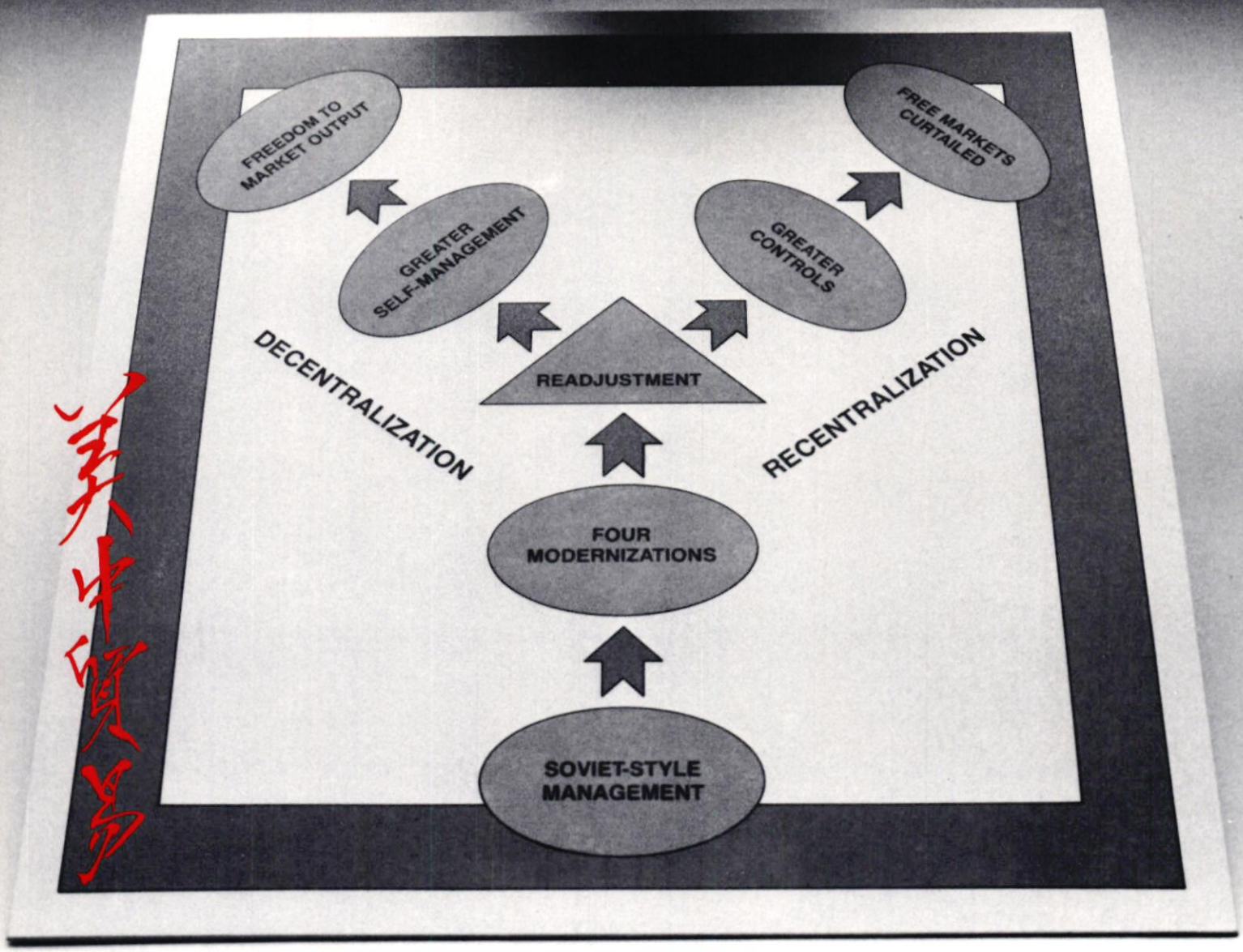
The China Business Review

May–June 1981

Chinese Management

Developing A New Game Plan



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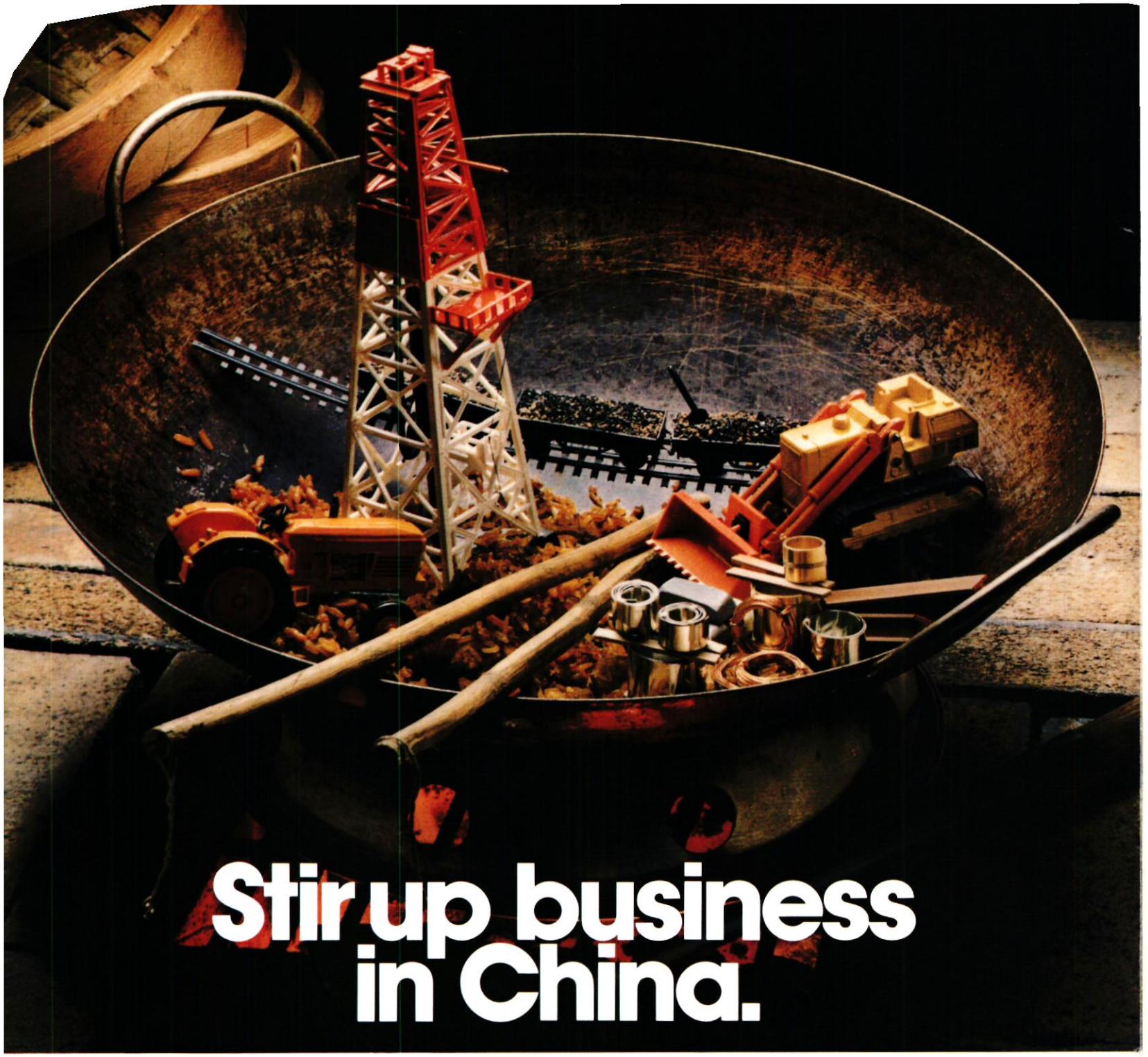

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The China Business Review

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May–June 1981 Volume 8, Number 3

CONTENTS

Front Cover: *Artwork by Wickham & Associates.*

The China Business Review welcomes articles from outside contributors. Manuscripts submitted for consideration should be typed double-space and normally may not exceed 5,000 words. They should be sent to the Editor, *China Business Review*, Suite 350, 1050 17th Street, NW, Washington, DC 20036, USA.

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China Wire

Ten Years of Sino-US Trade

June 10, 1981, marks the tenth anniversary of American trade with the People's Republic of China. From 1971 to the end of last year, more than $11 billion worth of goods were shipped between our two countries—with almost two-thirds of that value concentrated in the two years following normalization of diplomatic relations.

Our trade with China has established a pattern in which exports to China have outnumbered imports by about three to one. Agricultural commodities—wheat, corn, cotton, and soybeans—consistently have dominated our exports. Until China takes major steps to boost its exports, that pattern is likely to continue.

Ironically, at a time when China's own energy output has declined and gasoline is rationed in many of China's provinces, petroleum products have led all of China's exports to the US. In the past year, gasoline was the number one US import from China.

It is hoped this tenth anniversary of our China trade coincides with the beginning of a new age of accountability in the PRC, and that the blunders Baoshan represents are a thing of the past, along with the many other cancellations that occurred in the readjustment period.

The Next Ten Years

It is now clear that in the 1980s and 1990s energy will be as important a priority to the PRC as food is now. Growth in each of China's energy sectors has declined over the past four years, and negative growth is the near-term prospect. (China's current electricity output on a per capita basis is on a par with Bolivia's.) In the short-term, energy, transportation, and communications will have priority.

The long-term picture is also emerging—we can now piece together some of the main features of China's future strategy.

• *Improving the efficiency of the economy.* Conservation and improved efficiency in every industrial sector will rank with energy development as basic policies to improve the use of existing energy resources.

• *Shifting the balance from heavy industry to light industry in the 1980s.* This will have a marked effect on energy consumption. As offshore petroleum and major hydroschemes come on stream in the late 1980s and early 1990s, heavy industry—including chemicals, petrochemicals, and metallurgical industries—will again take prominence and help to underpin further development of China's light industry and agriculture.

• *Redirecting energy consumption from industry to consumers in the next ten years.* This move will particularly affect large urban areas. Coal gasification, for example, will be emphasized in cities to make maximum use of coal. Nuclear power will be used to boost energy-short regions (South China, East China, and Northeast China) by the mid-1990s.

• *Encouraging a rational industrial structure.* Regionally, industrial growth will be redirected to match energy availability. There will be development of clean, information-oriented enterprises, such as computers and electronic instruments, and of labor-intensive industry such as handicrafts and textiles in energy-poor urban areas. Heavy industry will be built up around major energy resources. Metallurgical, chemical, building material, and electric power industries will be developed in Shanxi, which has been tagged as China's future Ruhr.

• *Developing infrastructure.* China now has a ten-year interstate highway plan that includes building expressways, doubling the length of its hardtop roads by 1990 (from 100,000 km to 200,000 km), and adding 10,000 km in new roads. Currently only 2 percent of China's roads are "first" or "second" class. Among other things, the Chinese have realized that bad road conditions waste both gasoline and vehicles.

A national electricity grid, now in planning, will link the nation's provinces and municipalities with major east-west and north-south 500- and 750-kv lines by the 1990s.

• *Opening up a market for computer hardware and software.* Perhaps most important, in the next decade China will be putting in place a system of computers for its 1982 census under the auspices of UNDP, and a hardware system for 26 major universities, under a World Bank program, worth hundreds of millions of dollars. The software market that this will represent in China in the next 20 years could be enormous.

"Quite Spectacular"

Looking at a China 20 years down the road, we could very well see a country boasting an $800 billion GDP, up from the present $250 billion. The prospects for American trade with China, whatever the past disappointments, problems with decentralization, frustrations with bureaucracy, etc., are bound to be excellent in the long term.

The next ten years of Sino-US trade should be much better than the first. As Vice-Premier Bo Yibo told the National Council's Board of Directors in the Great Hall of the People on March 26, "during retrenchment, Sino-US trade may develop at a slower pace than previously, but afterwards the results will be quite spectacular."

—Nicholas H. Ludlow

China Calendar

EXHIBITIONS IN CHINA

☐ **Beijing, July 1–14.** Architectural materials exhibition to be staged by the Abacus Group of America in Beijing's Architectural Exhibition Hall. For information contact The Abacus Group, 350 Fifth Ave., New York, NY 10001; (212) 586–1000.

☐ **Guangzhou, July 15–21.** The 1981 Packaging Exhibition. Cosponsored by Industrial & Trade Fairs, International, Ltd.; Wen Wei Enterprises; and The Adsale People, the exhibition will open in the Guangdong Commodities Exhibition and Market Services Center.

☐ **Beijing, August.** International exhibition of telecommunications equipment, systems, and computers, sponsored by the Great Sincere Technology Exchange Company, Ltd. The exhibition will include technical exchange seminars and a lecture program, and will be held at the Beijing Center for the Exhibition of Samples of New Foreign Products.

☐ **PRC, fall.** A series of seminars covering accounting (September 7–21), financial planning (September 14–28), and hotel/motel catering (November 2–16). The Chinese sponsor for the first two seminars is the Chinese Academy of Arts and Sciences, and for the last seminar is the China Council for the Promotion of International Trade (CCPIT).

☐ **Chengdu, September 1–16.** New foreign products samples exhibition. The organizer, Sichuan Technical Exchange Center, offers foreign manufacturers the opportunity to meet end-users from Sichuan and neighboring provinces. The exhibition will take place in the Provincial Exchange Center. For information, contact Zhang Xianda, deputy director, Sichuan Technical Exchange Center, PO Box 33, Chengdu, Sichuan, PRC; Cable 1563 CHENGDU.

☐ **Beijing, September 14–26.** Food-processing and packaging machinery exhibition, co-organized by Wellful Technology Promotion Exchange and China Industry and Trade Consultant Corporation (CITCC), will be held in the Beijing Center for the Exhibition of Samples of New Foreign Products. For information, contact the CITCC, Join-In Comm. Center, Room 1504, 33 Lai Cai Kok Road, Kowloon, Hong Kong; Telex: 76045 CMICO HX; Telephone: 3–817952.

☐ **PRC, September 21–October 2.** Lasers and electro-optics technical sales seminar. The US Department of Commerce is sponsoring a technical sales seminar for manufacturers of exportable lasers and electro-optics technology. For information, contact Juergen Tooren, (202) 377–5186.

☐ **Beijing, October 13–31.** Nuclear technology exhibit. The American Nuclear Society will sponsor the exhibition, which will be held at the Beijing Exhibition Hall. For information call Patricia Pollack, (312) 352–6611.

☐ **Beijing, October–November.** New foreign technology exhibition. The fifth in a series of municipal exhibitions will open at the Beijing Center for the Exhibition of Samples of New Foreign Products, Hall Two. The Beijing Municipal Import and Export Administrative Commission and the Beijing Municipal Scientific and Technological Commission are sponsoring the exhibition series.

☐ **Tianjin, October 1–6.** CHINAPACK '81, organized by Industrial & Trade Fairs, Ltd., of Great Britain, and Sino-American Trade Advancement Company of Hong Kong.

☐ **Shanghai, November.** Japanese light industrial exhibition, featuring plastic manufacturing and food processing.

☐ **Guangzhou, November 23–27.** "Offshore China '81," China's first offshore-oil exhibition and conference. The event is being organized by Wah-Chang International Marine Industry Company, Ltd. and sponsored by Guangdong Shipbuilding Corporation, China Petroleum Corporation (Nanhai Branch), Economic and Social Commission for Asia and the Pacific of the United Nations, and Coordinating Committee for Offshore Prospecting of the United Nations. For information, contact Richard Wan, 900 David Road, Burlingame, CA 94010; (415) 692–5451.

☐ **Beijing, November 23–December 5.** Instruments and electronics exhibition. Organized by Hong Kong-based Best Engineering Company and sponsored by the Beijing Municipal Import and Export Administrative Commission, the exhibition will be held at the Beijing Technology Exchange Center. For information, contact C. K. Lau, Best Engineering Company, tel. 37846, Cable a/b BESTN HX.

☐ **Beijing, Shanghai, Shenyang, spring 1982.** Catalogue exhibition. A multi-industrial catalogue exhibition sponsored by CHINATRANS and D. H. L. Corporation will be in Beijing March 29–April 4, Shanghai April 5–11, and Shenyang April 12–18. For information, contact Elizabeth Warner, CHINATRANS, 1735 K St., NW, Suite 210, Washington, DC 20006; (202) 296–3244.

☐ **Beijing, April 15–24, 1982.** The first electronics production/semiconductor exposition, staged at the Beijing Exhibition Center. For information, contact Cahners Exposition Group, 222 West Adams St., Chicago, IL 60606; (312) 263–4866.

☐ **Tianjin, April 27–May 6, 1982.** International construction and mining exhibition and conference, "CHINA-BUILD '82," the first exhibition in China to combine the construction and mining industries, is being organized by Clapp & Poliak International, and sponsored by the China Council for the Promotion of International Trade (CCPIT). For information,contact Clapp & Poliak International, 7315 Wisconsin Ave., Suite 1147N, Bethesda, MD 20014; (301) 657–3090.

UPDATE

The National Council's telecommunications equipment exhibition, CHINA COMM (*see CBR*, Nov.–Dec., 1980, p. 6), has been postponed for twelve months and is now scheduled for early November, 1982. The exhibition is co-sponsored by Electronic Industries Association. For information, contact Ted Krause, Clapp & Poliak International, 7315 Wisconsin Ave. #1147N, Bethesda, MD 20014; (301) 657–3090.

National Council Board of Directors Visits Beijing

Topping the agenda were discussions of measures to facilitate investment, disseminate timely market information, and resolve tax issues affecting offshore oil development.

Scott Seligman

"It is our conviction that the current period of readjustment provides an important opportunity for our two nations to discuss the further removal of barriers and to build a solid foundation for a long-term trade program." This philosophy—articulated by National Council Board Chairman David S. Tappan, Jr.—constituted the central thrust of the Council's message to China's leaders. It was delivered on the occasion of the Board of Directors' fourth delegation to China since the founding of the Council in 1973.

The 15-member delegation, headed by Tappan with Council President Christopher H. Phillips serving as deputy leader, was hosted in China by the China Council for the Promotion of International Trade (CCPIT). During the week of March 19–26 delegates met with a range of leaders in China's ministries and commissions, including Vice-Premier Bo Yibo, newly appointed State Economic Commission Chairman Yuan Baohua, Minister of Foreign Trade Li Qiang, and vice-ministers from the State Energy and Agricultural commissions, the Ministry of Petroleum Industry, and the CCPIT.

Prior to departure, the group held meetings with top-level officials in the Reagan administration, including the secretaries of the Commerce and the Treasury departments, the special trade representative, and the deputy secretary of state. The purpose was twofold: to assess the new administration's attitude toward the further development of Sino-US trade, and to discuss a series of concrete steps needed for expanding bilateral trade. Shortly before his arrival in China, Tappan received a letter from President Reagan expressing the administration's willingness to "work with the National Council to improve prospects for the development of trade with the People's Republic of China so that Americans can compete effectively in that important market." The message was quickly given prominent play in the *People's Daily* (see below).


人民日报

THE WHITE HOUSE

March 17, 1981

Dear Mr. Tappan:

On the occasion of the visit to the People's Republic of China by the Board of Directors of the National Council for US-China Trade, I would like to express my appreciation for the contribution you have made to the development of economic relations between the United States and China. The work of the Council will take on added importance at a time when the United States and China are preparing for further expansion of trade and investment activities.

This Administration is prepared to work with the National Council to improve prospects for the development of trade with the People's Republic of China so that Americans can compete effectively in that important market.

With my best wishes for a successful visit.

Sincerely,

Mr. David S. Tappan, Jr.
Chairman, Board of Directors
National Council for US-China Trade
1050 17th Street, N.W.
Washington, D.C. 20036

The *People's Daily* of March 20 featured President Reagan's message to National Council Board Chairman David S. Tappan, Jr.

After consultation with government officials and Council members, the directors developed a comprehensive list of issues to be raised with the Chinese. Included were problems resulting from decentralization; the need to disseminate timely and reliable market information; the need to promulgate laws and to negotiate certain bilateral agreements in areas such as taxation, protection of investments and patents, and nuclear energy; and the need for an orderly approach to marketing in the US. Also placed on the agenda was a discussion of measures for facilitating Sino-US business, including increased access to the PRC market by American firms, improved visa processing, expanded travel opportunities within China, additional and appropriate office and residential space for business representatives, and standardization of customs duties.

Participating members of the Board also included Walter S. Surrey, general counsel to the National Council and senior partner of Surrey and Morse; William C. Douce, president and chief executive officer, Phillips Petroleum Company; Robert Boulogne, director of international buying, J. C. Penney Company, and chairman of the Council's Importers' Steering Committee; James M. Voss, chairman of the board, Caltex Petroleum Corporation; Charles I. Rostov, president, Trans-Ocean Shipping Company; Michel Fribourg, president, Continental Grain Company; and I-chuan Chen, the National Council's

Special Assistant for Liaison and Language Services.

In nearly all of the discussions, the Chinese discussed their economic readjustment and the implications for foreign trade. As Wei Yuming, vice-chairman of the Foreign Investment Control/Import-Export Commission, told the group, readjustemnt is an attempt to correct imbalances that have hindered the development of the Chinese economy. Since heavy industry underwent disproportionate development in the past and consumed too much investment capital, large industrial projects have been stopped; attention is now being given to agriculture, light industry, energy development and exploitation, and transportation.

Vice-Premier Bo Yibo observed that China, by readjusting its economy, is "aiming at a better takeoff on more solid ground."

Many Chinese leaders emphasized that the consequences of readjustment have been exaggerated by the press. Xiao Fangzhou, vice-chairman of the CCPIT, told the delegation that though readjustment has meant suspending many projects involving both domestic and imported equipment, it also has resulted in accelerated development in certain sectors. US-China trade may develop at a slower pace during this period but, according to Vice-Premier Bo, the results afterward promise to be spectacular. "China will offer quite a large market for foreign friends," he assured the delegation. Tappan, agreeing, predicted "explosive growth" in Sino-US trade relations over the long term.

Since the US government has been undergoing a type of "readjustment" itself, the board urged putting certain mechanisms in place to help recharter the course of bilateral trade. One of the most pressing priorities is for a tax law applicable to the petroleum industry, which is now bidding to assist in the second phase of China's offshore oil development. The law would provide for a payment creditable against tax owed the US government. Such a provision, the Board asserted, is crucial to the participation of US companies in China's development plans, since double taxation would render such cooperation financially unfeasible.

To benefit from the latest, most sophisticated technology in petroleum and other sectors, the delegates noted, China must promulgate a patent law. Additionally, bilateral treaties should be concluded in the areas of taxation, protection of investments, movement of people, and in the negotiation and conciliation of disputes. "While our legal systems differ," Surrey told Vice-Minister of Petroleum Industry Qin Wencai, "in this area, a marriage is both possible and essential."

National Council President Christopher Phillips confers with Vice-Premier Bo Yibo.

The delegates met with the State Agricultural Commission and urged the Chinese government to investigate its eligibility for US government programs—particularly PL-480, which might help relieve the drain on China's foreign exchange reserves caused by large purchases of foreign grain. They also advised the Chinese to retain legal counsel and actively pursue issues relating to import quotas on certain Chinese foodstuffs to the US. Vice-Chairman He Kang in turn detailed some agreements signed with the US for official exchanges of personnel, and cooperation in certain product areas such as seed development and food processing. Kang also discussed China's more selective approach to agricultural mechanization and noted that more farm mechanization is being sought for the Northwest and the Northeast, while irrigation projects are being pushed for the more labor-abundant South.

China's plan to boost its export revenue to fund purchases of foreign equipment was reinforced by the Council's willingness to aid that effort. Steering Committee Chairman Robert Boulogne discussed some of the barriers China has encountered in the US textile market, urging the Chinese to diversify their product lines, conduct more research on the US market, and obtain counsel to represent their interests. Charles Rostov detailed some of the coordination problems caused by decentralization, emphasizing that a certain amount of central control over branch activities is still needed at this juncture to ensure price stability, exclusivity agreements, and orderly approaches to the US market.

The delegation also urged the Chinese to conduct a careful review of pricing policy on basic services provided for foreigners; lodging and transportation, for example, should be set at equitable world market rates. These costs, viewed as excessive by many foreigners, are being considered increasingly important factors in companies' decisions concerning activities in China. Other issues raised included the need for multiple-entry visas, and a consistent and fair schedule of customs duties, particularly on merchandise samples and office equipment.

The discussions were regarded as useful and productive on both sides and many Chinese leaders noted with pleasure that the decision by the Council's Board of Directors to visit China at this time reflects an optimism not universally felt in the international community. "Some foreign friends have focused on the suspension of projects as if the sky were falling," asserted Vice-Premier Bo Yibo. "But most American firms are taking the long-term view and using foresight in their dealings with China."

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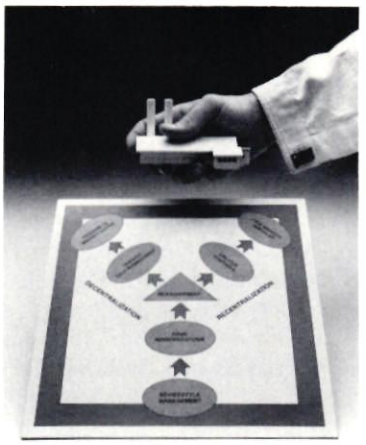


Reforming Chinese Management

The PRC is testing a number of strategies and considering some bold new moves

Thomas H. Pyle

Nine months ago the Chinese government offered me a unique opportunity to learn about factory management in China. I spent five months in Beijing, Shenyang, and Dalian researching and writing case studies on current management practices in China.

My research team was among the first five American-led teams to work for China's new business school, the National Center for Industrial Science and Technology Management Development at Dalian, Liaoning Province. The National Center opened in August 1980 at the Dalian Institute of Technology with 120 students, made up of factory managers, government officials, and university educators ranging in age from 25 to 45. They were taught modern management techniques by an American management faculty of eight, led by Dean William R. Dill of New York University Business School.

The center was established through the joint efforts of the Chinese and American governments; the project first came up during the historic meeting of President Carter and Vice-Premier Deng Xiaoping in 1978. The center's Chinese sponsors are the State Economic Commission, the State Science and Technology Commission, and the Ministry of Education. Carrying the flag for the American participants was the US Commerce Department.

Working with two Chinese economics professors, Yin Zunsheng of Qinghua University and Shen Lin of the People's University, I interviewed factory directors, middle managers, Party cadres, and workers at all levels in two textile mills, a large machine-tool plant, a folding-chair collective, a shoe factory, and a food processing plant. In addition, I visited and toured 25 other enterprises, agencies, and schools. It was a careful examination of Chinese enterprise management in the areas of production planning, finance, accounting, and marketing. From this experience has emerged a significantly clearer picture of what Chinese enterprise management today is really like.

General Background on Chinese Enterprise Management

Chinese factory management today has unfortunately been the frequent victim of abuses of political extremism, deprivation of financial resources, and constricting ideology. Buffeted by these forces, Chinese managers are sometimes cautious and conservative, poorly informed and inflexible. The consequences are shoddy product quality, inefficient financial deployment, and suboptimal production performance.

At the outset of our mission we were briefed by Kang Xinhao, director of the center and head of the State Economic Commission's Chinese Enterprise Management Association (*see CBR*, Jan.–Feb., 1980, pp. 8–10). His realistic, candid assessments gave us a strong framework in which to understand Chinese factory management today.

As Kang explained, two important factors determine how a factory is managed. One is the enterprise's administrative status. Is it controlled by central or local government? Second, under what form of ownership does the enterprise fall? Is it state- or collectively owned?

• *Administrative level.* A large factory, employing more than 8,000 workers, normally comes under direct central-government control. (Sometimes factories with 5,000 workers also fall under central direction.) Locally controlled enterprises can be supervised by provincial, municipal, or county authorities. In cities, medium and small enterprises are often run by urban districts and street committees. In rural areas, the lowest levels of administrative control are the commune, production brigade, and production team.

Behind the control exercised by government departments, the Chinese Communist Party apparatus also maintains ultimate control through Party

committees in all important enterprises.

• *Forms of ownership.* China's largest and most strategic enterprises are state-owned. They can receive state financial grants, have greater access to raw materials, are guaranteed markets for their products, and receive preferential assignments of college graduates.

Vying with the state-owned enterprises are collectives, owned by their workers and staff. Once heavily scorned and penalized with heavy taxes during the Cultural Revolution, collectives are now experiencing favor with Chinese officialdom. Current issues of the *People's Daily* regularly praise collectives as models to be emulated by less efficient, less profitable state-owned enterprises. (Twenty-four percent of China's state enterprises ran at a loss in 1978; in 1979 the figure fell to 23.7 percent.)

Though collectives have more managerial autonomy, they receive less favorable financial support. They have more direct access to the domestic markets because they are not required to contend with the hierarchy of officialdom towering above state-owned enterprises. They have more independence in spending decisions, but since the state favors them less, they are burdened by the necessity of arranging their own raw materials procurement in many cases. Salaries and welfare benefits at collectives are lower and less attractive than in state enterprises; young men dread assignments to collectives because their lower salaries diminish their marriage prospects. Since collectives remit only part of their profits to the state, they retain more than their state-owned counterparts, though they do not receive state capital grants on similar terms.

Quite recently new forms of ownership have come into existence, namely:

• Joint ventures between the state and collectives.

• Joint ventures between the state and individuals. Called joint stock companies, they reportedly are financed in three ways: (*a*) enterprises sell stock directly to their staff and workers; (*b*) municipal industrial bureaus sell stock to the public (private funds in China consist mainly of urban and rural savings deposits which totaled ¥39.9 billion, or $2.6 billion in 1980, of which ¥3 billion, or $1.9 billion, is held by former capitalists whose savings were restored after the Cultural Revolution); and (*c*) municipalities issue stock on behalf of many local enterprises. Fuyang Municipality in Anhui Province, for example, recently launched a citywide campaign to get people to buy stock in 80 light industries that the city felt could not be developed any other way. The stocks could be bought and sold freely, and investors were given jobs in the factories if they needed employment. According to an authoritative Shanghai journal that reported the Fuyang experiment, "At least 70 percent of the enterprise's profits must be retained, and no more than 30 percent of the profits can be turned over to those units which raised the investment funds."

• Joint ventures owned by collectives and individuals. Kangji commune in Guizhou's Qingzhen County, for example, has established a "joint agricultural, industrial, and commercial enterprise company" with ¥1.2 million (about $750,000) raised by selling shares to commune members at ¥100 ($63) per share.

