



A project of Volunteers in Asia

Learning From China: A Report on Agriculture
and the Chinese People's Communes

by: an FAO Study Mission

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LEARNING FROM CHINA



REGIONAL OFFICE FOR ASIA AND THE FAR EAST
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
BANGKOK 1977

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9 September-5 October 1975

Regional Office for Asia and the Far East
Food and Agriculture Organization of the United Nations
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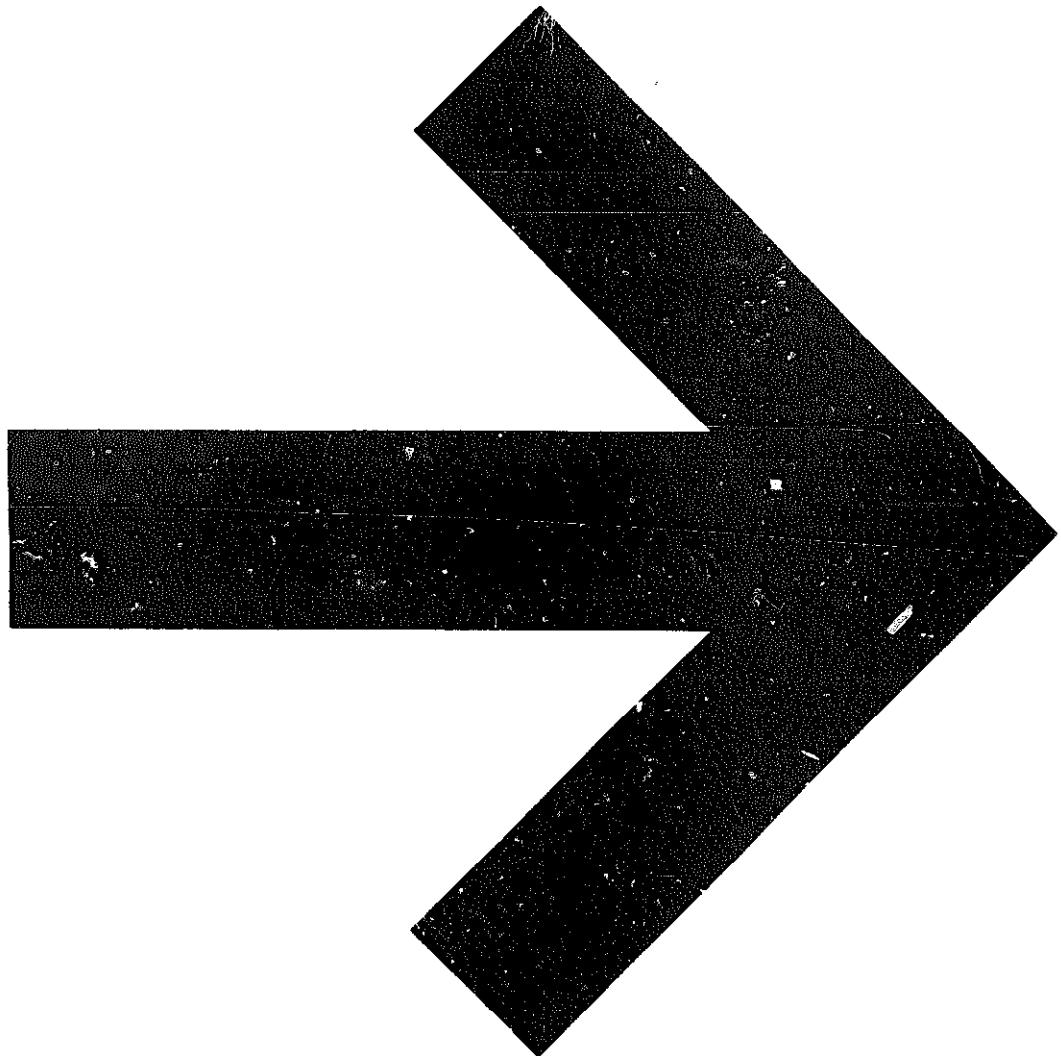


