

A CHINESE WEEKLY OF NEWS AND VIEWS

Beijing Review

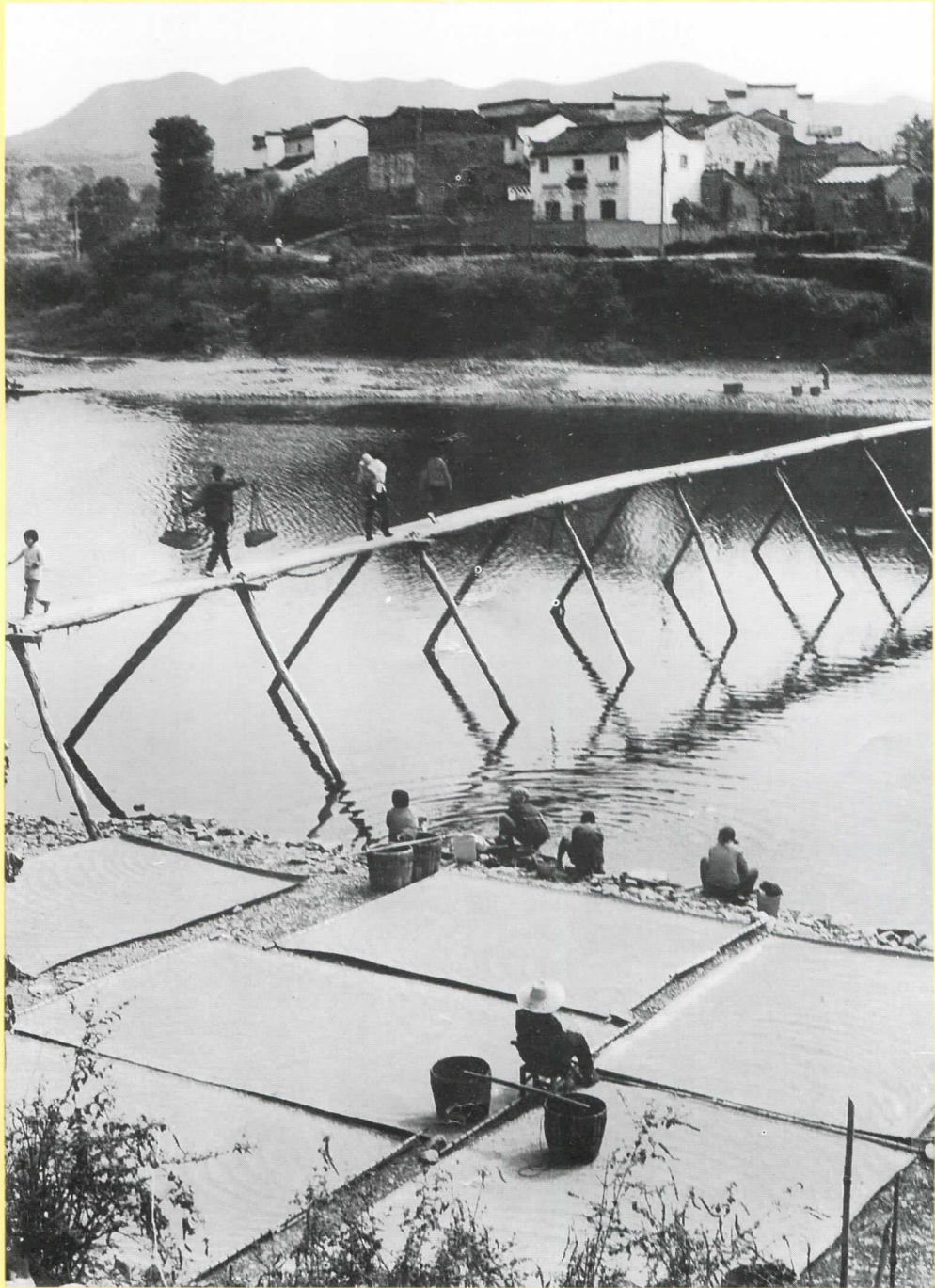
北京周报

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PROGRESS IN CHINA'S IRON AND STEEL INDUSTRY

China's Expanding Markets





A rural landscape.

Photo by Wang Guangxi

HIGHLIGHTS OF THE WEEK

Market Forces at Work

□ China's effort since 1978 to restructure its economy has successfully transformed the traditional central planning system into one that combines planning and regulation by market forces. The introduction of competitive principles has given rise to a variety of markets (p. 12).

Steel Industry Up to World Standards

□ China's iron and steel industry has made further progress in its efforts to improve product quality and variety after hitting the production target of 60 million tons of steel in 1990. Local iron and steel enterprises have developed rapidly by updating their technology and expanding international exchanges (p. 17).

African Unity Urged to Meet Challenges

□ The Organization of African Unity has renewed calls for African countries to pool efforts to maintain political stability, develop their national economies and promote regional economic integration (p. 8).

Understanding of DNA Structure Improves

□ A talented young scientist, Bai Chunli, was able to observe the DNA triple-stranded conformation by using a scanning tunneling microscope. His success has improved our understanding of the DNA structure and opened a new chapter in the study of organisms (p. 20).

Income Tax Law for Foreign-Invested Enterprises

□ The Income Tax Law of the People's Republic of China for Enterprises With Foreign Investment and Foreign Enterprises, published in full in this issue of *Beijing Review*, was adopted at the Fourth Session of the Seventh NPC on April 9, 1991 and scheduled to go into effect on July 1 (p. 24).

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COVER: The No.2 blast furnace, rebuilt with new technology by the Shoudu Iron and Steel Co. of Beijing, was recently put into operation. The new furnace has the most modern and advanced equipment. Exterior of the No.2 blast furnace. Bottom corner: automated control centre.

Photo by Chen Zonglie

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Yang Concludes Southeast Asian Trip

President Yang Shangkun's recent tour of Thailand and Indonesia has opened new vistas for friendly and co-operative relations between China and member countries of the Association of Southeast Asian Nations, *Renmin Ribao* (*People's Daily*) commented.

Yang and his party arrived in Bangkok on June 10 following his five-day trip to Indonesia. He was the second Chinese top leader to visit Thailand since former president Li Xiannian visited the country in 1985.

President Yang said the purpose of his visit was to promote the bilateral relations by "enhancing friendship, deepening understanding, broadening the common ground and developing co-operation."

At the banquet given by Thai King Bhumibol Adulyadej in honour of the Chinese President, Yang said the two countries have enjoyed long history



President Yang Shangkun goes sightseeing in Indonesia.

TANG MENGZONG

of friendly contacts and there is a kinship-like affinity between the two peoples. And the 16 years of diplomatic ties had witnessed all-round and smooth development in all aspects of their relations, he noted.

There have been frequent exchanges of visits by high-

ranking officials in recent years between the two countries, and the bilateral trade volume has amounted to about US\$1.2 billion, the Chinese president said.

King Bhumibol said the contacts between the two governments and peoples had made them inseparable.

During his meeting with Thai Prime Minister Anand Panyarachun, Yang discussed the Cambodian issue, saying China hopes the four Cambodian parties will let bygones be bygones and make way for an early settlement of the conflict.

Yang spoke highly of Chinese nationals residing in Thailand, at a banquet hosted by local Chinese associations, for their contributions to the development of the country and their role as a bridge between China and Thailand.

He told his well-wishers that the Communist Party of China (CPC) had long advocated the policy of "peaceful reunification and one-country, two systems," with such proposals as negotiations between the CPC and the ruling Kuomintang in

Yang presents King Bhumibol with a collection of Buddhist scriptures at the Grand Palace of Bangkok.

LIU JIANGSHENG



Taiwan on direct exchange of mail, trade, and air and shipping services.

"We hope the Taiwan authorities would take actions and make a genuine response," Yang said. ■

Boosting Production With Knowledge

In a bid to convert more scientific discoveries into high productivity or solid products, in the next five years China will carry out a series of programmes designed to improve product quality, develop new varieties, reduce production costs and improve productivity.

During the past 11 years (1979-1990), scientific findings brought 280 billion yuan of profit to China's national economy. For example, the Seventh Five-Year Plan period (1986-1990) saw more than 390 new strains of crops cultivated, bringing a 25-billion kilogramme increase in grain output. Twenty-five major crop diseases related to insects are now controlled. China's grain output made the record of 400 billion kilogrammes.

The acreage sown to long-grained hybrid rice, which won a special state prize, reached 1.3 million hectares in 1988, or 40 percent of China's total rice-growing acreage, and accounted for 48.5 percent of the nation's total rice output. The popularization of this hybrid rice is regarded as nothing short of a "green revolution" in China's grain production.

Thanks to the production of 120 items of new technological know-how, China's first large seabeach oil field, Gudong Oil

Field, turned out 17.7 million tons of oil in three years, making a profit of 8.8 billion yuan.

During the Eighth Five-Year Plan period (1991-1995), China will develop some 20,000 scientific findings. In agriculture, better varieties of grain, cotton and oil-bearing plants will be introduced along with new methods for the processing of farm products and the protection of the environment.

With the help of these findings, the annual agricultural output value is expected to reach above 200 billion yuan. Grain output will rise by 10 billion kilogrammes; cotton, 150 million kilogrammes; and edible oil, 500 million kilogrammes. The industrial output value will increase by 50-80 billion yuan as well.

Transfer of scientific knowledge will also help improve the technological level of such key industries as energy, raw materials, transportation, telecommunications, machine building and electronics.

Scientific institutions and organizations will work to disseminate scientific results, and en-

terprises will be eager to apply new technology in order to boost production. A market mechanism for selling and buying new technology and its scientific uses will also be set up.

There will be 500,000 to 1 million people engaged in popularizing scientific findings. By the end of 1991, 800 million yuan of state fund will have been used for this purpose. ■

State Sets Up Information Office

The State Council's Information Office, which aims to offer the world a better and more informative picture of China, has begun operation, Zhu Muzhi, director of the office, declared on June 13.

Zhu told a meeting of Chinese and foreign reporters and press officials from foreign embassies in Beijing that the aim of his office is to help promote mutual understanding between China and the rest of the world, so as

Zhu Muzhi introduces to the press his newly-established Information Office. JIANGUO



to strengthen China's exchanges and co-operation with other countries and regions in the economic, scientific and cultural fields.

The Information Office, a multi-functional administrative body, is responsible for "organizing, promoting and coordinating the work of different government departments in introducing China to the foreign countries." "We don't act as censors on news reporting and alike," he added.

Instead, the director promised, the office will provide various services and conveniences for all people, journalists included, who want to learn about China.

He stressed that China is still little known to most people abroad, and that more often than not the China in foreign minds does not tally with the China in reality, owing to partial knowledge, misunderstanding, prejudice, and, in some cases, false impression derived from rumours.

According to Zhu, the new office will neither take over the foreign affairs of any other governmental departments nor take over the function of the spokesman for the State Council.

Foreign press officials in China and foreign reporters as well as correspondents from Kong Kong and Macao are welcome to bring suggestions and questions to the Information Office, he said, adding, "We're ready to do our best to help."

Deputy director of the office, Zeng Jianhui, said the office has had branch offices set up in most provinces, autonomous regions and municipalities. The other deputy director, Zhou Jue, was also presented at the meeting.

by Staff Reporter Wang Xin



A recent fashion show in Beijing.

ZHANG YANHUI

Phones, Stocks, Decors Signal Better Life

China's urban residents are leading a better life, according to a recent *Workers' Daily* survey.

Telephones, once a rarity, have entered ordinary households. As effective communication tools adapted to the quickening rhythms of modern life, telephones are one of the most-sought-after consumer goods among urbanites.

In Harbin, capital of Northeast China's Heilongjiang Province, 23,034 households had telephones installed by the end of 1990, or 71 times the figure in 1985. Despite high telephone installation charges, which has increased from 1,000 yuan to 3,000 yuan since October of last year, 16,000 households in Harbin are awaiting telephone service.

Furthermore, there is a rising demand for telephone beepers in Harbin, where 14,000 pagers are already in use.

Interior Decoration. New and attractive interior decors have come in vogue among urban residents of Harbin. Statistics in-

dicate the average expenditure on house decoration has increased by more than 600 percent compared with figures released in 1985. Ornamental materials for interior decoration and household refurbishing such as wallpaper and painting materials are selling especially well.

The city's average per-capita expenditure on clothing has more than doubled in the past six years.

Another trend popular among residents of this northeast city is the use of gold ornaments. Compared with 1985, the per-capita expenditure on gold ornaments has increased by 400 percent in 1990, while that on cosmetics has increased by 1.4 times, indicated the *Workers' Daily* report.

A sample survey covering 10,000 married couples in Mudanjiang, another city in Heilongjiang, shows the average wedding expenditure has climbed from 5,000 yuan per couple in 1985 to 12,500 yuan last year.

Stock Exchange Gaining. Many citizens of Harbin have come to see stock exchange as a way of increasing the value of their savings and keeping a nest egg.

Last year, Harbin dwellers bought state treasury bonds to the tune of 200 million yuan, four times the 1989 figure. In 1989 the city had only one share-holding company; today there are 11. ■

Industry Picks up, Sales Remain Weak

In the first five months of this year China's total industrial output value registered a 13.3 percent rise, reaching 915.2 billion yuan.

Statistics show that the output of the state sector increased by 8.9 percent, the collective sector by 19 percent and the rural industry by 31.6 percent from January to May.

In May alone, the output value totalled 203.4 billion yuan, averaging 6.78 billion yuan a day, or an increase of 13.3 per-

cent over the previous month.

Industrial officials said that electrical machinery production was up thanks to increased investment. However, officials warned that the industry was still recovering. Production of steel, pig iron, rolled steel, non-ferrous metal, aluminium, and sodium carbonate grew at a lower rate than overall industrial growth.

The consumer goods market has returned to normal with the stable production of light industrial and textile products. In the first five months, the production of bicycles increased by 19.1 percent, colour television sets by 47.9 percent, tape recorders by 14.5 percent and electrical fans by 12.2 percent.

The first four months saw a 32 percent increase in the sales of agricultural machinery, compared with the corresponding period of last year.

Analysts said that the industrial growth of the past five

months is higher than the average growth rate of recent years, but the market sales are still weak compared with the industrial growth. ■

Stock Exchange Adds Wings to SEZ

A local law governing the trade in negotiable securities took effect in May in the Shenzhen Special Economic Zone. Shenzhen and Shanghai are the only cities in China to have established stock exchange markets on a trial basis.

The trade in stocks is increasingly becoming a way of life for Shenzhen, a close neighbour of Hong Kong. Of its population of 1 million, 80,000 have become involved in stock deals.