• Joint ventures owned by the Chinese government and foreign investors (*see CBR*, July–Aug., 1979, p. 46, for text of China's joint venture law).

• Enterprises run by Overseas Chinese or Hong Kong and Macao "compatriots."

• One-hundred percent foreign-owned enterprises.

• Individual proprietorships. These have made a rapid comeback in recent years. Today individual tailors, cloth cutters, locksmiths, bicycle mechanics, and even callous pruners can be seen at curbside in Chinese cities industriously fulfilling each customer's demand.

Today's management problems, according to Chinese leaders, stem partly from the influence of the Soviet Union's "one-man-management" system first adopted by China in the 1950s. Almost all factories are still organized as they were 30 years ago—with too much centralization the end result. Production quotas are set centrally, and, similarly, raw materials are procured from a single source, finished goods sold to a single buyer, profits centrally received, and expenses centrally incurred. The Chinese now officially concede that overcentralization has retarded the country's economic development and impeded domestic and foreign trade.

Significant reforms are being proposed. Already, 6,600 state-owned factories have been allowed to retain more profits, and have been given more say in decisions regarding product variety, distribution, and production. Managers are experimenting with material bonuses for worker output. Freer markets are opening up for about 10 percent of the economy. Competition between enterprises is being promoted through new techniques such as domestic compensatory trade between enterprises, joint ventures between urban and rural enterprises, and profit-sharing among enterprises. One thousand enterprises in 17 provinces and cities have been consolidated. Some managers even told us the new measures could include the right to fire poorly performing workers.

Manager Li's Universe: The Functional Areas

Management functions in almost every Chinese factory are split among eight to ten departments. The most important ones are planning, production, finance, supply and sales [marketing], labor and wages, and technical affairs. Different tasks sometimes dictate slightly different organizational structures from plant to plant—a textile mill may have a joint office of planning and production, for instance—but in the main, the above organizational categories are commonplace.

Production Planning

Planning is often considered the most important enterprise function, since all management initiatives from product-pricing to marketing must be incorporated in the yearly plan.

Planning procedures known as "two-down, one-up planning," have barely changed in 30 years (*see chart*). At year's end, most factories receive "control figures" or quotas in eight basic areas: output value, output quantity, profits, rejection rate (product quality), production cost-reduction, worker productivity, sales, and innovation. A factory's planning department redistributes the figures to other departments for review. After enterprise directors approve them, the factory returns the figures to its bureau, sometimes with recommendations for reducing the estimates. In the second "down" phase, the bureau issues targets based on the earlier control figures, which lay the groundwork for

the factory's quarterly and monthly plans.

Monthly production quotas are usually divided into three ten-day plans. Most firms split the load 40/30/30 percent. Actual plan execution does not always follow the model, however; significant end-of-month rushes occur frequently. Workers at the Shenyang First Machine Tool Factory had to bring cots and bedding to the factory to sleep by their machines during the last five days of each month.

The planning cycle can take from one to six months. It typically begins in early December and ends in late January or early February. Often plans are approved after the plan year (which begins January 1) is well under way. The bureaus sometimes cannot get their own plans approved quickly enough by their superiors. Enterprise managers faced with such delays are still expected to meet their quotas, no matter how late they receive their final targets. Therefore, managers continue to produce at a rate slightly above the previous year's rate to cover themselves.

Such a system has prompted enterprises to adopt certain defensive measures. Large stocks of reserve materials and parts are held by factories—indeed sometimes hoarded—to guard against supply dislocations or large quota increases.

A distinctive Chinese institution is the Material Allocation Conference. These conferences are normally held twice a year, last two to three days, and bring together representatives from different factories and government bodies to negotiate supply and sales contracts. Without these conferences, China's annual plans would remain so theoretical and unwieldy as to be virtually useless. These contracts flesh out the plan, giving factories the product requirements, shipment dates, and other detailed information, help them conduct their day-to-day business. In a major reform, suppliers and endusers who attend these conferences are now permitted to pair up as they choose.

After the first round of conferences at the municipal level, provincial conferences convene to correct supply and demand problems at the local level. National meetings follow the provincial ones. In the end, a Dalian apple-processing plant, for instance, can ultimately unload its surplus production by arranging with higher officials at provincial and national levels to sell it to other regions.

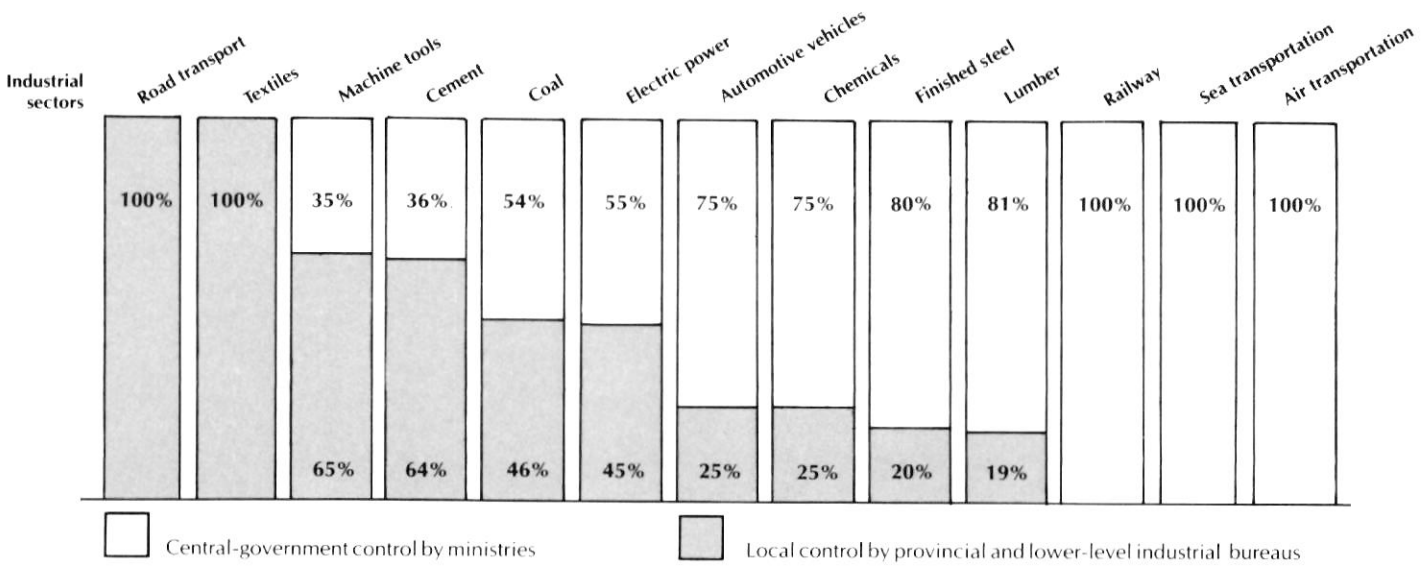
Planning Case Examples: The Beijing No. 2 Cotton Textile Mill, supervised by the Beijing Cotton Textile Corporation, follows a "two-up, two-down" planning procedure. Every quarter, plans are discussed with the parent corporation, which then passes the requests up to the Beijing Textile Bureau, the corporation's immediate superior, and the Beijing Commercial Bureau. When the No. 2 Mill's 11-man planning department receives the final plan, it draws up monthly targets accordingly. Some departments then even draw up weekly plans.

Close factory-corporation links make planning at the No. 2 Mill a quick, routine affair. The entire planning cycle takes no more than two weeks each December.

Some enterprises enjoy special planning autonomy, reporting directly to a provincial bureau or even to a national ministry, depending on their products' strategic importance.

The Shenyang First Machine Tool Factory's planning cycle follows a "one-up, one-down" pattern, owing to the factory's strategic importance to the nation and its close ties to the First Ministry of Machine Building. The plant's planning department passes up several detailed quarterly, yearly, and long-term plans only once; each covers nine basic areas: technical methods, new products, equipment repairs, production, product line (variety), materials usage, auxiliary production, wages, and finance.

Distribution of Management Authority



SOURCES: State Economic Commission, June 1979; *Jingji Guanli (Economic Management)*, February 1980; Ministry of Electric Power, March 1980.

The Dalian Leather Shoe Factory comes under the control of a recently formed parent corporation similar to the one that runs the Beijing No. 2 Textile Mill, but its corporation has little autonomy in making planning decisions. Rather, it is the Municipal First Light Industrial Bureau that establishes the targets, which are given to the corporation for implementation. The Dalian Leather Shoe Factory then writes monthly plans, specifying product styles, varieties, and materials to be used for the month. Each planning cycle lasts two months.

Problems and Changes: The Chinese are aware of significant problems with their planning methods. Plans are subject to abuses, such as the padding of figures, and they are too inflexible to handle the needs of a developing economy. Too much emphasis has been placed on rising output targets, and too little on satisfying consumer demand for better quality and variety.

Changes in planning procedures have been proposed, according to Kang Xinhao; but they are expected to be "moderate" in light of the country's commitment to the socialist ideals of central planning. One possible change is moving the yearly planning responsibilities from the bureau to the enterprise. Bureaus would prepare five-year guidelines, thereby allowing enterprises to draw up their own yearly plans independently. Under such a system individual enterprises could better manage their resources over longer, more realistic planning periods.

Fewer annual quotas are also under discussion. In fact, such a plan has been adopted experimentally by many enterprises. Instead of the eight targets mentioned previously, enterprises would be responsible for only four targets: quantity (including product variety), product quality, profit, and the fulfillment of contracts.

The quantity quota still measures the value of output. Product quality is judged by the reject rate measured against national product quality standards. The profit quota is a bit anomalous in a country with fixed prices and margins; enterprises making goods arbitrarily assigned high prices by the state will enjoy large profit margins even if poorly managed. Contract fulfillment measures a factory's ability to keep production and delivery dates and encourages better efforts to satisfy customer needs.

Coping with Supply Shortages

Production management in China has made great strides. But for all its progress, production is still handcuffed by insufficient communication between suppliers and markets.

Production managers in nearly every factory complain most about raw material shortages. Uneven procurement and low quality of raw materials are their biggest headaches. Materials are classified by their relative scarcity into three categories that reflect their strategic value. The system causes problems for enterprises when their products require diverse inputs from all three categories of goods. Men's shirts, for instance, require cotton (category 1) as well as buttons (category 2). Coordinating delivery times and production schedules to accommodate the red tape of the different government agencies that handle each category is difficult and frustrating for the Chinese manager.

Nor do managers have much say about the quality of incoming materials. Happy to receive materials at all, they make small fuss over substandard quality. Bureaucratic inertia usually foils efforts to return low-quality shipments, so managers try to obtain reductions in the goods' classification, or in purchase price.

The extent of a factory's supply problems of course depends on its relationship with the state. Collectives operate at a disadvantage. Since the government allocates top-priority goods, state-owned enterprises received more favorable treatment. Almost all their material needs are guaranteed. Collectives can get guarantees for only about half their raw material needs, and so they must scrounge for themselves in China's underdeveloped resource markets. Small wonder that great importance is placed on personal relationships in China between collectives and their suppliers.

Once materials are found, transport arrangements follow a complicated path. When a factory needs a shipment of materials, it will discuss its needs with its parent bureau. The provincial bureau will contact its counterpart supply company which has direct links with the material suppliers. When the suppliers receive the request from the enterprise, they contact their local office of the railroad company to get a shipment date, completing the initial arrangements. Arrangements then become a personal affair. The enterprise may send representatives to the railroad to appeal for speedy shipment.

"Since we permit foreign capital and Overseas Chinese to run businesses and build factories in China, we should also permit the Chinese people to invest money and build factories in their own country."

—He Jiangzhang, economist, January 12, 1981

Chinese managers are reluctant to talk about material shortages. None confessed any during our visits. When shortages do occur, however, managers either recontact their parent bureaus for more materials, ask for imports, or informally conduct barter with nearby factories.

Giant inventories aggravate the supply problem for most enterprises. Hence, even fewer goods are on the road between plants than in an advanced, interdependent economy. It is not uncommon for fruit-processing plants, for example, to run up inventories of six months. Excessive stockpiling has now forced the government to mandate maximum supply inventories of 90 days.

Marketing

Marketing practices of collectives usually outperform those of state-owned enterprises. Relying on state grants and prices, state-owned enterprises lack market sensitivity and are afflicted with the problem popularly called the "iron rice bowl," meaning that workers have guaranteed wages and little incentives to work harder to improve their output. Market responses, muted though they are, cannot break their means of support. Collectives, on the other hand, live by their

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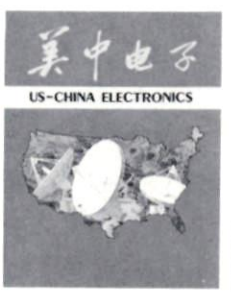

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ability to make profits on their products, which all their employees share. Poor sales can mean a direct decline in wages.

Limited raw material supplies are another major marketing constraint. In most cases the state dictates the course of supply and the quality of materials, as well as the price. To change sources, prices, or the kinds of materials procured, enterprises must petition their superiors, whose approvals are only grudgingly granted.

Despite the problems, new marketing techniques are developing at the enterprise level. The central government expanded the authority of 6,600 experimental firms to sell a portion of their output in free markets. Those enterprises easily fulfilling production quotas can sell whatever they overproduce to private customers. Usually only 10 percent of output can be sold on free markets, but larger enterprises with products in high demand sometimes can sell a higher percentage. Thirty-five percent of the total national retail sales of consumer goods in 1979 was above planned output. Shenyang First Machine Tool Factory sells 1,000 machine lathes, or 20 percent of its yearly production, to independent customers around China.

Customers have also been given more power to negotiate contracts with suppliers. Concluded at annual or biannual material allocation conferences held around the country, these contracts legally have the force of state-imposed quotas, so enterprises must do everything they can to fulfill them. The large growth in enterprise supply and sales departments has developed recently to take advantage of their new marketing authority.

The changing role of supply and sales departments is well exemplified by the Shenyang Walking Tractor Factory. The former director of production was appointed to head the factory's new sales department, which was expanded from one to three managers with 30 new salesmen. The department then focused intensive marketing efforts on communes all around the Northeast. Programs and schemes were also devised to promote its product; farmers had to be taught to overcome their traditional methods and accept mechanization. Since they had little money, creative ways to assist their purchases had to be found. The Shenyang Walking Tractor Factory therefore offered rewards to anyone in the plant who helped sell a tractor. It also

Three Bonus Systems Compared

The Dalian Leather Shoe Factory introduced piece-rate wages in May 1978, in an on-again, off-again program designed to stimulate production. Forty-two percent of its 1,280 workers participated in the system. Using ¥54 per worker as the average monthly wage-base, Dalian Leather Shoe established a daily bonus of ¥2.12. Dividing the daily bonus, ¥2.12, by the number of shoes in each worker's quota yielded the bonus per pair of shoes. A worker received his wage based on the number of shoes he produced in one day, and any amount over his daily quota brought him a bonus. If his quota was 100 pairs, his potential bonus allotment was ¥0.21 per extra pair.

Later the factory discovered that its new bonus system did not work. One problem was an imbalance in the production line; some workers produced too many shoes. The system was also unfair to younger workers whose lower base salaries meant that bonuses did not give them very much money incrementally. The system's use of base wages also caused problems; not all workers made the base wage, and disparities resulted. Dalian Leather Shoe scrapped the method in December 1979.

The Dalian Leather Shoe Factory also pays bonuses to managers. While workers receive 30–35 percent of their income from bonuses, their managers are technically restricted to 12 percent of wages, or about ¥6 per month, awarded for good performance of the production units. The technical restrictions for managers are only loosely followed, however. In other factories, managers are counted as workers, though they are allowed to qualify for only 80 percent of a worker's bonus. That tactic keeps managerial bonuses at a politically acceptable lower level. Such loopholes may not last very much longer. National policy changes have been announced that may raise administrator bonuses above those of workers.

The Shenyang Tranformer Factory developed a less individualistic bonus system that rewards workers according to individual and group performance. It is based on the number of hours worked on a task, compared to the standard number expected to complete the task. Base wages of 200 work-hours per month are guaranteed if the workers perform up to par, and if the time needed to complete the tasks does not fall below 90 percent of the work group's average time. This measure promotes steady production. Bonus payments are distributed to workers by their workshops according to the group's fulfillment of a 100-point standard. Fifteen points are given for production uniformity over the month. Other points are given for production quantity, quality, safety, reduction of materials consumed, good management, and obedience to rules. Outstanding workers can win extra points, as judged by workshop leaders. The work group with the lowest point score at month's end loses 10 percent of its regular bonus, while the one with the highest score wins 10 percent extra. Some workers are dissatisfied with the system because experienced workers who complete tasks speedily are denied rewards, owing to the slow pace of their work group as a whole.

The Shenyang First Machine Tool Factory needed an incentive system to promote coordination between two of its shops. Uneven work in the parts shop caused late deliveries to the assembly shop, which then missed its quota and lost its bonus through no fault of its own. Several methods had been tried to promote more harmonious production, but all failed.

Workshop leaders finally devised a plan called the "set-rate method," which rewarded individual and group efforts. A bonus fund of ¥20 per worker was established, with 90 percent of it granted to each of the four work groups for later distribution at its discretion. This ¥18 per worker-bonus encourages cooperation because it is awarded only if the group completes its quota. When the work groups receive the ¥18 per person, they redistribute the funds to individuals according to their contribution. Outstanding workers received more than the standard ¥18 per month. Work groups missing quotas lose some of their group bonus, which directly lowers the bonuses of individuals in the group.

established a credit-sales policy approved by its banker for a one-year experiment. Soon the factory's accounts receivable had increased to ¥2.8 million ($1.6 million). Installment payments then were instituted to ease the customer's payment burden. Under one scheme, 1,300 tractors were sold to Hailun County in Liaoning Province for payments made in three interest-free installments: 23 percent in June 1980, 23 percent in September, and 54 percent in December. A second customer purchased 200 units in May 1980, and paid in two installments, half in September, and half in December. A third group bought 280 tractors in July 1980, for which they paid 18 percent in August, 18 percent in October, and 64 percent in December.

To support its increasing market efforts, the plant drew up a sales budget. In the first half of 1980, the firm's sales department spent ¥50,000 ($31,200) for advertising, printing, and per diem expenses. It spent another ¥50,000 for train travel by salesmen. Those willing to travel third class instead of second kept 30 percent of the amount they saved.

Another case is the Beijing No. 2 Chemical Works, a PVC manufacturer, which changed its marketing methods shortly after the state required it to sell its excess output on the free market. Staff time spent on marketing in the firm's sales and supply department increased from 15 percent to 85 percent. Two new sections—handling collection of overdue accounts and market research—had to be added to the department.

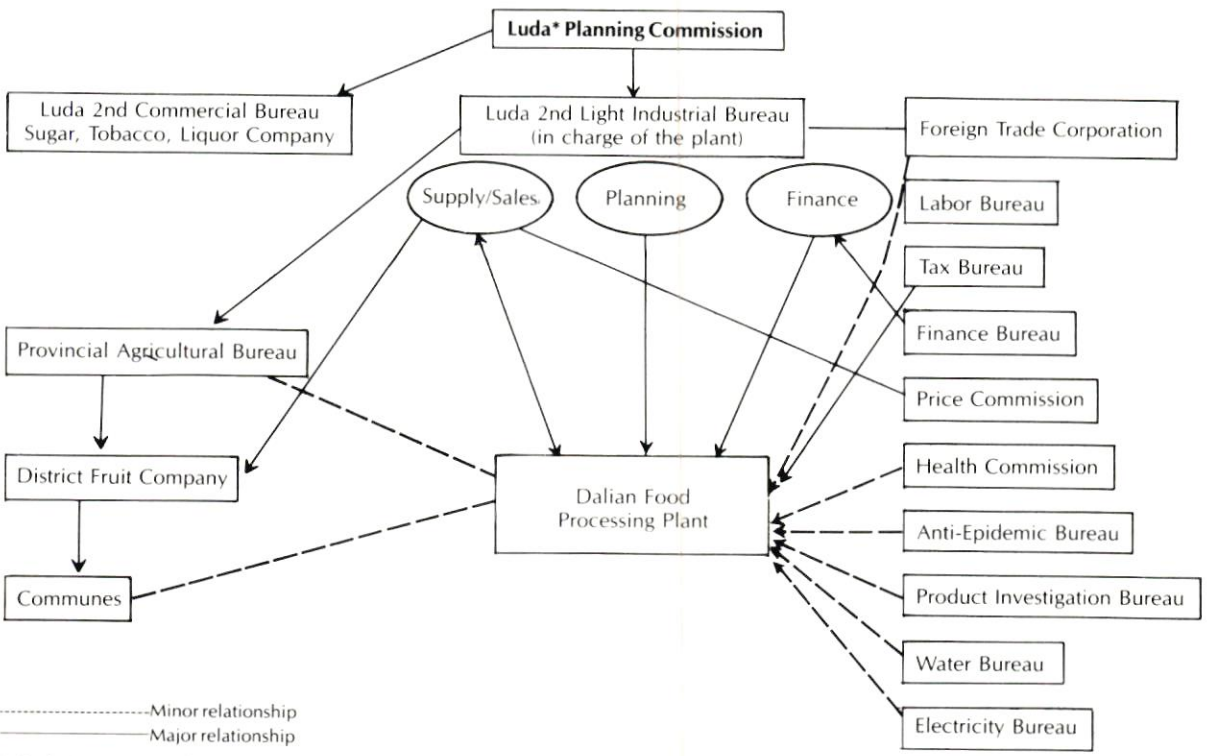
Though the greater orientation toward marketing has intensified competition, most managers exhibit a strong sense of cooperation and want to contribute collectively to national development. This noncompetitive business ethic imposes different and broader social responsibilities on the enterprise, which reduces its marketing flexibility. The Beijing Textile Company, for instance, gives technical assistance to the cotton industry in rural Xinjiang Province, 1,500 miles away, spending managerial time on its problems and sending specialists out to teach the workers. For these activities the company receives no funds.

Financial Planning

The financial side of enterprise management in China bears little resemblance to that in the West. Enterprises are far more constrained in their ability to manage funds for daily operations. Simplistic criteria are used to evaluate enterprise financial performance. Measures like return on investment, return on assets, and return on sales are not strictly measured. Profitability and asset productivity (measuring output value against fixed capital) are typically calculated. In lending analysis, banks lend according to an enterprise's ability to repay within a maximum of three years.

Enterprise financial departments. The structure differs little from factory to factory. One director heads up a group

The Management Maze: The Case of the Dalian Food Processing Plant



*"Luda" is an acronym for the cities of Lushun and Dalian, which together form one administrative municipality.

SOURCE: Thomas H. Pyle, March 1981.

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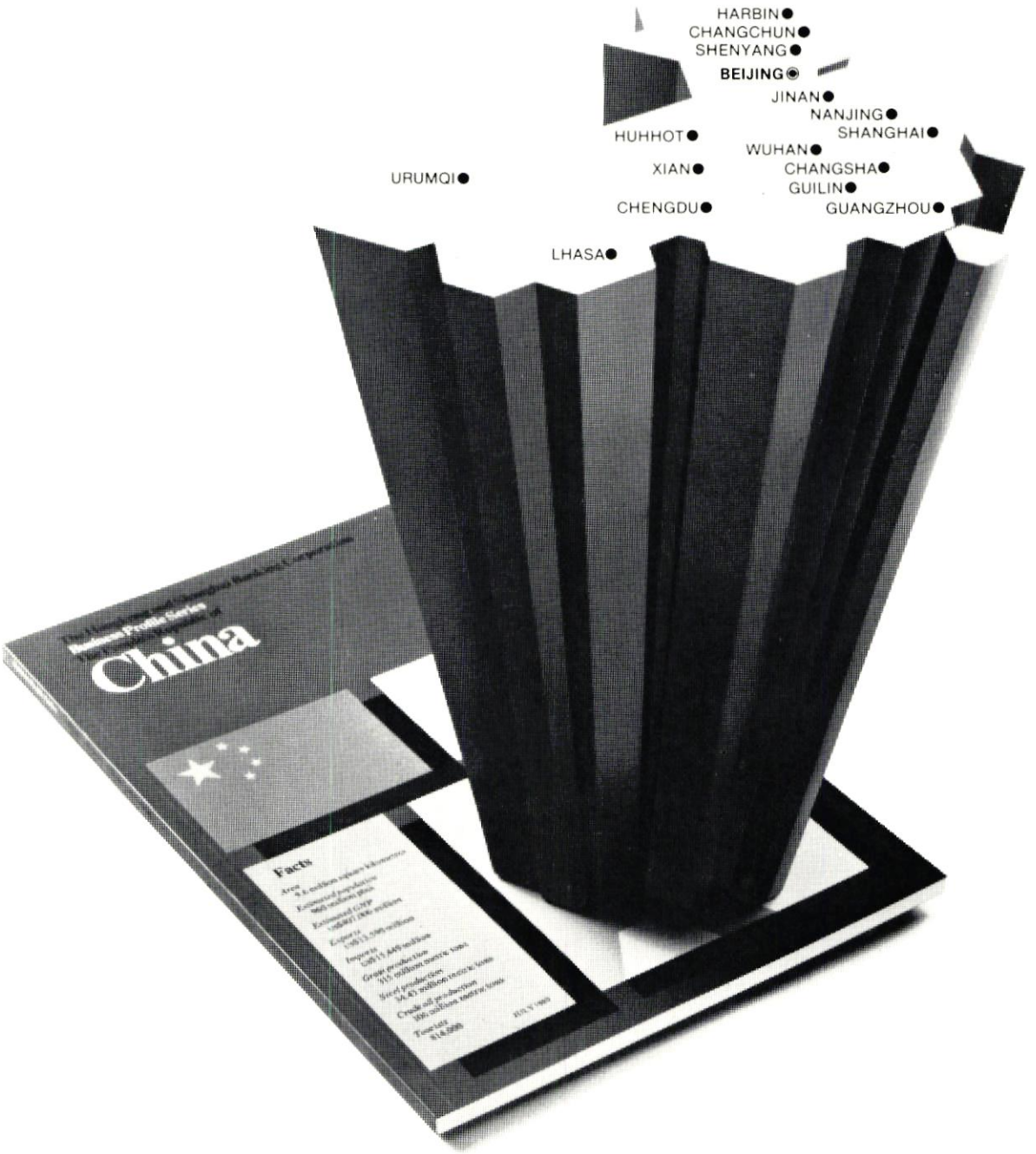

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of four to ten staff members, each responsible for the financial aspects of each enterprise function, such as production, quality control, accounting, welfare, or worker safety. One or two staffers actually analyze forms and statistics to pinpoint financial operating problems while the rest prepare records and statistical reports.

Enterprise financial departments spend remarkably little time planning a firm's finances and guaranteeing financial performance standards. Most financial planning is done above the factory level. Thus, department staff members are really arrangers, record-keepers, and reporters. Limited resources are jealously guarded by conservative cadres protective of their bases of authority. Arranging anything from a major loan to a taxi across town requires extensive time and personal effort. Financial "arrangers" play a key role in the system by seeking out loans and grant money, and by cultivating good relations with local bank representatives.

Chinese workers and peasants may now buy shares in joint stock enterprises. In several provinces an individual's tools, home, and even land may be contributed instead of cash.

World Economic Reporter, January 12, 1981

Accounting

Record-keeping is almost an art in China. Daily reports of production quantity, manhours worked, and consumption of raw materials are collected from the workshops and passed up to the finance department, which sometimes routes them to other relevant departments such as production or supply and sales. Reports are all done by hand, drawn up in triplicate on thin, tissue-like paper. One copy stays in the workshop, one goes to the finance departr ent, and one usually goes to the proo :tion department. Analyzing performance and tracking down records inevitably requires a cumbersome search through rumpled reams of fragile sheets covered with small handwritten numbers.

Financial accounts in China are organized along reasonably simple lines. Enterprises report their financial positions monthly, quarterly, and yearly on "balance sheets," as the Chinese call them. Chinese balance sheets look more like statements of sources and uses of American firms. The major sources of enterprise funds are grants and loans from bureaus and banks. Revenues from sales are usually so heavily taxed they hardly figure into fund sources. Grants and loans are used mainly to buy fixed assets like plant and equipment, and for purchasing raw materials. Raw material costs account for a tremendous proportion of an enterprise's overall costs, often amounting to 85 percent. This is particularly true in resource-scarce industries like textiles (cotton) and lumber (wood). Balance sheets are often the only formal financial data an enterprise submits to higher authorities.

Other financial accounts kept are unit-production cost statements, and quota fulfillment performance sheets. Most cost analysis is rudimentary and focuses only on unit-production costs, whatever the lot size. Unit cost analysis breaks down production costs into cost by raw materials, auxiliary materials, manhour productivity, and managerial costs (presumably overhead). Quota-fulfillment sheets establish an enterprise's annual performance, by comparing the completion of quotas—the standard eight criteria against the previous year's. These are often used as in-house indications of accomplishment, although sometimes they are passed to higher authorities.

Every year the accountants meet with the financial planners in an enterprise's parent corporation or bureau to formulate the enterprise's financial plan. More than in almost any other functional area, higher-level planners hold the lion's share of authority over financial matters; enterprises themselves have surprisingly little to say about how funds are spent. In essence they work with the control figures from the bureau to draft a plan for capital investment. It is the bureau that is then responsible for approving the request and for providing most or all of the enterprise's fixed and working capital.

Some enterprises, especially collectives, occasionally acquire additional funding with loans from either their bureau or a bank. The bureau's degree of scrutiny in monitoring the use of capital depends much on the enterprise's size and character. Smaller plants sometimes manage to overstate their needs by including all possible contingencies, without prompting bureau audits.

Depreciation scheduling lies outside the managerial domain of most factories. Calculating depreciation is uncomplicated, in that China's enterprises adhere to the same basic schedule. The average depreciation rate in 1979 was 4.1 percent a year—a figure that theoretically allows firms to renew old equipment every 28 years. However, many Chinese enterprises do not buy replacement equipment until a machine simply can no longer run, or until new product requirements cannot be satisfied on older machines. Capital replacement may take place well after depreciation schedules expire. Chinese textile mills still operate machines built in the 1920s.

Depreciation funds are not retained completely by the enterprise. They usually are split in half, according to government policy, 50 percent going to the enterprise for reinvestment, and 50 percent reverting to the bureau. Even after the passage of 28 years, an enterprise must negotiate with higher authorities to collect the balance of its depreciation funds.