TABLE OF CONTENTS

	<i>Page</i>
Members of the Mission	III
Preface	V
Preview	VII
Chapter I: Background to Chinese Agricultural Development	1
Chapter II: Agricultural Development: Why Learn from China?	5
Chapter III: The Chinese Approach to Agricultural Development	10
Chapter IV: The People's Commune: China's Tool for Agricultural and Rural Development	15
Chapter V: China's Agriculture: Some Achievements	15
Chapter VI: People's Organization: Transforming a "Sheet of Loose Sand"	74
Chapter VII: Transferability or Relevance of the Chinese Experience	80
Chapter VIII: Suggestions for China/FAO Cooperation	96
Appendix I: List of Main Locations Visited with the Names of Principal Officials and People Met	99

A detailed table of contents appears on pages 107 to 112

MEMBERS OF THE MISSION

The Mission which prepared this report was composed of the following officers from the FAO Regional Office for Asia and the Far East (Bangkok) and from FAO Headquarters (Rome):

- * Dr. Dioscoro L. Umali, Assistant Director-General (ADG) and Regional Representative for Asia and the Far East (Mission Leader);
- * Dr. Hazim A. Al-Jibouri, Senior Agronomist, Field Food Crops Group, Plant Production and Protection Division (FAO Headquarters);
- * Mr. G. Cameron Clark, Regional Rural Institutions Officer;
- * Miss Margaret Crowley, Regional Home Economics and Family Development Officer;
- * Mr. Chandra de Fonseka, Regional Liaison Officer, Action for Development/Freedom from Hunger Campaign;
- * Mr. Teuvo Lehti, Assistant to the Assistant Director-General, Economic and Social Policy Department (FAO Headquarters);
- * Mr. Philippe Mengin, Regional Information Officer;
- * Dr. C. Perumal Pillai, Regional Livestock Development Officer; and
- * Mr. Thet Zin, Regional Agricultural Services Officer.

CHINESE UNITS OF MEASURES

- 1 *liang* (tael) = 2.5 ounces = 50 grams
- 1 *jin* (catty) = 1.102 pounds = 0.5 kilograms
- 1 *gungjin* = 2.204 pounds = 1 kilogram
- 1 *dan* (picul) = 110 pounds = 50 kilograms
- 1 *mou* = 0.1647 acres = 0.066 hectares
- 1 *li* = 1/3 of a mile = 1.728 kilometres
- 1 *guangli* = 1 kilometres
- 1 *yuan* = US\$0.42

The Chinese are phasing out the *jin* and the *li* units and are making *gungjin* and *guangli* (metric units) standard.

PREFACE

This report is the first in a series of three studies into various aspects of Chinese agriculture.

The studies were conducted by Missions organized by the Food and Agriculture Organization of the United Nations.

These Missions were drawn up in response to an invitation to the Organization extended by the People's Republic of China at the Twelfth FAO Regional Conference in Tokyo in 1974.

The first Mission, composed of nine officers, visited China from 9 September to 5 October 1975. The Mission studied Chinese approaches to agriculture and the Chinese people's communes as an example of integrated rural development.

The second Mission visited China from 21 April to 12 May 1976. This Mission analyzed the Chinese experience in aquaculture.

The third Mission focused its attention on forestry. This Mission entered China on 8 September 1976 and remained for four weeks.

Prior to entering China, the first Mission defined its objectives:

1. To study Chinese approaches to agricultural and rural development in depth;
2. To analyze the commune experience as an example of integrated rural development;
3. To try to determine in what ways the Chinese development experience — or some aspects of it — is replicable.

The Mission entered China via the traditional Hong Kong-Guangzhou (Canton)* rail link, and then flew to Beijing (Peking). It left China through the same route.