To date the city has issued 270 million yuan (US\$51 million) worth of stocks (face value), half of them for public sale. Last year, the volume of transactions at the Shenzhen stock exchange market reached 1.176 billion yuan.

The establishment of the stock exchange market has added wings to Shenzhen as a pace-setter in reforming China's economic system. Stocks have become a major fund-raising means for most of the local companies. Now about 2,000 companies in the city are share-holding companies. The city has also developed a inter-bank loan market, foreign exchange market and a gold market. According to Zhang Guoqing, a local official, foreign investors are also allowed to share a piece of action on Shenzhen's stock exchange market within the framework of local law.

by Staff Reporter Han Guojian

The Lanzhou Aluminium Plant, one of the 10 biggest ones in China, has maintained a 100-percent first-grade product rate for seven years in succession.

ZHANG
SHENGGUI



OAU Urges 'Pool of Efforts'

by Pan Yongmin

The 27th summit meeting of the Organization of African Unity (OAU) ended on June 6 in the Nigerian capital of Abuja by calling on the African continent to pool its efforts to meet political, economic and social challenges.

The meeting, attended by 35 heads of state or government, adopted a statement on the situation in South Africa, which urged an end to violence in that country and called for continued sanctions against Pretoria. Three resolutions were also adopted calling on the people of Liberia, Ethiopia and Somalia to put aside differences and hold talks to restore peace and normal order there. It was announced that a mediation committee composed of Nigeria, Kenya, Sudan, Somalia and Djibouti had been formed to seek a peaceful solution to the Ethiopian crisis.

A noteworthy result of the meeting was the signing of a treaty on the establishment of an African economic community, an action representing a significant shift away from politics, which had traditionally held sway at OAU summits since its founding in 1963.

Major topics at the meeting included: mounting external debt, which now stands at some US\$270 billion; deteriorating trade terms; and increased economic co-operation and self-reliance through acceleration of economic integration.

Throughout the 1980s, two-

thirds of African nations, supported by international financial institutions, including the International Monetary Fund (IMF) and the World Bank, made economic adjustments. Except for a few, however, most countries witnessed rising unemployment, dwindling purchasing power, and slow economic growth.

Since 1988, thanks to good weather, most of the Sub-Sahara countries recorded a steady agricultural growth for three years in a row. The gross domestic product in Africa grew by 3.1 percent in 1989 and by 3.6 percent in 1990, approaching and exceeding the population growth rate of 3.2 percent.

Currently, Africa faces three major problems. First, a mounting foreign debt. More than 40 percent of Africa's annual export earnings is used to repay foreign debt. Second, the economic structure, characterized by the export of primary products and raw materials and the import of large quantities of manufactured goods, has not changed much. Since the late 1980s, prices of raw materials and primary products on the international market repeatedly fell, inflicting huge losses on African countries. On the other hand, prices of industrial products indispensable for Africa's agricultural and industrial production and people's daily life continued to rise. This price gap is among major factors responsible for Africa's poverty. The third restraint is the popula-

tion explosion. For years African population has been growing at a rate of over 3 percent, higher than the continent's economic growth. As a result, more than half of the world's least developed countries are located in Africa.

These severe challenges have prompted African nations to explore new paths of development. At its 21st summit in 1985, the OAU for the first time in its history called on member states to give priority to agricultural development, especially grain production. To right a misguided aid programme conducted by the IMF and the World Bank, the United Nations Economic Commission for Africa, together with many African countries, formulated a substitute plan which put emphasis on developing local resources, improving the management of state-run enterprises, encouraging agricultural development and self-sufficiency in grain supply, gradually diversifying the economy and exports, and conducting regional co-operation.

African countries have made great efforts to promote regional economic integration. Dozens of regional economic co-operative organizations have sprung up, including the West African Economic Community, the largest of them in size. As early as in 1979, an OAU summit meeting in Liberia proposed to break the market barriers between production and distribution and to promote economic integration among African countries. In April 1980, the OAU held a special summit in Lagos, Nigeria to discuss economic issues. This meeting adopted the well-known "Lagos Plan of Action," which mapped out goals for development up to the year 2000. It called on African countries to pool efforts to promote economic development and integration.

The prospect of a single Euro-

pean market, scheduled to be established at the end of 1992, and the emergence of other regional trading blocs make African countries more keenly aware of the necessity and urgency in completing the process of African integration.

The treaty signed during the latest summit suggested six stages for establishing the community, starting with the strengthening of regional economic groupings and ending with the setting up of an African Monetary Union, the establishment of an African Central Bank and the

creation of a single African currency.

In his closing speech, current OAU Chairman, Nigerian President Ibrahim Babangida described the meeting as "epoch-making" and a "unique, indeed historic, summit." By signing the treaty establishing the African Economic Community, "We have taken the decisive step towards economic integration, development and co-operation in Africa. The historic event was the fulfilment of a long-held dream to harness Africa's full potentials," said Babangida. ■

held a rally, strongly protesting a lack of fulfillment of promises made by the Kohl government. Demonstrators demanded for better living standards and more jobs.

Not long ago some big cities in the eastern region resumed "Monday meetings" against the government, expressing feelings and frustration against the Kohl government.

According to statistics, industrial production in the eastern region of Germany in 1990 decreased by 50 percent compared with that of 1989. It again decreased by 31 percent in the first two months of this year. More than 8,000 state enterprises, which took up 95 percent of the industrial production in former Democratic Germany, have nearly shut down or half stopped work. Industrial production continues to decline, but has not yet reached the bottom.

The sluggish economy and factory close-downs have led to serious unemployment. The jobless in the eastern region of Germany increased by 21,000 in March over figures of the previous month, totalling 800,000, while semi-unemployment reached 2 million. It is predicted that the unemployed will soon account for one third of the total number of labourers of this region. As unemployment increases so does concern for the future.

Although the newly organized five states of the eastern region have set up governmental operations at all levels, none operates well because of a shortage of money. The budgetary expenditure of the five states is 106.4 billion marks, while income is 62.8 billion marks, a deficit of 43.6 billion marks. Because of this shortage of money, problem solving is hampered, even at a standstill. Government proceedings await financial assistance from various states of the western region.

Germany Faces Stern Test

by Shun Feng

The economy in the east German region has deteriorated since the unification of two Germanys on October 3, 1990. Therefore, German Chancellor Helmut Kohl, while visiting the United States last May, asked the US entrepreneurs to invest in this region.

Before his visit, Kohl personally inspected the east German region on April 7, 1991. There he was applauded and also became the object of indignant protest and even the target for eggs. All this is a result of sharp economic deterioration since the unification of Germany.

The federal government originally thought there would be a smooth transformation of the economic and political systems of the eastern region and the creation of "the second German economic wonder." The Kohl government also claimed to raise the people's living standard of the eastern region to that of the

western region. However, the economic and social situation in the eastern region has worsened, causing a series of social problems.

Strike After Strike

At the end of last year, railway employees and teachers went on strike. This was followed, on January 23, 1991, by 12,000 post and telecommunication personnel demanding that their economic treatment be improved and their employment guaranteed. Subsequently, the main postal offices in some big cities basically stopped service during the three days of strike. The overstock of postal packets was more than 8 million, seriously affecting economic and social life in Germany.

On March 19, people in some cities in the eastern region held demonstrations and assemblies. In Leipzig, about 60,000 people

Other Problems

German unification was rapidly accomplished, causing a series of shocks and various unadaptabilities in the eastern region.

As the economic system was transformed, enterprises of the eastern region were pushed into sharp international competition. In comparison with the western region, their production efficiency is low and competitiveness weak. The consumption psychology of the people in the eastern region has undergone a change. The products made by enterprises in this region are not well sold and many enterprises have fallen into a crisis. Besides, the main markets for products of original East German enterprises were the Soviet Union and other member nations of the Council for Mutual Economic Assistance. Now that foreign trade of the eastern region is based on cash and the Soviet Union and East European countries have no hard currencies to buy products from the eastern region of Germany, eastern enterprises have lost their traditional market.

The original social and administrative organs of the eastern region have been fractured and new ones have not been set up because of a lack of personnel and funds. The management of the eastern region is actually in chaos. Many public employees in the eastern region were dismissed from offices and joined the unemployed army. The German government planned to send a large number of workers from the western region to work in the eastern region. However, because the working conditions and living standard of the eastern region are comparatively poor, the westerners don't want to go there. Furthermore, they are not familiar with the eastern region. All this has given rise to various contradictions.

Now a sluggish investment is

another big headache. It is difficult to rebuild the economy of the eastern region. The Kohl government pinned the hope of rebuilding the economy there upon an increase of private investment. The government had thought once it declared the policy of privatization and market economy in the eastern region, private investors would gather in great numbers. Because the original ownership of enterprises and landed estates in the eastern region is in a mess, the privatization process has slowly progressed. Also, because the environmental pollution there is serious and basic facilities are backward, enterprises of the western region of Germany and other Western countries don't want to risk investment in the eastern region of Germany. In the meantime enterprises of the western region would rather work extra shifts or extra hours and then transport products to the eastern region to sell than go there immediately. At the least they don't want to invest and build factories there for the time being. This has further caused the imbalance of economic development between the eastern and western parts of Germany and in particular led to an economic recession in the eastern region.

Because of the present situation the inhabitants of the eastern region feel abandoned. Their original enthusiasm towards the unification has been replaced by sober-mindedness. Furthermore, wage differences, wide gaps between the living standards and discrimination have made regional identity a cause of estrangement between the eastern and western inhabitants, creating a big social problem.

Countermeasures

In face of these difficulties, the Kohl government has tried to

find a way to deal with this situation. Not long ago it put forward a plan of prosperity for the eastern region. First, the government decided to allocate 100 billion marks to increase public investment, indirect subsidies and financial subsidies of all the newly built states in the eastern region. The second point is to readjust the policy of privatization by advocating simultaneous privatization and improvement of the enterprises of former East Germany. The Federal Assembly of Germany worked out a law aimed at removing obstacles to privatization and promoting investment. Its nucleus is to carry out the most favourable policy towards the investors and particularly those who create job opportunities by buying pieces of land and enterprises in the eastern region. The third point is to rapidly set up and perfect the administrative organs at all levels. The federal government decided to allocate another 7 billion marks to increase wages and subsidies of those talented persons in the western region who would like to work in the eastern region. It also decided to send managers and officials of the eastern region to the west for training. To ease the social tension, the ruling parties of Germany reached a consensus that the old-age pension of retired staffers and workers of the eastern region will increase by 15 percent as of July 1 on the basis of an increase of 15 percent approved earlier this year.

Whether all these measures will be effective or not cannot be decided by now, observers say.

It seems that the eastern region has now entered a most difficult period. To create the same living conditions in the whole of Germany and realize genuine unification is of primary importance, constituting the most difficult issue facing Germany today. ■

Ethiopia Changes Dramatically

by Huang Pengnian

Fighters of the Ethiopian People's Revolutionary Democratic Front (EPRDF) captured the presidential palace May 28; Mengistu regime fell.

Lying in northeast Africa, Ethiopia has 50 million of population including 75 ethnic groups living in an area of 1.2 million square kilometres. For decades this country has been afflicted by natural disasters and embarrassed by continued fighting.

Mengistu Haile Mariam, leader of the military regime since 1977, fled to Zimbabwe on May 21 under the excuse of inspecting a military training centre.

After Mengistu escaped, Deputy President Tesfaye Gebre-kidan and the reshuffled cabinet tried to stop the civil war and reach national reconciliation by freeing political prisoners and agreeing to hold talks with the opposition parties. But it was too late. Troops of the opposition groups marched onto the capital, overthrowing the Mengistu regime.

A combination of internal and external factors is responsible for the fall of the Mengistu regime. During the 14-year rule, Mengistu insisted on suppressing opposing ethnic parties with arms, triggering ethnic uprising at him. Years of civil war depleted the nation's human resources and materials, and the national economy was drawn to the edge of bankruptcy.

A major external factor related to the fall of Mengistu regime lies in the trimming of assistance to Ethiopia by the Soviet Union and the East European countries.

The EPRDF is the strongest opposition group composed of the Tigre People's Liberation Front (TPLF) and some other opposi-

tion parties. Initially, the organization proclaimed it believed in Marxism-Leninism and pursued socialism. In recent years, it advocated multi-party democracy, a mixed economy, equality among nationalities and the right of autonomy. Since the 1970s, the organization has fought against government troops in northern Ethiopia and carried out democratic reforms within the areas it controls, winning the support of local ethnic people.

The Ethiopian civil war holds a record for being among the longest in the world. The fight in Eritrea in northern Ethiopia has lasted for 31 years. During the Haile Sellassie I reign, the ethnic groups in Eritrea demanded independence and initiated armed struggle for this purpose in 1961. But the struggle was crushed by the central government.

When Emperor Sellassie was overthrown in 1974, the military regime strengthened the suppression which caused greater rebellion of the local people.

Eritrea covers an area of 12,000 square kilometres with 2.6 million people. Facing the Red Sea, Eritrea, with 1,113 kilometres of coastline, controls the Mandeb Straits and is strategically important. In its history, Eritrea had been occupied by troops from Turkey, Egypt, Britain and Italy. After World War II, the United States and the Soviet Union each supported, overtly or covertly, the Eritrean ethnic people's armed struggle for independence in order to weaken the other's influence in the area. In addition, the movement for independence has won support of some Islamic nations in the Middle East because of their shared religious

and cultural backgrounds.

Because the military regime, which maintained the ruling position of Amhara, carried out a policy of suppression among ethnic groups, national contradictions intensified. Throughout the country appeared 17 ethnic anti-government organizations and guerrillas fighting for specific national interests. Some of them were crushed by the government's army and the rest harbours various political demands. However, all agree on the same goal of overthrowing the Mengistu regime.

At present, the country still faces a danger of being split and the eruption of new conflicts. The Eritrea People's Liberation Front has declared the founding of its own interim government, indicating the possibility that Eritrea will form an independent group. Many Ethiopians are worried about this.

Thus far, the EPRDF controls only half of the country's land. The most difficult problem that the new regime must settle is Ethiopia's millions of refugees.

It is reported that some high officials of the former government, including the former Prime Minister Fikre Sellassie Wogderesse, have surrendered to the EPRDF. The normal order in the capital has been restored. Meles Zenawi, chairman of the EPRDF and acting prime minister, when explaining the new government's programme to the diplomats in Addis Ababa, said that the primary task is to restore law and order in the country and ease the pain of starving people. He stated that if the Eritreans vote in favour of independence, the central government will concede. ■

Economic Change Creates New Markets

by Zhao Xiaojian

Since 1978, China's effort to restructure its economy has successfully transformed the traditional central planning system into one of the planned commodity economy which uses market principles as key operating measures. This introduction of market principles led to some changes in the macro and micro-economic regulatory systems:

—As ownership has been restructured, both enterprises and individuals have cultivated an awareness of their capacity to participate in market activities on their own. In the past, enterprises and individuals were plagued by the monotonous pattern of public ownership and lacked a sense of economic participation. Since 1978, however, great changes have taken place in the ownership structure. First, sole public ownership has been replaced by state-owned, collective, private and foreign-funded economic sectors. Second, the separation of ownership rights from managerial rights within the public sector has made enterprises independent in management and responsible for their own profits and losses. Such changes have been a powerful market stimulus for enterprises.