Most enterprises divide their accounting practices into "mass accounting" and "specialized accounting." Under mass accounting each worker supposedly keeps close track of the materials he consumes in production and suggests ways of reducing costs. He must also do his share to ensure fulfillment of production quotas. Each factory work group appoints one of its members to account for the group. Specialized accounting is organized through the enterprise.

Bank Supervision

Local branches of the People's Bank of China monitor enterprises practical-

Photos by Tom Pyle

Sewing quality tablecloths for export, Dalian Embroidery Factory.

Peeling apples by hand, Dalian Food Processing Plant.

ly on a daily basis. Each factory is affiliated with a branch of the People's Bank, whose extensive national network throughout China surpasses even the China Post Office. Bank branches manage enterprise accounts with much more control than Western financial officers are accustomed to. Detailed monthly reports to the branch bank are obligatory. The government, in effect, uses the bank branches to enforce some of its labor and fiscal policies on the enterprises. Funds for a plant's wages and bonuses, for instance, cannot be tapped without the bank's expressed approval. Branches will not allow enterprises in most cases to pay bonuses exceeding the new national bonus ceiling of 12 percent of wages.

An important aspect of account management is a branch's role in initiating and supervising fund transfers among enterprises. Enterprises themselves rarely can write checks to cover expenses. Rather, when a supplier provides materials the supplier's bank branch will report to the enterprise's branch for payment. After the goods have arrived, enterprise managers have usually three days to refuse the goods. If the goods are acceptable and the enterprise's bank branch hears nothing from its client, the branch will automatically transfer the payments from the enterprise's account. The enterprise's financial staffers are notified about the transfer after the fact. If goods are unacceptable upon delivery, the enterprise informs its bank branch while withholding payment until reasons for the refusal are established. Sometimes branch bankers participate in discussions between suppliers and enterprises, acting, in effect, like referees to facilitate a settlement.

Bank branches also serve as liaisons between an enterprise and other financial institutions. When an enterprise needs a loan, its bank branch will make arrangements with the Construction Bank of China, the Bank of China (for foreign exchange), or the People's Bank of China. It also reports the enterprise's financial status regularly to government tax authorities.

Compared to the decisions denied the enterprises, the financial prerogatives granted to them seem rather insignificant. Enterprises can decide to invest unused portions of loans in interest-bearing bank accounts. Moreover, enterprises can look for ways to cut costs at the plant. They can also devote some funds, always according to their plan, into researching new product lines. Their area of greatest authority probably lies in parceling out individual bonuses, although the government's restraint on such matters is usually considerable.

Profits Increasing in Importance

The major reforms under way in China involving 6,600 state enterprises, begun in October 1978, have centered on the role of profits. The industrial output value of these enterprises constitute 60 percent of the national total, while the profits they turn over to the state amount to 70 percent of the national total. Of the 6,600 enterprises, 191 remit nothing to the state. Instead, the government announced in March that, "beginning in 1981, those enterprises which have embarked on full responsibility for their own profits and losses, will be allocated no state funds, and instead of turning over a portion of their profits, will be taxed." Until these experiments were inaugurated, state enterprises in China turned over virtually all of their profits to the state treasury.

Profit remittance rates vary, but generally enterprises are allowed to retain 6–12 percent of their profits. Collectives usually retain more by being taxed less. Retained profits are allocated to three funds for future use: an enterprise fund (for reinvestment in the firm's equipment); a bonus fund; and a worker's welfare fund (mainly for housing and health care). Welfare and bonus funds generally receive the majority of retained profits.

The increased emphasis on profits has prompted criticism, inasmuch as enterprises are now being rewarded unfairly. As indicated earlier, factories that enjoy high prices or are better endowed are reaping handsome profits

(passed along in part through worker bonuses), while equally able managers and workers in other factories are not receiving rewards.

To make profitability a more meaningful indicator of management success, the government gradually will levy three new taxes on the 6,600 experimental enterprises. According to a State Council directive appearing on the front page of the July 29, 1979, *People's Daily*, these measures include a resources tax (similar to a differential land rent), a fixed-asset tax (a form of interest payment for state investment in fixed assets), and an income tax on funds created from retained profits. The purpose of these taxes is to eliminate the natural advantages of well-endowed enterprises that have superior sources of raw material, more modern machinery, and larger financial reserves.

Labor and Wages

Workers in China are organized at three levels: by workshop, by work group, and by individual. Numbers differ according to enterprise and industry. Work groups in the Shenyang First Machine Tool Plant, for instance, averaged 65 workers, while the Shenyang Metal Furniture Collective's workshops had fewer than 30.

Labor, as with raw materials, is supplied by the state. Enterprise labor departments apply yearly to the municipal or provincial labor bureau to fill jobs through attrition or expanded production. The better-educated recruits come from the large local pool of high school graduates. School authorities work closely with the local labor bureaus, and sometimes can influence where particular students are assigned.

The yearly job-selection process causes considerable anxiety for Chinese high school students and their families. Students can indicate their first three choices for assigments—most covet jobs requiring minimal physical labor. Labor bureaus may try to meet the students' wishes, but arbitrary assignments appear to be the norm. Assignments are difficult to change. Only if a student has been assigned a job far from home, and can find another worker willing to trade with him, can he have a reasonable chance of changing jobs.

Just as workers had little to say about their assignments, factories previously had little say about the caliber of workers assigned to them. Recruits ill-suited to their tasks still had to be employed. A recent change in policy has given some factories new freedom to select workers according to their ability. These factories can recruit and interview workers on their own. New recruiting centers have opened in Beijing; some enterprises even have instituted proficiency examinations for their recruits. Those who fail to meet the enterprise's standards are reassigned.

Generally the enterprise makes arbitrary assignments to positions within the factory. A worker trained on one machine could retain his position next to it for the rest of his life. Some are promoted within their workshops to work-group leaders or shop foremen. A rare few enter managerial ranks. Little notion of job enrichment exists in Chinese enterprises.

Workers are paid monthly wages according to seniority. There are eight grades on the pay scale, ranging from ¥33 per month (about $20) for new recruits to ¥108 ($68) for veteran workers. In most factories the average wage is around ¥54 per month.

In American terms, the average Chinese wage totals $34, but its purchasing power in China is greater, primarily owing to significantly lower food and housing costs. Rents generally cost ¥3 to ¥5 per month, while food only amounts to one-tenth of an average month's wage. Discretionary expenses, however, take a bigger bite: watches can cost two-and-a-half month's wages, and bicycles over three-and-a-half months' wages.

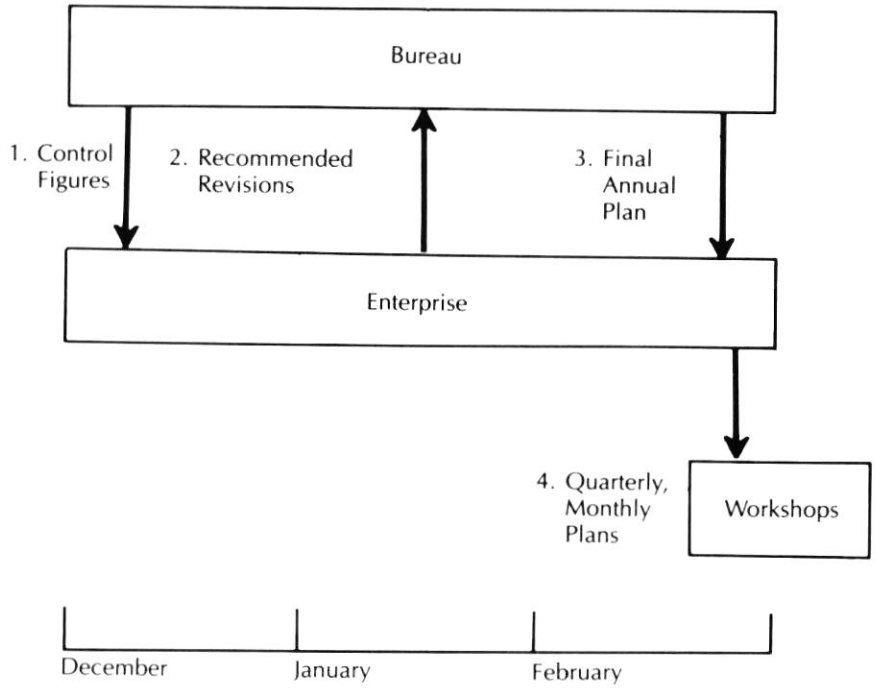
Promotions to higher wage levels are theoretically guaranteed every two to three years, to reflect a worker's performance as well as seniority. But in reality a worker—regardless of skill—should anticipate a promotion about once every five years. Promotions in Chinese enterprises are almost entitlements.

Bonuses

Though scorned during the Cultural Revolution, bonuses in the last two years have once again become an important part of a worker's compensations. Political criteria for awarding them also have been discarded in favor of recognizing productivity.

Bonuses are one of the most important tools available to today's managers. Both nonmaterial and material bonuses are used. Nonmaterial incentives include methods held over from earlier times when politics held sway. They are used to reward good workers with peer recognition and enhanced social status within the enterprise. Chief among them is the "model work-

"Two-Down, One-Up Planning"



SOURCE: Thomas H. Pyle, March 1981.

er" award given to the top 5 percent of the work force, based on management's evaluation of a worker's attitude, quota completion, cooperation, floor leadership, and colleagues' opinions. Model workers receive citations at annual factory meetings and acclamation in the local press. Photographs of these workers are also displayed around the enterprise.

Workshop or factory competitions are another important nonmaterial incentive. Many factories set aside one or two days a year for workers to show their production skills in competitions with representatives from other workshops. Great emphasis is placed on these contests by management, and champions win high praise.

For obvious reasons, material incentives are far more important in the workers' minds. Some bonus systems are based on piece-rate production, some on management's evaluation of workers, and some on a combination of both.

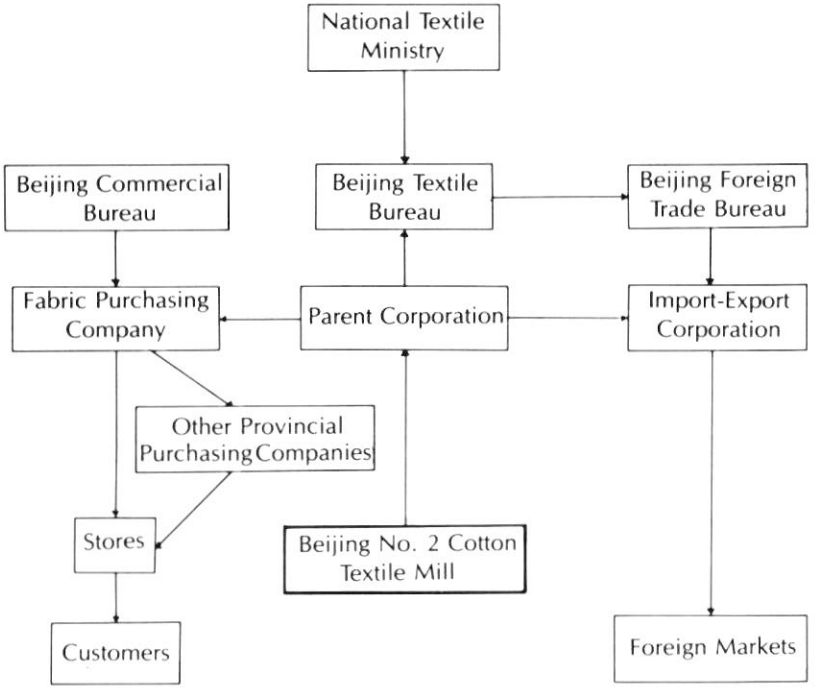
With the reemergence of bonuses has also come a series of state-pronounced regulations. Though bonuses are not supposed to exceed 12 percent of monthly wages, some systems allot up to 40 percent. Not all bonuses are uniformly applied; workers in some factories receive automatic bonuses, while those in others must perform extra work. Political barriers to bonus differentials by worker output are rapidly falling, as the great majority of workers enthusiastically endorses the new ideal of "more work, more pay." The worker's congress at Beijing No. 2 Cotton Textile Mill last year overruled management's proposal to distribute bonus funds equally among the workers, despite the inevitable disparities the alternative would cause.

Ironically, bonus standards usually are lax and seldom upgraded. Production standards in almost all enterprises are based on national industry averages. So masons laying bricks in the Northeast are evaluated according to the same brick-per-hour rate as masons in Guangzhou, despite differences in weather and materials.

This arrangement has contributed to the plague of "averagism" in Chinese production, a problem just beginning to be addressed. Most workers qualify for substantial bonus payments because standards are kept low to ensure that the majority of workers can fulfill them. Commonly 80 percent of a work force qualifies for bonus payments rewarding "superior" work.

Typical Marketing Channels: Anything but Direct

Case of the Beijing No. 2 Cotton Textile Mill



Industrial Bureaus and Corporations: The Real Managers

Management variables controllable at the enterprise level in the West are handled by higher agencies in China.

Three principal institutions control the Chinese enterprise: the corporation, the parent bureau, and other supporting bureaus. Their powers vary according to industry, location, enterprise, and power of local government. Some enterprises answer only to companies, some only to bureaus, and some to both.

The Corporation. Corporations are positioned between enterprises and bureaus and serve a function somewhat equivalent to that of American companies. They usually control from three to ten enterprises in the same industry. Corporations are staffed by experts drawn from both the bureau and the enterprises, and usually number no more than 100 people. Their smaller size is appropriate to their tasks of promoting efficient relations between plants under their control, expediting supplies, and locating customers.

Corporations are organized like enterprises, with planning, production, finance, supply and sales, labor and wages, and technical affairs departments. Other offices can include welfare, worker safety, and education. Whenever problems arise in one of these areas, heads of the responsible departments meet their counterparts in the enterprise.

Corporations are chiefly responsible for seeing that enterprises fulfill quarterly plans. They also distribute funds to enterprises, according to the financial plan.

Examples of two different kinds of corporations are the Dalian Leather Products Corporation, and the Beijing Cotton Textile Corporation. Though both were formed in 1979, their degrees of autonomy have evolved quite differently. Dalian Leather Products runs 13 enterprises with 5,552 people. Six enterprises make shoes, while others make hats, canvas products, protective equipment, and fur products. Revenues in 1980 totaled ¥49 million ($31 million). A 40-person research center has just been established to promote product development. The corporation's managers win bonuses based on seasonal performance of the enterprises under its jurisdiction, although they incur no penalties when the corporation misses its quotas.

While in theory the corporation was set up to strengthen supervision of enterprises, it was not given very much real managerial authority to do so. Its parent bureau, the Dalian Second

Light Industrial Bureau, retained almost all significant management prerogatives for itself. The bureau decided the level of current asset productivity, labor productivity, product quality, product quantity, product varieties, new construction, new equipment investment, access to state funds, and profit margins. The Dalian Leather Products Corporation merely divides yearly plans into manageable production segments. Its preeminent responsibility was simply to obey the directives of the bureau and ensure the plan's fulfillment.

The Beijing Cotton Textile Corporation, with a staff of 100, controls the affairs of 30,000 workers in ten units: three textile factories, three weaving mills, and four print and dye factories. The corporation is also responsible for 30,000 spindles, 7,500 looms, six single-color printing assemblies, six multicolor printing assemblies, and five sets of specialized fabric-printing machines. The corporation's work is divided among its departments of planning, finance, technical affairs, equipment, education, personnel and labor, civil construction, raw materials, finished products marketing, auxiliary materials, welfare, worker safety, and management affairs. It also has two offices headed by the local Communist Party branch: staffing, and propaganda.

The corporation's purpose is to improve marketing in the heavily controlled textile industry. Sheer output, long accepted as the major performance indicator, is no longer the prime consideration. As a representative of the corporation's management office noted, "China's economy in the past was an instructive planned economy which ignored the adjustment of the market."

The new corporation brought several fragmented functions under the control of one unit for the first time, including supplies, production, sales, personnel, assets, and materials. The new entity was also made into an independent accounting unit responsible for its own profits and losses, and was empowered to sign its own contracts.

The Parent Bureau. Bureaus answer to city or provincial government and are generally similar to larger corporations which supervise enterprises in one sector. They seldom control any labor force of their own.

There are basically two types of bureaus: the parent bureau and specialized support bureaus. The parent bureau controls the planning and day-to-day activities of enterprises, while support bureaus have specialized responsibilities in such areas as pricing, welfare, public health, and labor. Dealing with so many authorities poses a serious problem for Chinese enterprises. Enterprise initiatives in almost any area first must be cleared by the enterprise's parent bureau, and often by specialized support bureaus, whose areas they affect. Chinese managers describe this complex network as having "too many mothers-in-law."

Each enterprise has a different relationship with its parent bureau, depending on its size, importance of its product, and nature of the industry. Large enterprises usually receive closer supervision. The Dalian Food Processing Plant, for example, is a strictly controlled enterprise with little autonomy. Its parent, the Luda Second Light Industrial Bureau, is responsible for more than 50 industries. The nature of the food business probably requires stricter control since public health is at stake. Half of its output is exported, while other controls on quality and financing are also imposed, further restricting the firm's managerial autonomy.

The Dalian Food Processing Plant is not allowed to sell directly to the market, but must sell only to the state's purchasing agents. Nor can it sell goods at the higher prices their premium products would surely command. The plant's apple storage deficiency remains uncorrected because the bureau has not granted the plant permission to invest its own funds in new facilities.

Most frustrating of all are the headaches involved in developing a new food product. In 1978 the Dalian Food Processing Plant proposed a new variety of canned fruits to be included in the next year's production plan. Because a change in product variety was involved, the Luda Second Light Industrial Bureau had to approve. Then the Liaoning Provincial Light Industrial Bureau, a higher authority, had to approve the municipal bureau's approval. The State Ministry was consulted for its approval after that. Finally, the Luda Foreign Trade Commission was approached to submit an order to give the new product an initial market.

After all important authorities acquiesced and an order was placed, the plant then appealed to the Luda Planning Commission for the raw materials to make the new product. The decision was still pending after one month of negotiations. Should the Planning Commission refuse to provide extra materials, even after such careful consultations, the new product idea will die.

Relatively smaller, problem-free factories tend to receive less bureau attention. The Shenyang Metal Furniture Collective, for instance, has developed a reliable reputation which goes unquestioned by its parent bureau. Employing 725 workers, Shenyang Metal Furniture inevitably pays closer attention to revenues and costs. As a collective, it must survive on its own profits; it has no "iron rice bowl." When it passes up planning requests, the parent bureau—Shenyang Light Industrial Bureau—approves them without a fuss.

The enterprise seems to take advantage of its relatively small size and good reputation to influence the price-setting process. Since the collective's ability to meet profit quotas is greatly influenced by the margins allowed for new products, it has a strong incentive to calculate its production costs generously, since costs are the basis for setting prices. In this way its bureau pegs prices higher, increasing its own profits.

In the future the management innovations of these small-scale collectives will be just as significant in setting the course of China's reform movement as the management changes in China's giant state enterprises. 完

Thomas H. Pyle surveyed more than 30 Chinese factories and government institutions while researching Chinese enterprise management techniques last year. His subsequent case studies on management in cotton textiles, machine tools, furniture making, shoes and food processing, are now used as teaching materials at China's new National Center for Industrial Science and Technology Management Development in Dalian. Educated at Princeton University and Harvard Business School, Pyle currently works at the Morgan Guaranty Trust Company in New York.

* *

National Council members may contact the CBR *for background to the story and details that could not be published.*

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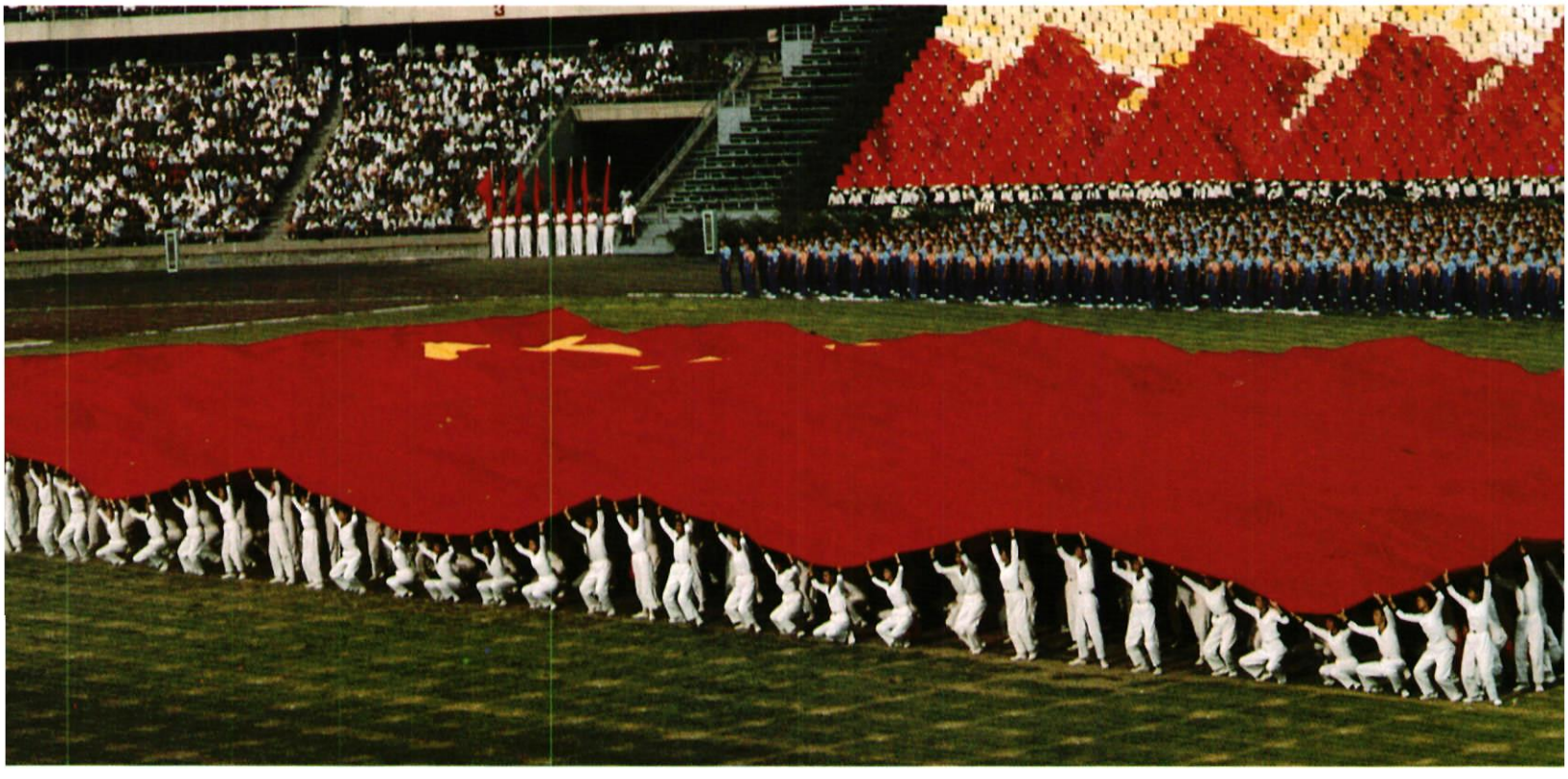

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The Beijing Office of the National Council

American firms considering opening an office in Beijing should look first at the National Council's office already there. Located at the front lines of American business activity in China, the Council's Beijing office is playing an increasingly important role in the development of member firms' China trade. Not only a liaison between US firms and Chinese organizations and a business information center, the Beijing office is a source of administrative support and market advice for companies doing business in China.

Plans for opening a Beijing bureau had been discussed for many years by Council members, but only after normalization of relations in 1979 did the plans come to fruition. The China Council for the Promotion of International Trade (CCPIT), the Council's companion organization in the PRC, agreed to sponsor a resident Council staff member in China, and late that year Richard Glover arrived to serve as the first Beijing representative. Since then the office has grown in both personnel and scope. Now a registered foreign enterprise in the PRC, the office is staffed by two full-time American professionals as well as a native Chinese office assistant, and is housed in a two-room suite in the Beijing Hotel, overlooking the historic Forbidden City and the Great Hall of the People on Tiananmen Square.

"We provide nearly as many kinds of services as we have member companies," remarks Scott Seligman, who took over the Council's Beijing office in January. "We're asked to do everything from explaining China's current economic situation and predicting purchasing priorities to distributing literature and making appointments." The office also fields inquiries from Chinese organizations interested in doing business with the United States.

Seligman, who is fluent in Chinese, joined the Council as assistant director of the Delegations Department a year and a half ago. Working with him is Stephen Markscheid, also fluent in Chinese, who joined the Council in 1979. They are assisted by Li Wenda, who was sent by the Beijing Friendship Commercial Service Corporation. Li brings with him 30 years of experience in a number of Chinese government organizations, including the Ministry of Foreign Affairs and the Beijing Chemical Institute.

Council representatives Stephen Markscheid (*left*), Scott Seligman (*center*), and Staff Assistant Li Wenda.

By far the most common request members make of the Beijing staff is for help in scheduling appointments with Chinese officials. "This is a great deal harder than it sounds," Seligman points out, "since telephone communication is a difficult proposition in China, and many bureaucratic formalities must precede even so simple a task as arranging a face-to-face meeting. Because appointments are seldom set up prior to someone's arrival, it can be extremely difficult to confirm a meeting more than a few days in advance. It's practically impossible to do so from abroad."

Obtaining and transmitting timely business information make the Beijing office an important source of the Council's market-intelligence service to member firms. "Frequently executives will stop in for a briefing as soon as they arrive in Beijing," says Markscheid. "We can share with them our latest information about pertinent Chinese trade organizations as well as point them in new, and often more fruitful, directions."

The office also serves as the right arm for the Council's activities and information requests in China. Staffers coordinate trade delegations under Council auspices, assist the Exporter Services Department with industrial exhibitions, and interview Chinese trade organizations on their structure and functions to keep the Publications and Research Department up to date.

Administrative support constitutes the lion's share of the office's service to visiting member firms. Often the staff must come through on short notice when a projector bulb blows out, a contract needs retyping, or an electric adaptor or transformer is forgotten. During a recent trip to China, R. V. Barnhart of Fuller-O'Brien Corporation discovered he had brought along the wrong kind of light bulb for his slide projector. "We would have had to shut down the whole five-day seminar," he said, "but the Beijing office came through in a pinch with a carousel projector."

In addition to slide and overhead projectors, the office has a Xerox machine and a typewriter available to company representatives; the office may have access to a telex machine in the near future. Many members use the office as a mailing and cable address in China. Visiting representatives are also put in touch with local secretarial and

translation services on a short-term basis.

The Beijing office maintains a library of reference works helpful to visitors and resident firms alike—standard publications such as *Thomas Register, Standard and Poor's Register,* and *Corporate Affiliations;* directories of US importers and trade associations; various reference works on China; US tariff schedules; and a variety of English-Chinese technical dictionaries. English texts of various Chinese laws and regulations are on file, as are most Council publications. The office also subscribes to a variety of China-related newspapers, magazines, and reports.

In addition to maintaining good relations with the Chinese, the Council's Beijing staff works closely with the economic and commercial staff of the US Embassy in Beijing, keeps in contact with the consulates in Shanghai and Guangzhou, and works with the many Beijing-based offices of US firms. As a service to this growing constituency, the office has inaugurated the monthly "Beijing Briefings," a series of general interest lecture-discussions for the China-based business community. 完

Beijing Office Address and Services

Beijing Representative: Scott Seligman
Deputy Representative: Stephen Markscheid
Staff Assistant: Li Wenda
Address: Suite 1136, Beijing Hotel, Beijing, PRC
Telephone: 552231, 556531, 558331, ext. 1136
Office hours: Monday–Friday: 8:30 AM–12:00 noon; 1:30 PM–5:30 PM. Saturday: 8:30 AM–12:00 noon. Sunday: closed.
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Use of reference materials: Thomas Register, Standard and Poor's Register, Corporate Affiliations, Tariff Schedules of the United States, The China Business Review, various Council publications, etc. Please telephone in advance for an appointment.

Doing Business with China's Defense Industries

Karen Berney

Tighter civilian rein on the military in recent years has forced China's arms manufacturers to increase civilian goods production substantially. Most of the Machine Building ministries' new customers are foreign firms—many of which have found that China's defense industries generally number among the country's best-equipped and -managed, and offer opportunities for future sales, licensing arrangements, and joint ventures.

Drastic cuts in China's 1981 defense budget underscore the government's determination to modernize the civilian economy more quickly than the military sector. Originally set at ¥20.2 billion ($13.3 billion), military expenditures were cut this February by an estimated 22 percent to ¥16.5 billion ($11.0 billion), a figure even lower than the defense expenditures of three years ago.

The change in emphasis from guns to butter affects all seven of China's armament ministries: the second through eighth ministries of Machine Building, which are in charge of nuclear devices, aircraft, electronics, conventional land armaments, shipbuilding, guided missiles, and aerospace. Significantly, civilian ministers have taken command from military officers in all but one of these ministries since 1978. Only the Second Machine Building Ministry, in charge of developing nuclear technology, is still headed by a military officer, General Liu Wei.

Two moves in particular have consolidated civilian control over the military; namely, the appointment of a foreign affairs specialist, Vice-Premier Geng Biao, as China's new minister of national defense; and the creation in February 1980 of the State Machine Building Commission under Vice-Premier Bo Yibo. The commission coordinates all machine building activities in civilian and military sectors, and implements the government's policy of beating swords into ploughshares.

About 80 percent of China's defense industries now produce one or more lines of civilian goods. In 1980 between 45 and 55 percent of the total output value of defense factories consisted of much-needed bicycles, sewing machines, furniture, household appliances, and other light industrial items.

To accelerate sales, each Machine Building Ministry is setting up special agencies to design, exhibit, and market its civilian wares. The Third Ministry already maintains retail outlets selling its consumer goods on a commission basis in nine major cities.

The research institutes, academies, and experimental factories under the seven military ministries have also been stripped of their privileged status. They now have been told to "get off their high horses," and to "put an end to deficit situations" by concluding technical innovation contracts with local industrial bureaus and enterprises.

In fact, with the emphasis on applied research and independent financial accounting, nearly all China's research institutes are adopting the contract system of work. Elite R&D centers are reporting millions of yuan worth of profits from designing cigarette filters, tire caps, and new machines for making iron molds. They even offer to send technicians to help contractors install the equipment free of charge.