Upon arrival of the Mission in Beijing (Peking), Mr. Li Yung-kai, Director of the Bureau of Foreign Affairs at the Ministry of Agriculture and Forestry, arranged for extensive briefings. The views and suggestions of the Mission regarding the itinerary were solicited and adopted.

* The Pinyin spelling has generally been used for the names of locations with the former spelling in brackets for major towns. For example, Peking will appear as *Beijing (Peking)*. Some spellings have not changed.

With patience and understanding the Government sought to meet the varied requests that a multi-disciplinary group of this kind brings forth. Three full-time interpreters were assigned to this tour. Mr. Kung Chantung, Vice-Director of the Bureau of Land Reclamation and State Farms at the Ministry of Agriculture and Forestry, accompanied the Mission on its travels.

In the course of this trip, the Mission visited twelve communes and twenty-two different sites related to its area of study.

Chinese officials arranged the programme in such a way that Mission contacts would be on as wide a spectrum as possible. Thus, members had the opportunity to meet with people in various settings: in farm homes, in fields, on threshing floors, and in commune offices, schools, research institutions, trains, etc.

The timing of the trip enabled the Mission to view crops still in the fields. Members were also in China when it marked its National Day on 1 October. This enabled the Mission to observe the colourful ceremonies in the Great Hall of the People and elsewhere.

There are many problems in reporting on China. The country is vast and the population huge. The variety of China's ethnic groups, and cultures, and its long history make it impossible to write definitive reports.

But it can be said that the Mission did criss-cross the more important agricultural areas, perhaps with the major exceptions of the northeast and west/southwest. It is therefore fair to say that the Mission did get a rather good glimpse of Chinese agriculture. And while production levels and other variables may differ from region to region, the Mission feels its observations on policies, approaches and practices appear to hold throughout.

There is no doubt the Mission was shown some showcase models: The Red Flag Canal, Chililing, Dazhai (Tachai) and probably the Ho Lei People's Commune in the Shanghai area. There is a very real — and understandable — pride on the part of the Chinese in the accomplishments of these institutions.

But the Mission also studied communes that were obviously "run-of-the-mill". Some were just struggling to raise production to acceptable levels; others were not too successful.

Thus, a basis for comparison was available. And in any case, it was obvious, too, that the line-up of places to be visited was dictated, in part, by availability of transport links and time constraints.

Even more important, perhaps, was the fact that members undertook this Mission with a spirit of open-minded enquiry. They entered China as students, not teachers. The Mission went to learn, not to advise.

It is also this attitude that will indicate why this is not just another report on China's communes. This report has a "bias".

This "bias" - perhaps the more proper word is focus - ~~seems~~ to extract from the Chinese experience what elements and lessons are most likely to be useful and relevant for other developing countries. Technical cooperation between developing countries (TCDC) is only one aspect that the international community has come recently to adopt, within a much broader common yearning to learn from each other.

This was not then an academic quest.

Many developing countries are desperately searching for techniques, strategies and approaches to solve seemingly intractable development problems: food security; greater agricultural productivity; better nutrition; effective use of manpower, etc. All want a better life for their people.

It is against this setting that China's development experience has been opened to study.

The Chinese themselves insist that their country is still developing; that they have still much to accomplish; that each nation must plan and implement its development in accordance with its own specific conditions.

This report, therefore, responds to this search and offers a service by analyzing a sharply-defined sector of the Chinese experience. It does not attempt prescriptions. That is not the task of this Mission.

For the Mission, this assignment was a challenging and deeply educational experience.

Members wish to place on record their special appreciation to: Vice-Minister Yang Li-kung, Mr. Li Yung-kai, Mr. Kung Chan-tung, Mr. Ma Ling, Mr. Chang Shih-chau, Mr. Hsu Kuo-chang, all of the Ministry of Agriculture and Forestry, as well as to the Mission's three patient interpreters - Mrs. Hsu Ching-hwa, Mr. Chu Yu-lung and Mrs. Chu Cheng-hsuan.