—Prices have been readjusted to better mirror the value of commodities and the relations between supply and demand. State-set prices, floating prices and free prices coexist. The proportion of state-set commodity prices has been decreased and the proportion of commodities whose prices are subject to market regulation has been increased in order to narrow

the gap between the two pricing systems for the same commodity. The ultimate goal is to have a single pricing system and, under the guidance of planning, to let prices float with the market. As required by the law of value, prices for farm produce, energy, raw and semi-finished materials and other basic industrial products have been increased in order to achieve price parity.

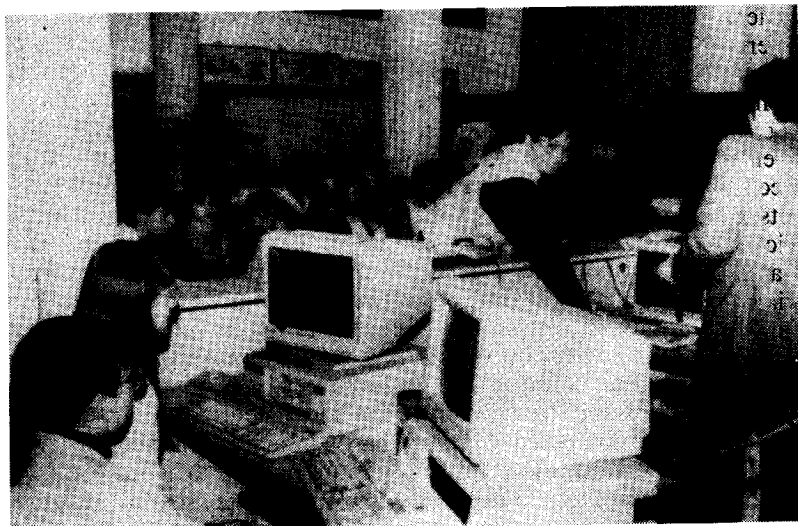
—The scope of market has been gradually widened and various market systems promoted. In terms of market forms, not only have the original wholesale and retail markets been developed, but auction and leasing markets have also been established. In terms of market variety, apart from the original consumer goods market, a capital goods market, monetary market, real estate market and foreign exchange market have also seen rapid development. A new market network centred around large and medium-sized ci-

ties and featuring the free flow of commodities has been initially shaped.

—With their regulatory functions strengthened, markets are playing an ever more important role in the national economy. Price changes are exerting an increasing influence on commodity supply and demand, labour and funds. In the past, enterprises depended heavily on the government but today they must keep a close eye on market trends. In the field of macro-economic regulation, the state no longer exercises quantitative management of the economy through direct planning as it did in the past. Instead, it exercises indirect macro-management through the use of market mechanisms in accordance with the law of value. The state guides enterprises in its macro-economic development programme by changing such parameters as tax, interest and exchange rates.

The Shanghai Foreign Exchange Co-ordinating Centre registered a total transaction volume of US\$1.85 billion last year.

LIU ZHONGYANG



The author is an official of the China Council for the Promotion of International Trade.

Various markets have developed in China.

1. Commodity Market

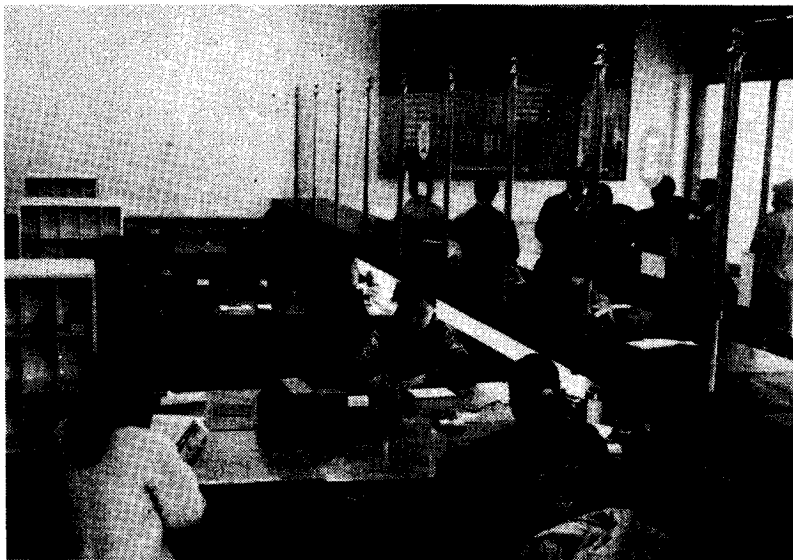
Commodity markets are the foundation of the market system. After more than ten years of economic reform, China's commodity markets have become quite active and a complete commodity market system has initially taken shape.

—The consumer goods market. As a result of the introduction of various forms of ownership and management and channels for the circulation of commodities, the scope of commodities subject to market forces has been widened. New commercial forms such as trade centres, trade shops, wholesale markets, farm produce trade fairs, co-operative stores as well as agriculture-industry-commerce enterprises have emerged. This has resulted in booming urban and rural markets. Nationwide, the number of commercial outlets increased from 1.048 million in 1978 to 8.6 million in 1990 and the number of trade fairs increased from 40,809 in 1980 to 73,857 in 1990. The total value of transactions conducted at trade fairs throughout the country came to 224.5 billion yuan in 1990, about 27.2 percent of total retail sales nationwide.

—The capital goods market. A variety of capital goods markets emerged. Many capital goods can be traded in the market whether or not they are produced according to state plan, thus greatly strengthening the role of market mechanisms. Capital goods markets for metals, machinery, electric equipment, timber, building materials, chemicals, light industrial materials and automobiles have been established throughout the country.

2. Monetary Market

In order to make better use of funds and meet the needs of a



BAI LIANSUO

The Trust and Investment Corp. of the People's Construction Bank of China opened a securities office in Beijing on March 19.

developing monetary market, China has conducted a series of reforms of its financial system. As of September 1983, the People's Bank of China, acting as the exclusive financial agent of the state's financial affairs, stopped providing loans and handling deposits for enterprises and individuals. To provide such services, four specialized banks—the Industrial and Commercial Bank, the Agricultural Bank, the Bank of Construction, the Bank of China—and an investment bank with the special task of overseeing loans from the World Bank either resumed operation or were newly established. In July 1986, the Bank of Communications resumed its domestic banking businesses as China's first joint-stock financial institution. Later, an international trust and investment corporation, local trust and investment companies, leasing companies and financial companies were established. In addition, such financial organizations as urban and rural credit co-operatives were also developed.

The reform of the financial system gave birth to vibrant financial markets which have already grown quite large in operation.

Financial markets play a positive role in promoting economic development through their lending and borrowing activities.

—The stock markets. When the Shenyang Trust and Investment Corp. took the lead in handling stock exchange businesses in early August 1986, it marked the birth of the stock market in China. Following quickly on its heels were Shanghai, Xian, Taiyuan, Chongqing, Wuhan, Xiamen, Shenzhen, Guangzhou and Fuzhou. In December 1990, China's first Stock Exchange was established in Shanghai and, just recently, the Shenzhen Stock Exchange was established. By the end of 1990, China already had 46 securities companies overseeing more than 700 affiliates and 30,000 employees and floating 200 billion yuan in various securities. Listed securities have been growing annually by more than 60 percent; transactions reached 13.6 billion yuan in 1990 or six times that of 1989. Listed securities include treasury bonds, financial bonds and enterprises' stocks. As China continues with its economic restructuring and opening up, the securities markets are certain to thrive.

—The debt market. Currently, the debt market in China refers to lending and borrowing between banks, a market which, in recent years, has been in a state of flux. The volume of lending and borrowing totalled 30 billion yuan in 1986, some 230 billion yuan in 1987 and 520 billion yuan in 1988, but down to 290 billion yuan in 1989 and decreasing to 260 billion yuan in 1990. Such fluctuations have much to do with China's unstable financial policies. Despite this, there is a lot of room for development of China's debt market in the future.

—Insurance. In 1979, China decided to establish an economic compensation system by resuming the issuance of domestic insurance. Recent years have seen a rapid development of the People's Insurance Corp. of China in its domestic business. By 1990, premiums totalled 17.78 billion yuan and claims 8.11 billion yuan.

—Foreign exchange co-ordination markets. The Shenzhen Special Economic Zone was the first to establish a foreign exchange co-ordination centre in 1985. It was then followed by ev-

ery province, autonomous region and municipality, every city with independent planning power and other special economic zones. When a national foreign exchange co-ordination centre was established in Beijing, foreign exchange prices were allowed to fluctuate with the supply and demand. A national foreign exchange market network has thus been initially established. In 1990, the value of all transactions nationwide came to US\$13.164 billion, up 53.68 percent from 1989.

3. Labour Market

China's labour force is made up of ordinary workers and farmers as well as a more educated and trained body of personnel. Corresponding with these two groups are two administrative systems: a labour system and a personnel system, the first in charge of workers and farmers and the second of office staff.

—Reform of the labour system and establishment of labour market. Since the reform of the labour system began in 1986, the State Council has established a series of rules on employment in enterpris-

es. The rules stipulate that the employment system should be in line with public needs and open to all and that employees should be selected according to enterprise requirements. Additionally, new workers should be hired under contract and the old practice of the "iron rice bowl" (life-long employment) eliminated, employers granted the right to fire employees for serious breach of discipline and an unemployment and pension insurance established.

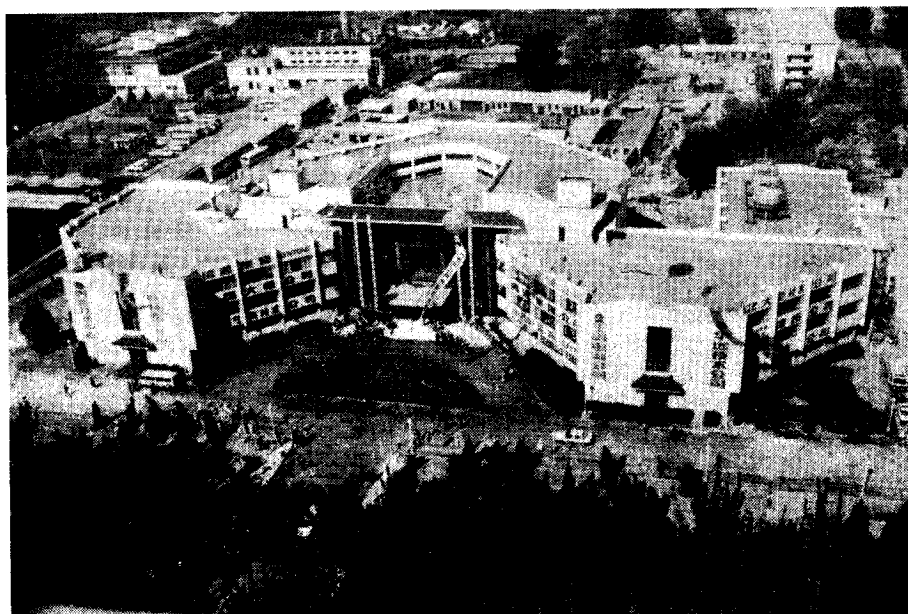
During the course of labour reform, the new system of labour markets has promoted a reasonable flow of labour and provided more opportunities for both employers and employees to select each other. By 1990, more than 8,000 labour markets were established throughout the country. These markets have played a major role in job assignments, transfers, provision of unemployment insurances and locating jobs for rural labourers.

—Reform of the personnel system and the founding of the personnel exchange centres. As part of the reform of its labour system, China has also restructured

its personnel system. As the use of contracts has widened, the competitive bidding system introduced among enterprises has resulted in the nurturing of a large number of talented managerial personnel. For example, town and township government civil servants will be hired under contract and personnel will be transferred administratively or through personnel exchange centres. To this end, various levels of personnel departments established personnel exchange organizations.

China presently has

An aerial view of the Technology Trading Centre of the Beijing Experimental Zone for the Development of New Technology Industries which opened on May 11. WANG CHENGXUAN



more than 1,000 personnel exchange centres charged with the task to match people and jobs. They thus play a significant role in promoting the reasonable flow of labour.

4. Real Estate Market

One key factor in the reform of the land-use system is to allow the use of state land for compensation during a specified period of time. Initially, land-use rights could not be transferred, leased or mortgaged in the market in order to protect land resources and increase overall economic benefits to the state. To deepen land-use reform, however, special economic zones and coastal open cities began in the second half of 1987 to allow the transfer or lease of land-use rights so long as the principle of separating ownership of land from the right to use is maintained. On May 19, 1990, the State Council promulgated "Provisions on Lease and Transfer of State Land-Use Rights in Cities and Towns." According to the provisions, investors have the right to lease land and to transfer, lease, and mortgage such right. These reforms are now applied nationwide. In the special economic zones and coastal open cities, many foreign businessmen have acquired the right to develop tracts of land.

Real estate business has thus been brisk and various kinds of real estate transaction centres have been established in most large cities. Housing trusts, mortgage, labour services, consulting services, housing exchanges, repair and decoration are all part of the real estate market. Incomplete statistics indicate that the volume of real estate transactions reached 5 billion yuan in 1989, a level maintained during 1990.

One development which merits attention is the commercialization of housing. Many cities have introduced such practices as sale of commodity houses, renting, in-



LI KAIYUAN
The Taiwanese general manager (right) of the Fuzhou Xinghua Arts and Crafts Co. Ltd. shows off his products to Hong Kong businessmen. The stone and wood carvings are in high demand in the United States, Japan and Southeast Asian countries.

creased rent for extra floor space and security deposits. Reform of the housing system, for example, has already begun in Beijing, Shanghai and in other pilot locations such as Yantai in Shandong Province, Bengbu in Anhui Province and Tangshan in Hebei Province. Housing is thus included as part of the local planned commodity economy. In 1989 a total of 10 billion yuan worth of new residential houses were sold to individuals, a figure which remained the same throughout 1990.

The real estate market has grown in China and is certain to develop rapidly in coming years.