Two Ministries Compete for GM's Favor

The outcome of competition between the first and fifth ministries of Machine Building over an import project may influence how quickly a market for defense technology will develop in China. The General Automotive Bureau (GAB), under the exclusively civilian First Ministry, and the Fifth Ministry's North China Industries Corporation (NORINCO), have been talking to GM about licensing the know-how to manufacture modern engines and automatic transmissions. But the potential buyers have in mind different applications for the technology.

During the February 1979 Sino-Vietnamese border clash, 60 of the PLA's 1950-vintage tanks experienced mechanical failures and had to be abandoned in the field because Chinese 4×4 recovery vehicles lacked sufficient power to climb the steep terrain to retrieve them. Hence, the PLA's high command very much wants to acquire the technology necessary to build high-performance recovery vehicles, and it has instructed NORINCO to negotiate a deal.

The GAB, on the other hand, is seeking a commercial design of the vehicle having civilian applications, such as pipe and railway car transportation.

GM is only amenable to devoting time and manpower to one such project. But Beijing is not planning to dictate its preference. Rather, it has decided the best test of efficiency is to let GM choose the more advantageous partner.

Meanwhile GM has already sunk a few million dollars in traveling to China, hosting delegations, and in preparing technical briefings. It says neither NORINCO nor the GAB has proposed an arrangement that would guarantee the firm a return on its investment. "The GAB offered to purchase 1,300 engines and transmissions over the eight-year life of the agreement.... That wouldn't even cover our travel expenses to and from China," noted a GM spokesman. Further negotiations with each concern have been deferred indefinitely.

—Karen Berney

Foreign Exchange Drive

In addition to pursuing civilian markets, defense industries are actively seeking ways to earn foreign exchange. TECHIMPORT, MACHIMPEX, and INSTRIMPEX, the foreign trade corporations under the Ministry of Foreign Trade, still handle the products of some of the machine building ministries, but they no longer act as their exclusive trade representatives. Over the past two years, each Machine Building Ministry has formed an import and export corporation (*see chart*). And they are busy promoting themselves as low-cost suppliers of high-technology products. Their import priorities are to acquire technology to aid the transformation of their factories into dual-use production centers.

This past winter, the North China Industries Corporation (NORINCO) of the Fifth Ministry dispatched two delegations to the US in search of business partners. Claiming control over 400 factories that can produce anything (NORINCO's catalogue lists over 140 products in six categories—from flash detonators to sunglasses), the corporation also boasts access to the best machine tools and metallurgical resources in China. The corporation maintains its own permanent exhibition hall in Beijing, and sometimes requires as little as two days' notice to mount displays of foreign products. US businessmen describe NORINCO officials as forthright and aggressive.

At best, most US companies are still lukewarm at the prospect of subcontracting to NORINCO-run factories. After touring a few of NORINCO's facilities, an executive of Detroit Diesel Allison concluded that China's management system is fraught with too many problems for efficient mass production of consistently reliable products to be ensured.

Terex Corporation, however, is prepared to take such risks to get its foot in the door. Under the terms of a January agreement, two NORINCO factories in Baotou will participate in the complete assembly of Terex's heavy-duty construction vehicles. Terex is supplying the major parts while others, such as axles and wheels, will be produced locally. The company is accepting payment according to the number of units NORINCO sells in China or abroad.

American businessmen have responded a bit more eagerly to overtures from a Nuclear Energy Industry Corporation delegation from the Second Ministry, which visited the US under National Council auspices in January. The delegation returned to Beijing with a letter of intent relating to pen-type personal dosimeters that the CNEIC would supply over the course of 15 years to the Dosimeter Corporation of America. The firm also pinpointed an ionization radiation surveymeter, produced by the CNEIC's Xian factory, as another item it would like to import in large quantities.

The defense industries also are offering to service foreign products

China's Machine Building Ministries

Ministry	Minister, Current (C) and Former (F)	Import and Export Corporation	Major Product Areas; Military (M) and Civilian (C)
Second Ministry of Machine Building	**C:** Liu Wei, brigadier general **F:** Liu Xiyao	China Nuclear Energy Industry Corp. PO Box 2319, Beijing	**M:** Nuclear warheads; stock of both fission and fusion warheads believed to number 300. **C:** Meters and instruments for measuring radiation; nuclear electronic instruments; uranium survey and mining equipment; optical instruments; mechanical components, e.g., hot cells, air filters, heat exchangers and valves.
Third Ministry of Machine Building	**C:** Lu Dong, manager in metallurgical industry **F:** Li Qitai, Air Force general	China Aero-Technology Import and Export Corp. 67 Jiaonan Dajie, Beijing China Aviation Equipment Corp.[2] 155 Dongsi Xi Dajie, Beijing	**M:** Jet fighters, F-2 (MiG-15), F-4 (MiG-17), F-6 (MiG-19), F-7 (MiG-21), F-8 (Mach 2 fighter), F-9 (twin-engined MiG-19)[1]; ground attack bombers, Shenyang Tu-16, Il-28, Tu-4; transports, An-2, Il-14, Li-2; helicopters, Mi-4,6 and 8, Aerospatiale Super Frelon and Dauphin II; Yak-18 basic trainer; Spey engines, Tumansky R-11 engines; air-to-air missiles. **C:** Agricultural planes, optical recorders, watchmaker lathes, transducers, switches, motorcycles, and helmets.
Fourth Ministry of Machine Building	**C:** Qian Min, provincial party cadre **F:** Wang Zheng, lieutenant general	China Electronics Import and Export Corp. 49 Fuxing Lu, Beijing China Electronic Computer Service Corp.[1] Address: NA	**M:** Avionics, early-warning radar, electronic countermeasures, space electronics. **C:** Earth stations, navigation equipment, computers and peripheral devices, radios, TVs, integrated circuit technology, and consumer electronics, components and materials.
Fifth Ministry of Machine Building	**C:** Zhang Zhen, manager in petroleum and chemical industries **F:** Li Chenfang, major general	China North Industries Corp. 7A Yuetan Nan Jie, Fuchengmen Wai, Beijing	**M:** Tanks: T-54, T-59, T-34, T-63, Is-2; reconnaissance vehicles: T-60, T-62, PT-76; armored personnel-carriers, Types 55 and 56; BTR-40, BTR-50, BTR-152, K-62; antiarmor weapons, 57mm, 85mm, and 100mm guns; SU-76, SU-85, and SU-100; ISU-122 self-propelled artillery, 82mm, 120mm, 160mm mortars; 107mm, 140mm rocket-launchers; 75mm, 82mm recoilless-launchers, and 37mm, 57mm, 100mm antiaircraft weapons. **C:** High-precision and heavy-duty metal-cutting,

sold to China. In January, Xerox Corporation, cooperating with the Sixth Ministry's China Corporation of Shipbuilding Industry, established a center in Beijing to service all 500 Xerox machines operating in China. As a sale lure, Xerox is offering a one-year warranty for service on all new copiers and other products it sells in China.

Supplying the PLA

For the foreseeable future, China's defense industries will be seeking ventures that earn foreign exchange. The US business community shouldn't forget that the most important customer these factories have is the People's Liberation Army (PLA).

Although US firms may sell directly to the PLA, it is often easier to make contact with endusers through the foreign trade corporations under the Machine Building ministries. Boeing Vertol Company, for example, found it difficult to identify the right organizations and individuals in China's 3.6 million-man army. PRC Embassy defense officials referred the company to the Third Ministry of Machine Building's Aero-Technology Import and Export Corporation (CATIC). The company is now embarked on a marketing program for the sale of its heavy-lift Chinook helicopter to the PLA.

"We see CATIC as an administrative body whose primary function is to judge who the appropriate players are, and bring them together in a forum with the foreign company," says Vertol's Far East Sales Manager Norbert Josten.

After contacting CATIC during its participation in the November US trade exhibition in Beijing, Vertol was invited to stage a week of technical seminars at the Nanjing Aeronautical Institute in early March. There it met officials from the military-equipment acquisition department of the PLA's general staff who expressed a strong interest in the Chinook for antitank, artillery, and rapid-deployment missions as well as for civilian applications in powerline construction and offshore oil support. Vertol then realized that in order to sell helicopters to the PLA, it had to sell the Chinese defense planners on tactical doctrines that require helicopters.

"What we intend to do is promote a demand resulting in a high budgetary priority and a decision to purchase the Chinook," claims Mr. Josten. With that objective in mind, Boeing Vertol, under Defense Ministry auspices, is arranging a series of briefings for the PLA's operational staff in September. Discussions on how China might reduce the cost of acquisition by building a technical base through fabrication of selected components will also be initiated.

"The bottom line is that we believe Beijing will buy Chinooks. Not this year and probably not next, but we expect to be involved in serious discussions in the 1983–85 time frame for first requirements," concludes the Vertol spokesman. When that day comes, Vertol hopes that it will have generated a sense of urgency within the PLA to acquire the Chinook.

Engaged in Military Production

			-forging, and -pressing tools; diesel engines; chemical engineering materials; and bicycles, sewing machines, and kilowatt meters.
Sixth Ministry of Machine Building	**C:** Chai Shufan, former vice-chairman of Capital Construction Commission **F:** Fang Qiang, admiral	China Corp. of Shipbuilding Industry 10 Yuetan Beixiaojie, Beijing	**M:** Submarines, destroyers, frigates, patrol escorts, fast-attack craft, ocean minesweepers, hydrofoils, and infantry landing craft. **C:** Bulk carriers, container vessels, marine engines, factory design and consulting services.
Seventh Ministry of Machine Building	**C:** Zheng Tianxiang, provincial party cadre **F:** Song Renqiong, lieutenant general	Great Wall Industry Corp.[4] 1 Hongqiao Dong Dadi, Congwenmen Wai, Beijing	**M:** Strategic weapon systems: IRBM (CSS-2), limited range ICBM (CSS-3), full range ICBM (CSS-X4), military satellites. Long March-3 (CSL-X3) launch vehicle under development. **C:** Communications, weather and earth resources satellites; telemetry, tracking and control equipment.
Eighth Ministry of Machine Building	**C:** Not yet announced **F:** Jiao Ruoyu, career diplomat, was appointed mayor of Beijing in January 1981	China Precision Machinery Import and Export Corp. 2 Yuetan Beixiaojie, Beijing	**M:** Tactical weapons systems including antiaircraft weapons, air-to-air, surface-to-surface and cruise missiles, and missile-guidance systems. **C:** Instruments and meters for space navigation, infrared, laser, optical equipment, micrometers, switches, batteries, computers, facsimile equipment, tv sets, stereos, rubber seals, pipe castings, ovens, lamps, sofas, washing machines, light trucks and microbuses.

[1]F-7, F-8, and F-9 jet-fighters are known to still be in production in China; production of F-2, F-4, and F-6 fighters is believed to have been discontinued, though the F-6 cockpit is now being updated with avionics from Marconi Defense Systems, U.K.
[2]The two trading corporations differ in that the first has plants directly under its control, while the latter reportedly functions exclusively as a business intermediary. In that capacity, it procures foreign and domestic aviation equipment for civilian aircraft.
[3]The China Electronics Import and Export Corp. handles a wide array of electronic products including consumer goods, while the latter corporation coordinates the importation of foreign computers.
[4]The Great Wall Industry Corp. specializes in precision machinery, oil equipment and tools, electromechanical products including candy packers, computers, radar, integrated circuits, instruments and meters, magnetic heads, tapes, and discs.

SOURCES: National Council, *China Business Manual 1981; Jane's Weapon Systems,* 1978; *Far Eastern Economic Review; Asia 1980 Yearbook;* and Harlan W. Jencks, "The Chinese Military Industrial Complex and Defense Modernization," *Asian Survey,* October 1980, pp. 965–89.

Table prepared by Karen Berney.

Hebei Preserved and Dried Fruits

Hebei preserved and dried fruits include: Dried Pear, Dried Apple, Dried Apricot, Preserved Pear, Preserved Apple, Preserved Peach, Preserved Apricot, Preserved Dates, Preserved Cherry-Apple and Haw Flakes. All are prepared from the fruits produced in Hebei Province.

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The Delegations Debate

Carol S. Goldsmith

Only five months ago Chinese delegations to the US had reached epidemic proportions, prompting a *People's Daily* editorial to remark, "Our embassy has almost become a reception office." In 1980 alone 994 Chinese delegations visited the US, according to National Council sources, up sharply from 450 in 1979 (*see* p. 29).

The rising figures reflected three important policy shifts in China: the "four modernizations," decentralization, and normalized relations with the US. Deng Xiaoping's consolidation of power after Mao's death stirred long-dormant dreams of industrial progress and improved economic relations with the West. Provinces, cities, and even prefectures suddenly were encouraged to organize trade missions abroad. Hubei and Ohio started the trend toward state-to-province and sister-city exchanges with Governor James Rhodes' visit to China in July 1979; by the beginning of this year, some two-dozen states and at least ten cities had gotten into the act.

Companies played host to virtually any Chinese who wanted to come. An extravagant few even chartered private planes for delegations and arranged elaborate banquets in the early days, thinking $20,000 was a small price to pay for a chance to do business with China.

Then, almost as rapidly as the numbers had soared, delegations began to decline in February 1981. The primary reason: budget-cutting in both the US and China. The cancellation of so many costly projects had made it painfully apparent the Chinese could afford only a fraction of what Americans wished to sell. No longer could China justify sending so many delegations abroad, especially as more companies began cutting back the delegations investment of bygone days.

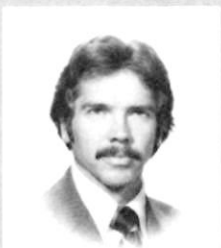
Taking a Second Look

A factor contributing to the change, of course, has been Americans' dissatisfaction with the way Chinese delegations have been conducted. The size and scope of many missions have tended to suggest little more than browsing expeditions. Groups comprising as many as 20 Chinese delegates have been known to crowd in visits to 15–20 companies on a three-week tour, making it difficult to do business even if the groups had the authority to sign deals. As time passed and the projects fell through, executives began wondering, "Are delegations making solid contributions to business? How much time and money are they really worth?"

The answers vary from firm to firm. J. A. Hollingsworth, manager of Bucyrus-Erie's international mining machinery sales, says his division sees about four Chinese survey delegations a year, and sends one or two such missions to the PRC. "As a direct result of delegations," he reports, "business probably has been zero." James Han, Caterpillar's China projects manager, says his company last year hosted 14 survey delegations from China, met with about 50 others, and took only a few Caterpillar delegations to China. Yet most of the firm's business was done before the recent explosion in delegations, he says. The Boeing Company, which started its China trade with the sale of ten 707s in 1972 and continued with three 747 SPs in 1978, likewise attributes most of its success to the company's own business initiatives, rather than to delegation travel.

Middle West Consultants, Inc., numbers itself among the lucky few to have done business with a delegation; the firm purchased $35,000 worth of pharmaceuticals from a National Council-sponsored SINOCHEM delegation last summer. Carolyn Brehm, director of the Council's Importer Services Department, says that same delegation—one of 17 selling missions the Council hosted last year—concluded around $7.5 million worth of business while in the US, and another $7 million after departure. Thirteen of those missions signed additional contracts for undisclosed sums.

Clark Equipment credits some $2.6 million worth of business directly to delegations. Last April the industrial truck division sent its first delegation to China to discuss with the Ministry of Communications material-handling equipment used in port operations. Follow-up efforts by Clark's Hong Kong representative and the Gillman trading com-



"How can I determine which delegations are worth hosting? A gut feeling. I get out my divining rod."

Chris Stowell, WJS, Inc.

"If you ask the question, 'what would business be like if there were no delegations,' I don't think it would be as good. But you must separate the general-interest delegations from the business meetings."

William Clarke, BWT Co.

pany there resulted in a second invitation in June, reports Wayne Jordan, product marketing manager for Clark International Marketing. Those discussions with endusers from seven Chinese ports led to the first order in October for six container-handling lift trucks valued at $1.3 million. Four subsequent orders brought the total purchase to 26 lift trucks.

Some companies undoubtedly would credit that sale to the work of Clark's Hong Kong representatives and to follow-up meetings, rather than to contacts made during the delegations. Examples of deals being signed *on* delegations are indeed rare. Letters of intent, which may or may not pan out, are more common—such as the one signed in January by the China Nuclear Energy Industry Corporation delegation to supply a company with pen-type personal dosimeters (*see* p. 24).

Li Wei of the PRC Embassy admits that most delegations arrive with broad directives: "not only to learn, but to look [at a company] from different angles—from a technical point of view, from a business point of view." That approach takes time and several trips. As a result, three or four Chinese delegations may visit a company before any business is generated. Li concedes that seems repetitious, but says each group has its part to play in a deal.

Companies tend to tick off a standard list of complaints when asked about PRC survey delegations:

• *The short-term results don't justify the expense.* To companies concerned only with immediate returns, delegations seem a losing proposition. Profits from a medium-sized contract may not cover the investment some firms have made in air travel, hotel rooms, tours, and banquets for a delegation. But the companies can't blame the Chinese for that, says Caterpillar's James Han. "When you offer a free ride, it's your own fault. When we go over *there*, we don't get a free ride."

• *The Chinese provide too little information about their trip.* Who is coming? What are the delegates' areas of authority and expertise? Exactly what do they wish to see? At times the Chinese have been coy in giving precise details. Perhaps their plans have changed more than once; perhaps they fear too-specific requests will limit what they are permitted to see. This is disconcerting to Americans who are requested to send detailed biographies and describe specific areas of interest months in advance of their own China trips.

Last year one American company hosted a Chinese construction delegation that arrived, unexpectedly, in two distinct groups. During company visits, the group of materials engineers and decision-makers expressed interest "in touring factories and meeting with American businessmen," reported the escort. But the second group of architects and structural engineers became "bored with factories and only wanted to look at concrete structures."

The head of the construction mission didn't care to look at it either. He bowed out of quite a few programs—to the general displeasure of his American hosts.

• *The delegations have been too large.* Though generally pleased at the mix of technical people and decision-makers coming from China, companies complain there are too many of each. Bill Clark of Baker World Trade has hosted delegations with as many as 16 members. In his view, "between four and eight people is ideal. Too many times you get in a noisy plant where everyone can't hear, or you have transportation problems—two cars [show up] instead of three. A smaller delegation is apt to learn more," he says.

Smaller groups also leave a smaller margin for error. One large truck manufacturer tells about a multipurpose delegation that split in different directions partway through the cross-country trip. The segment he ended up hosting was supposed to be visiting Otis Elevators.

• *Delegations have been spread too thin.* According to the National Council, a typical survey delegation might spend three to four weeks in the US visiting at least one company a day. Admits Li Wei, "You see so much you can't understand anything."

• *There is too much overlap among delegations.* The *People's Daily* in December cited several wasteful examples familiar to China traders: "[An] American electronics computer company received three Chinese delegations in two days. These three delegations saw the same things, asked the same questions, heard the same introductory reports, and asked for the same source material from that company." About the time that editorial appeared, Party Vice-Chairman Chen Yun advocated in a speech that China send fewer and smaller missions abroad.

• *The Chinese provide insufficient follow-up to delegations.* A middle-level manager at General Electric says perhaps the most frustrating thing about hosting delegations is going all out to brief the group, and then not hearing from them again. "When we don't see follow-ups, we get concerned about the group's sincerity," he says. If the Chinese are serious about business, they must allow the working-level people to come back."

In just two years, the size of PRC delegations has diminished from an average of seven people to four.

These difficulties have prompted the National Council to become more discriminating in its choice of delegations. Says Stephanie Green, who directs delegations for the National Council, "We made the decision late last year to accept either a high-level, industry-specific group that will affect sectoral decisions, or lower-level, industry-specific groups that want to do some real business. We will get away from general-survey delegations."

Consequently Caterpillar, and other companies, are also cutting back their expenditures on delegations. Han says his company is keeping its yearly budget to several thousand dollars. Another large manufacturer is accepting delegations in just three categories: trucks, agricultural machinery, and construction equipment. Most firms are weighing expenses against immediate expectations, spending the most on the hottest prospects. A more economical way to make initial contacts, some say, may be through delegations hosted by the National Council, government departments such as State and Commerce, and various state and private groups in the China trade. 完

Types, Numbers, and Trends

Gillian Leavitt

The growth in US-China trade in recent years was matched by a rapid increase in the number of Chinese delegations traveling to the US. Altogether, 1,783 delegations have visited the US since Deng Xiaoping's historic visit in January 1979, when Sino-American diplomatic relations were resumed after a 30-year hiatus.

Chinese delegations fall into three main categories as defined by the purpose of their mission. About half are academic exchanges or research missions. Such groups occasionally pursue trade opportunities; most are hosted by universities, research institutes, or conferences. A few come under the auspices of the federal government and nonprofit organizations. The second category is technical-training delegations. The number of these groups is normally a strong indicator of trade activity, since the purpose of these visits is usually to train Chinese technicians how to operate and maintain equipment that China has agreed to purchase. Such groups constituted only 9 percent of total delegations in 1980, down from 16 percent in 1979.

The third category is technical survey delegations. These participate in exhibitions, visit US companies and other business organizations, and study US equipment and technology. Such groups generally include engineers and technicians, at least one researcher who takes copious notes throughout the trip, and are headed by a few high-level administrators.

Over the past two and a half years the size and composition of these delegations have changed considerably. The key developments:

▶ *Rapid growth—until recently.* The number of PRC delegations jumped from 450 in 1979 to 994 in 1980, an increase of 121 percent. But after January 1981 the number of delegations declined slightly—from 80 delegations in January to only 76 in May. The major causes of the slowdown are thought to be China's reappraisal of its economic priorities and the country's severe curtailment of capital goods imports.

▶ *Smaller delegations.* Seven people per delegation was the norm in 1979. In 1980 the average size fell to six, and during the first five months of this year, delegations comprised an average of only four people. The trend toward smaller delegations is expected to continue, since Chinese officials announced in December 1980 that delegations would become smaller and more selective.

▶ *Business delegations mushroom.* Business-related delegations, which comprise more than 90 percent of all delegations, increased by 124 percent in 1980. Cultural, athletic, and nontechnical scholarly delegations numbered 41 in 1979, and 76 in 1980—an 85 percent increase. In the first part of 1981 the number of business-related delegations fell sharply, but they continued to make up more than 90 percent of all

Number and Composition of PRC Delegations to the US, 1979–80

	1979		1980	
	number	percent	number	percent
Business (technical, industrial, scientific)	**409**	**90.9**	**918**	**92.3**
By purpose				
Academia, research, theoretical investigation	*203*	*45.1*	*502*	*50.5*
Technical survey, business discussions, trade negotiations, exhibitions	*133*	*29.6*	*327*	*32.9*
Technical training	*73*	*16.2*	*89*	*8.9*
By sector				
Aviation, æronautics, astronautics	*35*	*7.8*	*58*	*5.8*
Agriculture—machinery, chemicals	*21*	*4.7*	*62*	*6.3*
Banking, finance	*0*	*0.0*	*14*	*1.4*
Construction	*11*	*2.4*	*29*	*3.0*
Chemicals	*25*	*5.6*	*27*	*2.7*
Computers	*19*	*4.2*	*28*	*2.8*
Defense	*0*	*0.0*	*7*	*0.7*
Electronics	*15*	*3.3*	*56*	*5.6*
Energy—nuclear, electrical, solar	*30*	*6.7*	*45*	*4.5*
Law	*1*	*0.2*	*3*	*0.3*
Light industry	*25*	*5.6*	*130*	*13.1*
Machinery, equipment	*20*	*4.4*	*43*	*4.3*
Mining, metallurgy	*36*	*8.0*	*56*	*5.6*
Petroleum—processing, equipment	*45*	*10.0*	*61*	*6.1*
Printing, publication	*1*	*0.2*	*9*	*0.9*
Public health—medical instruments, systems, science, etc.	*42*	*9.3*	*94*	*9.5*
Shipping, port operations	*8*	*1.8*	*25*	*2.5*
Posts, telecommunications	*3*	*0.7*	*18*	*1.8*
Tourism	*1*	*0.2*	*6*	*0.6*
Transportation—air, land	*5*	*1.1*	*13*	*1.3*
Other	*66*	*14.7*	*134*	*13.5*
By US host				
Corporate	*189*	*42.0*	*418*	*42.0*
Government—federal, local	*26*	*5.8*	*103*	*10.4*
Private, nonprofit—association, society, etc.	*73*	*16.2*	*97*	*9.8*
University, institute, foundation	*85*	*18.9*	*231*	*23.2*
US-China trade consultants, agents	*36*	*8.0*	*69*	*6.9*
Nonbusiness (sports, culture, nontechnical)	**41**	**9.1**	**918**	**92.3**
Total	**450**	**100.0**	**994**	**100.0**

SOURCE: National Council files, May 1981. Chart prepared by Gillian Leavitt.

PRC delegations visiting the US.

▶ *Light industrial delegations double.* When broken down by industrial specialty, it becomes clear that as light industrial delegations increased sharply in 1980 there was a decline in delegations from heavy industries (petroleum, transportation, shipping, and construction). In second place after light industrial delegations were groups of Chinese doctors and health-care technicians that constituted almost 10 percent of total delegations.

During the first five months of 1981 the largest number of delegations represented five sectors: light industry; machine manufacturing; energy, including petroleum and coal; and public health.

The preponderance of light industrial delegations from 1980 to date is a consequence of China's economic readjustment program, initiated in 1979. By favoring light over heavy industry, the Chinese hoped to remedy an economic imbalance that nurtured ever-increasing budget deficits and unfavorable trade balances. Plans for huge capital-intensive projects in 1979 were gradually abandoned, particularly in mining and metallurgy. Instead, the Chinese began to follow the more traditional Asian pattern of promoting labor-intensive, light industrial exports in order to earn more foreign exchange from limited initial investments.

▶ *More export delegations.* China's substantial trade deficit with the US ($2.7 billion in 1980), has prompted China to dispatch more missions abroad in search of export opportunities. Sixteen percent of the PRC delegations in 1979 billed themselves as export missions; in 1980 the percentage increased to 20. Meanwhile, the number of import delegations sent to the US in search of purchasing opportunities fell from 30 percent in 1979 to 22 percent in 1980.

▶ *Private sector hosts half of all delegations.* American companies and trading firms hosted 225 delegations in 1979 and 487 in 1980—about 50 percent of the total in both years. In the first five months of 1981, however, the US private sector hosted proportionately fewer PRC delegations.

▶ *Research and study delegations on the rise.* In 1980 more than 50 percent of China's delegations to this country consisted of scientists, engineers, researchers, and university professors. These missions participated in short-term research projects at universities and research institutes and are to be distinguished from the nearly 5,000 Chinese scholars enrolled in American graduate and undergraduate programs in 1980.

The increasing scholarly orientation of some of the Chinese delegations indicates a shift in China's development strategy. In the words of Vice-Premier Bo Yibo, chairman of the State Machine Building Industry Commission: "We wish to stress the importance of 'pure technology' rather than the purchasing of complete plants." China's official Xinhua News Agency also announced in February, "In heavy industry, [the] emphasis will be on research and study as a means of preventing waste and saving energy. Comprehensive technical and economic investigations must precede the construction of large industrial and mining projects."

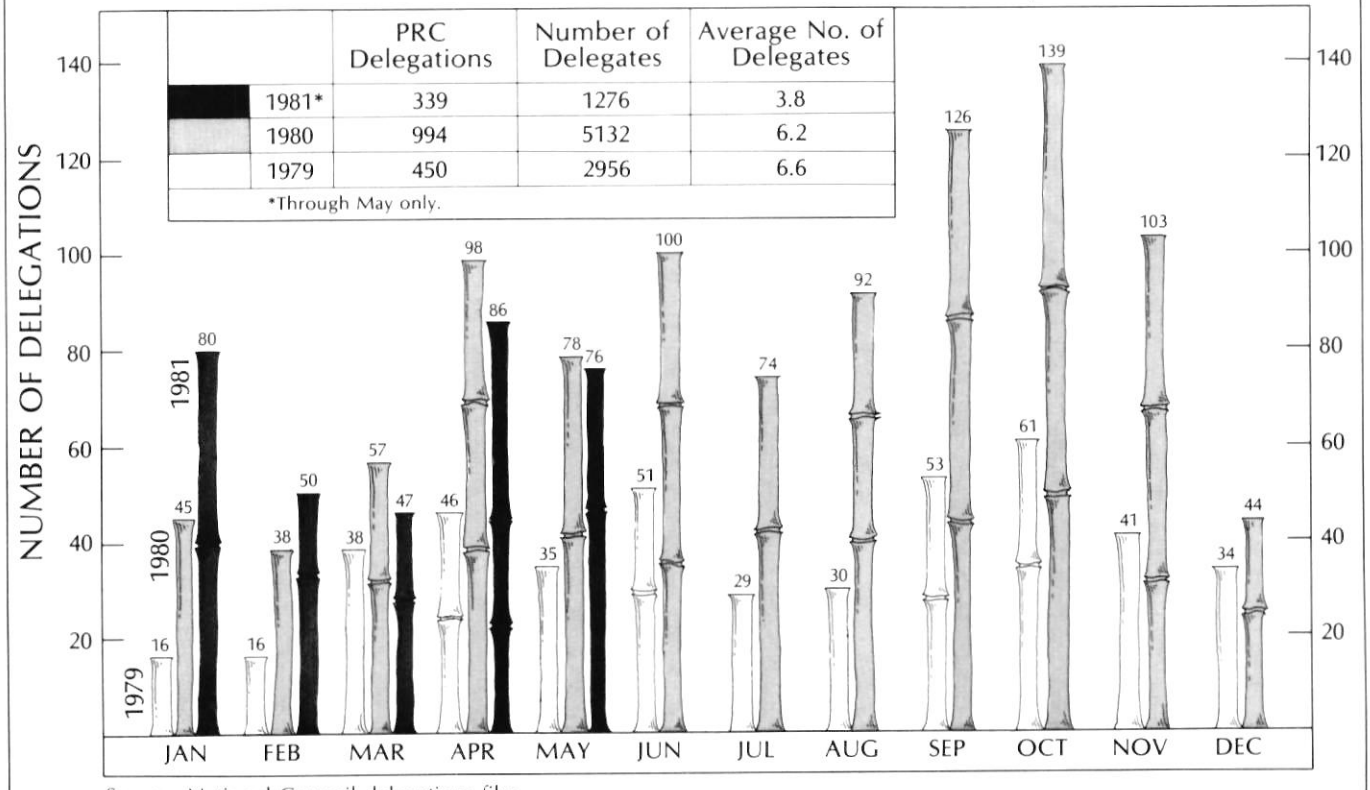
Indeed, many of what used to be buying delegations in 1979 were replaced in 1980 by "investigation" and "study" delegations. In early 1981 the proportion of study groups to total delegations has continued to grow.