A word of thanks also goes to Mr. Juan L. Mercado of the FAO Regional Office who helped to edit this report with a minimum of the unfortunate jargon that too often bedevils official reports.

Mission members are aware of a number of repetitions in the text of this report. These occur because Chinese institutions or accomplishments were analyzed from different viewpoints and by members representing different disciplines

REVIEW

LEAVING OUR MENTAL LUGGAGE BEHIND

Dr. D.L. Umali, Mission Leader

China's development experience today commands a growing interest among people seeking answers to elusive development issues. At the end of this Mission members felt that this heightened interest is fully justified.

China is a country that is coping — with a remarkable degree of success — with development issues that fester in other countries.

China also offers an unprecedented social experiment that sweeps in a full quarter of the human race. Given the twentieth century demographic transition, the size is unique in history.

This is a nation that, within the short span of 27 years, has succeeded in banishing starvation. It is now providing food, clothing, shelter and reasonable security for over 800 million people. It has mobilized the world's largest agricultural labour force, reversed the flood of people into cities and kept people on the land.

"Seeing with your own eyes" is better than asking a thousand questions. And the Mission's visit underscored the truth of this old saying.

We did see part of China with our own eyes. And Mission members asked more than a thousand questions.

Chinese officials also arranged our programme in such a way that we met scores of people — all the way from senior ministry officials to members of production teams at the village level.

We saw, too, scores of communes. They ranged from the very successful to those just barely making headway.

Still, one must be mindful of the immensity of this country, the diversity of its people, its long ancient history and the magnitude of its problems.

There is an observation that may highlight the difficulty of reporting on China.

As we travelled from villages to towns and provinces, to Beijing (Peking) and then out again, one fact struck me. The members of our FAO team were loaded with the huge, unwieldy luggage of the modern-day traveller. We wrestled with suitcases, satchels, airline

bags, attache cases, etc. On the other hand, our guides travelled light. They carried small bags with a few essentials.

This contrast suggested that in viewing China, we should leave at the doorstep the mental luggage of our outside-world lives. We must not impose our own criteria, judgements and prejudices shaped by our past, our education and value systems. We owe it to ourselves to try to see China as the Chinese see it.

The members of this Mission consciously tried to adopt a spirit of open-minded enquiry. We entered China as students, not as teachers. And certainly, we did not go to advise but to learn.

China today is under-developed but vibrant, flexible and experimental. It has the flavour of the American frontier of about a century ago.

Others, too, note this vibrance. In fact, some observers have spoken of this atmosphere of "clearing the ground for the new shoots to sprout" in China. And this has stirred a heightened interest in the Chinese development experience.

This is one side of the coin.

There is another side, namely: the collapse of the once-widespread and facile assumption that the Chinese experience was either negligible or irrelevant. The achievements and the problems that our Mission observed have helped lay some of these assumptions to rest.

But perhaps what has done most to jolt the earlier unquestioning dismissal of China's experience has been the demonstration of concern for the human being.

We may disagree on what the Chinese vision of man is. But there is no doubt that today the basic needs of the Chinese people are, to a large measure, being met. In the Chinese view, man is regarded as the end for all development measures, not merely the means.

Chairman Mao once said: "Of all things in the world, people are the most precious".

This concept comes through very clearly in China's approach towards the small farmer.

Many countries of Asia today are either starting or revising existing programmes to reach this sector of their societies. The people, who are clustered in this sector, are extremely poor. They are barred from effective participation in national life.

The masses in China are former landless agricultural workers, tenants or small farmers. China has chosen, however, to devote almost the entire national effort — the total war for agricultural production and against backwardness referred to in this report — to helping this sector.

All political and technical workers are constantly reminded to "Learn from the Masses" in order to "Serve the People". A fundamental principle for success, the Chinese are told, is to "Have Faith in the Masses". The Chinese start from the lowest common denominator: the small farmer. It is small farmers who are now in charge of the overwhelming portion of China's development effort.