5. Technology Market

Since the Chinese government decided to restructure its scientific and technological system and develop a technology market in 1985, the market has developed rapidly and become a key component of the country's market system. This has promoted the application of scientific and technological achievements, thus combining science and technology with economic construction. Progress has been made in the following fields:

—The volume of technology

trade has increased annually. The figure reached 50 million yuan in 1983, up to 2.06 billion yuan in 1986 and further up to 7.51 billion yuan in 1990.

—The marketing network has been expanded. As technology trade has developed, various places and departments have set up technological development organizations and formed a multi-tier and multi-channelled technology market network. The network encompasses county-level areas and, in 1990, there were 20,700 technology/trade institutes.

—There has been a well-regulated administration of the technology market with various locations setting up administrative and regulatory departments. These departments have helped to normalize market administration.

—The technical level has continued to improve. In the technology market's initial stage of development, the main buyers of technology commodities were small and medium-sized enterprises because the market could not meet the needs of large enterprises. Today, however, the market can meet the material and technological needs of both large and medium-sized enterprises.

6. Information Market

An information market has also begun to grow in China. Information, as a commodity, will play an increasingly important role in the development of the commodity, financial, labour, real estate and technology markets.

Already, China has a nationwide information service network. At the top level, there is the State Economic Information Centre; at the city level and within various ministries and commissions, there are economic information centres and information service organizations; and at the county-level, there are information service departments. Additionally, many information consulting service companies have been set up to provide macro-economic information for governmental and enterprise decision-makers and collect micro-economic information for enterprises.

In general, China's great progress in its reform effort has gradually strengthened the market system. During the Eighth Five-Year Plan period (1991-95), China will continue to develop the consumer goods market and expand the capital goods market. It will also deepen reform of the commercial and the supply systems in order to set up an effective commodity circulation system under the state's guidance and administration. Efforts will be made to develop various kinds of wholesale markets and trade forms, especially trans-regional comprehensive or specialized enterprise groups which engage in marketing and goods circulation. At the same time, monetary, technology, information, real estate and labour markets should all be developed to keep pace with the development of the commodity markets. All barriers and regional blockade and compartmentalization should be eliminated in order to promote a nationally unified market. No doubt, the continued development and improvement of a variety of markets and of an overall market system will be the trend of China's future economic development. ■

Steel Industry Reaching World Standards

by Our Staff Reporter Zhang Zhiping

After meeting its target for producing 60 million tons of steel during the Seventh Five-Year Plan period (1986-90), China's iron and steel industry has made further progress in the quality and variety of its products. Local iron and steel enterprises have developed rapidly and there have been notable achievements in technological renovations and international technological exchanges.

In 1990, China produced 66.04 million tons of steel and 51.21 million tons of rolled steel, thus fulfilling the targets set in the Seventh Five-Year Plan two years ahead of schedule. In five years, the country produced a total of 295 million tons of steel, approximately 1.5 times the figure in the previous five-year plan period.

The Seventh Five-Year Plan period witnessed the most rapid and vigorous development and drastic changes ever in China's iron and steel industry. In five years, the industry registered an average annual growth of 3.8 million tons in iron and steel production. The output in 1990 was 19.2 million tons more than in 1985. During this period, the

industry invested a total of 67 billion yuan, raising the nation's steel production capacity by 43.71 million tons, pig iron by 9.54 million tons, and rolled steel by 15.95 million tons.

Improved Quality

In recent years, despite the constant growth in output, China's iron and steel industry has had some problems. On the one hand, following the introduction of the retrenchment policy, the nation's iron and steel market became sluggish and some rolled steel products became a drag on the market. In the first half of last year, China's rolled steel stock increased 11.03 percent over the same period of the year

CHINA

Output of China's Ten Major Iron and Steel Enterprises

	Steel (million tons)		Iron (million tons)	
	1980	1990	1980	1990
Anshan Iron and Steel Co.	6.97	7.71	6.70	7.41
Wuhan Iron and Steel Co.	2.78	4.74	3.44	4.51
Shoudu Iron and Steel Co.	1.55	4.36	2.94	3.58
Baoshan Iron and Steel Complex.		3.87		3.30
Baotou Iron and Steel Co.	1.23	2.52	1.28	2.51
Benxi Iron and Steel Co.	0.90	2.37	3.10	2.75
Maanshan Iron and Steel Co.	1.09	2.04	1.78	2.24
Panzhuhua Iron and Steel Co.	1.62	1.91	1.95	2.29
Taiyuan Iron and Steel Co.	1.15	1.79	0.92	1.33
Tangshan Iron and Steel Co.	1.15	1.58	0.19	0.69
Chongqing Iron and Steel Co.	0.62		0.49	

before. On the other hand, there has been an increasing shortage of many kinds of special rolled steel. The supply of more than 100 specifications of rolled steel sorely needed by the energy, machine-building and light industries and transport and communications services has fallen short of demand. Due to a shortage of steel products of some specifications and varieties, China has had to spend several billion US dollars annually to import them. To change this situation, China's iron and steel industry, while striving to increase output, focused on increasing the variety and quality of products and improving the product mix.

In five years (1986-90), 70 iron and steel enterprises built 462 production lines operating according to advanced international standards. By 1990, more than 40 percent of China's iron and steel enterprises were operating according to international standards. The amount of steel produced which met international standards rose from 4 million tons in 1986 to 23 million tons.

Last year, China readjusted the product mix of its iron and steel industry through the development of new products. According to the Ministry of the Metallurgical Industry, the output of

steel plates, tubes and strips badly needed by energy, transport and communications and machine-building industries rose 48 percent. The output of 11 kinds of rolled steel which were in critically short supply domestically rose 27 percent over 1989 while the import of rolled steel dropped 57 percent from 1989, down from 19.63 million tons in 1985 to 4.2 million tons.

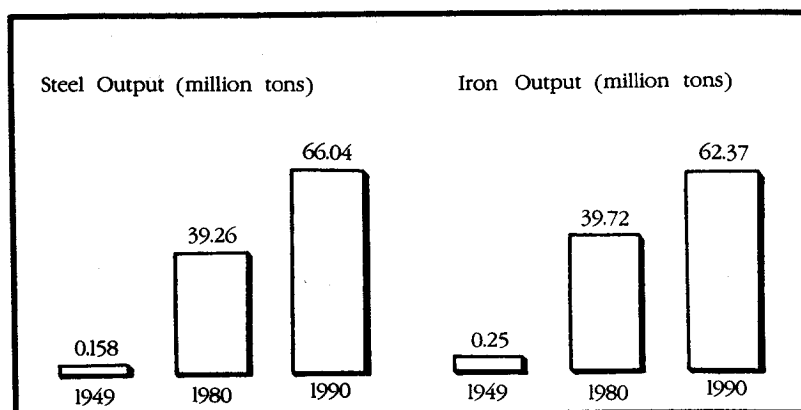
By the end of the first quarter of this year, the mix of China's iron and steel products was balanced. In the first two months, compared with the same period last year, the undersupplied steel plate, tubes and strip steel rose 6.95 percent, steel sheets 16.75 percent, and seamless steel tubes 6.25 percent, all exceeding the growth rate of the nation's iron and steel output.

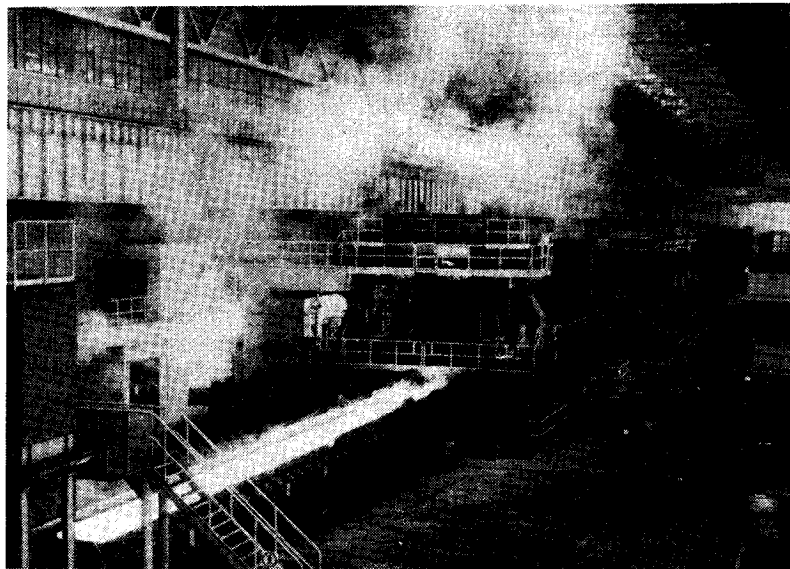
During the Seventh Five-Year Plan period, China's iron and steel industry not only produced a batch of import substitutes by readjusting the product mix and improving the quality of products but also exported 3.9142 million tons of rolled steel.

Local Enterprises

The Seventh Five-Year Plan period also witnessed the fastest growth of China's local iron and steel industry.

China has more than 1,400 local iron and steel enterprises. During the five years, the steel output of these enterprises rose 7.5 million tons, accounting for 40 percent of the industry's total growth, and their iron output increased 8 million tons, accounting for 48 percent of the total





ZHANG PING

The modern hot rolling mill at the Baoshan Iron and Steel Complex is of advanced 1980s technical level.

growth.

In the five years, China's local iron and steel enterprises invested more than 16 billion yuan in technological transformation and necessary expansion projects, greatly upgrading their equipment and technical level.

In the period, China's iron and steel industry yielded 88 billion yuan in profits and taxes, including 24 billion yuan contributed by local iron and steel enterprises. The number of local iron and steel enterprises with an annual output exceeding 1 million tons increased from two in 1985 to seven, and 35 local iron and steel enterprises entered the ranks of China's top 500 businesses.

Technical Renovation

Technological transformation was a shot in the arm for China's iron and steel industry. According to statistics, between early 1986 and early 1990, the newly increased production capacity from technological renovation accounted for 60 percent of the industry's increased production capacity, including 8.31 million tons of steel making and 6.97

million tons of iron smelting.

The continuous casting technology, which occupies an important place in China's iron and steel production, is gradually replacing the mould casting technology, while the rate of continuous casting increased from 10.18 percent in 1985 to 21 percent in 1990, raising the output by 8-10 percent, or the output of a steel mill with an annual capacity of 1 million tons.

The introduction of 30 new

technological items such as blast furnace coal spray helps reduce energy consumption. By the end of 1990, China's coal consumption for each ton of steel output dropped 1.63 tons, saving a total of 9 million tons more than in the Sixth Five-Year Plan period.

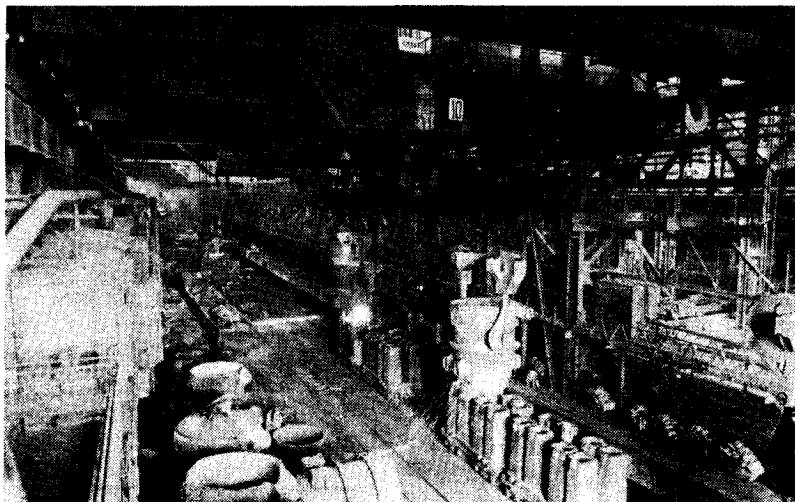
During the Seventh Five-Year Plan period, three-fourths of China's iron and steel industry's investment was used to re-equip old enterprises. In five years, the Anshan Iron and Steel Complex invested 5 billion yuan to renovate its major equipment, a step which helped increase its fixed assets by 5.5 billion yuan and raise its output each year. Equal importance is attached to the import of advanced equipment and technology and to China's own development of advanced technology. This has enabled a batch of old enterprises to stress product quality and efficiency rather than output.

Foreign Co-operation

China's iron and steel industry has further expanded its foreign economic co-operation and technological exchange. During the Seventh Five-Year Plan period, China imported a batch of key

A workshop at the No. 1 Steelworks of the Anshan Iron and Steel Co.

XU XIANGJUN



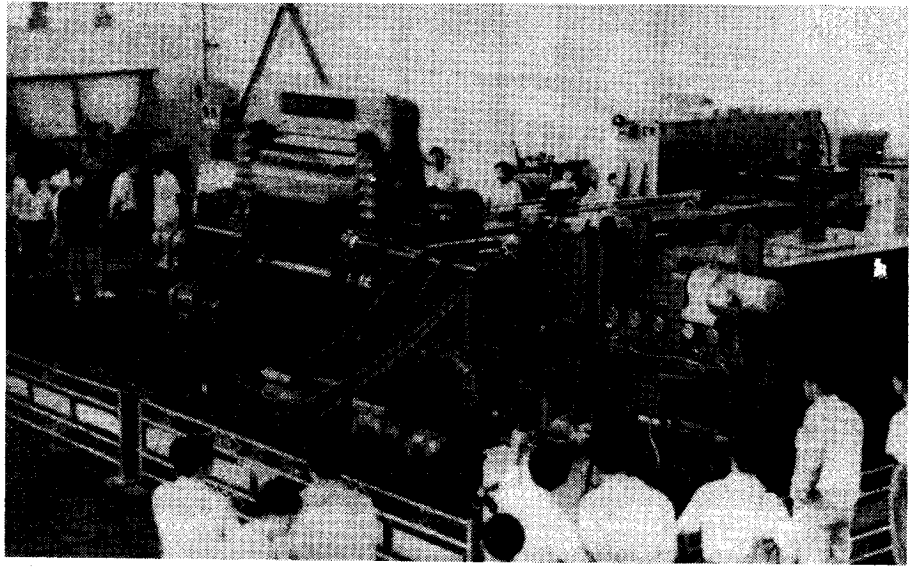
technological items and equipment, helping upgrade the iron and steel industry's backward equipment. In five years, the industry exported US\$5.4 billion worth of products and the export of rolled steel made a breakthrough. In 1990, China exported 2.5 million tons of rolled steel, an all-time high. In the same period, China imported 63 million tons of iron ore, chromium ore and manganese ore and began to establish ore supply bases abroad.

The Channer iron mine built jointly by China and Australia produced 3 million tons of high-grade iron ore in 1990.