As with so many imponderables in US-China trade, the future composition and focus of Chinese delegations will only become apparent when China's current period of retrenchment draws to a close. 完

PRC DELEGATIONS VISITING THE US (1979-1981)

	PRC Delegations	Number of Delegates	Average No. of Delegates
1981*	339	1276	3.8
1980	994	5132	6.2
1979	450	2956	6.6

*Through May only.



Source: National Council delegations files.

The $2.6 Billion Contract Freeze

The fate of key heavy-industrial projects now depends on Japan's willingness to extend several billion dollars in soft loans.

Martin Weil

When China ordered contractors building four petrochemical complexes and the Baoshan steel plant rolling mills to stop all work in late January—an act many observers interpreted as the unilateral cancellation of $2.6 billion in contracts (*see box*)—it appeared the country was willing to sacrifice its business credibility to meet its sweeping retrenchment goals. Now, as China casts about for foreign aid to continue many of the projects, it is the credibility of the readjustment program itself that is open to question.

Symbol of Discord

Controversy has surrounded these projects ever since they were signed in a great flurry in December 1978. They quickly became the target of Chen Yun, the respected economic planner in the 1950s who has always opposed extravagant industrial development schemes. One of Chen's first actions, taken soon after being returned to power by the December 1978 Communist Party plenum, was to force the suspension of all contracts for these projects held by Japanese companies. (A clause in the contracts permitted the Japanese and Chinese governments to withhold approval.) The move was designed to rein in China's capital construction expenditures, but Chen lacked the political power to stop them permanently. So by June 1979 the contracts were reinstated under their original terms—except Baoshan, for which deferred payments were arranged in lieu of cash upon delivery.

Chen's view that the projects should be scrapped or delayed slowly gained adherents, owing to cost overruns, declining oil production, and a general downturn in the 1980 economy. These problems, in conjunction with personnel changes at the top engineered by Deng Xiaoping, greatly strengthened Chen's position; at the Party work conference in December 1980 he appeared to wrest clear-cut supremacy in economic policymaking.

China's economic policies enunciated soon thereafter—a shift of resources to consumer goods, and tighter central control over capital construction—bear Chen's unmistakable imprint. The key to their success is balancing the budget by reducing capital construction expenditures. Chen's budget calls for construction spending to fall by 44 percent in 1981—to 30 billion yuan ($18.4 billion). And one of the keys to reducing the budget by this amount is to stop construction on the imported projects.

There can be little doubt, therefore, that the January telexes to the Japanese, German, and English contractors were ordered by Chen, and that Chen's hope was to cancel construction.* (Cancellation of the Dongfang Chemical Works had in fact been announced earlier in the *People's Daily*.) About $1.4 billion of the contracts are held by Japanese firms.

Statements by Chen suggesting that all inappropriate projects be stopped "even if they appear to cut into sinews and bones," and insisting it is "better to suffer greatly in one year than slowly for five years," were quoted in the media. The press also recalled in favorable terms the readjustment that Chen launched in 1961 in the wake of the disastrous Great Leap Forward. That readjustment involved the canceling of all except a few capital construction projects and the closing down of numerous factories. Most were small scale, but some were large projects begun with Soviet aid. At that time, however, it was the Soviet suppliers who unilaterally canceled contracts in midstream.

Confusion Ensues

Chen may not have fully appreciated the differences between China's circumstances in 1961 and 1981, when he made the cancellation decision. Since his rehabilitation he has had very few known contacts with foreigners. It is unlikely that he was fully aware of the contract terms, the extent to which they had already been implemented, or the difficulties in resolving them. After forcing his opponents into line, he apparently left the details to be worked out by China's foreign trade bureaucracy.

The bureaucrats very quickly realized the complexities. Having already shipped roughly 10–50 percent of the equipment to China by January, the companies discouraged the idea that the equipment—much of it custom-designed—could be resold on the world market. Many companies believed China originally desired not to pay for equipment that had been ordered from the subcontractor but not shipped, and objected vehemently.

The storm of criticism directed at the Chinese appears to have resulted in a decision to continue accepting some, and possibly all, scheduled shipments. The *CBR* knows of no contracts for which shipments have been delayed by more than a month or two. China also has agreed that all the contracts ultimately will be resolved according to "standard international practice."

Loans for the Petrochemical Projects

When Deng Xiaoping first mentioned the idea of reviving the petrochemical plants with low-cost Japanese government loans (with Japan also supplying the crude oil) to a Japanese minister in February, it may have been only one of several strategies under consideration. Indeed, TECHIMPORT negotiators had not even considered the possibility of seeking loans prior to Deng's statement,

according to one press account.

Now the foreign loan option has become the main part of the strategy, as the costs of cancellation have become more apparent. Negotiators from TECHIMPORT have reportedly refused to discuss compensation with the affected companies, pending the outcome of loan discussions on a government-to-government level. According to April news accounts, the Chinese were asking for as much as $4 billion in soft Japanese government loans—far more than the value of the jeopardized contracts. The loans would finance the domestic Chinese portion of the projects, such as housing and water projects, in addition to a portion of the unshipped equipment. Reportedly the Chinese hope to use the loan to revive a portion of the Nanjing project and the delayed Daqing project first,* leaving the remainder of the Nanjing project, the Shengli project (and possibly the Dongfang complex near Beijing) for later. The designs of some of the plants may be modified as well.

Since Japan has a large stake in maintaining friendly bilateral relations with China, a cornerstone of its foreign policy, aid is expected. But less money probably will be made available than the Chinese have requested.

Complex negotiations over the loans are expected, inasmuch as the Japanese are struggling to accommodate China while avoiding charges from other aid recipients that China is receiving favorable treatment. According to April press reports, the Japanese may offer:

- Approximately $200 million in government Overseas Economic Development Fund money (OECF) at 3 percent interest over 30 years which has already been allocated to China for other projects (the Wuqiangxi dam and a Hunan railroad tunnel, among others). The money would be used for auxiliary facilities at Baoshan and Daqing.
- Perhaps $300 million in additional OECF money.
- Ex-Im Bank and/or commercial bank funds from lines of credit already available to China. The use of commercial bank funds at ordinary interest rates would help mitigate charges of favoritism.

According to one report, the Japanese would not make any government money available for Nanjing unless the German government was willing to offer aid for the $600 million in German projects there. There were no indications in late April that the Ger-

Postponed Plant Contracts

Type of Plant	Contractor/Licensor	Value Total (US$ million)	Value Percent delivered[1]
Baoshan Steel Mill		*840*	
1. Hot rolling	Mitsubishi	340	0
2. Cold rolling	Schloemann-Siemag consortium, including Wean United, US	500	0
Nanjing Petrochemical Complex		*1,050*	11
1. Two ethylene	Toyo/Lummus, US	200	—
2. Two high-density polyethylene	Mitsui, C. Itoh	90	—
3. Vinyl chloride monomer	Toyo/Mitsui Toatsu	55	—
4. Polyvinyl chloride	Shinetsu Chemical/ Nichimen	70	—
5. Hydrotreater	Chiyoda Chemical/Chevron, US	45	—
6. Aromatics	Lurgi/UOP, Union Oil, US	185[2]	—
7. Terephthalic acid	Lurgi/Amoco, US	185[2]	—
8. Polyester resin	Zimmer, West Germany	220	—
Shengli Petrochemical Complex		*635*	48
1. Ethylene	Toyo/Lummus, US	100	—
2. High-density polyethylene	Constructors John Brown, UK/Union Carbide, US	50	—
3. Vinyl chloride monomer	Toyo/Mitsui Toatsu	55	—
4. Polyvinyl chloride	Shinetsu	70	—
5. Aromatics	Toyo/UOP	45	—
6. Oxoalcohols	Davy McKee/Union Carbide, US	35	—
7. Caustic soda	Mitsui/Diamond Shamrock, US	200	—
8. Butadiene and synthetic rubber	Nippon Zeon	30	—
9. Epichlorohydrin, synthetic glycerin	Asahi Chemical, Japan Gasoline Corp.	50	—
Dongfang Petrochemical Complex			
Acrylic acid, acrylic ester	Mitsubishi	30	54
Qingdao Petrochemical Complex			
Methanol	Lurgi	50[2]	—

[1]Percentages shipped reported in the *Far Eastern Economic Review*, Feb. 20, 1981, p. 47. An April 5, 1981, Kyodo report suggests that about 45 percent of the Japanese petrochemical equipment remained undelivered at that time.
[2]The three affected Lurgi contracts total $420 million, but the value of the individual contracts are estimates.

Table prepared by Martin Weil.

man government is as receptive to the Chinese proposals as are the Japanese.

Despite the complexities, companies involved in the petrochemical contracts are considerably more sanguine about their prospects than several months ago. Japanese companies have been told by high-ranking Chinese economic planners that the contracts will be honored.

Baoshan on Indefinite Hold

Although stage one of the Baoshan steel mill might yet go forward—if the Japanese loans come through—there have been no serious moves to revive the Schloemann-Siemag and Mitsubishi rolling-mill contracts. The fact that no equipment has yet been shipped makes the contracts somewhat easier to stop. In addition, China would have to add more iron and steelmaking facilities, as well as a continuous caster, to supply the mill. And that is something China has indicated it does not wish to do. Finally, China's deemphasis of heavy industry under the readjustment program has cut demand for flat rolled steel more than for petrochemical fiber.

Mitsubishi is reportedly asking for 30 percent compensation on its $340 million contract. Schloemann-Siemag, on the other hand, may have requested about 50 percent of the $500 million value of its contract—an unrealistically high amount, some observers feel. The Chinese were not known to have offered any terms as of April, and there is no cancellation clause in the contracts to cover the contingency. Given China's unfamiliarity with some of the companies' underlying costs (such as precontract expenses and opportunity costs), the negotiations promise to be protracted.

Political Fallout

Chen Yun has succeeded in at least temporarily cutting off domestic funds for the petrochemical projects, but the move to revive them with loans cannot be a development he is happy with. A commentary reflecting his views in the April 9 *People's Daily* stated, "We absolutely cannot do as some comrades advocate: when money, equipment, materials, etc., are not available domestically, then borrow from abroad, buy from abroad, and stretch our hands abroad. This kind of thinking and action is undependable and impossible."

Another policy gyration cannot be ruled out, and the possibility that loans could be lined up and then vetoed at the highest level cannot be completely discounted. The practical difficulties of disengaging from the contracts however, and the danger to China's international reputation, seem to be propelling leaders toward continuing them, albeit at a slower pace and on a smaller scale. Stopping projects, the Chinese are learning, is much harder than starting them. 完

*Among the petrochemical installations not slated for cancellation are the Yanshan (near Beijing) and Daqing petrochemical complexes, which the Chinese have informally told companies will be delayed, and Shanghai's Jinshan aromatics-polyester complex, which will go ahead as planned. These projects, the *CBR* has learned from industry sources, require relatively modest infrastructure investment, particularly at the existing Yanshan and Jinshan complexes. Moreover, all of them probably have access to sufficient feedstock. Daqing would run on gas from nearby oilfields, while by-products from existing refineries could supply the Yanshan and Jinshan complexes.

* *

National Council members may contact the CBR *for background to the story and details that could not be published.*

Design Engineering

Two contracts provide a blueprint for future opportunities.

Martin Weil

Knowing how to design a complicated plant, the Chinese have learned, is just as important as knowing how to manufacture advanced equipment. Hence the new interest in engineering contracts that offer China blueprints, advisors, and a course of instruction on how to put together a plant using unfamiliar technology.

The need for such assistance became apparent in the mid-1970s during the construction of the eight M. W. (formerly Pullman) Kellogg ammonia/urea fertilizer plants. Even as these plants were being built, the Chinese tried to build a comparable plant in Shanghai without any foreign assistance, part of which was commissioned with great fanfare in 1979. The experience of building this plant, however, seems to have driven home the complexity of the design engineering task, because in January 1979, the PRC sought help from Kellogg Continental (Holland) for a new urea plant.

Under the contract with Kellogg, the company is taking charge of the design work, but is working with Chinese equipment suppliers. This arrangement is in many ways a prototype of two design engineering contracts recently concluded with the US firms Roberts & Schaefer (an Elgin Industries subsidiary) and Ebasco (an Enserch subsidiary).

The Roberts & Schaefer Case

The company's $30 million contract for a 920 ton-per-hour (approximately 3 million tons per year) coal-washing plant in the Yanzhou, Shandong, underground mining area, represents one of the hardest-earned successes in US-China trade. The Chicago-based firm began negotiating in early 1978 with TECHIMPORT, which was acting on behalf of the Ministry of Coal. Like so many other proposals at the time, this one involved the supply of a virtually complete plant. The company believes it was on the verge of clinching the agreement at the beginning of 1979, when many other contracts were being signed.

Before the few remaining details could be finalized, however, China's initial economic retrenchment began. Negotiations with Roberts & Schaefer were broken off for over a year. In the end, the delay cost the ministry more than the company, since the washing plant will now come onstream two to three years behind the Xinglongzhuang coal mine that will be its raw material source.

Negotiations began again in March of last year. Unlike other planned projects that were postponed in 1979, this one remained a high priority, for reasons that are easy to see. Less than 10 percent of Chinese coal is currently washed at all, and Chinese technology is based on outdated Soviet designs. Coal washing or "beneficiation" (which removes useless or harmful material from coal) increases the quality of coal while reducing its volume, a process that facilitates transportation and increases the efficiency of coal-burning machines and plants.

When the Chinese began negotiating again, however, they indicated that the terms would have to be changed so that Chinese factories could supply a larger share of the plant's equipment. This began a several-month process of give and take over how to accommodate the request while meeting company quality standards. Earl Antonson, senior vice-president of engineering and one of the company's chief negotiators, affirmed that Roberts & Schaefer was able to adapt, but adds, "We took a firm stand on the major items."

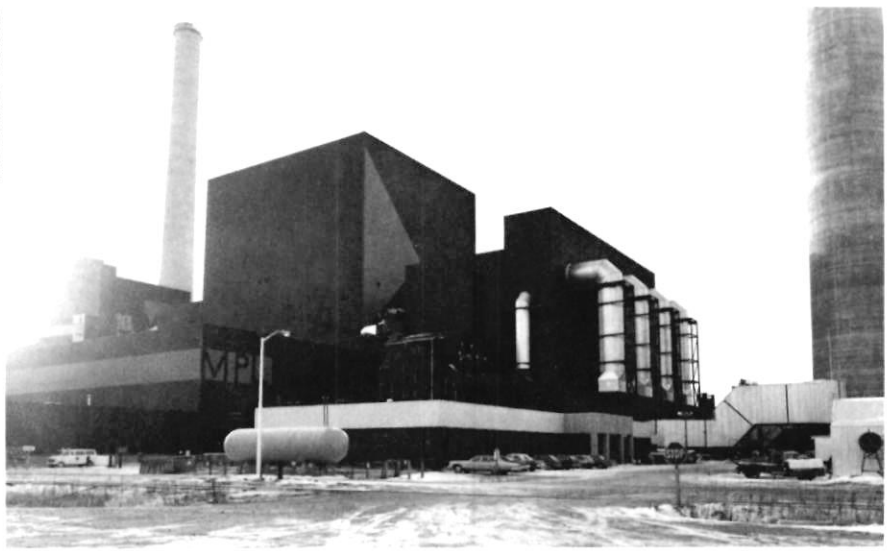
He sensed that Ministry of Coal negotiators, whose primary concern was obtaining a quality plant rapidly, would have preferred a lower proportion of Chinese-made equipment (in some cases even lower than what the company agreed to). Their interests, however, conflicted with those of the First Ministry of Machine Building (also represented on the Chinese negotiating team), which wanted as many orders as possible. Antonson believed that each ministry had veto power and that "On some occasions when we would lose contact with them for a few days, disagreements were being ironed out privately."

The final contract stipulates that as much as 50 percent of the equipment and materials (in value) is being made in China. All major process equipment however, such as pumps and flotation machines, will come from Roberts &

Schaefer or subcontractors such as the Denver Equipment division of Joy Manufacturing. The Chinese factories will be responsible for nearly all of the structural and fabricated metal work, such as sumps, chutes, and tanks. Some of the drawings and specifications for Chinese-made parts are to be furnished by the company. It is understood that they are not to be used for other plants.

The plant design calls for a coal-washing process that includes pure and artificial gravity separation, and froth flotation to produce three different grades of coal: exportable high-grade metallurgical coal; lower-grade coal for domestic metallurgical use or possibly for export as steam coal; and middlings for use in Chinese power plants.

Photo courtesy of Ebasco



Huainan, Anhui plant will resemble Clay Boswell Unit No. 4 (above), recently completed by Ebasco in Minnesota.

The basic plant design was developed in the US over a three-month period ending in April 1981. The Chinese sent nine engineers to ensure that Roberts & Schaefer's design matches the contract's stipulations. No formal training program is being offered to these engineers, whose competence greatly impressed their Roberts & Schaefer counterparts.

The Chinese are taking charge of detailed engineering which includes wastewater disposal. The company's contribution to environmental engineering will be to design a scrubbing system for the thermal dryer. This is a more limited involvement in pollution control than would be typical in the US.

There will be no direct contact between the company and the Chinese equipment suppliers; all communication will be channeled through TECHIMPORT and the Ministry of Coal. Yet the company will have a team of perhaps six people on site as construction advisors. Construction is targeted to begin this summer, and finish up by 1984.

The Ebasco Case

Ebasco's December 1980 contract calls for the design of one power plant with two 300-megawatt (mw) coal-fired generators at Shiheng, Shandong, and one with two 600-mw generators at Huainan, Anhui. The contract goes even further than Roberts & Schaefer's in isolating design engineering as the key element in the arrangement.

The decision to seek Ebasco's assistance follows several purchases of plants with 300-mw generators in the mid-1970s, and at least one attempt to design and manufacture such a plant in China. The first Chinese 600-mw generator plant is being built at Yuanbaoshan, with Alsthom-Atlantique supplying the turbogenerators (*see CBR*, Mar.–Apr., 1981, p. 12).

Ebasco will develop the basic engineering design for the Anhui and Shandong plants in the company's Lyndhurst, New Jersey, offices. The Chinese, at the same time, are making an intensive effort to study the company's methods. According to Nicholas DeSpirito, general sales manager for international business development for Ebasco, fully 44 people from the Shanghai Design Institute of the Ministry of Electric Power will participate in the preliminary engineering and design for a ten-month stretch in 1981–82. They will become familiar with what Ebasco calls its "reference plant," a model developed over the years into which engineering variables are plugged to determine plant specifications and configuration. DeSpirito believes that the Chinese hope to learn enough about the reference plant to be able to design future 300- and 600-mw unit power plants on their own.

Environmental designing, and specifically flue-gas desulfurization, are among the techniques the Chinese most want to learn from Ebasco. Although the latest scrubbing technology will be incorporated in the blueprints, the Chinese may delay installing the expensive systems.

Ebasco's role changes to that of an advisor after preliminary engineering is completed. Ebasco advisory personnel will be stationed in China, where detailed engineering and design will be undertaken by the Chinese. Ebasco construction and startup advisors will also participate in the construction phase of the projects.

Equipping the plant to meet company quality standards is a major challenge facing both the US and Chinese sides. Ebasco, unlike Roberts & Schaefer, only has an advisory responsibility for equipment procurement. Many of the equipment suppliers have yet to be determined. But the two most important pieces—the boiler and turbogenerator—are to be among the first produced by Chinese factories under licensing arrangements with Combustion Engineering and Westinghouse (*see CBR*, Mar.–Apr., 1981, p. 9). This unusual arrangement presents potential coordination problems, not only because of the Chinese factories' inexperience but also because the First Machine Building and Electric Power ministries will need to cooperate.

But so far DeSpirito is impressed with the competence of the Chinese engineers and remains optimistic that trial startups of one generator per plant will take place as scheduled in 1985–86, and that full startup will begin in 1986–87.

Do the Roberts & Schaefer and Ebasco deals mark the beginning of a new trend in technical transfer to China? The combination of pure engineering services with the procurement of Chinese-made equipment manufactured under license represents one of the boldest and most sophisticated attempts, in China or anywhere else, to combine "self-reliance" with "learning from abroad," and could well become a model for engineering projects involving unfamiliar technology. 完

Construction in Beijing

A. J. Robinson

New buildings in Beijing are erected by six major construction companies. Each company works in different zones, has its own staff, vehicles and machinery, and takes pride in having contributed notable landmarks to Beijing's rising skyline.

The No. 1 Construction Company, for example, which conducts most of its work south of Tiananmen Square, had a hand in building the Beijing Exhibition Center, the Telegraph Building, the Great Hall of the People, and Chairman Mao's Memorial. In March 1981 the company broke ground for the construction of the 528-room Jian Guo Hotel, a $20 million joint venture between China International Travel Service and a Hong Kong developer. The No. 5 Company has built many giant residential apartment blocks, while the No. 6 Company recently began work on the Great Wall Hotel, another foreign joint venture scheduled for completion in 1983.

Supervising their work is the Beijing Construction Bureau. Its staff, together with the six companies, two specialized assembly plants, a component parts facility, hospital and research institute, comprise a total of 30,000 workers and staff.

Above the bureau is the Beijing Municipal Capital Construction Commission. It directs all projects in the city and draws up an annual plan together with the Beijing Municipal Planning Commission. The annual plan is turned over to the bureau for implementation, which refines the plan and allocates projects and construction machinery to the six building companies it supervises. The Beijing Design Academy, the architectural branch of the municipal government, has over 1,000 technical personnel who design all of Beijing's major buildings and propose the building estimates that form the basis for contract negotiations between the construction companies and their customers.

At the top of the organizational ladder is the State Capital Construction Commission, which was given more authority last year to coordinate all large- and medium-scale projects in China. It supervises all lower-level capital construction commissions throughout China's 29 provinces, autonomous regions, and three provincial-level municipalities—Shanghai, Tianjin, and Beijing.

It is this hierarchy that decides which projects are included in the annual plan, and how they should be ranked in importance. The Beijing Planning and Beijing Construction commissions usually handle proposals in one of three ways: reject the project, instruct the enterprise to do the work itself, or forward it to the Beijing Construction Bureau for assignment to one of its companies.

Once a company receives a project assignment, a "three-in-one" planning process begins. Representatives from the construction company, the Beijing Design Academy, and the customer flesh out the specifics of the proposal. Upon reaching a consensus on floor space, structure, construction methods, technology, and scheduling, the academy draws up a cost estimate. Simultaneously, the company requisitions the necessary raw materials and machinery. When all is finalized, the company signs two contracts—setting a delivery date and specifying construc-

Planning to Build in China?

Expect protracted negotiations.
Capital construction in China is now more centralized, owing to a State Council decision last December which strengthened the authority of the State Capital Construction Commission over all large- and medium-scale projects. As a result, many projects negotiated at the local level will now require approval from a host of central government agencies in charge of planning, finance, and construction supplies. The key is to get a project labeled as a top priority by the State Capital Construction Commission and State Planning Commission. There is no guarantee that a project will not be postponed or cancelled, but once firmly rooted in the annual plan, the odds improve that a project will become a reality.

Secure your supplies.
Serious transport and bureaucratic problems force many Chinese construction companies to manufacture all their own building materials. If their materials run out before a project is completed, months may be required to obtain the needed supplies from a source that is controlled by another arm of the government.

Avoid novel building procedures.
Business people should sensitize themselves to the challenge of a joint venture or other building project in the Chinese construction context. Chinese construction managers, for the most part, are seasoned veterans who have witnessed few deviations in construction methods during the last two or three decades. A new project incorporating Western building methods represents a change from business as usual. Hence, it will take time for Chinese construction managers to revamp their planning, scheduling, and evaluation systems.

tion details. The customer then deposits the agreed-upon sum of money in the bank; the company draws on this amount over the course of construction.

A Case Example: The Beijing No. 1 Construction Company

Since its creation in 1949, the Beijing No. 1 Construction Company has grown into one of the largest construction companies in all of China. Currently it employs 11,000 people (35 percent of them administrative and support personnel). Each year it completes close to 350,000 square meters of floor space, primarily in government buildings, apartments, and warehouses, at a value of roughly ¥60 million ($40 million).

Structure of the No. 1 Company. The No. 1 Company's organizational structure is typical of the other construction companies (*see chart*). It is divided into 12 departments reporting to four deputy managers who, in turn, are responsible to one manager. Actual construction work falls on the shoulders of four construction districts, each averaging 2,000 workers and headed by a leader overseeing functional departments patterned after the top company hierarchy. The districts supervise teams of laborers averaging 200 people. Within each team are a leader and six to seven foremen.

Districts have a great deal of autonomy and together with teams formulate monthly plans. Teams are left to determine ten-day plans that are further broken down into daily schedules by leaders and foremen. Work teams are sometimes deployed in different construction sites within a district.

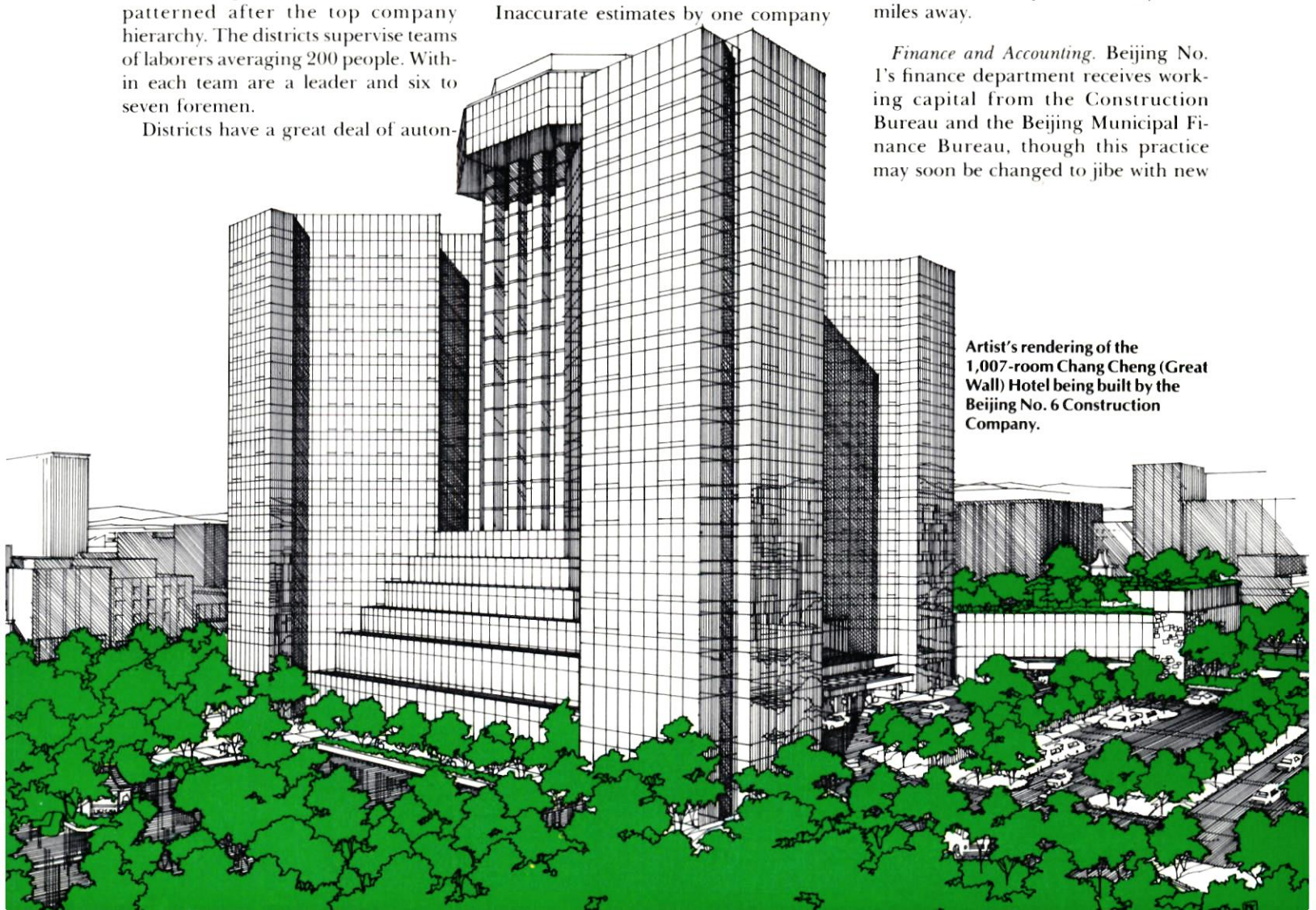
The No. 1 Company manufactures some of its own building materials including steel frames, marble, terrazzo, and prefabricated concrete walls. The districts contain specialized machinery groups traveling from site to site as needed. Plumbers, electricians, excavators, and skilled hoisters also form specialized groups.

Logistics. The production planning department is the nerve center of No. 1. It is charged with the allocation of quarterly targets for the completion of floor space to the districts, and rationing the limited amount of company machinery. This is no easy job, given the company's strained and inadequate communication and transportation facilities. The limited amount of large heavy construction equipment shared by all six Beijing companies necessitates accurate planning by both company and Construction Bureau forecasters. Inaccurate estimates by one company can derail another's project, if both require the same resource.

Raw material shortages and shipment delays also play havoc with planning schedules. Steel, wood, glass plates, and cement are all requisitioned from the bureau. The bureau then has to request these materials from other state agencies, particularly rationed items listed in the state plan. Meetings to allocate key ingredients are held only twice a year with the State Planning Commission and Ministry of Building Materials. This process, of course, takes time and frequently contributes to project delays or suspensions.

An incident that occurred last summer illustrates the extent of the supply problem. Beijing No. 1 found itself at capacity in its prefab concrete molding plant. It turned to other plants under the Construction Bureau, but they couldn't help. Either it had to delay an important project or seek concrete moldings from outside sources. The company actually had no choice but to subcontract out. Ironically, the difference in cost was not that great. The big worry was bureaucratic red tape and delivery problems, even though the other plant was only a few miles away.