This represents a fundamental difference in development policy. It rests on the view that a society can move forward only to the extent that the poorest citizens can improve their lot. It rests on people.

We must grasp the meaning of the egalitarian and anti-elitist society that the Chinese are trying to build. In this way, we can appreciate better the rationale behind many of the approaches they have designed.

This thrust is also reflected in other sectors. Let me mention two: the status of women and persistent attempts to reduce gaps between various sectors such as government and people, between the intellectual and the worker, between city and farm.

We take for granted that Chinese women today are free from concubinage, from the threat of being killed at childbirth or traded off to bawdy houses.

Also, we assume that it is the normal state of affairs that the great majority of women in China have a job; that there is scarcely any field of work from which they are barred; or that women who work in state enterprises are guaranteed a pension.

Yet, for more than 3 000 years, women were nothing more than chattels in China. And wasn't it just yesterday when a Constitution was adopted that guaranteed their rights and equality with men? The Marriage Law that did away with so many abuses was only adopted in 1950.

China constantly whittles away at any gap between cadres and people by a party philosophy of hard work, plain living and sharing in manual labour. This is to encourage supervision and criticism by people at the lowest level — something almost out of Jefferson, one would think.

The Mission is aware that some people claim that what is emerging in China today is a development blueprint. It is significant that the Chinese themselves are the first to deny this.

Nor is it a development precedent, as some think. It has been rightly said that precedents merely embalm the mistakes of the past. The Chinese decision to drop their unquestioning acceptance of foreign development precedents in the fifties underscores this point.

The Mission's view is that we are observing a very talented people rediscovering themselves. This rediscovery is being carried out, among other ways, in innovative attempts at social organization and in blazing new paths for their development.

The paths are based on a very clear-headed appreciation of their own history, their own resources and needs as well as the constraints that face them.

They provide useful reference points for us, as we try to seek the answers that have eluded us for so long.

In conclusion, the Mission feels that the Chinese development experience also offers a message: it seems to say — at least to the Mission — that if people can achieve so much despite tremendous odds, then perhaps mankind's prospects for the future may not be all that bleak. Given a vision, hard work, and self-reliance, mankind can still climb out of the cesspool of poverty.

If the Chinese experience helps to dissipate some of the pessimism that has paralyzed far too many people today, it will have made another worthwhile contribution to our world. After all, it is the only world we have. And we share it with the Chinese people.

CHAPTER I

BACKGROUND TO CHINESE AGRICULTURAL DEVELOPMENT

The three main features of China's physical environment condition Chinese approaches to agricultural development.

These are: the ratio between arable land and population; the rainfall patterns; and the incidence of siltage caused by the large rivers, especially the Yellow River or Huang He and its tributaries.

Land Ratio

China's population is estimated at "nearly 800 million"¹. Since there are some 130 million ha of arable land, the overall land/person ratio therefore comes to only about 0.15 ha. This compares with 0.27 ha in India, 0.10 ha in Indonesia, 0.04 ha in Japan, and about 1.0 ha in the USSR and the U.S. China has about 60% of the U.S. crop land or half the Soviet Union's arable land. Yet, China must feed more than 3½ times the population of either the U.S. or U.S.S.R.

The implication of this on agricultural development approaches is evident: if China is to avoid heavy dependence on imported food supplies, the output per unit of land will have to be increased sharply. This will call for multiple cropping, more and better farm inputs, appropriate mechanization of farm operations, etc.

Rainfall

Water also etches its own unique mark on development strategies.

An analysis of China's rainfall patterns shows that, except in the south 70-85 per cent of the rain (average 600-1 000 mm) is concentrated within four months: June to September.

