG	In operation; contract not yet signed 4/21/80
Construction Materials and Plants			
Ready Mixed Concrete Ltd. (Australia)	Set up of a quarry at Woo Sheck Koo in Guangdong Province. 80 percent of the output will be exported to Hong Kong	$5.5 million	Has reached agreement 4/19/80
Consumer Goods			
Remy Martin (France)	Agreement with Vine Farm of Tianjin to establish Sino-French Joint Venture Wine Co. Remy Martin will provide advisory services, production technology, marketing services	NVG	Agreement 1/80†
Coca-Cola (US)	Technology for construction of bottling plant in Beijing	NVG	Agreement signed 3/26/80
The Spaulding Company (US)	Manufacture of sporting goods by Chinese under contract to Spaulding	NVG	Negotiation 4/28/80
Electronics			
Merlin Gerin (France)	Electrical equipment	NVG	Contracts signed 1979‡
Citizen Watch Co. (Japan)	Factory to assemble wristwatches in Guangdong	NVG	Negotiation 2/26/80
Globe International Unit of Johnson Controls (US)	Battery manufacturing equipment to modernize automobile factory in Beijing	NVG	Contract 2/28/80
Siltec (US)	a) Silicon processing equipment b) Turnkey silicon wafer plant	a) $0.07 b) NVG	a) Sold 3/17/80 b) Negotiations 3/17/80
Unicom Automation Co. (Japan)	Agreement with Tianjin Computer and Scientific Instrument Corp. of China to establish technical exchange committee. China will produce microcomputers upon Japanese specifications	NVG	Agreement concluded 3/18/80
BOT Lease Co. of Tokyo (Japan)	2-year contract to lease electronic service and office equipment to service enterprises in Beijing	NVG	Contract 3/25/80
Sperry Univac (US)	Computer assembly cooperation contract with the State Administration of Computer Industry	NVG	Contract signed 3/26/80

Company/Country	Product/Plant/Technology	Value Million US $ (local currency if known*)	Status Date Announced
CW Communications (US)	Joint venture with Fourth Ministry of Machine Building to publish a bimonthly magazine, *China Computerworld*. First issue scheduled for 10/80	NVG	Tentative agreement 3/31/80
O.P.M. Leasing Services Inc. (US)	Used IBM 370/138J with 25 peripheral devices	NVG	Transaction concluded 4/1/80
JPD Enterprises (US)	a) Exclusive joint venture for manufacture and distribution of records, cassettes, tapes, stereos, and phonographs throughout China and for export	a) NVG	a) Initial agreement signed 4/28/80
	b) Joint venture to manufacture color TV sets and electrical components for sale and distribution in China and for export	b) NVG	b) Initial discussions 4/28/80
Food Processing Plants and Equipment			
Henry Jones Ltd. (Australia)	Technical assistance for several fruit and vegetable canning factories	NVG	Will provide 4/1/80
Carnation Company (US)	Joint venture for feed mill in Fujian Province	NVG	Agreement signed 4/21/80
Machinery			
The Fasteners Institute of Japan	Joint venture with Zhangjiakou People's Committee, Hebei Province, to establish factory for mass production of standardized screws, including nuts and bolts	NVB.	Negotiation 3/80
Babcock Wire Equipment (UK)	Rubber hose machinery	$0.12 (£54,000)	Order secured 3/26/80
Parker Hannifin Corp. (US)	Joint venture to construct plant for making sealing devices	NVG	Preliminary agreement 4/24/80
Metal Mining and Processing			
Bechtel Corporation (US)	Feasibility study for tungsten mine and concentration plant in Fujian Province	NVG	Fujian has commissioned Bechtel 4/21/80
Nonferrous Metals and Products			
GTE (US)	Barter agreement in which tungsten, molybdenum concentrate, and rare earths would go to GTE in exchange for mine tool equipment	NVG	Negotiation 3/10/80
Petroleum Equipment			
Svenska Varv (Sweden)	2 oil tankers (80,000 dwt/each)	Approximately $80.5 million (approximately 350 million Swedish kroner)	Order won 4/15/80
Scientific Instruments			
Diaform (UK)	Precision instruments	$0.28 (£120,000)	Contract won 3/20/80
Shipping			
Hitachi Shipbuilding & Engineering Co. (Japan)	Improvement of Hung Chi Shipyard in Dairen	NVG	China has requested aid 3/12/80
Telecommunications			
NASA (US)	Landsat ground station	NVG	Memorandum of Understanding signed 1/24/80†
Tourism			
Porta-Homes Inc. (Philippines)	Easy-to-install modular houses to be used as hotels	NVG	PRC will import 1/29/80
Japan Air Lines (Japan)	Joint venture to sell package tours going to China	NVG	Accord 3/18/80