Finance and Accounting. Beijing No. 1's finance department receives working capital from the Construction Bureau and the Beijing Municipal Finance Bureau, though this practice may soon be changed to jibe with new



Artist's rendering of the 1,007-room Chang Cheng (Great Wall) Hotel being built by the Beijing No. 6 Construction Company.

national directives. Smaller projects will still be funded by local budget allocations, but larger projects—including those involving foreigners—will be financed through bank loans arranged by the People's Construction Bank of China (*CBR*, July–Aug., 1980, p. 17). The PCBC has been granted the authority to charge penalties for late interest payment, to freeze or halt loans, and to demand project feasibility studies. In short, it will act as the final watchdog over large investment projects.

Under self-management reforms, Beijing No. 1 has been allowed to retain 35 percent of its yearly profit, while submitting 65 percent to the Construction Bureau and Municipal Finance Bureau. A company's profit is best defined as its ability to construct a building at a lower cost than specified in the budget plan or negotiated contract. The company deducts welfare expenses from this difference to cover workers' housing, school, and health-care facilities. The leftover constitutes the firm's annual profit.

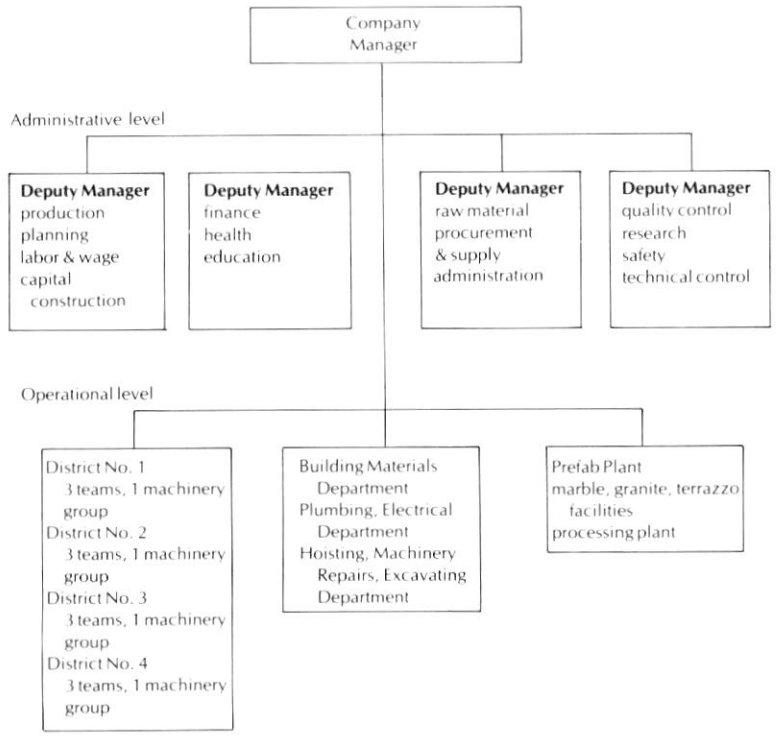
Profit retention represents a new kind of social pressure for No. 1's management. Though management is free to decide how to use profits, its proposals must be ratified at a workers' congress held once a year. Therefore the decisions to earmark so much for a new crane versus a new welfare program are taken seriously.

The tremendous amount of routine work besetting the company generates a great deal of pressure. A manager may devote as much as 30 percent of his working hours to filling out daily, weekly, monthly, quarterly, and annual reports. Moreover, collective decision-making results in daily and weekly company meetings, accompanied by numerous consultations with bureau officials. The effect on the pace of construction work is apparent.

Standards and Quality Control. The company, districts, and teams operate under eight production and quality standards issued by the Municipal Capital Construction Commission: (1) quantity of floor space completed; (2) annual sales volume; (3) labor productivity; (4) quality; (5) safety; (6) utilization rate of machinery; (7) total building costs; and (8) management of working capital.

In mid-1980 these eight were being reduced informally to four: (1) sales per worker; (2) quality; (3) floor space completed; and (4) profit. The basic eight are still recorded and passed on to the Construction Bureau and other authorities—but only the new four are required.

Organizational Structure of the Beijing No. 1 Construction Company



SOURCE: As disclosed by officials of the Beijing No. 1 Construction Company to A. J. Robinson, August 1980.

Since a company's profit-potential lies in its ability to minimize costs through greater labor productivity and construction innovation, it has a keen interest in performing well on a given project. Planners in the No. 1 company, and at the district and team level rely on past experience in scheduling work to achieve better-than-expected results. Prospective foreign partners should note that the use of new building methods and materials will require revising existing standards or adopting new ones. Here again, there may be time delays as Chinese companies adjust to new building methods.

Beijing construction companies pride themselves on a job well done. Their reputation for quality depends on a rating of excellent or satisfactory according to the basics: foundation, structure, floors, doors, windows, decoration, water-proofing, water, heat, and electricity. If 50 percent of the above categories are judged excellent, the entire project earns an "excellent" rating.

The workers' congress and management of Beijing No. 1 Construction Company have set a goal of 80 percent excellent ratings for all projects this year. Officials at Beijing No. 1 are quick to point out that although their chief responsibility is to meet the year's quota for completed floor space, *quality* will never be sacrificed. But there are no financial penalties for missing a deadline; and a customer has little recourse unless the work is a priority project. The best customer safeguard against delay is to rely on a company's desire to maintain its good reputation. 完

A. J. Robinson interviewed officials of the Beijing No. 1 Construction Company for nearly four weeks in June and July, 1980. His report is currently used as a case study by China's first business school, the National Center for Industrial Science and Technology Management Development in Dalian, Liaoning Province. Mr. Robinson holds a master's degree from the Harvard Graduate School of Business Administration.

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National Council members may contact the CBR *for background to the story and details that could not be published.*

China's Draft Patent Law

China's State Patent Bureau is ready to present a draft version of the PRC's first patent law to the Sixth National People's Congress for ratification this spring. This information comes from a US delegation that visited China last November under the auspices of the State Scientific and Technological Commission. Comprised of five officials from the US Patent and Trademark Office and six lawyers representing the New York-based Licensing Executive Society, the delegation consulted with more than 30 Chinese organizations active in the licensing of foreign technology in China.

The Patent Bureau, set up a year and a half ago by the State Council, is located temporarily at the No. 24 Workers' Stadium in Beijing. Officials at the bureau indicated that its current staff of 200, including examiners, researchers, attorneys, and administrators, will climb to more than a thousand in coming years.

The new law will protect exclusive patent rights granted to foreign firms doing business in China. China will issue three kinds of patents: normal patents lasting for about 15 to 17 years; utility-model patents covering minor inventions with a five-year term renewable for a second five years; and industrial design patents also with an initial five-year term that is renewable.

Filing Procedures

Under a provision in the draft law calling for reciprocal priority rights, a company will have a one-year period, starting from the date it registers an application in its home country, in which to decide to file for patent protection in China. In practice then, the Patent Bureau will only accept foreign applications for new, patented technology.

Chinese state-owned enterprises must also first apply for a domestic patent if they seek patent protection abroad. The Patent Bureau has decided that Chinese innovators will receive rewards for their resourcefulness, but patents will be assigned to their employer. Chinese organizations cannot prevent exploitation by other Chinese parties, but will receive compensation for the dissemination of their patents. An exception to the rule concerns the 5 percent of the population that does not work for the state; their inventions will be assigned and remunerated on an individual basis.

Foreigners must submit applications through the Legal Affairs Office of the China Council for the Promotion of International Trade (CCPIT), which is training a staff to handle appeal and infringement cases as well as processing. China is considering levying criminal penalties for patent violations; these are typically civil crimes in Western countries.

China has adopted a deferred-examination system under which patent applications will not be examined by the Patent Bureau for substance as a matter of course, but only when formally requested by the applicant and accompanied by a processing fee. All applications will be published 18 months after filing, and the applicant must request an examination within two years from that date or the case will lapse. Thus, foreign firms will have about three and a half years from the time of filing with the Patent Bureau to determine whether its invention covered by a patent has a strong enough commercial future to warrant a request for protection in China. The Patent Bureau will allow six months after the patent is granted for the public to oppose its issuance.

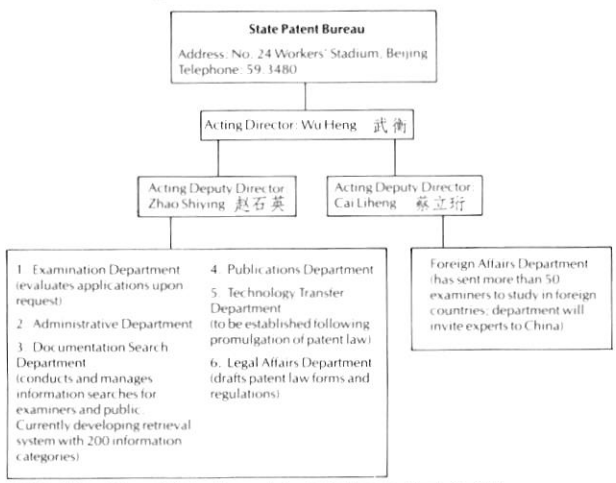
Areas of technology that do not qualify for protection under China's draft patent law include: chemical products and compounds (including all pharmaceuticals); animal and plant species; food and beverages; nuclear and atomic energy inventions; and computer software.

The US delegation held extensive discussions with officials of the State Scientific and Technological Commission, the ministries of Chemical Industry and Metallurgical Industry, among others, in an effort to persuade China not to exclude chemical products from patent protection. But Beijing contends that no one firm should have exclusive control over the manufacture of chemical products since many are essential for human well-being.

Good for Confidence

The new patent system should expand business cooperation in a number of ways. With the publication of each patent 18 months after filing, foreign firms will be receiving a form of free advertising. Information pertaining to who is doing what and where will be distributed regularly by the Patent Bureau to industrial ministries which will in turn pass it on to their subordinate enterprises. —Karen Berney

Organization of the State Patent Bureau



SOURCE: National Council Beijing Representative Scott Seligman, March 17, 1981

How the Port of Portland Meets the Challenge of Breakbulk Cargo

Donald Grigg

The growth of US-China trade has required special measures to match Chinese cargoes with modern US freight-handling systems. One example is the monthly ocean-rail mini-landbridge service through the Port of Portland offered by China Ocean Shipping Corporation (COSCO). The development of Chinese container manufacturing and container-handling facilities eventually will modify the special needs of Chinese shipping, but this will take time. The following article indicates how one major West Coast port developed arrangements to fulfill a growing role in US-China trade.

Regular monthly Chinese-flag service from Shanghai to Portland has been maintained since February 1980, except for a brief diversion after the eruption of Mount St. Helens. General cargo is carried eastbound—nails from MINMETALS, piece goods from CHINATEX, foodstuffs from CEROILS, and baskets from ARTCHINA—with US grain carried on the return voyage.

This service, the work of the China Ocean Shipping Corporation (COSCO), is offered on an ocean-rail mini-landbridge basis through Portland to more than 20 cities in the US and Canada, with onward rail shipment covered by a single ocean bill of lading.

COSCO's shipping requirements presented Portland with a complex operational problem. Each month a shipload of breakbulk cargo—cartons, bales, drums, and crates of every size and dimension—must be unloaded and immediately reloaded onto rail trailers. According to Captain Peter Norwood, Portland's marine director, a number of factors helped Portland meet this challenge: "three transcontinental railroads, a genuinely enthusiastic International Longshoremen's and Warehousemen's Union (ILWU) labor force, diversified marine facilities, proximity to the railhead, and non-congested facilities."

Portland first became acquainted with US-China shipping several years ago, when the port authority conducted a technical seminar in the city and then followed it up with several trips to China. Parties from both countries discussed port management, computer technology, facilities and equipment, container operation, rates and tariffs and, most important, the US distribution network. Port officials had to explain to the Chinese the complex roles of competing private companies at each step of the transportation system.

By nature, breakbulk is a slower operation than container use, but vessel discharge and trailer loading has worked smoothly. "Three-fourths of the trailers are loaded by the port and delivered to the railroad within five days after vessel discharge," says Norwood. To avoid operational and documentation snags, the port has worked closely not only with COSCO, but with the Port of Shanghai, China Ocean Talley Company, China Ocean Shipping Agency, Stevedore District No. 5 in Shanghai, and Kerr Steamship Corporation, COSCO's US agent for West and East Coast breakbulk service. The Portland longshore labor force has been involved since the early planning stages. Bill Luch, secretary of ILWU Local 8, points out that the US-PRC shipping "is bringing a lot of work to Portland. One recent ship had 43,000 individual boxes."

Port officials acknowledge a few difficulties with the COSCO service on final delivery times. "We've run into cases in which shipping instructions negotiated between buyer and seller did not mesh perfectly with COSCO's mini-landbridge concept," says Norwood. "This has led to some delays, but we've worked with a number of companies to iron out difficulties and speed up delivery."

COSCO's US service is expected to be upgraded technologically as the Chinese shipping fleet grows. China recently has purchased eight new ro-ro (roll-on, roll-off) container vessels from Kawasaki Heavy Industries in Japan, and has established joint ventures to manufacture containers (*see CBR*, Nov.–Dec., 1980). Container service to the West Coast was inaugurated in March, and monthly container service between Shanghai and Portland is under consideration.

"When COSCO is able to offer container service, US exporters will have a new regularly scheduled shipping option to China," according to George Nakata, market manager of Portland's China program. "Right now, US suppliers usually quote prices fob (free on board) at a major port, and buyers receive quotes cif (cost, insurance, and freight), but we're seeing more cif quotes from US exporters. We've received some inquiries about shipping arrangements and we've been able to assist some US firms."

The recent signing of the US-China maritime agreement has cleared a number of hurdles to further activity by COSCO and American-flag carriers. Mutual access to ports has been increased, with each side guaranteed one-third of bilateral cargo. These developments undoubtedly will result in increased activity and new challenges for US ports, including the Port of Portland.

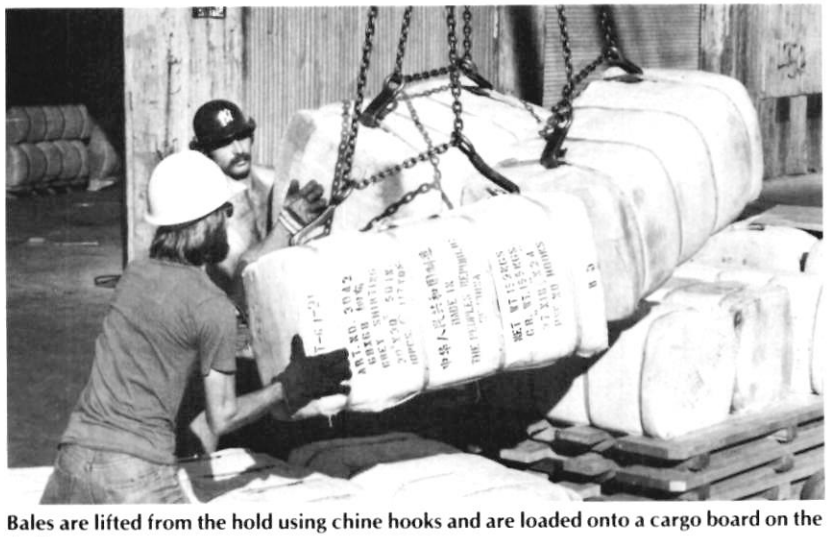
Packages of all sizes and shapes call for extra care, particularly when jade arrives loosely packaged in cardboard boxes.

The *S.S. Rong Cheng* arrives at Terminal 4 at the Port of Portland, laden with general cargo. Monthly Chinese-flag breakbulk service between Shanghai and Portland links China to more than 20 cities throughout the US and Canada.

Breakbulk cargo is assembled by hand on cargo boards in the vessel's hold, since palletization at the point of manufacture is not yet common in China. There is a shortage of inexpensive wood in China for pallet construction; and shortage of space at Shanghai's congested port makes it difficult to load cargo onto pallets at dockside.

Bales containing textiles are loaded onto cargo boxes.

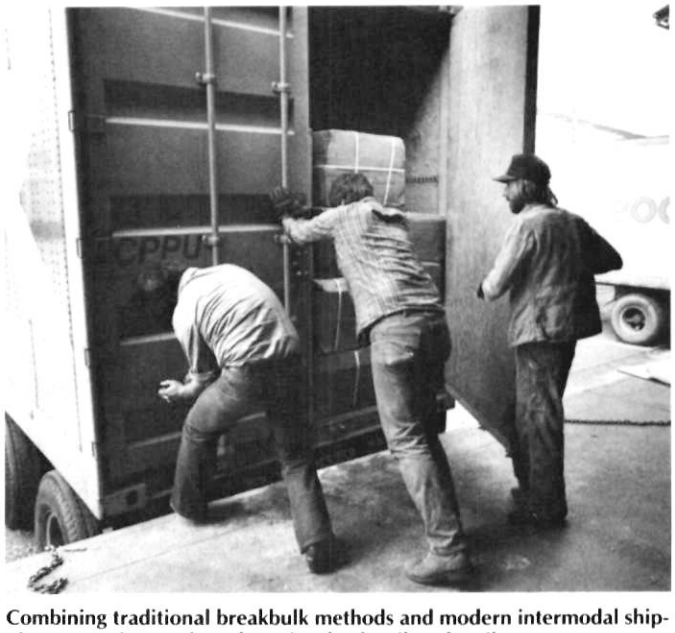
Two cargo boards are lifted from the hold using a double-robot.



Bales are lifted from the hold using chine hooks and are loaded onto a cargo board on the deck.

Cargo is placed in a transit storage area to await loading into railroad trailers.

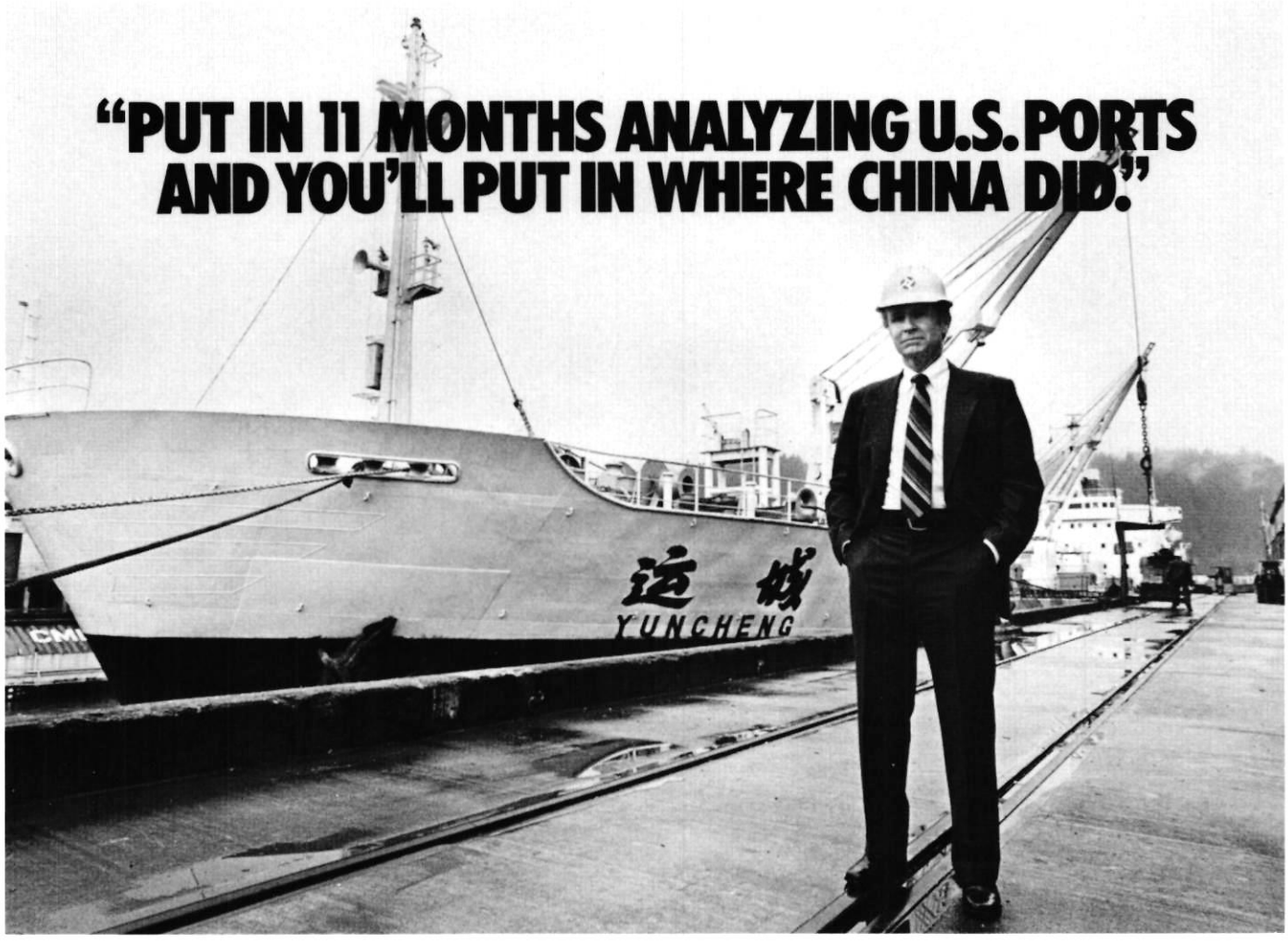
A wide variety of packaging requires custom-designed freight-handling techniques.



Combining traditional breakbulk methods and modern intermodal shipping: cargo is transferred to piggyback railroad trailers.

Port of Portland security guard places a special cable seal-lock on the trailer door.

A railroad trailer is loaded onto a Chicago-bound railcar chassis at Burlington Northern's yards.



Mr. Lloyd Anderson, Executive Director, Port of Portland, reveals why the People's Republic of China made the decision they did.

"On February 18, 1980, the China Ocean Shipping Co. vessel RONG CHENG put in at Portland, Oregon, to unload the first import cargo shipped between these two countries by a Chinese flagship in 31 years.

"Anyone who knows the Chinese, knows they didn't make this selection lightly. They methodically analyzed a variety of U.S. ports. What they discovered should be of interest to anyone involved with international trade.

"THEY WANTED TO WORK WITH THE ONES DOING THE WORK."

"First and foremost, the Chinese sought efficiency. Maximum speed, minimum hassles. Rather than deal with leasors and leasees, they wanted to deal with the ones who run things. This narrowed the field appreciably; on the entire West Coast, there is only one major operating port. Portland.

"THEY NEEDED A PORT THAT COULD HANDLE IT ALL."

"While China will no doubt soon expand to other ports,their first location had to be well-equipped for all their cargo needs. Another point for Portland.

"Besides our rather well-known breakbulk capabilities, we also offer state-of-the-art container, steel, grain, ro-ro, log and auto facilities. All with one thing in common: uncommon efficiency.

"THEY INSISTED ON DIRECT INLAND ACCESSIBILITY."

"Obviously, all our streamlined operations don't mean much if cargo doesn't move swiftly on to its final destination. So we put together a *total* distribution package for them, in essence acting as their domestic traffic consultant.

"We worked with the steamship line's agent, rail lines and several truck lines to synchronize the entire shipment. From our docks, all the way to each of 26 markets in the eastern U.S. and Canada.

"CONDUCT YOUR OWN ANALYSIS."

"All of this may sound impressive but, for one reason or another, not leave you totally convinced. Fine. In that case I would urge you to undertake a little evaluation of your own.

"Simply route a trial shipment through Portland. While this may not be quite as scientific as the Chinese method, we suspect you will arrive at roughly the same findings, i.e., your cargo will reach its destination in less time than usual, with fewer foul-ups. At most competitive rates.

"Call our local representative or, in the continental U.S., toll-free 800-547-8411. (Inside Oregon call 231-5000.) And arrange your own analysis. Certainly the stakes are high enough to warrant a little comparison shipping."

Port of Portland

CEROILS

Tending the Grain Business

Karen Berney

The New York branch office of the China National Cereals, Oils, and Foodstuffs Import and Export Corporation (CEROILS) has made remarkable progress since it opened for business one year ago in China's mission to the United Nations. In January it became the first Chinese foreign trade corporation to move out of the 520 12th Avenue offices. CEROILS now has offices on the 15th floor of One Penn Plaza, complete with a sign outside the door, four wall-to-wall-carpeted rooms, and an electronic information console that keeps track of trends in the world's commodity markets.

On any given day, the attention of Mr. Cai, one of CEROILS' three New York representatives, is fixed on a computer screen displaying the minute-by-minute ticker tape of the Commodity News Service. His colleague, Mr. Liu, is sifting through piles of USDA crop and weather publications or weekly editions of *Milling and Baking News*, which covers recent grain transactions.

CEROILS' New York operation is Beijing's strategic listening post on the volatile US grain market; it has no authority to negotiate or sign contracts. Every evening, at the close of the Chicago Board of Trade's business, Cai and Liu analyze the day's myriad clues to the market—temperatures in the wheat belt, dock strikes, spot prices—to anticipate price fluctuations and thereby advise CEROILS' Beijing headquarters when it ought to buy and sell. Errors of judgment and timing can be expensive. Failing to second-guess when Washington was going to lift its embargo on grain sales to the Soviet Union, for example, could have cost Beijing millions of dollars in a big deal.

The Purchase Decision

China's string of long-term bilateral grain accords with the US, Canada, Australia, Argentina, and France will ensure Beijing annual access to between 12.3 and 17.2 million metric tons of grain in the coming years. As China's leading billion-dollar grain supplier,

China's Ministry of Food

The key planning body in charge of grain imports is China's Ministry of Food. Headed by Zhao Xinchuo, the ministry was formally restored in 1978 after having been merged with the Ministry of Commerce for ten years. It is responsible for all cereals and edible oils from the time the raw products leave communes and state farms until they reach state retail counters. This includes storing, processing, transporting, and distributing the food. Such activities provide the ministry's planning bureau with a data base for determining import needs.

Information on the ministry's 17 bureaus and their functions was provided by Gene Vickers, who has visited China many times in his former capacity as executive vice-president of US Wheat Associates. His findings:*

1. Office of the Minister
2. Internal Administration
3. Finance and Accounting
4. Personnel
   recruits cadres and managers
5. Foreign Affairs
   communication and liaison
6. Grain Policy Research
7. Capital Construction
   builds storage and processing facilities
8. Design
   maintains an institute for designing storage and processing facilities
9. Education
   develops plans and curriculum for the ministry's two colleges
10. Science and Technology
    develops research projects and sets development priorities
11. Oils and Fats
    crushing and extracting activities
12. Cereal Foods and Oils Processing
    maintains more than 2,000 flour mills producing 50–2,000 tons per day and averaging 150 tons per day
13. Feedstuffs
    ingredient procurement, processing, and distribution of manufactured animal feed
14. Grain Storage and Transportation
15. Grain Procurement and Rural Supply
16. Urban Grain Supply
    distribution according to ration program
17. Planning
    procurement and distribution of domestic and foreign cereals and oils

The Ministry of Food is charged with planning, operating, and enforcing China's nationwide system for rationing grains and oils. Age and occupation determine individual food allocations. Manual workers receive more food, the amounts of which vary according to how their physical activity is classified. Conversely, the very young and old receive less food. As a general rule, rations are not altered to reflect short-term supply factors, inasmuch as China is believed to maintain grain reserves, although the size of these reserves has never been officially disclosed.

*The bureau names are not direct translations from the Chinese, nor are they necessarily listed in order of importance or authority.

the US has agreed to sell 6 to 9 million tons of grain a year through December 1984, with wheat accounting for 80 to 85 percent of the total.

The exact quantity, quality, delivery date, and port of arrival of the PRC's annual grain imports is determined by the Ministry of Food (*see* p. 45) in cooperation with the Ministry of Agriculture. The Ministry of Food makes its recommendations to the State Planning Commission, which then consults with the Ministry of Finance to establish a budget for foreign grain purchases. Procurement is handled by the Ministry of Foreign Trade through CEROILS.

With CEROILS' growing business acumen has come an increased concern with quality.

The government's decision to improve the dietary standards of the population has led Food Ministry officials to pay greater attention to specific wheat classes and flour grades to meet the quality requirements of various products, such as baked bread and high-protein noodles. Western traders report that CEROILS is showing an increasing interest in selecting foreign wheat by class as well as by origin and cost.

The Buying Process

CEROILS has a different purchasing strategy for each market. Canada and Australia, which have long-term wheat agreements with China, sell their surplus grain through public wheat boards. Twice a year, these boards meet with CEROILS to negotiate the quantity and price of their exports to China under six-month subcontracts. The long-established payment pattern calls for 25 percent down with the remainder due in 18 months with interest.

The US has no government monopoly negotiating grain deals with foreign customers. Eighty-five percent of America's worldwide exports are dominated by five private multinationals—Cargill (Minneapolis), Continental (New York), André (Lausanne), Louis Dreyfus (Paris), and Bunge (Buenos Aires). With regard to US sales to China, CEROIL officials point out that each company's annual volume depends on the interplay of supply and price factors, but generally, about half is by Cargill and 30 percent by Continental, while the remaining 20 percent is sold by André, Louis Dreyfus, and a number of small midwestern US farm cooperatives.

Though Beijing is obligated to purchase at least 6 million tons of US grain a year, it is free, under the October 22 US-China grain agreement, to choose its own US suppliers. With such massive cash orders in the offing, CEROILS is well-positioned to exploit the savagely competitive rivalries of the big five. It is also believed that CEROILS has a monetary incentive to play the market wisely: if CEROILS meets its import targets with less foreign exchange than originally allocated, it may retain a certain percentage of the difference.

Until the late 1970s, Western traders had to negotiate grain sales in Beijing. With China's opening to the West, CEROILS has adopted many of the informal business practices of other big buyers. When it wants to make a purchase, it may contact its friends in the grain companies by telephone or telex about six months before a required delivery.

More often, a grain company will approach a CEROILS representative. Cargill's man in Geneva, for example, may ring up his contact in Beijing and quote the spot price at which American farmers are selling No. 2 yellow corn to grain elevators. A discount may be offered to the Chinese, representing a small mark above the price at which Cargill can acquire the corn. If CEROILS New York thinks the time is right, CEROILS Beijing may call other suppliers to get additional bids. The

Boosting China's Demand for US Wheat

To promote US wheat exports to the PRC, Washington has given Beijing a $750,000 check to purchase the equipment for its first fully mechanized bakery from the Champion Equipment Corporation of Joliet, Illinois. The bakery project is being spearheaded by the private trade group, US Wheat Associates. US Wheat convinced the USDA's Foreign Agricultural Service (FAS) to foot the bill out of its development funds for overseas commodity markets. US Wheat Associates and the FAS negotiated and signed the equipment contract in July with the China Light Industrial Products Import and Export Corporation.