Moreover, in China, a northerly or north-east cold air current must blow to lift the south-east monsoon to sufficient heights for it to yield its moisture. In other monsoon areas, contact with mountains provides the required cooling. Under such conditions, there is one variable — the monsoon air — and one constant — the mountains. In China, rain depends on the fickle coincidence of two variables: the meeting of warm and cool air currents. Hence, there is often too much or too little rain in many parts of the country.²

This helps in understanding the extraordinary

incidence of flood and drought (sometimes both simultaneously in different areas), and the consequent crop failures and famines in Chinese history. According to the Chinese, there were 1 621 floods and 1 392 droughts in 2 117 years (till 1911). This means an average of more than one calamity a year.³ Similar figures were given to the Mission at the Ministry of Agriculture and Forestry briefing in Beijing (Peking).

These disasters partly explain the near obsessional streak in the Chinese psychology with regard to grain reserves and flood control.

Siltage

The problem of flooding is compounded by heavy river siltage. The Huang He and its tributaries have the worst river siltage concentration per cubic ft (283 cm³) in the world: 2.26 lb (1 kg) compared with 0.66 lb in the Colorado and 0.065 lb in the Nile. About 90 per cent of this comes from the lower regions of Shanxi (Shansi) and Shaanxi (Shensi). This is 27 times greater than the world average. It gives some gauge of the degree of soil erosion.⁴

China's traditional solution to keep out silt-loaded flood waters was to build mile upon mile of dikes along river banks. This compounded the problem: the higher the dikes rose, the more silt piled up on the river beds to the detriment of navigation and flood control.

Capsule Background

The heavy emphasis on agriculture in China today has historic roots. It also reflects the rural basis of the Chinese communist revolution. A brief background may therefore help in understanding how Chinese agricultural policies have changed over the years.

Feudalism in China dates back to the later Shang and Chou dynasties (1300 B.C. to 220 B.C.). Feudal lords and the lesser-nobility then parcelled out their land holdings equally among their tenants. This was known as the Ching-Tien system. Title to the land remained with the feudal lord. Tenants worked their allotted lands within an oppressive network of feudal rights and obligations.

By 200 B.C. the Chou dynasty had collapsed. Persons' landownership had largely replaced the old

feudal system. The era of oppressive landlords, mandarins and oppressed peasantry, however, continued. Calls for reform were ignored. Little basic change occurred for 2 000 years until the communist takeover in 1949.

Throughout this period, a tragic cycle repeated itself again and again: peasant oppression, followed by agrarian crisis and natural calamities climaxed by peasant revolts, trailed by abortive attempts at reform. The nineteenth century added to this what was probably among the worst examples of foreign exploitation: the two Opium Wars and extra-territorial concessions to foreign powers.

A major feature of this period was the Taiping Rebellion. The brief regime that followed the rebellion in Central China from 1851-1864, led by Hung Hsiu-ch'uan, owed much to the West and to Christian influence. The Taiping policies included: radical land reform, collectivization of property, equal rights for women, language reform and the promotion of simple and more austere life styles. In a very real sense, the policies anticipated those of the communist revolution enacted exactly one century later.

It is significant that the Chinese Communist Party (CCP) acknowledged the significance of the Taiping movement and took care to analyze its lessons – notably the lesson that the core of a movement for radical national change had essentially to be the poor rural peasantry.

In 1911, the last Manchu Dynasty was overthrown. The Chinese Republic came into being with Sun Yat-sen as President. The Kuomintang or Nationalist Party was reorganized from the old "League of Common Alliance", with the help of Soviet advisers.

Another landmark in the pre-history of the communist revolution was the May 4th Movement in 1919. This was a national outburst against the diehard colonialism that the Chinese felt was reflected in the Peace Treaty of Versailles. Chairman Mao was impressed by the Movement's explanation of the connection between feudalism and imperialism. He referred to the May 4th Movement as "Cultural Revolution that was uncompromising in its opposition to feudal culture – there had never been such a great and thorough-going cultural revolution since the dawn of Chinese history".

In 1921, the CCP was founded as a separate entity.