China's iron and steel industry absorbed foreign capital equivalent to 12.6 billion yuan. In addition, it established a number of joint ventures and exclusively foreign-funded enterprises. Some 18,000 people went abroad on inspection tours or for studies, and 7,000 foreign experts and scholars were invited to lecture or provide technical guidance. China also sent 11,000 people abroad to contract for projects valued at US\$514 million. The turnover of these projects totaled US\$280 million and earned US\$30 million in foreign exchange.

Problems and Targets

Due to continual increases in production cost, the rise of the prices of raw materials and railway freight and the devaluation of the Renminbi, the iron and steel industry is short of funds and has incurred debts totalling 27 billion yuan. During the



Pendulum flying shears, trial produced by the Nanjing High-Speed Gearbox Factory, is a key piece of equipment of the 1.7-metre rolled steel production line at the Wuhan Iron and Steel Co.

GAO MEIJI

Eighth Five-Year Plan period (1991-95), China's iron and steel industry will face a high debt rate, low repayment ability and great difficulties collecting funds. Moreover, the contradiction between the supply and demand of iron ore will become more prominent and the shortage of coking coal will become increasingly critical. The task of improving the quality of products will also be imperative.

China's iron and steel industry must effectively use its funds and increase investment returns while striving to optimize its investment structure.

According to Qi Yuanjing, minister of the metallurgical industry, the main targets of the industry during the Eighth Five-Year Plan period and in the years before the turn of this century are to maintain an appropriate growth rate while striving to improve the industrial structure, product quality and economic returns. It is planned that by the year 2000 a number of enterprises will have reached the developed nations' technical level of the 1980s, and that some enter-

prises will catch up with the current level of developed nations. The supply of most of the 100 key rolled steel products which have a close bearing on the development of the national economy and have been in critically short supply for a long time will be assured. Product quality will be improved and the quality of a large number of products will equal that of similar foreign products. The main work procedures and energy consumption index of a number of key enterprises will approach or reach the present level of the Western countries. Main sources of pollution will be kept under control. Efforts will be made to establish large enterprise groups and develop a modern enterprise management system suitable to China's iron and steel industry.

By 2000, the key iron and steel enterprises with equipment of advanced international or domestic level will account for 60 percent of the industry's total production capacity. The nation's steel output is expected to reach 75 million tons by 1995 and 80 million tons by 2000. ■

PEOPLE

Bai Chunli and His STM Research

by Our Guest Correspondent Huang Yong

The new phenomena discovered by young scientist Bai Chunli through a scanning tunneling microscope (STM) he developed himself have improved our understanding of the structure of DNA.

In the small hours of November 20, 1990, in a laboratory of the Institute of Chemistry under the Chinese Academy of Sciences in the "City of Sciences" on northern outskirts of Beijing, Bai Chunli and his colleagues were trying to find an ideal observation position for a new scanning tunneling microscope, one designed to image the surface of materials. Suddenly, a clear triple-stranded structure appeared on the screen.

"What's this?" a postgraduate student asked nervously.

Looking at the screen, Bai

thought maybe it was a variant structure of DNA previously discovered by biologists. "Try again," Bai told the student.

On December 28, *Science Bulletin* (issue No. 24), China's most prestigious scientific publication, was halted as it was being taken to the printer. The publisher was asked to include a thesis on variant structural conformations of DNA written by Bai and his colleagues on the first page. After its publication, Bai's discoveries of variant conformations of denatured DNA, the triple-stranded conformation and the joining

structure between the right- and left-handed double-helical section, aroused great interest in Chinese scientific circles.

A Lucky Fellow

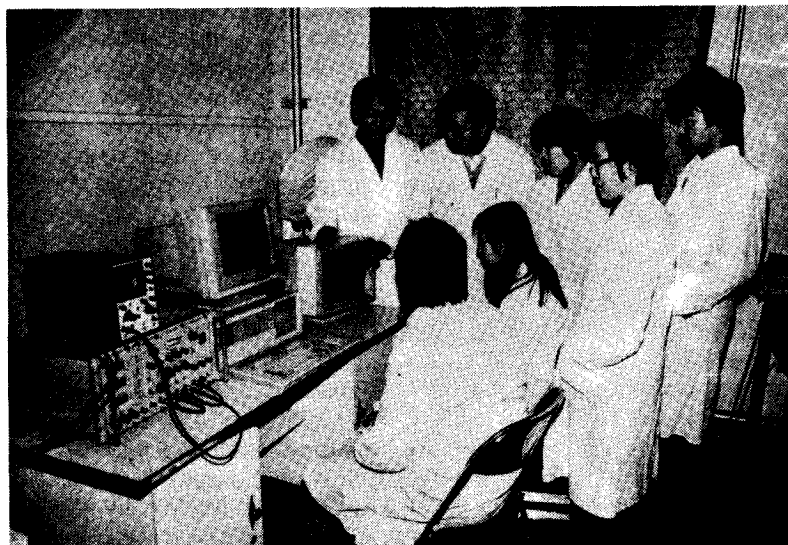
Bai Chunli, now 38, studied chemistry in Beijing University in 1974 and, four years later, entered the Institute of Chemistry under the Chinese Academy of Sciences as a postgraduate with an excellent academic background. After receiving a doctorate in September 1985, Bai continued his study for a post doctorate at the California Institute of Technology in the United States, the same university where Zhou Peiyuan, Qian Xuesen, Lu Jiayi and other well-known Chinese scientists once studied and worked.

At Caltech, Bai experimented with the extended X-ray absorption fine structure under the guidance of Prof. Baldeschwieler, an academican of the American National Academy of Sciences. With the use of only limited data, Bai assembled and put into operation a microscope in order to observe the extended X-ray absorption fine structure. At the same time he did some experiments with semiconductor superlattice. His experiment demanded a good command of optical, electronic, machinery and technical vacuum knowledge as well as an excellent work skill. He also programmed the computer software required by his experiment.

Not long after he started his research programme, he found that Prof. Baldeschwieler was also working on STM.

Bai Chunli (second, left) and his colleagues.

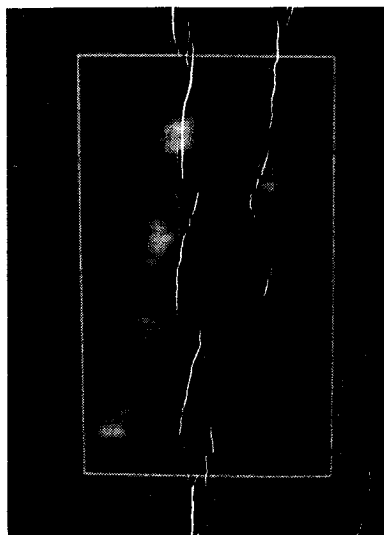
YANG LIMING



The scanning tunneling microscope (STM), a device to image the surface of materials, was first developed in 1982 by physicists Binnig and Rohrer at the IBM Research Laboratories in Zurich. Previously, people had produced various kinds of models of atomic structure but no one had seen images of the material surface of an atomic resolution. For their achievement, Binnig and Rohrer won the Nobel Prize in 1986. Since then, scientists around the world have made major strides in their exploration of the atomic world.

Bai Chunli understood that the development of STM technology would exert a tremendous influence on the research of surface science. Although China had not yet begun its research in the field, he knew how meaningful and significant it would be to master the technology and develop China's own STM. He asked, therefore, to join the experimental work being conducted on the vacuum STM. Since then, Bai had worked on two research programmes. Work was hard but Bai was determined to create a miracle and follow in the footsteps of other Chinese scientists who once worked at the Caltech and became innovators such as Qian Xuesen, one of the initiators of cybernetics and system science, Zhou Peiyuan and Zhao Zhongrao.

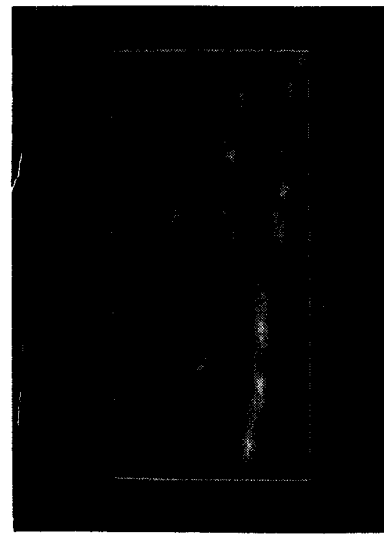
The thesis "Scanning Tunneling Microscopy Investigation of $2H-MoS_2$ Layered Semi-Conducting Transition-Metal Dichalcogenide" which described the research achievements gained by Bai Chunli and his American colleagues was read at the Second International STM Conference held in the United States in 1987. Bai's work on the STM programme was particularly appreciated by the experts. In a letter to Prof. Hu Yadong (Hu Ya-tung), director of the Institute of Chemistry under the Chinese Academy of Sciences, Prof. Baldeschwieler, chairman of the Second Interna-



Left: A triple-stranded DNA formation. Right: A structural combination of double-stranded and triple-stranded DNA.

tional STM Conference, said, "Dr. Bai has spent the last two years with my research group at Caltech developing this new technique ... and, in particular, Dr. Bai has participated in developing a scanning tunneling system which works at high vacuum and which has been used to image the surface of materials. Dr. Bai has contributed not only to the construction of the experimental equipment but has also made a major contribution to the computer software required to run the experiment and analyze the experimental results. I believe that Dr. Bai is one of the most able and talented young research scientists."

In September 1987, Bai decided to return to China to develop China's own STM according to his own designs and buy the necessary apparatus and equipment with the money (US\$5,000) which he had saved and raised for future research work in China. After learning of his decision, a deputy administrator of an American company asked him to work for his company, offering Bai good work, comfortable living conditions and other excellent benefits. Bai, however, rejected the offer because he wanted to return to his native land as quickly as



ZHONG KE

possible. On October 31, 1987, Bai returned home with his wife Li Chunfang, bringing with them valuable technical data, apparatus and equipment as well as their hope for the future.

Unflinching Efforts

In mid-December 1987, Zhou Guangzhao, president of the Chinese Academy of Sciences, discussed the restructuring of the academy with a group of young scientists who had returned from abroad. At the meeting, Bai frankly spoke about the need for research funds and briefed others on the STM research being conducted in other countries. His speech caught the attention of the president and, in less than a month, a special fund of 300,000 yuan, approved by President Zhou Guangzhao, was offered.

The Institute of Chemistry under the Chinese Academy of Sciences established a research group and transformed the guest reception room into a laboratory. Bai was starting the laboratory from scratch, however, and had to scour everywhere for the required equipment.

The STM is a combination of sophisticated machinery, electron-

ic, computer and other auxiliary devices. Since its electronic circuits have the ability to detect weak signals, each part must be finely produced in order to reduce vibrations as much as possible. Some people told Bai that it was too difficult for them to find necessary equipment and they might gain nothing for their effort in a year. Bai was very clear about the problems he faced but knew there was no choice. From the first day the research funds were available, he worked from morning until midnight. In addition, he read great quantities of materials in order to keep track of STM progress in other countries. He hoped China could enter the international research of the atomic world as quickly as possible and thus promote development in other branches of science.

At 5 pm on April 12, 1988, Bai observed a high-scale resolution through the STM he developed himself, a picture of the surface of an organic conductor. The picture, looking not unlike a precipitous mountain and a rolling sea, led China's research of surface science into the atomic world.

Bai then took further steps in his research of the atomic world. Using a newly developed STM, Bai and his colleagues imaged the surface of graphite, MoS_2 , organic conductors, biomembranes, conductive polymers, HgCl_2 , solution polymers absorbed on substrates, high temperature superconductors and catalysts and achieved encouraging results. They achieved a picture of phosphatidylcholine bilayers with a resolution 10 times higher than achieved by foreign countries and made some progress in STM research of high temperature conductors and conductive polymers of the Bi series.

In March 1989 Bai and his colleagues developed China's first atomic force microscope (AFM) based on the STM. The AFM can not only observe the surface of conductors and semiconductors

but also image the surface of insulators. Their achievement is of great significance to the research of surface science of non-conductive materials. The world's first AFM developed in 1986 had a resolution of 30 angstroms (an angstrom equals 0.0000001 cm) and this, in turn, was increased by 25 angstroms in 1987. The AFM developed by Bai is of the advanced world level. Today, only a few laboratories in the world have developed the AFM and are able to image a surface with an atomic resolution. Bai has used the China-made AFM to image the surface of graphite, TiO_2 , organic ferromagnetic material and managed to obtain pictures with a resolution of the atomic scale several times.

In July 1989, Bai Chunli went to Japan for the Fourth International STM Conference. All of his four theses were accepted by the conference. Learning of his achievements, Prof. Baldeschwieler exclaimed, "It is inconceivable that you have achieved such good results in such a short period of time."

By the end of 1988 Bai won a national prize for young chemists and in May 1989 was cited as a promising young scientist by the Chinese Academy of Sciences. In September 1989, Bai was cited as a national pace-setter by the State Council and in early 1990 was awarded a national silver medal for his scientific and technological progress.

But the keen competition in the research of the atomic world has only just begun and exciting news is continuing to roll in.

In March 1989, scientists at the Lawrence Livermore National Laboratory of the United States observed the double-helical structure of DNA through the STM, the biggest scientific event of 1989.

Scientists of the Santa Barbara College of the California University for the first time imaged the surface of materials in solution

with the AFM.

By the end of that year, the Jet Propulsion Laboratory of the United States developed a ballistic-electron emission microscope.

Many people were interested in Bai's work and hoped to hear some news from him. In the exciting microcosmic competition, people were expecting much from the young scientist.

To support Bai's work, the Chinese Academy of Sciences listed the STM research as one of its key projects by the end of 1989 and earmarked a total of 960,000 yuan for Bai's STM research programme over the last two years.

Bai devoted himself to his new work. He and his colleagues designed a core STM suitable to low temperatures and vacuum and constructed new computer analysis and processing procedures for structures. They also perfected the STM so that full-colour three-dimension surface plots were possible.

In September 1990, they began to experiment with the structure of DNA. During their research, they encountered a lot of problems and were especially hampered by the fact that they had to maintain a 10-angstrom distance between the STM tip and the uneven surface of the materials. If they were careless their results would not be satisfactory. During their research experiments, Bai and his colleagues observed the triple-stranded conformation and thus became the first group of people in the world to see the variant conformations of denatured DNA with their own eyes. DNA is the basic material for storage, replication and genetic information relay and its biological functions determine molecular structure. Thus, to study the structure of molecules has become one of the key objectives of finding the secrets of life itself. Bai's success in observing the triple-stranded conformation by use of the STM under normal temperature has opened a new chapter in the study of organisms and human body. ■

Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises

(Adopted at the Fourth Session of the Seventh National People's Congress on April 9, 1991, promulgated by Order No. 45 of the President of the People's Republic of China on April 9, 1991 and effective as of July 1, 1991)

Article 1 Income tax shall be paid in accordance with the provisions of this Law by enterprises with foreign investment within the territory of the People's Republic of China on their income derived from production, business operations and other sources.