The Chinese-built and -operated 9,400-square-foot bakery is scheduled to open this October in Beijing with a productive capacity of 1,500 lbs. of bread per hour. Further down the line are other projects designed to whet China's appetite for US wheat foods. US Wheat Associates currently is seeking private and public investors for a pilot noodle factory and flour mill.

Contract Cancellations: A Time to Reap

The Chinese have long maintained reputations for being astute traders, but CEROILS' savvy exceeds that of China's other foreign trade corporations. A case in point: the so-called "contract cancellation."

China's long-term grain needs often require that CEROILS, the China National Cereals, Oils, and Foodstuffs Import-Export Corporation, sign contracts at least a year before actual shipment. But when changing market conditions present an opportunity for profit, the Chinese may sell their contract back to the exporter.

If CEROILS buys 3.7 million bushels (100,000 tons) of wheat at $5 a bushel for future delivery and the value rises by 10¢ a bushel within days or weeks, CEROILS may offer the contract back to the seller at $5.08 a bushel, thereby making a profit of $296,000. The seller then can sell the wheat on the spot market, turning a profit of $74,000, or sell it sometime in the future in the expectation that prices will continue to rise.

According to a spokesman for the Kansas City Board of Trade, contracts between CEROILS and grain merchants include clauses providing for such sell-backs. But China does not always make a profit in the deal, he noted. Beijing may have other reasons for selling purchase contracts—particularly if the Chinese crop is better than expected.

The point though, is that the Chinese do not routinely break contracts and leave the exporter holding the bag. Sell-backs conform to the trading rules, and are a particularly attractive option when a profit is in sight.

—Karen Berney

play-offs begin and result in a winner shortly thereafter.

Over the telephone or by telex, the details of the transaction, including delivery date, shipping arrangements, payment, cancellation, and arbitration terms are all hammered out. The exporter draws up a contract and mails it to Beijing to be signed.

Speedy Payment

US-China contracts typically call for free onboard delivery, and stipulate payment through irrevocable letters of credit (L/Cs). In a practice that deviates from the norm, L/Cs issued by the Bank of China to grain companies are transferred telegraphically within 48 hours, provided the exporter's shipping documents and USDA grain-inspection certificates are in order. Most US exporters—including cotton exporters— receive payment from the Bank of China via telex-to-mail or mail-to-mail, which can delay payment for up to four weeks after shipment.

Why US grain merchants enjoy such favorable payment terms has as much to do with China's need for US grain as with the financial beating suffered by the grain companies in 1973 because of canceled wheat contracts. According to one grain insider, the companies responded by presenting a united front and literally demanding instant payment from Beijing as a condition for conducting further business.

The contract cancellations in the winter of 1973 were precipitated by the discovery of TCK smut in white wheat from America's Pacific Northwest. US bulk carriers stood for 90 days at the Port of Dalian before the smut was discovered by Chinese sanitation inspectors. The grain companies argued that the fungus spread during the three-months demurrage in Dalian harbor, and that the smut could have been reduced to acceptable levels by heat sterilization if discovered earlier. However, Chinese officials blamed the grain companies, and the incident caused a considerable drop in US exports.

In late 1980, CEROILS placed its first order for 130,000 metric tons of US white wheat since 1974. The grain dealers have agreed to cover the cost of sterilization in the case of contamination while wheat farmers in the Pacific Northwest are financing the studies of two Chinese scientists at Oregon State University to increase Beijing's understanding of the TCK smut problem. Grain entering China today must meet stringent inspection requirements, which include zero tolerance of TCK smut contamination.

Logistics

Under the terms of fob sales, the exporter's responsibility ends once grain reaches "the end of the loading spout." The US-China maritime agreement signed in September entitles American flag vessels to carry one-third of the bulk cargo shipped to China. However, the entire US bulk carrier fleet is currently running the Alaska-US oil trade, and is not likely to be diverted to the less lucrative grain transport business. Hence, all US grain destined for Chinese ports is traveling on PRC-owned or chartered bottoms.

The dramatic upsurge of grain shipments to China has increased the role of US shipping agents. Strachen Shipping Company, for instance, is the exclusive representative of the China Ocean and Shipping Company (COSCO) at the Port of New Orleans. It oversees logistical arrangements for COSCO, including ship scheduling and contract negotiations with the longshoremen's union for loading services at the dock. COSCO has a similar agreement with Kerr Steamship for PRC-bound goods departing from the ports of Portland and San Francisco, while Lykes handles its ships in the Gulf ports. 完

Food Aid for China

In a significant break with policy, China has asked the international community for more than two million tons of grain and 300,000 tons of seed, to aid natural-disaster victims in Hubei and Hebei provinces.

Vital Statistics	**Hubei Province** (flood-stricken)	**Hebei Province** (drought-stricken)
Total population	46,000,000	51,000,000
Affected population	20,000,000	23,000,000
Worst affected population	6,200,000	15,000,000
daily per capita caloric consumption*	1,200–1,400	1,200–1,400
Damaged crop area (hectares)	1,300,000	6,000,000
percentage of total	35.0	90
Aid Requested by China	(million metric tons unless otherwise indicated)	
Rice		
Wheat	500,000	500,000
Soybeans	NA	600,000
Maize/sorghum	75,000	75,000
Cooking oil	NA	440,000
Milk powder	10,000	10,000
Grain seeds	NA	2,000
Cotton seeds	1,500	19,500
Fertilizer	500	500
Padded clothing	118,600	200,000
(million pieces)	1.3	4.4
(million quilts)		1.5
Medical supplies (million $US)	$13.3	$26.7
Total cost of aid package for both provinces (million $US)		$1,000
Chinese contribution		$ 300
Foreign contribution		$ 700
Foreign contributions to date		
EEC, Norwegian, Japanese pledges		$ 10
US pledge		under consideration

*Average per capita caloric intake in China is slightly above 2,000 calories a day (*see CBR*, Mar.–Apr., 1981, p. 20). The World Health Organization considers 1,800 calories a day as a basic necessity.

SOURCE: UN Disaster Relief Office report based on site visits by three teams in December and January 1981. Table prepared by Karen Berney.

China's Energy Plan for the 80s

Christopher M. Clarke

Only three years ago the Chinese were confidently, even jubilantly, expecting an oil bonanza that would pay for their ambitious program of the "four modernizations." Ten new Daqing-sized oilfields, eight major new coal bases, and 30 new electric power stations were to be supported by new trunk-line railroads and a major program of port development. Expected revenues from foreign sales of oil were to help build a modern heavy industry by the year 2000. But almost as quickly as US pumps dried up in 1973, Chinese petroleum production dreams were dashed. The country now faces an energy crisis as severe as the West's, and perhaps even more difficult to solve.

At least five major factors contributed to China's energy shortages. Historically, the country has underinvested in the transportation lines supporting the energy sector. Railroads offer a key example: 43 percent of all rail traffic in China, and some 60 percent of north-south traffic, carries coal—about two-thirds of China's output. Rail traffic increased about tenfold between 1948 and 1975, yet route length since liberation has only doubled; overall track (because of double tracking) has expanded about three times. Similarly, the production of rolling stock has shown negative growth in the past two years.

As with the rail system, underinvestment in pipelines and ports has hampered China's ability to deliver energy. Some 47 percent of the water transport under the Ministry of Communications is coal-related, yet only recently has a concerted effort been made, with Japanese assistance and financing, to improve the port system.

China's widespread regional imbalance of supply and demand has compounded the energy problem. Most of China's coal supply lies in underpopulated and underdeveloped northern provinces, far from the heavy energy demands of the South and East.

The provinces of Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangsu, Jiangxi, Zhejiang, and Shanghai Municipality together account for almost 40 percent of the gross value of industrial output (GVIO) and more than 35 percent of China's population. But they have only 2 percent of the nation's coal reserves and 10 percent of its hydropower potential. By contrast, Shanxi and Inner Mongolia together possess more than 60 percent of China's coal, but have less than 4 percent of population and GVIO. Similarly, almost three-quarters of China's hydropower potential is found in the Southwest, which has less than 20 percent of the population and less than 10 percent of GVIO.

Energy recovery in China is nearly as inefficient as energy use. Coal mines recover only about 60 percent of their known deposits, while only about 30 percent of the oil in China's developed oilfields is ultimately recovered.

The country's aggregate conversion rate for primary energy resources is only a little more than half that of the US. Energy consumption per unit of output ranges from twice that in Japan for chemical fertilizer and steel, to about ten times per motor vehicle.

A final cause of China's energy crisis is poor coordination, planning, and management. Until recently, China had no comprehensive energy plan. Even since the establishment of a State Energy Commission last August, responsibility for various parts of the plan remain shared by the State Planning Commission, State Economic Commission, State Science and Technology Commission, State Machine Building Industry Commission, State Capital Construction Commission, Ministry of Petroleum, Ministry of Chemicals, Ministry of Coal, Ministry of Electric Power, Ministry of Water Conservancy, Ministry of Geology, and other agencies. Consequently much equipment, up to and including oil rigs, has been sitting crated and idle. Last December, Premier Zhao Ziyang admitted that nearly $2 billion in equipment purchased abroad was sitting in storage (although it was not all energy-related equipment).

How Serious is the Crisis?

In December 1980 Premier Zhao admitted that the energy shortage was causing China's industry to run at about 70 percent capacity and that the need to make up for years of underinvestment in future capacity and transportation had led to declining rates of growth, even to declining output, of energy resources.

By China's own admission, per capita energy consumption is 0.6–0.7 tons standard coal equivalent (tsce) per capita per year. This is only 6 to 7 percent of America's consumption. In 1978 China's per capita electric consumption was about on a par with India, Bolivia, and Zaire. China's total output figures in 1980:

PRC energy output in million tons standard oil equivalent

	1980	Percentage of total
Petroleum	158.8	25.0
Coal	450.8	71.0
Natural gas	18.1	2.9
Hydroelectric	7.0	1.1
TOTAL	634.7	100.0

The serious domestic situation has interfered with China's energy obligations abroad. This year oil sales to the Philippines will be cut by 100,000 tons, to 900,000 tons. The Japanese, originally promised 9.5 million tons in 1981 and 15 million tons in 1982, now expect to receive only 8.3 million tons each year. Reportedly China has even sought to purchase 1 million tons of oil from Kuwait, and was said to have been negotiating with Iran and Iraq for the purchase of oil before those two countries went to war.

Guangdong Province, one of China's most energy-deficient areas, illustrates the gravity of the problem. Because the province could supply only 61 percent of needed electricity in 1979, industry lost some ¥7.5 billion (US$ 5 billion) in output value. Despite Guangdong investing one-fourth of its capital construction budget in the electric

industry, output of electric power in 1980 grew only 8 percent. And officials expect a 500 percent increase in Guangdong's electricity demand by the year 2000.

Energy Planning

Since 1978 China's leaders have come to see the need for a comprehensive energy program, now being formulated. For the first time planners are seeing energy as one element of an interrelated socioeconomic system; forecasts of China's energy needs are being related to population growth, for example.

Similarly, energy consumption patterns are being viewed in the context of a shift from heavy to light industry. The Chinese point to the fact that light industry uses about 80 percent less energy than heavy industry, and that for each percentage change in the ratio, China can save about 6 million tons standard coal equivalent. Moreover, for each ¥1 million of investment, Chinese light industry provides more than 250 jobs; fewer than 100 would be created in heavy industry.

Finally, planners recognize the energy implications of budget deficits, inflation, and uncontrolled capital construction. China's leaders realize that their inability to fuel existing industries adequately makes it foolish to construct new high energy-consumption facilities. Uncoordinated local development disrupts national coordination of energy production and distribution. New construction will now be coordinated by the SPC, taking into account China's financial, technical, and energy capabilities.

Conservation

Chinese leaders recognize their principal short-term task as initiating strong conservation measures and improving the efficiency of existing machinery and plants. Conservation plans in 1980 called for saving 23 million tons of coal, 3 million tons of gasoline and diesel fuel, 1.5 million tons of fuel oil and coke, and 7 million megawatts of electricity. This year's plans are reported to be similar. As of November 1980 no new petroleum-fueled equipment will be designed, manufactured, or imported without the approval of the SPC. Moreover, all oil-burning industrial boilers and furnaces must be converted to coal by May 1985. Inefficient and wasteful facilities have been ordered to conserve energy or change product line, or face shutdowns. Work teams have been sent out from Beijing to assess the efficiency of energy use in industrial facilities—some 350 people went in March 1980 alone.

The 1980 budget for technical innovations in conservation increased by about half this year, from ¥2.04 billion to ¥3 billion. Officials have been enjoined to conserve energy by using public transportation; in Anhui and Sichuan orders were given to park 20–40 percent of the provinces' motor vehicles to conserve fuel. New agencies have been created to assist the conservation effort. Guangdong in January became the first province to set up a provincial energy commission, paralleling the State Energy Commission. Shanghai's municipal government also has created an office for the planned use of electricity.

Oil and coal output has fallen in recent years and is not expected to rebound until at least 1982. This has embroiled leaders in disputes over the best way to conserve energy and increase future supplies.

Coal

Although conservation is intended to relieve the immediate strain of China's energy shortage, new resources obviously must be developed. Coal is the first priority. With known reserves totaling some 600 billion tons, China trails only the Soviet Union and the United States in coal output. Most important, China can develop its coal with relatively unsophisticated technology and low investment.

There are significant technical problems attached to coal development: coal fields are far from eastern population centers; transportation is inadequate and costly; and coal, relatively inefficient as a heat supplier, creates high levels of pollution. In addition, some half-dozen key questions on the development of this resource must be resolved.

To begin with, officials must compromise on the disparate goals of mechanizing China's coal mines on the one hand, or utilizing its massive labor force on the other. The 1978 policy stressed rapid, high-level mechanization and high production targets. Since 1980, Gao Yangwen and his Coal Ministry have seemed resigned to a slower pace of mechanization, and have advocated lower production targets over the next year or two while stepping up investment in tunneling and mining infrastructure to compensate for past neglect. But the idea of cutting back output, even temporarily, does not sit well with other high-ranking officials, many of whom favor using China's abundant manpower to maintain output over the next few years until mechanized production can be more widely introduced.

Recent across-the-board budget cutbacks have taken care of another major issue: whether to develop new mines or improve output of existing ones. The Chinese in the near term will lower output goals in the large, national mines to give more play to developing infrastructure and extending tunnel networks. Meanwhile the Coal Ministry is apt to continue its push for developing eight new major coal bases, including Huolinhe, Yiminghe, and Yuanbaoshan. On the whole, central officials agree that national investment funds should go into developing large-scale mines. But regional officials in energy-poor areas naturally stress the value of small, locally developed mines.

Another issue is whether China should continue to stress underground coal mining or give added emphasis to open-pit operations. Approximately 96 percent of China's coal output comes from deep mining—which the Chinese can accomplish more or less with relatively low technology and some financial aid from the apparently willing Japanese. But greater potential can be found in the open-pit. The Coal Ministry has strongly advocated surface coal mining (perhaps with American technology and equipment), even though financing is bound to hinder its expansion for some time.

Perhaps the thorniest issue calls up a slew of questions that are debated in the US as well. Is it cheaper to transport coal or to develop it locally? Should new transport modes be developed at the expense of existing ones? How strongly should other energy sources be pursued?

Right now northern coal is diverted

to the South where some regional officials—notably Guangdong Party First Secretary Ren Zhongyi—are advocating local development. Guangdong would like to alleviate its shortage by bringing in coal from Guizhou and by constructing nuclear power installations. Other officials maintain that the cost of such a program would be too high, and that shipping coal to the South is still 30–40 percent cheaper than developing southern coal. A third faction calls for minehead electric generating facilities in the North, with the transport of coal being replaced with the long-range transmission of electricity. Still another group prefers building coal slurry pipelines to the other options.

Electricity

Following conservation and coal, China's third energy priority—electricity—currently has a green light for development.

This year, although the amount of available investment funds has been reduced, electric power's slice of the capital construction budget has risen from 6.9 percent in 1980 to 9.1 percent. Reflecting this increased emphasis, Vice-Minister of Electric Power Li Rui said in February, "The absolute value of capital construction investment in the power industry ranks first compared with what other industrial departments receive. All the capital construction projects under construction in the power industry are being allowed to continue."

Hydroelectric power in 1979 provided about 17 percent of China's electric output. Plans are to increase this amount to 25 percent or more in the next 20 years. As a result, 1981 investment in hydropower will increase by 2 percent over 1980 to 50 percent of investment in power generation.

The development of hydro projects, however, involves some serious problems, the first of which is money. The Gezhouba dam reportedly costs ¥3.5 billion ($2.2 billion at current exchange rates). The Three Gorges project will cost about ¥9.56 billion ($6.0 billion). In addition, the construction of such large projects takes as long as ten years and displaces people and farmland. The Three Gorges ultimately will cause the relocation of about 1.4 million people, and will cost China 44,000 hectares of cultivable land (*see CBR*, May–June, 1980, pp. 16–23). The regional political implications of such issues will create another serious constraint on the development of massive hydro projects. Similarly, because of the location of most of China's hydro potential, the costs of transmission infrastructure will be huge.

Nonetheless, China's hydropower potential is abundant. It is a clean and renewable resource in known quantities and locations, providing such ancillary benefits as fisheries, irrigation, and water transport. Moreover, small, locally developed hydroprojects are within the technical and financial capabilities of many of China's communes. Such installations can provide electric power for agriculture, small industry, and domestic consumption which otherwise would be unavailable.

Hydropolitics, of course, has raised a number of hotly contended issues. What size projects will be developed? Where? Who will control them? The Three Gorges project stirred up all these questions and more. The ministries of Electric Power and Communications, oppose current plans for the massive project on the Yangzi, citing cost, time of construction, relocation problems, and the difficulties created for river transport. The Electric Power Ministry, responsible for increasing generation of electric power quickly, would prefer a series of medium-sized dams on tributaries that would be less expensive and would come on line sooner. The Ministry of Water Conservancy, which controls the project and most of its huge budget, clearly does not want the project delayed or canceled.

China's prime source of electricity—thermal power—accounts for about 75 percent of its electric generating stations and provides about 83 percent of China's electricity. Of this, approximately 80 percent comes from coal, and the balance from oil. In general, thermal plants are less expensive and more quickly built than hydropower or nuclear electric generating plants.

Whatever combination of hydro and thermal installations China opts for, three issues remain. The first is infrastructure development. For example, China currently has no 500,000-volt lines, although plans call for completing two in 1981, one in the Northeast, and one in Central China. Recognizing this deficiency, the leadership this year increased the percentage of electric power investment for transmission lines from 22.2 percent in 1980 to 28.1 percent in 1981.

A second issue is the size of installations. China currently has about 90,000 small plants generating some 7.1 million kilowatts. Most of these have been developed locally. National investment is being channeled into large plants. This is reflected by the fact that while the 1981 production of 180,000 megawatts of generating units is down slightly from 1980, the average annual capacity of each unit is 155 megawatts, or about twice that of last year. In its search for larger-capacity generating units, China's First Ministry of Machine Building has signed licensing technology agreements with Westinghouse and Combustion Engineering for the production of 300- and 600-mw generators and boilers for coal-fired power plants.

The third electric power issue involves the intended user of the power plant; that is, will a power plant be built with a specific heavy industrial enduser in mind, or will planners ensure that such plants are integrated into the economy of the region? The Metallurgy Ministry, for example, has been a strong advocate of building power plants designed to fuel particular heavy industrial complexes like Baoshan. However, with the recent postponement of Baoshan's phase two (*see CBR*, Jan.–Feb., 1981, pp. 9–13), planning authorities have decided to go ahead with construction of its attendant power plant, with its output to be diverted to Shanghai. Similarly, the Longtan hydro project in Guangxi, originally envisioned as the power supply for an aluminum plant, is now being integrated into the Hongshui regional development scheme.

Petroleum

That China's oil development now has dropped to fourth priority points out the high costs, lengthy development time, and serious risks associated with this sector. Neither quantity nor location of oil reserves is certain, and from that standpoint at least coal and hydro seem safer bets. But of course petroleum has advantages as a clean, easily transported fuel that, in today's world market, is well worth developing.

The crucial issue in China's oil development is whether to concentrate resources on offshore or onshore drilling, or on both at once. For now the shortage of personnel and finances has precluded the dual strategy. Moreover, the decision clearly has been made to concentrate on offshore development.

French and Japanese companies have signed exploration agreements with China, and in February 1981 Total Chine, a French company, struck oil in the Gulf of Tonkin, while another French company, Elf Aquitaine, discovered encouraging signs in the Bohai Bay.

These optimistic prospects have been soured for some US companies by Chinese concentration on cooperation with state-owned foreign companies. The latter companies have political incentives to accept less attractive contract terms and levels of risk than private US firms feel they can accept. In addition, uncertainty over petropolitics in Beijing has disconcerted some US firms. The Chinese Ministry of Geology, for example, favors reserving more than 40 identified structures in the South China Sea for Chinese exploitation, while the Petroleum Ministry's subsidiary corporation, China National Oil and Gas Exploration and Development Company, originally indicated that only eight areas would be reserved. Wildcat rigs operated by the Ministry of Geology are said to have struck oil, adding impetus to Geology's desire to develop China's oil itself.

Onshore too, China has faced severe handicaps. Diminishing oil resources in the Northeast fields (China's mainstays in the past) has caused China to shift its emphasis to the West, where abundant oil deposits are known to exist. However, in addition to the difficulties of developing and transporting these resources, Chinese unwillingness to share risks equitably and failure to provide sufficient profit incentive for foreign involvement have disouraged even those companies involved in early seismic prospecting.

Meanwhile, the newly discovered eastern fields of Renqiu (*see CBR*, Nov.–Dec., 1980, pp. 20–24), Liaohe, Nanyang, and others have been mysteriously quiet. While production has continued, it appears that negotiators and some technicians have been transferred to offshore projects.

Petroleum development has, of course, been a center of political controversy in the past three years. The failure to make good on the grand designs of 1978, associated with top leaders like Hua Guofeng, Li Xiannian, Yu Qiuli, and Gu Mu, has caused substantial political fallout. Disagreement with the advocates of readjustment came to a head in August and September 1980 when Yu Qiuli was shifted from the SPC to the newly created State Energy Commission, and Minister of Petroleum Song Zhenming was fired (*see CBR*, Nov.–Dec., 1980, pp. 33–35). The most recent development in this conflct was Kang Shien's appointment as minister of petroleum and his removal from the State Economic Commission.

The primary responsibility of the SEC is to coordinate supply and demand in China's annual planning process. Kang became SEC chairman when a continued oil supply seemed assured. Kang's career and expertise centered on the production of more oil, not managing the consumption of less. Thus, it made both economic and political sense for him to be "demoted" to the position of minister of petroleum. If he is successful in increasing output, his transfer will be interpreted as a wise one. If he is unsuccessful, it will be substantially easier to eliminate one of the "energy clique's" main supports in the leadership.

Despite economic retrenchment and scaled-down imports of big ticket items, the energy sector remains an area of high potential for US exporters.

Nuclear Power and Alternatives

As discussed in the January–February, 1981, *CBR*, nuclear power is receiving new attention in China. Provincial officials have combined with scientists from State Science and Technology Commission and the Chinese Academy of Sciences and officials from the Second Ministry of Machine Building in advocating nuclear-generated electric power as a major energy source for the future. Despite the price tag of $1 billion or more, and the ten-year construction period, nuclear power is seen as a clean, safe, and relatively inexpensive source of energy.

No final decisions have been made as to the level of foreign involvement, which is at least partly due to the debate between proponents of a relatively self-sufficient approach to nuclear development and those wanting greater reliance on foreign technology. Second Ministry of Machine Building administrators favor a Chinese-built project using foreign consultants. The Electric Power Ministry, more concerned with increasing China's power supply quickly, favors importing whole plants to be constructed with large-scale foreign involvement. It appears likely that three or more reactors in the 900–1100-mw range will be built in the next ten years. Prime locations are Guangdong, Shanghai, and Liaoning.

Another important element in redressing regional imbalances and providing energy to China's rural areas is the development of alternative sources. Biogas or methane is the most popular of these alternatives. China now has about 7 million rural biogas pits, seven times as many as in 1975, supplying about 30–40 million peasants. Less (but still substantial) attention is also being paid to developing local shale-oil deposits, solar power, wind power, geothermal tidal power, and forests for wood fuel. While there is little political support for massive national-level investment in most of these areas, localities have been strongly encouraged to make maximum use of alternate energy sources through the employment of low-level technology and local funds and manpower.

Since 1978, China has come a long way in the direction of establishing realistic energy policies and plans. Its current short-term priority is to conserve energy while nudging the economy away from heavy industry toward a light industrial, consumer-oriented system. Even as the rate of increase for energy demand is being reduced, development of coal, hydroelectricity, thermal electricity, petroleum, nuclear power, and alternate energy sources will increase supply. Whether China's plans are realistic, or can succeed, is uncertain. But it is encouraging to see Chinese planning become more sophisticated in the 1980s. 完

The National Council held a briefing on China's energy priorities and prospects on March 31. Interested Council members are welcome to contact CBR *for charts and other materials handed out at the briefing.*

Hydropower Agreement Update

The Army Corps' recent report on the Longtan hydropower project revealed key business opportunities for the private sector.

Robert A. Delfs, Jr.

US firms' displeasure over the US-PRC Hydropower Agreement (*see CBR*, May–June, 1980) has cooled in response to recent steps by government agencies, but the role of private industry in future activities under the protocol is still unclear.

The most controversial bilateral technical agreement dating from the Carter administration, the 1979 Protocol on Cooperation with the PRC on Hydroelectric and Water Resources Management was one of 14 specific agreements under a general umbrella agreement on scientific and technical cooperation signed by President Carter and Vice-Premier Deng Xiaoping in January 1979. Included in the hydropower protocol were promises to exchange information and technical personnel and to seek further agreements on technical consulting, construction management, and project planning and design. Five of the 12 scheduled missions to and from China have been completed (*see chart*).

Although a major objective of the protocol was to "facilitate the development of commercial industrial services by the private sector," according to Benjamin Huberman, director of the White House Office of Science and Technology, it has nevertheless prompted criticism from private US engineering and construction firms.

At issue is the annex to the protocol, negotiated last March by an interagency team headed by Holsey G. Handyside, deputy assistant secretary of energy. The supplementary agreement outlined cooperative activities on six project areas. Two of the projects were already under discussion with private US consulting firms—the Longtan hydroelectric power project in Guangxi and the Ertan project in Sichuan.

The annex provided that the US Army Corps of Engineers and the Water and Power Resources Services (WPRS, formerly the Bureau of Reclamation) would visit China to study the two projects. It further called for US agencies to provide "on-site assistance in construction engineering and

The Longtan Study

The US Army Corps of Engineers recently issued its "Report on the Design Review of the Longtan Project," the first of several studies proposed in the annex to the August 1979 US-China energy protocol. The report provides the first glimpse of the type of recommendations the Corps is making to the Electric Power Ministry and the South-central China Survey and Design Institute in Changsha, Hunan Province. The report also highlights business opportunities that the hydro projects may represent to US engineering and design firms.

The Longtan site is in a steep valley cut by the Hongshui River in Guangxi. The largest of eight major dams in the Hongshui Basin (three are under construction), Longtan would generate over 18 billion kwh per year from an installed capacity of 3,000–4,000 mw. Originally planned in conjunction with the now-postponed Pingguo aluminum plant, Longtan is now slated to provide electricity to Nanning (325 km) and Liuzhou (260 km) in Guangxi, as well as to Guangzhou and Hong Kong (700 km) via 500-kilovolt (kv) transmission lines. Cost of the project is estimated at RMB 3.3 billion (US$2 billion).

The Corps report revealed that the Chinese plan to undertake both the design and construction of the Longtan project themselves, but noted they intend "to seek US advisory assistance from time to time as design and construction activities proceed." A summary of the report to Vice-Minister of Electric Power Li Rui also stressed the need for further economic analyses and engineering cost-comparisons among the various designs proposed.

US technology could be used in several aspects of the project, the report indicated. Examples included drilling techniques in seismic and geotechnical surveying; computer methods to project sedimentation effects of water storage and navigation; large turbogenerator design; and the design and construction of ship locks or lifts. Perhaps the most significant set of recommendations concerned the cost-benefits of high-speed, large-capacity processing, hauling, and placement equipment. In a study requested by the Chinese, the Corps team found that two to three years total project construction-time could be saved if equipment, production, and placement rates used in the US were applied, provided that the Chinese select an earth rockfill design. Heretofore, the Chinese have preferred concrete gravity designs in building high dams.

—Robert A. Delfs, Jr.

Current Status of Hydropower and Water Resources Management Projects
Under US-PRC Protocol of August 1979 and Annex of May 1980

Project (listed in May annex)	US lead agency	PRC ministry	Delegation trips
1. Multipurpose development planning for the Hongshui River Basin (Guangxi Province)	US Army Corps of Engineers	Electric Power	PRC team: Nov.–Dec., 1980* US team: (Sept.–Oct., 1981?)
2. Feasibility, design, and construction of the Longtan hydroelectric power project (Guangxi Province)	US Army Corps of Engineers	Electric Power	US team: Nov.–Dec., 1980* PRC team: (summer/fall, 1981?)
3. Planning and design alternatives for the Three Gorges (Sanxia) hydroelectric power project (Hubei Province)	US Water and Power Resources Service	Electric Power	PRC team: Oct.–Nov., 1980 US team: Apr.–June, 1981
4. Power-grid technology (indefinitely postponed)	Bonneville Power Administration	—	—
5. Design alternatives for the Ertan hydroelectric power project (Sichuan Province)	US Water and Power Resources Services	Electric Power	PRC team: Jan.–Feb., 1981 US team: (July/Aug., 1981?)
6. Regulation problems of the Changjiang River estuary	US Army Corps of Engineers	Communications	PRC team: (Sept.–Oct., 1981?) US team: Oct.–Nov., 1980

*Report completed.

Table prepared by Robert A. Delfs, Jr.

management if desired by the [PRC] Ministry of Electric Power."