Company/Country	Product/Plant/Technology	Value Million US $ (local currency if known*)	Status Date Announced
E-S Pacific Development & Construction Co. (US)	Joint venture with Beijing branch of CITS to construct and manage a 1,000-room, 21-story hotel in Beijing named the Great Wall Hotel	NVG	Approved by Foreign Investment Commission 4/23/80
Zhong Mei Hotel Development Venture Ltd. (Hong Kong)	Joint venture for construction of the Jian Guo Hotel	NVG	Approved by Foreign Investment Commission 4/23/80
China Air Catering Ltd. (Hong Kong)	Joint venture with Beijing branch of the CAAC to upgrade quality of food and beverages on CAAC's international flights	NVG	Approved by Foreign Investment Commission 4/23/80
Transportation Equipment			
Northern Lite Manufacturing (US)	25 Park Model trailers	NVG	Has sold 3/80
(Japan)	Construction of 375-mile waterway between Tianjin and Nei Monggol for coal transport	NVG	Negotiation 3/1/80
Alcade Engineering (UK)	Equipment to test aircraft components	$0.23 (£103,000)	Order won 3/22/80
Volkswagenwerk AG (W. Germany)	Auto assembly plant	NVG	Negotiation 3/24/80
(Australia)	Assistance in electrification of Hong Kong–Guangzhou railway	nearly $21 million	Contract won 3/27/80
Parsons Corporation (US)	Study for a new airport in Xiamen, Fujian Province	NVG	Has been hired 4/21/80
Nippon Sharyo Seizo Kaisha Ltd. (Japan)	Locomotives, rail cars, other transportation equipment	$64.4 million	Expected to sign contract 4/24/80
Miscellaneous			
Taft, H-B International (US)	13 one-hour, 1 ninety-minute, and 3 two-hour episodes of the TV series "The Man from Atlantis" for CCTV	NVG	Has exported 2/80
Ogilvy and Mather International (US)	Agreement with Beijing Advertising Corp. and Guangdong Advertising Corp. to act as primary agency for placement of Chinese advertising within the EEC, Australia, New Zealand	NVG	Agreement signed 3/13/80
H. Maihak AG (W. Germany)	Know-how and cooperation contract for an analyzer plant in Beijing	NVG	Contract concluded 3/26/80
Mitsubishi Heavy Industries, Mitsubishi Corp., Trinity Development Company Ltd. (Japan)	Construction of 18 shops and 4 warehouses within Baoshan steel complex	$35.7 million	Contract signed 4/16/80
Sanwa Bank Ltd., Asahi Trading Co. (Japan)	Joint venture to establish consulting company offering information about potential bilateral business tie-ups	NVG	Agreement signed 4/17/80†
Corley Productions Ltd. (US)	Agreement to shoot movie in China titled "The Lady and the Panda"	NVG	Agreement signed 4/26/80†

Total Value of 1980 Sales Listed Through April 30: $62.55 million+
Total Value of 1980 Negotiations Listed Through April 30: $145.25 million+
Cumulative Total Value of 1980 Sales Listed Through April: $285.02 million+
Cumulative Total Value of 1980 Negotiations Listed Through April 30: $507.2 million+

NVG = No Value Given
*Date contract signed. All others are when sale or negotiation was announced.
†Dollar conversions at month-end rates quoted in International Financial Statistics (IMF).
††Some 1979 deals are also included, since they were not reported in the last issue of *CBR*.

Table prepared by Marie-Louise de Vegvar

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