Income tax shall be paid in accordance with the provisions of this Law by foreign enterprises on their income derived from production, business operations and other sources within the territory of the People's Republic of China.

Article 2 "Enterprises with foreign investment" referred to in this Law means Chinese-foreign equity joint ventures, Chinese-foreign contractual joint ventures and foreign-capital enterprises that are established in China.

"Foreign enterprises" referred to in this Law means foreign companies, enterprises and other economic organizations which have establishments or places in China and engage in production or business operations, and which, though without establishments or places in China, have income from sources within China.

Article 3 Any enterprise with foreign investment which establishes its head office in China shall pay its income tax on its income derived from sources inside and outside China. Any foreign enterprise shall pay its income tax on its income derived from sources within China.

Article 4 The taxable income of an enterprise with foreign investment and an establishment or a place set up in China to engage in production or business operations by a foreign enterprise, shall be the amount remaining from its gross income in a tax year after the costs, expenses and losses have been deducted.

Article 5 The income tax on enterprises with foreign investment and the income tax which shall be paid by foreign enterprises on the income of their establishments or places set up in China to engage in production or business operations shall be computed on the taxable income at the rate of 30 percent, and local income tax shall be computed on the taxable income at the rate of 3 percent.

Article 6 The state shall, in accordance with the industrial policies, guide the orientation of foreign investment and encourage the establishment of enterprises with foreign investment which adopt advanced technology and equipment and export all or greater part of their products.

Article 7 The income tax on enterprises with foreign investment established in special economic zones, foreign enterprises which have establishments or places in special economic zones engaged in production or business operations, and on enterprises with foreign investment of a production nature in economic and technological de-

velopment zones, shall be levied at the reduced rate of 15 percent.

The income tax on enterprises with foreign investment of a production nature established in coastal economic open zones or in the old urban districts of cities where the special economic zones or the economic and technological development zones are located, shall be levied at the reduced rate of 24 percent.

The income tax on enterprises with foreign investment in coastal economic open zones, in the old urban districts of cities where the special economic zones or the economic and technological development zones are located or in other regions defined by the State Council, within the scope of energy, communications, harbour, wharf or other projects encouraged by the state, may be levied at the reduced rate of 15 percent. The specific rules shall be regulated by the State Council.

Article 8 Any enterprise with foreign investment of a production nature scheduled to operate for a period of not less than ten years shall, from the year beginning to make profit, be exempted from income tax in the first and second years and allowed a 50 percent reduction in the third to fifth years. However, the exemption from or reduction of income tax on enterprises with foreign investment engaged in the exploitation of resources such as petroleum, natural gas, rare metals, and precious metals shall be regulated separately by the State Council. Enterprises with foreign investment which have actually operated for a period of less than ten years shall repay the amount of income tax exempted or reduced already.

The relevant regulations, promulgated by the State Council before the entry into force of this law, which provide preferential treatment of exemption from or reduction of income tax on enterprises engaged in energy, communications, harbour, wharf and other major projects of a production nature for a period longer than that specified in the preceding paragraph, or which provide preferential treatment of exemption from or reduction of income tax on enterprises engaged in major projects of a non-production nature, shall remain applicable after this Law enters into force.

Any enterprise with foreign investment which is engaged in agriculture, forestry or animal husbandry and any other enterprise with foreign investment which is established in remote underdeveloped areas may, upon approval by the competent department for tax affairs under the State Council of an application filed by the enterprise, be allowed a 15 to 13 percent reduction of the



Shenzhen Mayor Li Hao says the simplicity and clarity of the new tax law will help investors proceed with their feasibility studies and estimate the return on investments.

amount of income tax payable for a period of another ten years following the expiration of the period for tax exemption or reduction as provided for in the preceding two paragraphs.

After this law enters into force, any modification to the provisions of the preceding three paragraphs of this Article on the exemption from or reduction of income tax on enterprises shall be submitted by the State Council to the Standing Committee of the National People's Congress for decision.

Article 9 The exemption from or reduction of local income tax on any enterprise with foreign investment which operates in an industry or undertakes a project encouraged by the state shall, in accordance with the actual situation, be at the discretion of the people's government of the relevant province, autonomous region or municipality directly under the central government.

Article 10 Any foreign investor of an enterprise with foreign investment which reinvests its share of profit obtained from the enterprise directly into that enterprise by increasing its registered capital, or uses the profit as capital investment to establish other enterprises with foreign investment to operate for a period of not less than five years shall, upon approval by the tax authorities of an application filed by the investor, be refunded 40 percent of the income tax already paid on the reinvested amount. Where regulations of the State Council provide otherwise in respect of preferential treatment, such provisions shall apply. If the investor withdraws its reinvestment before the expiration of a period of five years, it shall repay the refunded tax.

Article 11 Losses incurred in a tax year by any enterprise with foreign investment and by an establishment or a place set up in China by a foreign enterprise to engage in production or bus-

business operations may be made up by the income of the following tax year. Should the income of the following tax year be insufficient to make up for the said losses, the balance may be made up by its income of the further subsequent year, and so on, over a period not exceeding five years.

Article 12 Any enterprise with foreign investment shall be allowed, when filing a consolidated income tax return, to deduct from the amount of tax payable the foreign income tax already paid abroad in respect of the income derived from sources outside China. The deductible amount shall, however, not exceed the amount of income tax otherwise payable under this Law in respect of the income derived from sources outside China.

Article 13 The payment or receipt of charges or fees in business transactions between an enterprise with foreign investment or an establishment or a place set up in China by a foreign enterprise to engage in production or business operations, and its associated enterprises, shall be made in the same manner as the payment or receipt of charges or fees in business transactions between independent enterprises. Where the payment or receipt of charges or fees is not made in the same manner as in business transactions between independent enterprises and results in a reduction of the taxable income, the tax authorities shall have the right to make reasonable adjustment.

Article 14 Where an enterprise with foreign investment or an establishment or a place set up in China by a foreign enterprise to engage in production or business operations is established, moves to a new site, merges with another enterprise, breaks up, winds up or makes a change in any of the main entries of registration, it shall present the relevant documents to and go through tax registration or a change or cancellation in registration, with the local tax authorities after the relevant event is registered, or a change or

Jilin deputies discuss the new tax law.



Photos by XUE CHAO

NPC deputies vote for the new tax law.

cancellation in registration is made, with the administrative agency for industry and commerce.

Article 15 Income tax on enterprises and local income tax shall be computed on an annual basis and paid in advance in quarterly instalments. Such payments shall be made within 15 days from the end of each quarter and the final settlement shall be made within five months from the end of each tax year. Any excess payment shall be refunded and any deficiency shall be repaid.

Article 16 Any enterprise with foreign investment and any establishment or place set up in China by a foreign enterprise to engage in production or business operations shall file its quarterly provisional income tax return in respect of advance payments with the local tax authorities within the period for each advance payment of tax, and it shall file an annual income tax return together with the final accounting statements within four months from the end of the tax year.

Article 17 Any enterprise with foreign investment and any establishment or place set up in China by a foreign enterprise to engage in production or business operations shall report its financial and accounting systems to the local tax authorities for reference. All accounting records must be complete and accurate, with legitimate vouchers as the basis for entries.

If the financial and accounting bases adopted by an enterprise with foreign investment and an establishment or a place set up in China by a foreign enterprise to engage in production or business operations contradict the relevant tax provisions of the State Council, tax payment shall be computed in accordance with the relevant tax provisions of the State Council.

Article 18 When any enterprise with foreign investment goes into liquidation, and if the balance of its net assets or the balance of its remaining property after deduction of the enterprise's undistributed profit, various funds and liquida-

tion expenses exceeds the enterprise's paid-in capital, the excess portion shall be liquidation income on which income tax shall be paid in accordance with the provisions of this Law.

Article 19 Any foreign enterprise which has no establishment or place in China but derives profit, interest, rental, royalty and other income from sources in China, or though it has an establishment or a place in China, the said income is not effectively connected with such establishment or place, shall pay an income tax of 20 percent on such income.

For the payment of income tax in accordance with the provisions of the preceding paragraph, the income beneficiary shall be the taxpayer and the payer shall be the withholding agent. The tax shall be withheld from the amount of each payment by the payer. The withholding agent shall, within five days, turn the amount of taxes withheld on each payment over to the State Treasury and submit a withholding income tax return to the local tax authorities.

Income tax shall be exempted or reduced on the following income:

(1) the profit derived by a foreign investor from an enterprise with foreign investment shall be exempted from income tax;

(2) income from interest on loans made to the Chinese government or Chinese state banks by international financial organizations shall be exempted from income tax;

(3) income from interest on loans made at a preferential interest rate to Chinese state banks by foreign banks shall be exempted from income tax; and

(4) income tax of the royalty received for the supply of technical know-how in scientific research, exploitation of energy resources, development of the communications industries, agricultural, forestry and animal husbandry production, and the development of important technologies may, upon approval by the competent department for tax affairs under the State Council, be levied at the reduced rate of 10 percent. Where the technology supplied is advanced or the terms are preferential, exemption from income tax may be allowed.

Apart from the aforesaid provisions of this Article, if preferential treatment in respect of reduction of or exemption from income tax on profit, interest, rental, royalty and other income is required, it shall be regulated by the State Council.

Article 20 The tax authorities shall have the right to inspect the financial, accounting and tax affairs of enterprises with foreign investment and establishments or places set up in China by for-

eign enterprises to engage in production or business operations, and have the right to inspect tax withholding of the withholding agent and its payment of the withheld tax into the State Treasury. The entities and the withholding agents being inspected must report the facts and provide relevant information. They may not refuse to report or conceal any facts.

When making an inspection, the tax officials shall produce their identity documents and be responsible for confidentiality.

Article 21 Income tax payable according to this law shall be computed in terms of Renminbi (RMB). Income in foreign currency shall be converted into Renminbi according to the exchange rate quoted by the state exchange control authorities for purposes of tax payment.

Article 22 If any taxpayer fails to pay tax within the prescribed time limit, or if the withholding agent fails to turn over the tax withheld within the prescribed time limit, the tax authorities shall, in addition to setting a new time limit for tax payment, impose a surcharge for overdue payment, equal to 0.2 percent of the overdue tax for each day in arrears, starting from the first day the payment becomes overdue.

Article 23 The tax authorities shall set a new time limit for registration or submission of documents and may impose a fine of 5,000 yuan or less on any taxpayer or withholding agent which fails to go through tax registration or make a change or cancellation in registration with the tax authorities within the prescribed time limit, fails to submit income tax return, final accounting statements, or withholding income tax return to the tax authorities within the prescribed time limit, or fails to report its financial and accounting systems to the tax authorities for reference.

Where the tax authorities have set a new time limit for registration or submission of documents, they shall impose a fine of 10,000 yuan or less on the taxpayer or withholding agent which again fails to meet the time limit for going through registration or making a change in registration with the tax authorities, or for submitting income tax return, final accounting statements or withholding income tax return to the tax authorities. Where the circumstances are serious, the legal representative and the person directly responsible shall be investigated for criminal responsibility, by applying *mutatis mutandis* the provisions of Article 121 of the Criminal Law.

Article 24 Where the withholding agent fails to fulfill its obligation to withhold tax as provided in this Law, and does not withhold or withholds an amount less than that should have been withheld, the tax authorities shall set a time limit for

the payment of the amount of tax that should have been withheld, and may impose a fine up to but not exceeding 100 percent of the amount of tax that should have been withheld.

Where the withholding agent fails to turn the tax withheld over to the State Treasury within the prescribed time limit, the tax authorities shall set a time limit for turning over the taxes and may impose a fine of 5,000 yuan or less on the withholding agent; if the withholding agent fails to meet the time limit again, the tax authorities shall pursue the taxes according to law and may impose a fine of 10,000 yuan or less on the withholding agent. If the circumstances are serious, the legal representative and the person directly responsible shall be investigated for criminal responsibility by applying *mutatis mutandis* the provisions of Article 121 of the Criminal Law.

Article 25 Where any person evades tax by deception or concealment or fails to pay tax within the time limit prescribed by this Law and, after the tax authorities pursued the payment of tax, fails again to pay it within the prescribed time limit, the tax authorities shall, in addition to recovering the tax which should have been paid, impose a fine up to but not exceeding 500 percent of the amount of tax which should have been paid. Where the circumstances are serious, the legal representative and the person directly responsible shall be investigated for criminal responsibility in accordance with the provisions of Article 121 of the Criminal Law.

Article 26 Any enterprise with foreign investment, foreign enterprise or withholding agent, in case of a dispute with the tax authorities on payment of tax, must pay tax according to the relevant regulations first. Thereafter, the taxpayer or withholding agent may, within 60 days from the date of receipt of the tax payment certificate issued by the tax authorities, apply to the tax authorities at the next higher level for reconsideration. The higher tax authorities shall make a decision within 60 days after receipt of the application for reconsideration. If the taxpayer or withholding agent is not satisfied with the decision, it may institute legal proceedings in the people's court within 15 days from the date of receipt of the notification on decision made after reconsideration.

If the party concerned is not satisfied with the decision on punishment by the tax authorities, it may, within 15 days from the date of receipt of the notification on punishment, apply for reconsideration to the tax authorities at the next higher level than that which made the decision on punishment. Where the party is not satisfied with the decision made after reconsideration, it may insti-

tute legal proceedings in the people's court within 15 days from the date of receipt of the decision made after reconsideration. The party concerned may, however, directly institute legal proceedings in the people's court within 15 days from the date of receipt of the notification on punishment. If the party concerned does not apply for reconsideration to the higher tax authorities or institute legal proceedings in the people's court within the time limit, and if the decision on punishment is not fulfilled, the tax authorities which made the decision on punishment may apply to the people's court for compulsory execution.

Article 27 Where any enterprise with foreign investment which was established before the promulgation of this Law would, in accordance with the provisions of this Law, otherwise be subject to higher tax rates or enjoy less preferential treatment of tax exemption or reduction than before the entry into force of this Law, in respect to such enterprise, within its approved period of operation, the law and relevant regulations of the State Council in effect before the entry into force of this Law shall apply. If any such enterprise has no approved period of operation, the law and relevant regulations of the State Council in effect before the entry into force of this Law shall apply within the period prescribed by the State Council. Specific rules shall be regulated by the State Council.

Article 28 Where the provisions of the tax agreement concluded between the government of the People's Republic of China and foreign governments are different from the provisions of this Law, the provisions of the respective agreement shall apply.

Article 29 Rules for implementation shall be formulated by the State Council in accordance with this Law.