The US firms charged that the government had undermined their position. Discussions on feasibility studies and construction contracts ceased, they claimed, because the Chinese were now expecting the same services from the US government. In response, government officials have stressed that the Chinese wanted a government-to-government relationship as a condition for any US involvement in these projects. The Chinese reportedly seek US government advice and intermediation in dealing with private firms. The Baoshan steel mill fiasco, some observers feel, alerted them to the need for better-quality advice.

In a February meeting with the American Consulting Engineers Council, Lt. General Joseph K. Bratten, the new chief of the Army Corps of Engineers, assured those present that the Corps' philosophy and desire was not to compete with the US private sector in the international market. And in a March 30 statement to the *CBR*, Clifford I. Barrett, acting deputy commissioner of the Water and Power Resources Service, said, "the WPRS views its future role in China as that of a catalyst, working between the Chinese government and US private industry."

The WPRS has also included representatives from the National Council's Engineering, Design, and Construction Committee, and from the American Consulting Engineers Council in a team that recently visited China to study the Three Gorges (Sanxia) hydropower project.

Despite US government assurances, private firms are concerned that a disparity still exists between Chinese expectations and the intentions of the US agencies. The misunderstanding was the fault of the annex, some firms believe, since it made no mention of the role of the private sector. Moreover, some Chinese officials apparently believed that the US $2 billion in US Ex-Im Bank financing promised by former Vice-President Mondale in 1979 would all go to hydropower development.

No one has claimed that the hydropower agreement has cost US firms contracts. The readjustment has put these and other major projects on the back burner while Beijing concentrates on completing dams already under construction. But work on these projects may not be far off. Energy is a priority sector for development, and a highly placed source in the PRC State Capital Construction Commission (SCCC) has informed the National Council that both the Longtan and Ertan projects will probably be included in the sixth five-year plan (1981–85) to be finalized this year.

How rapidly the Chinese want to complete these projects may determine the role of US firms. An accelerated construction schedule would make high-speed US construction technology and equipment—an area in which America is a world leader—very attractive to the Chinese. 完

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National Council members may contact the CBR *for background to the story and details that could not be published.*

China Bookshelf

General

The People's Republic of China: A Basic Handbook, 2nd edition, compiled by James A. Townsend and Richard C. Bush. Published in cooperation with the China Council for the Asia Society by the Council on International and Public Affairs, 1981. Distributed by Learning Resources in International Studies, Suite 1231, 60 East 42nd Street, New York, NY 10017. 112 pp. $4.50. This handbook will be a welcome addition to all China collections. The land and people, history since 1945, foreign relations and defense, economy and trade, public services, and daily life are briefly introduced; statistical tables, maps, and chronologies are provided; and supplementary readings are suggested. The first chapter is a guide to sources of information on China.

China: Its History and Culture, by W. Scott Morton. New York: Lippincott & Crowell, 1980. 276 pp. $16.95. In his book for the sophisticated but nonspecialized reader, the author integrates a study of Chinese culture with historical events. A historical and cultural chronology and a bibliography are included.

Science and Research

Science in Contemporary China, edited by Leo A. Orleans. Stanford: Stanford University Press, 1980. 599 pp. $35. This survey of Chinese science is a collection of 28 papers by distinguished American scientists describing developments in science and technology in the late 1970s. Following an account of the history of Chinese science and of science policy since 1949 are chapters dealing with mathematics; physics; chemistry; astronomy; geography; earth sciences; meteorology; fisheries, aquaculture and oceanography; biomedical research; plant breeding; plant protection; animal sciences; agricultural mechanization; engineering; energy; electronics; environmental science; and the social sciences.

Animal Agriculture in China: A Report of the Visit of the CSCPRC Animal Sciences Delegation, edited by Jacob A. Hoefer and Patricia Jones Tsuchitani. Washington, DC: National Academy Press, 1980. 197 pp. $12.95. CSCPRC Report No. 11. The report of the 1979 delegation surveys animal industry in China, emphasizing swine and poultry raising. Nutrition, breeding, reproduction, economics, processing and utilization, and animal diseases are discussed. Information on selected agricultural research institutes is appended.

China Trade and Investment

Doing Business in Today's China, edited by Jane Ram. Published for the American Chamber of Commerce (1030 Swire House, 11 Chater Road), Hong Kong, by the *South China Morning Post*, 1980. 236 pp. $18. This useful collection of papers covers advertising, negotiating, financing, and legal aspects of trade with China as well as such varied topics as China's oil, shipping, and decentralization of the economy. A unique feature is the chapter "Auditing the Assets of a Joint Venture in the PRC."

Investment and Taxation in the People's Republic of China, 3rd expanded edition, compiled by Eugen Jehle. Amsterdam: International Bureau of Fiscal Documentation (PO Box 20237, 1000 HE Amsterdam, The Netherlands), 1981. 137 pp. plus appendices. Dfl. 95. The new edition of this valuable compilation contains, as part of either the text or appendices, regulations on taxation and investment through January 1981. Forms of foreign investment are described, and taxation is thoroughly discussed. Seventeen appendices include texts of Chinese laws and regulations, texts of the US and EEC trade agreements, and names and addresses of important Chinese organizations.

Insurance in China. New York: International Division, Chubb & Son, Inc. (100 William Street, 10038), 1980. 16 pp. Single copies available at no charge. The brochure outlines insurance coverage of the People's Insurance Company of China. Discussed are the concept of insurable interest in joint ventures, compensation trade agreements, barter and licensing agreements; tort liability; insurance contracts and coverage available; foreign currency policies; nonadmitted insurance; and policy language.

Energy

The International Energy Relations of China, by Kim Woodard. Stanford: Stanford University Press, 1980. 717 pp. $50. The author analyzes China's international energy policy and domestic development and, using computerized projection models, projects domestic production and energy trade through the year 2000. A baseline projection of China's energy balance, if it continues to follow patterns of the past 30 years, shows that China could become a net energy-importer in the early 1990s. Statistics describing low-, median-, and high-growth projections define the likely outcome of the Chinese energy balance to 2000. Various production estimates and statistics on trade are compiled for the period 1949–77. The volume is a major compendium of energy data and a valuable addition to the literature on China's energy.

China's Oil: Problems and Prospects, by Sevinc Carlson. Washington, DC: The Center for Strategic and International Studies, 1979. Distributed by McGraw-Hill, 457 National Press Building, Washington, DC 20045. 128 pp. $77. An economic analysis of China's oil potential, the study describes the development of the oil industry through 1979 and looks at China's oil reserves in relation to other energy resources. Energy consumption and oil export potential are examined, with the author concluding that it is unlikely China will become a major oil exporter before the early 1990s, if at all. A fold-out map of major oil basins and oilfields is included.

Books and business guides submitted for possible review in The China Business Review *should be sent to the National Council's book editor, Marianna Graham.*

CHINA BUSINESS

Catherine Yelloz
Assistant Librarian

The following tables contain recent press reports of business arrangements exclusive of those listed in previous issues. China's export and import sales are included only if the contracts are listed as signed, won, secured, or concluded. All others are counted as negotiations. Joint ventures, licensing arrangements, and other forms of business arrangements are included if clasified as such in Chinese and foreign media reports. The accuracy of these reports is not independently confirmed by the *CBR*.

中外贸易 EXPORTS TO CHINA: 1981 SALES AND NEGOTIATIONS THROUGH APRIL 1

Company/Country	Product/Plant/Technology	Value	Status Date Announced
Agricultural Commodities			
British Livestock Co. (UK)	387 breeding sheep and 33 goats	NVG	shipped 1/13/81
Cherry Valley Duck Farms (UK)	A ten-year contract to sell British-bred Peking ducks to a farm at Tai Ling Shan	NVG	contract signed 1/29/81
(Burma)	80,000 tons of rice	NVG	will sell 2/4/81
(Morocco)	700 tons of cotton	NVG	sold 2/5/81
(Sri Lanka)	500,000 kilos of tea	NVG	sold 2/13/81
Agricultural Technology			
Continental Grain Co. (US) and Chia Tai International Investment Co. (Hong Kong)	Agreement with Guangdong Province and Shumchun City to build a high-technology livestock and poultry feed mill	$30 million	agreement announced 2/6/81
(Poland)	200 combine-harvesters	$3.5 million	order won 2/81
Chemicals			
Montedison (Italy)	75,000 metric tons of urea to SINOCHEM	NVG	will sell 2/12/81
ANIC (Italy)	Joint petrochemical research with an emphasis on synthesizing polymers	NVG	accord signed 2/27/81
Electronics			
Accutest Corp. (US)	Three of its Model 193A watch circuit test systems (spare parts and training)	$250,000	order received 11/24/80
Dresser Atlas (US)	Sophisticated data-processing centers in support of drilling operations offshore China	$2 billion	contract negotiated 12/80
Western Electric International (US)	A hospitality communications system, for the largest and most modern hotel	NVG	sale negotiated 12/1/80
Hitachi (Japan)	An electronic computer system, Hitac-M-160H	NVG	will deliver 12/26/80
Motorola (US)	Electronic equipment to be used by the Pearl River Survey Department for hydrographic survey and dredging work	$140,000	order received 12/29/80

ISOT (Bulgaria)	a) Four computers b) 100 and 200 megabyte magnetic disc drives and disc packs to 65 enterprises and organizations c) two-way barter trade agreement	$2 million	sold and agreement signed 1/81
Hitachi Maxell Ltd. (Japan)	Silver oxide battery manufacturing plant to be built in Jiangsu Province	NVG	contract signed 1/81
The Trane Company (US)	Absorption water chillers	NVG	order received 1/81
Scientific-Atlanta Inc. (US)	Cable television and testing and control equipment	$1 million	order received 1/20/81
Oriental Photography (Japan)	Color film-processing systems	$142,952 (¥ 30 million)	contract concluded 2/81
Polymax Sistemas e Perifericos (Brazil)	1,000 minicomputers in a package involving technical assistance and technology transfer	$32.6 million	negotiations announced 2/81
The Vessel Traffic Management System (UK)	A harbor surveillance Racal-Decca HR 25 radar	$1.5 million (£680,000)	contract signed 2/81
Yokohama Magnetics Co. (Japan)	Magnetic head manufacturing facility	NVG	agreement announced 2/81
Fujitsu (Japan)	Electronic telephone exchange system for Fujian Province	$6.1 million (¥ 1.3 billion)	order received 2/12/81
Zilog Inc. (US)	Zilog's MCZ 1/50 microcomputer systems and microcomputer board-level products	$5 million	agreement signed 2/23/81
Nihon Denki (Japan)	Medium-scale computers ACE S 400	NVG	announced 3/17/81
Machinery			
Doyle & Roth (US)	Four heat-exchangers	NVG	shipped 12/80
Eberhard Manufacturing Co. (US)	Special modification of its Model 1969 cam-action container lock and a specially designed hinge for ocean containers being built in the PRC	NVG	will supply 12/80
Niigata Worthington Co. (Japan)	Know-how on production and sales of process pump	NVG	announced 12/9/80
Nippon Gear Kogyo Co. (Japan)	Technology on manufacture of control valve	NVG	announced 12/9/80
Shin Nippon Machinery Co. (Japan)	Joint production of general purpose pump	NVG	negotiations announced 12/9/80
Ulvac Corp. (Japan)	Consigment production of vacuum pump	NVG	announced 12/9/80
Vacuum Metallurgical Corp. (Japan)	Technology on manufacture of titanium foundry	NVG	negotiations 12/9/80
Yamatake-Honeywell Co. (Japan)	Technology on manufacture of automatic control valve	NVG	announced 12/9/80
Thorn Automation (UK)	Two thyristor-operated heater control cubicles to be used in high-density polyethylene production	NVG	supplied 1/21/81
C-E Air Preheater (US)	Agreement to provide the Chinese First Ministry of Machine Building with the technology to manufacture and sell the Ljungstromer air preheater for domestic and export utility markets	NVG	agreement signed 2/6/81

Dowty Hydraulic Units (UK)	Electrohydraulic directional control valves, pilot valves, and power supply units	NVG	order received 2/25/81
(Japan)	Circulating hot water retort sterilization equipment	NVG	announced 3/17/81
Machine Tools			
Snap-On Tools International (US)	Aircraft maintenance tools	NVG	negotiations announced 1/26/81
Military Equipment			
(Israel)	Arms sale, including a large amount of electronic and optical equipment	$2 billion	negotiations announced 12/6/80
Mining Equipment			
Wagner Mining Equipment Co. (US)	Mining vehicles and parts	$1 million	shipped 11/80
Petroleum and Natural Gas			
Petty-Ray Geophysical (US)	A three-year geophysical service	NVG	contract signed 12/80
Thermotics Inc. (Canada)	Two thermal oil recovery units to be installed at Liaohe oilfield	NVG	sold 12/80
Union Industrielle (France)	Agreement to build offshore platforms in Guangdong	NVG	agreement concluded 12/80
Power			
General Atomic Co. (US)	Cooperation on high-temperature gas-cooled reactor development with the Institute of Nuclear Energy and Technology of the PRC	NVG	agreement signed 12/28/80
Shipping			
(W. Germany)	China shipyards will build 26 river barges and 4 freighters	NVG	agreement entered 1/14/81
Alexander Shipping Co. (Greece)	Motorship, *Amalia*, 16,251 dwt, 10,302 grt, 7,563 nrt, built 1978	$10.4 million	sold 1/21/81
Naviera Astro SA (Spain)	Motor bulk carrier, *Manuel Yllera*, 51,080 dwt, 30,406 grt, 22,475 nrt, built 1971	$10.5 million	sale announced 1/21/81
Paphos Compania Inc. (Greece)	Motor bulk carrier, *Pelopidas*, 38,948 dwt, 19,672 grt, 14,833 nrt, built 1968	$10.5 million	sold 1/21/81
Øve Skou R/A (Denmark)	a) Motorship, *Jytte Skou*, 9,906 dwt, 7,486 grt, 4,227 nrt, built 1965	NVG	sold 1/21/81
	b) Motorship, *Susanne Skou*, 9,906 dwt, 7,345 grt, 4,253 nrt, built 1967	NVG	sold 1/21/81
Serenity Shipping Inc. and Lamont Shipping Inc. (Panama)	a) Motorship, *Honesty*, 17,128 dwt, 10,358 grt, 6,644 nrt, built 1976 b) Motorship, *Integrity*, 17,726 dwt, 10,710 grt, 6,555 nrt, built 1977	$18.7 million for both	sale announced 1/21/81
(Singapore)	Refrigerated motorship, *Cherry Crystal*, 9,398 dwt, 7,076 grt, 4,051 nrt, built 1961	NVG	sold 1/21/81
Home-Pack Transport Inc. (US)	Exclusive two-year contract to handle household goods, vehicles, diplomatic and general cargo shipments door-to-door to and from China, and technology transfer agreement in export packaging	NVG	contract won 1/30/81

Steel and Steel Products			
(Japan)	128,000 tons of steel products for the first half of 1981	NVG	order announced 2/5/81
Textile Plant and Equipment			
Savio and Nuovo Pignone (Italy)	Textile machinery	$5.5 million	contract signed 1/81
Kleinewefers (US)	Continuous pretreatment installation for desizing, scouring and bleaching, and pad-steam installation for all dyeing processes	NVG	order placed 1/19/81
Platt Longclose (UK)	Unicom low liquor package-dyeing machine	NVG	sold 2/81
Gunze Sangyo Co. (Japan)	Joint production of cotton underwear in Shandong Province	NVG	agreement announced 2/5/81
Nissan Zidosha (Japan)	High-speed looms	$3.5 million (¥ 750 million)	provisional contract 3/17/81
Textile Products			
(Republic of Korea and Taiwan)	Is exporting large quantities of chemical yarns and staple fibers via Hong Kong	NVG	announced 2/10/81
Tourism			
American Standard Inc. (US)	Deluxe bathtubs, lavatories, toilets, and faucets to the Jinling Hotel	NVG	contract awarded 1/19/81
Millie's Industrial Development and Service Group (Hong Kong)	Hotel project, the "Bamboo Garden Hotel," and a telephone exchange station in Shumchun	$80 million	announced 1/21/81
American Global Cruises (US)	Exclusive rights to operate a passenger service along the coast of China	NVG	announced 1/29/81
Carrier (US)	Air-conditioning facilities to be installed at the Chung Shan Hot Spring Resort	$3.5 million	will supply 1/29/81
Bihag Brander Ltd. (Switzerland)	Hotel, convention, recreation and housing complex to be built in Shumchun	$350 million	agreement signed 2/14/81
Transportation			
Suzuki Motors (Japan)	10,000 motorcycles	NVG	order received 1/27/81
Toyota Motor Co. (Japan)	Orders received for 10,000 motor vehicles in the past three months	NVG	announced 2/27/81
Tomos Factory (Yugoslavia)	Long-term agreement and contract with Chongqing machine building plant for the joint production of motor vehicles	NVG	signed 3/4/81
Miscellaneous			
BBC (UK)	a) Whole of the BBC TV Shakespeare, children's ballet, and music programs	NVG	order landed 12/4/80
	b) Co-production with the Shanghai Animation Film Studio of a full-length animated film	NVG	agreement reached 12/1/80
Fulmer Research Institute (UK)	Training of Chinese engineers at Fulmer in the development of new materials technology	NVG	contract signed 12/12/80
ABC Sports (US)	Telecasting of international edition of Wide World of Sports	NVG	agreement completed 12/15/80

International Coins and Currency (US)	Exclusive rights to distribute international coins of legal tender commemorating the 1980 Winter Olympics at Lake Placid	NVG	contract signed 12/15/80
Arnold & Company (US)	Affiliation agreements with Guangdong Advertising Corporation and Tianjin Advertising Corporation	NVG	agreements established 12/17/80
Kamakura Shobo (Japan)	Editorial and advertisement know-how to the Chinese magazine *Fashion*	NVG	contract announced 12/21/80
Airport Catering Services (UK)	Contract with the Civil Aviation Administration of China (CAAC) to provide catering services	NVG	contract awarded 1/81
Mitsukoshi Ltd. (Japan)	Will consign Japanese-made products and craftworks for sale in Beijing	NVG	announced 1/24/81
A-Mark Precious Metals (US)	Agreement with the China Mint of the People's Bank of China to market 21,000 sets of four gold-proof commemorative coins annually over the next three years	NVG	agreement signed 2/81
UN Children's Fund and UN Disaster Relief	Relief funds to the quake-stricken Daofy County in Sichuan Province	$96,250	donated 3/4/81
World Wildlife Fund	A panda research center in Sichuan Province	$1 million	agreement signed 3/13/81

Total value of 1981 sales listed through April 1 ..... $789.8 million+
Total value of 1981 negotiations listed through April 1 ..... $4.2 billion+
Cumulative value of sales from January 1, 1979, through April 1, 1981 ..... $12.2 billion+
Cumulative value of negotiations from January 1, 1979, through April 1, 1981 ..... $10.8 billion+

中外贸易 CHINA'S EXPORTS: 1981 SALES AND NEGOTIATIONS THROUGH APRIL 1

Company/Country	Product/Plant/Technology	Value	Status Date Announced
Agriculture			
(Rwanda)	Assistance in the construction of rice plantations, reservoirs, and a rice mill	NVG	announced 11/80
(Japan)	20,000 metric tons of Chinese soybeans	$7.6 million	will purchase 3/9/81
Foreign Aid			
(Seychelles)	Construction of a high school to start early in 1981	$6 million	announced 12/5/80
(Mozambique)	Agreement to increase agricultural technical assistance	NVG	agreement signed 12/7/80
Metals and Minerals			
(Japan)	Will import 500 tons of pig iron	NVG	announced 12/18/81
Military Equipment			
(Somalia)	Between ten and 20 Mig-19s	NVG	to be delivered 2/7/81
Petroleum Products and Equipment			
(Philippines)	900,000 tons of crude oil for 1981	NVG	contract signed 2/23/81

Transportation			
(Pakistan)	Assistance in an aircraft-rebuilding factory	NVG	completed 11/80
Shipping			
Wheelock Maritime International (NA)	Two 27,000 dwt Lakes-fitted bulk carriers for delivery in 1983	NVG	order placed 12/16/80
Schulz and Clemmesen Ship Co. (W. Germany)	Three 4,400-ton multipurpose oceangoing cargo ships	NVG	ordered 1/23/81
Miscellaneous			
(Yemen Arab Republic)	China Engineering and Construction Corporation will build 400 five-room homes	$23 million	contract signed 2/20/81
Sogo Department Store (Japan)	Agreement reached with CHINATUHSU and ARTCHINA on the consignment production of rugs, down, porcelain, and furniture	NVG	agreement reached 2/81

Total value of 1981 sales listed through April 1 ..... $28.5 million +
Total value of 1981 negotiations listed through April 1 ..... $44.1 billion +

NVG = No value given
NOTES: Contracts denominated in foreign currencies are converted into US dollars at the most recent monthly average rate quoted in *International Financial Statistics* (IMF).
Contracts concluded over two months ago are also included if they were not reported in the last issue of the *CBR*.

中外贸易

JOINT VENTURES: 1981 PRESS REPORTS THROUGH APRIL 1*

Foreign Party	Chinese Party	Technology/Terms	Value	Status
Nifco, Inc. (Japan)	Second Light Industry Bureau of Liaoning Province, Lu Ta Plastic Industry Corp. and Fushun Plastic Corp.	Plastic industrial fasteners	NVG	memoranda exchanged 12/9/80
Shu Holdings, NV (Netherlands)	NA	Joint venture in the form of a patented transshipment dock, enabling China easier access to the European coal market	NVG	proposed 12/11/80
Gearhart Co. (US)	NA	Wireline logging services	NVG	letter of intent signed 12/19/80
(Japan)	NA	Development of a Chinese copper deposit at Anqing; Japan will provide the technology and the equipment, and the Chinese will furnish labor and materials	between $4.8 and $9.5 million	agreement expected 1/81
Li Tungsten Corp. (US)	NA	A newly-formed US-based company to be responsible for marketing the bulk of Chinese tungsten powders, wolframite and scheelite in the US and Canada	NVG	negotiations announced 1/30/81
Fujitsu (Japan)	Municipal Scientific Committee, Tianjin	Joint venture to produce Chinese language information handling hardware and software	NVG	announced 2/81
Maha Nakorn and Cold Storage Co. (Thailand)	Hainan authorities	A fishing venture, with 30 percent split in profit for the Chinese	NVG	deal concluded 2/81
Springfield Cultural and Educational Institute (Hong Kong)	Educational authorities of Haichu district in Canton	Establishment of the Modern English Language Center in Guangzhou	NVG	announced 2/81
(Hong Kong)	NA	The Happiness Nursery, with Shenzhen providing premises and labor at a cost	NVG	negotiations announced 2/81
(Hong Kong)	NA	Driving school in Canton	NVG	contract signed 2/81

MK Taxi Co. (Japan)	NA	Will set up jointly a taxi service either in Beijing or Shanghai initially	NVG	agreement reached 2/6/81
Gaysa Machinery Co. (Chile)	EQUIMPEX	Establishment of a 50-50 joint venture with Santiago that will deal with China-manufactured machinery and equipment; the Chinese will provide the products and the Chilean, the building site and office furniture; the venture will be valid for five years, renewable	$1 million	agreement announced 2/11/81
Linfeng Co. (Macao)	Beijing Municipal Foreign Trade Co.	Joint venture in Macao (the Jingao Company Ltd.) to handle transit goods from Beijing, accept orders and engage in other aspects of compensation trade on behalf of Beijing's foreign trade departments	NVG	announced 3/5/81
(Italy)	Shanghai Arts and Craft Company	A prestige store with China holding 49 percent	$500,000	opened 3/14/81

*Joint ventures already approved by China's Foreign Investment Control Commission are listed in the March–April 1981 *CBR*, pp. 22–23.

中外贸易 LICENSING: 1981 PRESS REPORTS THROUGH APRIL 1

Foreign Party	Chinese Party	Technology/Terms	Value	Status
Pilkington (UK)	NA	Optical systems for head-up display units on military planes	NVG	negotiations announced 12/5/80
Logabax (France)	China Electronics I/E Corporation	KSR printer contract which covers finished products, subassemblies, technical training and a 5-year license	$6.6 million	contract received 12/15/80
AEG-Telefunken AG (W. Germany)	NA	Seven-year licensing agreement to build color TV sets	NVG	contract signed 1/81
Siemens AG (W. Germany)	China Corporation of Shipbuilding Industry	License to produce low-voltage generators	NVG	awarded 2/11/81
Cummins Engine Co. (US)	China National Technical I/E Corp.	Certain types of Cummins' diesel engines	NVG	agreement announced 2/17/81
Bethlehem Steel Corp. (US)	Guangdong Shipbuilding Corp. and Wah-Chang International Marine Industry Co. (HK)	Offshore drilling-rig construction	NVG	memorandum of understanding signed 3/17/81

中外贸易 OTHER ARRANGEMENTS—COUNTERTRADE (C); COMPENSATION TRADE (CT); PROCESSING (P); AND BARTER (B). 1981 PRESS REPORTS THROUGH APRIL 1

Foreign Party	Chinese Party	Technology/Terms	Value	Status
Toshiba Tungaloy Co. (Japan)	Ministry of Metallurgical Industry and the Revolutionary Committee of Jiangxi Province	CT: Technological help on manufacture of cemented carbide tools in exchange for tungsten ore	$1 million	negotiations announced 1/20/81
(Sri Lanka)	NA	B: Will sell 20,000 metric tons of rubber and buy 80,000 metric tons of rice in return	NVG	agreement renewed 1/21/81
Lake & Hot Springs Country Club (Hong Kong and Thailand)	Shumchun authorities	CT: Agreement signed for the construction of a country club; Shumchun will provide land and labor while the Hong Kong company is supplying capital and designs	NVG	agreement signed 1/23/81
(Singapore)	NA	CT: Establishment of a plant in Singapore to build engines for farm machinery; China will provide castings to the plant and would receive engines in return	NVG	agreement reached 2/16/81

RMB:Dollar Rates

	RMB/ US$	US¢/ RMB
February 4		
Bid	1.6028	62.3908
Offer	1.5948	62.7038
Median	1.5988	62.5469
February 9		
Bid	1.6059	62.2704
Offer	1.5949	62.5821
Median	1.6019	62.4259
February 18		
Bid	1.6298	61.3572
Offer	1.6216	61.6675
Median	1.6257	61.5120
March 5		
Bid	1.6456	60.0768
Offer	1.6374	61.0724
Median	1.6415	60.9199
March 17		
Bid	1.6309	61.3158
Offer	1.6227	61.6257
Median	1.6268	61.4704
March 18		
Bid	1.6227	61.6257
Offer	1.6147	61.9310
Median	1.6187	61.7780
March 20		
Bid	1.6129	62.0001
Offer	1.6049	62.3092
Median	1.6089	62.1543
March 24		
Bid	1.6209	61.6941
Offer	1.6129	62.0001
Median	1.6169	61.8467
April 1		
Bid	1.6337	61.2107
Offer	1.6255	61.5195
Median	1.6296	61.3648
April 3		
Bid	1.6418	60.9088
Offer	1.6336	61.2145
Median	1.6377	61.0612
April 7		
Bid	1.699	60.2446
Offer	1.6517	60.5437
Median	1.6558	60.3938
April 10		
Bid	1.6483	60.6686
Offer	1.6401	60.9719
Median	1.6442	60.8199
April 16		
Bid	1.6798	59.5309
Offer	1.6714	59.8301
Median	1.6756	59.6801
May 14		
Bid	1.7359	57.6070
Offer	1.7273	57.8938
Median	1.7316	57.7501

SOURCE: Standard Chartered Bank, Ltd., New York.

CORRECTION

March–April *CBR*, page 6. The airline was CAAC (China's national airline), and not PanAm, which hosted National Council President Christopher Phillips and other special guests on its inaugural flight.

The National Council for US-China Trade

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我不知道你的公司代表什么
I don't know what your company stands for.
我不知道你的公司有那些顾客
I don't know your company's customers.
我不知道你的公司办得怎样
I don't know your company's record.
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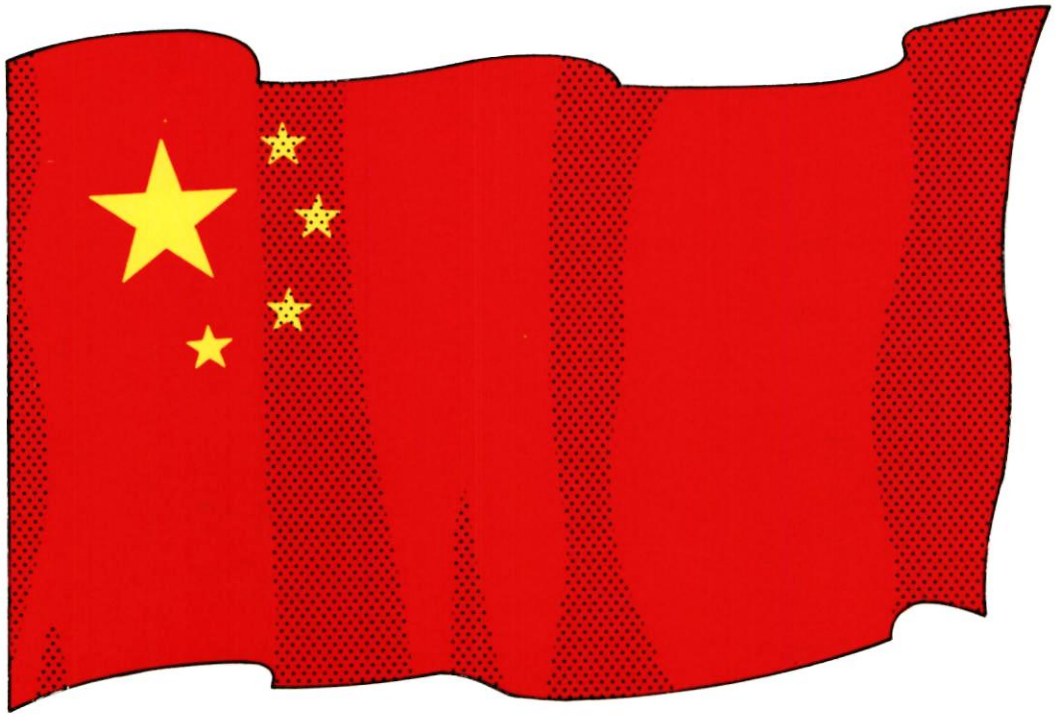

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