Article 30 This Law shall enter into force on July 1, 1991. the Income Tax Law of the People's Republic of China for Chinese-Foreign Equity Joint Ventures and the Income Tax Law of the People's Republic of China for Foreign Enterprises shall be annulled as of the same date.

Appendix:

The Relevant Articles in the Criminal Law

Article 121 In case of tax evasion or refusal to pay taxes in violation of tax laws and regulations, if the circumstances are serious, the taxpayer shall be ordered to pay the tax due and may be fined in accordance with the tax laws and regulations; the person directly responsible shall also be sentenced to fixed-term imprisonment of not more than three years or criminal detention. ■

Autumn West Lake Tours in Hangzhou

A grand tourism event "West Lake in Autumn 1991" will be held by the Zhejiang Tourism Corp. and the Hangzhou Tourism Corp. at West Lake, Hangzhou, this autumn.

Hangzhou is a historical and cultural city with many scenic spots, and autumn is the West Lake's golden tourist season. With breezes carrying whiffs of osmanthus scent and endless stretches of autumn lotuses, the West Lake attracts tens of thousands of overseas travellers each year.

Autumn West Lake activities this year will be much more colourful than those of past years. Apart from traditional programmes, there will be international tourist and cultural activities, including:

- Mid-Autumn Moon Festival (Sept. 22). Features evening moon-admiring festivals at Three Pools Reflecting the Moon, Autumn Moon Over Calm Lake and Jade Emperor Hill Top, tasting of mooncakes and attendance at art performances.

- Evening Boating on the West Lake (Aug.-Nov.). Lights show the outline of Baoshu (Blessing) Pagoda, islets in the lake and the West Lake. Tourists can enjoy the radiant fairy lights and lake reflections under the moonlight. In the wonderful Three Pools Reflect the Moon they can see the shadows of the moon, the pagoda and clouds. Performances of traditional string and woodwind instruments, popular south of the Yangtze River, are held on replicas of ancient boat floats, and a show *Congratulating Su Dongpo on His Birthday*, a famous poet, takes place in the rebuilt Ancient Park on Yuangong Mound, an islet in the lake. The Night Garden of Orioles Singing Among Fluttering Willow Branches boasts a large musical fountain; and tearooms with music and karaoke dot famous beauty spots around the lake.

- Night Tour on the Qiantang River (Aug.-Nov.). On the *Paradise on Water* pleasure boat tourists can take in the night view of the Qiantang River and listen to famous melodies and folk songs played by traditional Chinese stringed and woodwind instruments at evening festivals.

- Watching and Chasing the Qiantang River Ebb Tide Festival (Sep. 22-26). This offers views of the world-famous wonderful tides of the Qiantang River and the moon plus tasting of mooncakes and the autumn favourite—lake crabs. Also the Three Sights of the Tide tour on the first to fifth and the fifth to the 19th every lunar month.

- West Lake Osmanthus Festival (Sept. 26-Oct.3). This features visits to the five-kilometre-long osmanthus corridor, tasting of sweet osmanthus-flavoured food and the diversions of local operas, folk songs and dances.

- Fifth West Lake International Osmanthus Mar-



West Lake at Hangzhou.

ZHONG JIAN

athon (Sept. 22). About 1,000 athletes from China, Japan, the United States, Germany, Singapore and other countries will participate in this run around the West Lake. Other activities include osmanthus-viewing, tasting of osmanthus-flavoured food and watching folk dances from the south of the Yangtze River.

- 1991 West Lake Art Festival (Oct. 5-25). Famous Chinese painters will demonstrate Chinese painting and calligraphy, and shows of folk handicrafts will be held along with domestic and international painting exhibitions, academic symposiums and water village sketching.

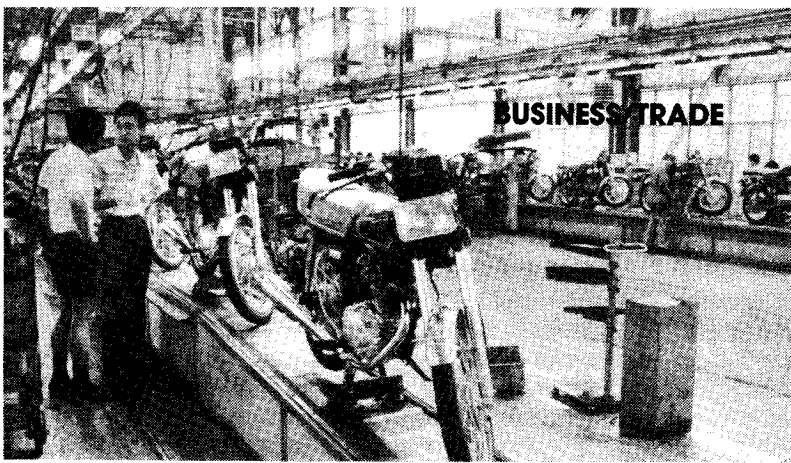
- Traditional Chinese Medicine Festival at Tonglu, Hangzhou (Oct. 26-28). It provides consultations with famous traditional Chinese medicine doctors; sales and exhibitions of famous, valuable prepared Chinese medicines and medicinal herbs from various large Chinese pharmaceutical factories; and visits to the Huqingyutang Traditional Chinese Medicine Museum in Hangzhou.

- The fourth Sino-Japanese Friendship West Lake Marathon (Nov. 5). The race proceeds round the West Lake and includes a West Lake tour; performances of folk songs, dances and operas from south of the Yangtze River. Over 300 Chinese and Japanese athletes will participate.

- The second Zhejiang West Lake TV Fair (late Oct. to early Nov.). It features Chinese and foreign TV programmes; parachute jumping performances; motorcycle races, international football matches; academic symposiums; and variety shows.

- Hangzhou Tourist Souvenir and Commodity Exhibition (mid-Oct.). On display will be famous, special and quality daily-use travel goods and souvenirs of Hangzhou.

by Chen Mingzhao



ZHANG PING

The Sino-Thailand Shanghai-Ek Chor Motorcycle Co. Ltd. imports advanced technology and management expertise which helps raise the quality of the company's products to the world level of the early 1980s and its annual output to 200,000 motorcycles.

Motor Industry Imports Technology

According to an official of the China Automobile Industry Corp., China will continue to import production technology and equipment during the Eighth Five-Year Plan period (1991-95). Priority will be given to spare parts production technology and key equipment such as engines, carburetors, magnetors, vibration dampers, flexible production lines, comprehensive experimental platforms, and exhaust testing technology and equipment.

China has begun to negotiate the purchase of design technology for motorcycles with displacements of 100-200cc and greater than 200cc.

The official said most of these import items have been listed in the Eighth Five-Year Plans at the state, provincial and departmental level and that funds are already available. Foreign businessmen are encouraged to conduct joint ventures and co-operative and compensation trade to carry out the projects.

During the Seventh Five-Year Plan period (1986-90), China invested a total of 700 million yuan (including US\$50 million) to upgrade the technology of the motor industry, import motorcycle and engine production lines

and accelerate replacement parts production. Since product quality was improved and brought up to the level of the late 70s and early 80s, exports greatly increased.

China currently has 25 factories producing more than 1.3 million motorcycles annually. An official of the auto industry believes that the import of advanced technology during the Eighth Five-Year Plan period will help China raise the quality of its motorcycles to the world level of the mid-1980s.

113 Foreign-Funded Enterprises Cancelled

The Shenzhen Administration of Industry and Commerce recently cancelled 113 foreign-funded enterprises which, after receiving licences, halted operation for a long time owing to the shortage of funds, thus violating the regulation that each side to a joint venture shall provide sufficient funds to carry out the contract.

An official of the industrial and commercial administration said that there were many reasons for the shortage of funds in these foreign-funded enterprises. Some failed to conduct a careful feasibility study before opening their business and, consequently, found no market for their prod-

ucts. Some had internal problems between the partners, which made continuous co-operation impossible and the investors unable to provide investment in time. Some other enterprises were poorly managed and suffered continuous losses, which put off the investors. In some other cases, the investors engaged themselves in illegal activities through applying for the establishment of co-operative enterprises. They imported machinery and equipment which were exempt from taxes and resold them at a higher price.

Officials from the relevant department said that Shenzhen will continue to strengthen management of foreign-funded enterprises and penalize those which do not provide sufficient funds. He said that a review will be conducted once every year. ■

by Yao Jianguo

More Chinese to Be Trained Abroad

China will further accelerate its intellect imports by sending more staff to be trained abroad during the Eighth Five-Year Plan period (1991-95). The emphasis of the training will be on agriculture, energy, communications, telecommunications, raw material, key state projects and development of new products, according to the leading office under the State Council in charge of overseas intellectual resources.

Wang Nai, head of the office, said China sends staff mainly to Hong Kong, the United States, Japan, Singapore, Germany and Britain to learn the know-how of advanced technology and management experiences. In the coming years, on the basis of consolidating and strengthening co-operation with the above-mentioned areas, China will seek similar co-operation with Thai-

land, the Soviet Union and France.

Wang said beginning in 1985 China selected a total of 7,400 technical and managerial personnel from industrial and commercial enterprises to be trained abroad. Up to date, 98 percent of the trainees have come back on schedule. He said China presently sends 2,000 technical and managerial staff abroad each year and the figure will increase to 3,000 in the near future.

In the coming years, China continues to offer a good working environment for these returned trainees and is planning to set up a special fund to encourage and support their scientific research and work.

by Yao Jianguo

Sino-French Contract Signed

A contract to transfer technology to China by the Framgem Co. of France for the design and manufacture of nuclear fuel components for 900,000-kw pressure stacks was signed in Beijing on May 28.

According to an official from the China National Nuclear Industrial Corp., under the contract, China will use French technology and equipment to upgrade the production line of the Yibin Nuclear Fuel Factory in Sichuan Province. It will give the factory the capacity to provide the Guangdong Daya Bay Nuclear Power Station with nuclear fuel components by the end of 1993.

Basing the supply of nuclear fuel on the domestic market is an important Chinese policy for the development of nuclear-generated electricity. The signing of the contract will help promote the development of design and manufacturing technology for supplies of nuclear fuel components to China's large nuclear

power stations. At the same time, it will further enhance nuclear power co-operation between China and France. ■

New Programme for Yantai

One of China's 14 open coastal cities, Yantai in Shandong Province plans to encourage access for the outside world during the Eighth Five-Year Plan (1991-95). It will promote the use of foreign funds, export trade and construction in its development zone.

Yantai will pay more attention to benefits from the use of foreign investment and strive to enhance co-operation with large foreign chambers of commerce in order to import new and high technology for the development of large joint ventures. In the coming five years, the city plans to attract US\$230 million in direct foreign investment, as well as use US\$130 million in foreign governmental loans. The number of foreign-funded joint ventures, co-operative and wholly foreign-owned enterprises in operation is expected to reach 350 by the end of 1995.

The city plans to readjust and optimize the mix of export products in order to expand exports of machinery and electrical goods, textiles and light industrial products and other industrial products with a high additional value. The construction of export commodity bases will be quickened and overseas markets further developed. By 1995, the city's total value of goods purchased for export is expected to reach 3.5 billion yuan (about US\$650 million), representing an average annual increase of 10 percent.

Efforts will be made to construct technology-intensive hi-tech projects involving the manufacture of precision machinery, electron meters, microelectronics

and new materials. During the Eighth Five-Year Plan period, the Yantai Economic and Technological Development Zone will be expanded to six square km and foreign businessmen will be encouraged to invest in the development of large-scale hi-tech export-oriented projects in the zone through the establishment of a Scientific and Technological Garden. By 1995, the zone will have a total investment of 1.5 billion yuan in fixed assets and 250 foreign-funded projects based both at home and abroad. By then, some 180 industrial enterprises will be put into operation. ■

Bid for Expressway Construction

International bidding for the construction of the Hangzhou-Ningbo Expressway in Zhejiang Province will be invited in September and decided in December.

The 145-km expressway, one of China's main 12 highways, starts from Pengbu Town in the eastern suburbs of Hangzhou to Dazhujia in Ningbo. The speed limit for motor vehicles will be 120 km an hour on the 26-metre-wide roadway. It will be equipped with traffic safety, monitoring, plus communications and service facilities. Construction of the route that requires 20 million cubic metres of earth and stone will take 42 months.

The highway will cut the travelling distance between Hangzhou and Ningbo by 71.7 km. Ge Hongsheng, the governor of Zhejiang Province, said that the completion of the highway is of great significance in developing an export-oriented economy and improving the investment climate of the region. ■

China and Australia Co-operate in Plastics

The Langfang Lan-Ao-Jin Plastics Co. Ltd., a Sino-Australian joint venture manufacturer of plastics, was set up late May in Langfang City, Hebei Province.

The company is a co-operative venture of the Langfang Lancheng Industrial Products Co. Ltd. and the Australian Origenes Enterprises PTY Ltd. Investments for the enterprise totalled US\$671,200 million, of which the Chinese side made up 70 percent and the Australian side 30 percent.

The joint venture will mainly manufacture plastic bags from imported materials and then export products to foreign countries. After the company begins production, it will be able to manufacture 600 tons of plastic bags and earn US\$3.1 million in sales.

Richard Z. Lee, foreign agent for the Langfang Lan-Ao-Jin Plastics Co. Ltd., and the deputy general manager of the Australian Origenes Enterprises PTY Ltd., expressed satisfaction that only a relatively short time of 75 days was needed to sign the contract after negotiations were begun. He noted that this showed China's support for foreign investors. He also noted that he would try his best to renovate equipment and update the company's technical level, introducing professional staff to pass on the latest technical know-how and provide management assistance, and try to begin production as soon as possible in order to make the products enter the international market. ■

News in brief

● The China Auditing Society will send its members to partici-

pate in the 50th anniversary celebration of the International Auditors' Association to be held on June 18-19 in New York. Chinese Premier Li Peng has sent a letter of congratulation to the association.

The International Auditors' Association is a non-governmental organization established in 1941 in the United States. As of now, 103 countries and regions have joined the association. The China Auditing Society was established in 1987 and became a member of the international association the same year.

● China's first sewage treatment plant, constructed with Danish government loans, technology and equipment, was recently put into operation in the east of Handan City, Hebei Province.

Using internationally advanced sewage treatment technology, the plant can handle 66,000 cubic metres of waste water daily. Co-designed by Handan City and a Danish company, project construction began in 1989 and was listed by the State Environment Protection Bureau as a pilot project.

● The B ultra-sonic devices produced by the Jiangdu Electronic Medical Instrument Plant, Jiangsu Province, have been exported to the Soviet Union in small quantities and attracted the interest of local businessmen. Clinical practice indicates that the product is up to the standard of similar products of the mid-1980s in developed European and Latin American countries and gives a clear, high resolution picture of a patient's internal organs. Small and light, the B ultra-sonic machine is quite suitable for rural areas.

● Diaoxinxuekang, a new type of the state-class medicine for treating heart disease, developed by the Chengdu Biological Research Institute of the Chinese Academy of Science, has been in

high demand since it appeared on the market. Several domestic pharmaceutical factories have discussed producing the medicine with the institute. In addition, many pharmaceutical businessmen from Japan, the Soviet Union, the Netherlands, South Korea, Singapore, Hong Kong and Macao have held talks regarding purchase and marketing agreements or production co-operation.

The medicine, made from special medicinal herbs, has been used by some 300,000 patients. It has been effective in treating a variety of coronary diseases, including hypertension and arrhythmia. There are no side-effects. In 1988, the product won the top prize for scientific and technological achievements from the Chinese Academy of Science.

● A maritime satellite ground station, the first of its kind in China, was put into operation in Beijing on June 3 after four years of construction. China then becomes the newest member of the 20-country International Communications Club.

Located in the northwestern part of Beijing, the station is equipped with standard A and standard C facilities of the International Maritime Satellite (INMARSAT) manufactured by the EBNERA of Norway. The equipment is controlled by several computers, checked and tested by computer and can be reversed automatically. Its two 13-metre antennas are directed at the two synchronous satellites of the INMARSAT which are located over the Indian Ocean and the Pacific Ocean.

● The China Commercial Farming Co. attended the China Export Trade Exhibition held in New York on June 14. The company displayed over 80 processed products in five categories including food, rubber and chemicals.

The items displayed by the company were all of high quality. ■

New Method for Computer Network Tests

Although the trend is to seek global or at least regional standardization in communications between computer networks, the achievement of this goal is proving more difficult than expected.

In the late 1970s and early 1980s, several developed countries published state-prescribed standards for computer networks and the International Standardization Organization (ISO) established network protocol standards.

However, the existence of the protocol has still not solved software compatibility problems. Under these circumstances, the development of standardized test technology for network protocol products has become crucial.

Zeng Huashen, 45, engaged in research on Britain's first generation of computer network test systems as he worked for a Ph.D in the early 1980s in London. The system, like others, was to enhance the potential to link standard computer networks. At that time, Zeng conceived the idea of the ferry principle and the ferry clip.

Zeng's concept was described by Dr. Dahbura at the US Bell Laboratory as being "stupidly simple." Dr. Dave Rayner, chief of the British state physical laboratory protocol standard team, remarked, "It is one of those ideas that is so obvious that you wonder why you didn't think of it before. Well done!"

In 1986, Zeng and his 11 colleagues in the Chengdu Computer Research Institute of the Chinese Academy of Sciences began the ISO proto-

col standardized test. It was a key technological research project during China's Seventh Five-Year Plan period (1986-1990). By 1990, the research team headed by Zeng had created the environment for computer network protocol standard tests based on Zeng's concept. At an appraisal meeting, experts stated this method was more comprehensive and superior to others. Technically, it matches the most advanced foreign test systems of the late 1980s.

Network test systems provide an outside stimulus, directly or indirectly, to a test object and then observe the response to determine whether the object moves correctly.

The traditional distribution test method that Zeng used earlier in research in Britain is the most popular system. But this approach encounters the difficulty of synchronizing the upper tester inside the system and the lower tester outside.

Under ferry control method, the upper tester is moved into the lower system and the data carrier between the testing and the tested systems serves as a ferry, resolving the synchronization problem. Application of this approach shows that limits on the testing capacity of upper testers are eliminated once the testers are shifted into the lower system. This makes programming easier.

In 1988, Zeng improved the ferry method by putting two arms on the ferry to produce the ferry clip. It is now possible to visit any point inside a tested object, changing the view that only systems placed inside the tested object can

perform a comprehensive direct test. With the help of the ferry clip, the outside test system can directly test the object.

Ferry method has become widely used in test systems. In 1986, West Germany's Telenet GmbH employed the method for the first time in practical tests of Videotex Interworking Protocol. In 1989, the computer technology research institute of the German Democratic Republic Academy of Sciences adopted it. From 1988 to 1990, the University of British Columbia established a test system based on ferry clip method. Idacom Electronic Ltd., which cooperates with the university, has applied ferry clip to its high-property portable network test devices.

Professor S.T. Chanson of the computer department of the University of British Columbia wrote to Zeng last September, "Almost everyone who understands the approach agrees that it is technically superior to conventional methods." He added, "I believe the ferry clip approach is an important contribution to the concept of protocol testing and it is now well known among researchers and practitioners in the field."

Also last year, Zeng received a letter from Dr. Rudolf Jan Heijink of the Dutch Royal Post and Telecommunication Institute, who is president of the program committee of the 4th International Workshop on Protocol Test Systems. The letter said, "As we feel that you would be a most qualified program committee member, we are very pleased to invite you to participate in the program committee of this workshop." ■

New Pingju Opera Reflects Rural Life

A part from Peking opera, there are still more than 300 local opera forms in China. In recent years, artists in these local opera troupes have successfully produced operas dealing with contemporary life. *A Mountainside Family*, for example, is a *pingju* opera which was performed by the Shenyang Pingju Opera Theatre and was one of the best operas presented at the National Contemporary Opera Festival held in May, this year.

In contrast with Peking opera which is usually considered as an artistic form of the imperial court, *pingju* opera has closer connections to the common people. It originated in the rural areas of eastern Hebei Province early this century. The original form was quite simple and the only musical instrument used to accompany the singer was a set of seven bamboo slips tied together. *Pingju* opera gradually took its present form with the introduction of local dance popular in northeastern China, and the addition of other musical instruments and a complete repertoire of singing melodies. Because it came into being at the time when China was undergoing the May 4th New Cultural Movement, *pingju* opera was strongly influenced by Western drama and opera. Consequently, most of its plays deal with contemporary life and are extremely popular among local people of northeast China and north China.

A Mountainside Family is a realistic lyrical opera depicting a family story set in a mountainside village in northeast China during the period of reform and opening to the outside world.

The story began 20 years ago.

Qiufeng, the heroine, was deeply in love with Tianye. However, Qiufeng's parents forced her to marry Tiancheng, her lover's elder brother, who, according to feudal tradition, should be given priority in marriage. But Qiufeng was pregnant with Tianye's child and gave birth to a girl named Hongguo after the marriage. Tianye left his native village to go to a remote place.



A scene from *A Mountainside Family*.

20 years later, Tianye returned to his native hometown with hatred for his elder brother, Tiancheng, and love for Qiufeng and his daughter. Tiancheng has just signed a responsibility contract for a piece of land which he plans to turn into an orchard, hoping to get rid of the poverty that has plagued them for so many years.

Tianye's return leads to sudden turmoils in the peaceful life of the family. Tiancheng, troubled by his guilt for his brother, was blinded in an accidental explosion. In order to get the money for her husband's medical treatment, Qiufeng betroths her daughter Hongguo to someone she doesn't love. When Tiancheng learns of this, he decides to sell his house and return the betrothal gifts and bring an end to

Hongguo's tragedy. Tiancheng's deed gradually wins him Tianye's forgiveness and the two brothers reconcile with each other. However, Tiancheng's health deteriorated critically from overwork. As he is dying, he asks his brother to take care of the family and the orchard he never managed to have.

"The opera is a description of the character and fate of the mountain people and a laudatory song of their unyielding spirit," said Huang Weiying, the playwright.

The opera successfully depicts several artistic images: the industrious and honest Tiancheng, the virtuous Qiufeng, the weak and faithful Tianye, and the naive Hongguo. The character of each person is gradually developed with the development of the plot and the inner world of the characters is revealed by their dramatic outer conflicts.

Other factors including props, dances and music all contribute to the characterization of the opera. For instance, the suona (a pipe musical instrument) and wine bottle are the two symbols for Tiancheng. The suona signifies his remembrance of his bitter love story and his love for Qiufeng, while the wine is something he uses to escape from reality, showing the weak side of his character. The old Chinese scholar tree, a popular tree in northeast China, is used in the setting, not only to bring to mind the specific place where the opera is set, but also to heighten the mood of the opera. By adapting the *Errenzhuan*, a folk singing style popular in northeast China, local flavour is added to the opera.

One scene in the opera is very symbolic: With the music of a work song, a group of people appear on the stage carrying large

stones on their backs. From the stone carrier, people can feel the strong life force and the people's persistent struggle against fate. Yang Xiaoyan, director of the opera, said, "The stone carrier symbolizes the theme, that is, people will doggedly push forward no matter what kind of misfortune they suffer." The woman director, in her thirties, has directed several operas and won five awards at the national and provincial levels.

The Shenyang Pingju Opera Theatre has a history of more than 30 years and has produced over 100 plays.

by Feng Jing

Baseball Games to Be Held in China

With the approval of the Asian Baseball Federation (ABF) and the International Baseball Federation (IBF), the 16th Asian Baseball Championship is to be held in mid-September in Beijing and Tianjin. It is the first time for China to host the largest baseball game in Asia. Japan, South Korea, the Democratic People's Republic of Korea, the Philippines, Guam, China's Taibei and China will plunge into the competition. In addition, according to an IBF decision, an Australian baseball team will participate.

Baseball will become a formal competitive event in the 1992 Barcelona Olympic Games. Therefore, the 16th Asian baseball championship will qualify two teams in Asia and Oceania for the Spain Games.

The sport of baseball is popular in Japan, the Philippines, South Korea and Taiwan. Over the past decade, Japan, South Korea and China's Taibei were among the best major international baseball players. The five world-famous baseball powers include Japan, South Korea and

China's Taibei (the others are the United States and Cuba). In the XI Beijing Asian Games last year, baseball was listed as an event. President of ABF Jong-Nak Kim said that he believes baseball will become a formal competitive event in the 1992 Games.

Late last century, baseball had been brought to China and spread to some schools in big cities by Americans who ran schools in the country and by Chinese students returning from the United States and Japan. By the 1920s and 1930s, the sport was flourishing here.

In the early years of the People's Republic, baseball was mainly played by the army. In 1956, the State Physical Culture and Sports Commission decided to spread the game throughout China. Since 1957, national baseball championships have been held yearly. However, they were temporarily suspended due to economic woes and the cultural revolution in the 1960s and 1970s.

Beginning in 1985, China's national children's baseball team has won five championships, a second place and many third places in international and Asian competitions, edging into the world's advanced ranks.

In 1982 when China was accepted as an ABF member, Chinese baseball team had already participated in the 13th, 14th and 15th Asian baseball games. In the last competition, China won fourth place, after Japan, China's Taibei and South Korea.

by Lou Linwei

Chemical-Coated Seeds Increase Production

The Chengdu Institute of Organic Chemistry of the Chinese Academy of Sciences in southwestern China's

Sichuan Province has developed a drought-resistant chemical for crops. Each small bag of the yellowish powder substance weighing only 5 g and costing 0.07 yuan can be applied to crops covering one-15th of a hectare.

The chemical is actually a polymer resin, which becomes sticky when soaked in water. Crop seeds coated with it have a higher ability to resist drought as they draw in and then gradually release water. The substance is particularly suitable for dry agricultural areas, as it enables seeds to absorb a far greater water supply than their untreated counterparts.

There are many barren mountainous areas in Sichuan Province susceptible to dry weather due to the soil's poor water holding capacity. The Chengdu Institute of Organic Chemistry began to develop the drought-resistant chemical two years ago. So far, three versions have been developed and large-scale experiments have shown encouraging results. In the 6.7-hectare area of Xianhe and Baolin districts of Lezhi County, seeds coated with versions II and III have led to an average increase of 5.25 percent in production. In 1990, tests on a 66.7-hectare corn tract showed a maximum increase of 25 percent in production. Use of the chemical increases costs by 1.17 yuan per *mu* (15 *mu* = one hectare), but income goes up to 9.85 yuan or nine times the cost. Obviously, the substance is of high economic benefit.

The chemical loses its effect after a year in the ground. Because it contains no metallic ions, it is dissolved into the soil by microbes and thus does not harm the earth.

Presently, the new technology is being spread throughout China and the Chinese Academy of Sciences has listed it as a key project.

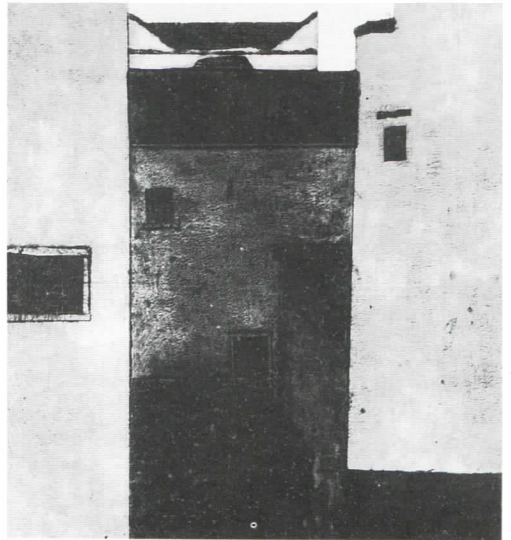
by Lou Linwei

ART PAGE



A Residential Quarter of South Anhui
(paper engraving).

Another Residential Quarter of South Anhui
(paper engraving).



Engravings by Ding Huiming

Ding Huiming, born in Tongling City, Anhui Province in 1962, now works at the Tongling Non-ferrous Metals Co. of Anhui Province. A self-taught student of fine art, he specializes in engraving. Here are some of his woodcuts and paper engravings.



A Farmer's Home.



Rural Scenery.

Changyi Foreign Trade Corp. of Shandong Province

The battenburg and mesh button produced by the Changyi Drawn-Work Factory are used for interior decorations. Since 1979, the company's products have been sold to more than 30 countries and regions including Canada, Japan, Italy, the United States and Hong Kong and have been awarded prizes for their high quality by Shandong Province and by the state.

Men's shirts and women's blouses, jackets and silk-embroidered shirts produced by the Changyi Clothes Factory have always sold well and thrice won a prize for quality from Japanese customers. The women's combed and fine spun lace blouses were awarded a prize of excellence and the Soaring Gold Dragon prize by the Ministry of Light Industry.

The Changyi Chemical Fibre Printing and Dyeing Factory, with its advanced production equipment, is now equipped with four processing systems for dyeing and finishing, knitwear dyeing and finishing, yarn dyeing and colour weaving. Their main products, Bodao-brand Waltz woollen fabric, Feilong-brand valitin wool, Persian wool, resin-treated satin, knitted cotton polyester and coloured imitation wool fabric, sell well in countries and regions including the Soviet Union, Singapore, India, Australia and Hong Kong.



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