The Modern Period

Between 1921 and 1927 the CCP initially followed the Soviet model. In this *first phase*, it began with urban workers. But after repeated failures, the Party shifted to the countryside in Jiangxi (Kiangsu) and Fujian (Fukien).

There, it set up rural bases. Chairman Mao became a member of a communist group in Changsha in October 1920.

The *second phase* covers a decade: 1927-37. Work in the rural base areas intensified. But there was little progress. Thus, 1927 saw Chairman Mao conduct his survey and report on the peasant movement in Hunan – a landmark both in Chairman Mao's ideological development and in that of the Party. This phase followed the first split between the Kuomintang and the Party.

By 1934, Kuomintang attacks ejected the communists from their southern bases. Chairman Mao and the communists began the Long March of 6 000 miles to the north-west province of Shaanxi (Shensi) and set up headquarters in Yan'an (Yenan). Chairman Mao's predominance was not yet established. He was more concerned with how to win over the many and lead the country into the transitional stage of a "new democracy". Similarly, his land policy was: strike at the landlords but enlist, on the Party's side, the rich peasants and intermediate classes. Thus, the first land law of February 1930 was very mild.

A more severe land law of the Chinese North-West Soviet Government came into force. In 1935 it provided for confiscation of all rich peasants' land not cultivated by owners themselves. This law was suspended in 1937, when the Second United Front was formed with the Kuomintang to repel the Japanese Army.

Given the joint Kuomintang-CCP front, land policy during the *third phase* 1937 to 1945, was considerably diluted. It sought to win over the landlords. The "principal contradiction" was found, not between landlord and peasant, but between the Chinese masses and the Japanese military forces. Party policy was toned down to a campaign for modest rent reduction from 50% to 37.5% and fair interest rates pegged at 15% per annum.

The *fourth phase* covered the period after victory over the Japanese in 1945 until 1949.* A more radical Party policy emerged as outlined in the Directive of 4 May 1946. The Party resumed confiscation and distribution of land. Civil war erupted. Chairman Mao again became concerned with retaining as much rural support as possible. Party cadres were instructed to be selective in dealing with the land problem: they were to be lenient with rich peasants, small and middle landlords, and to unite firmly with poor and middle peasants.

This policy shift was repeated in May 1948. On the eve of assuming total control of China, the Party moved back to a more pragmatic moderate policy, especially

* The final break with the Kuomintang occurred during this phase.

in areas it controlled. The objective was to protect agricultural production from the disruptive effects of too radical and premature a land programme.

On the threshold of setting up the People's Republic of China in 1949, Chairman Mao believed that individual peasant agriculture would first have to be gradually transformed to cooperative agriculture.

The Post-1949 Record

The years between 1950 and 1958 saw China adopt a Soviet economic strategy and Soviet institutional forms. Russian also became the first foreign language of the country. The new government permitted Russians to help draft its First Five-Year Plan (1953-57).

The plan built on Russian experience. Its basic policies called for:

1. Agriculture to serve industry;
2. First priority to go to heavy industry;
3. Economic power to flow from Beijing (Peking) ministries at the top to the factory manager at the bottom;
4. Material rewards to be used to stimulate individual activity.

In China's agrarian setting, these policies soon encountered obstacles. Agricultural growth slowed down. So did light industry, which depended on agriculture for raw materials. The new industry introduced infra-structural advantages to already well-industrialized areas in Manchuria and to Shanghai, Tianjin (Tientsin), and Nanjing (Nanking) on the east coast. Regional disparities in industrialization were exacerbated.

Criticism mounted against assumptions of the plan. The Chinese increasingly felt they should have started with their own revolutionary experience of nearly two decades in the rural areas.

Chairman Mao articulated this growing criticism in two major policy pronouncements: "On the Ten Great Relationships" (April 1956) and "On the Correct Handling of Contradictions among the People" (February 1957). His theme was: re-examine adoption of Soviet development approaches in the light of different Chinese conditions and greater reliance on the Party's own considerable experience in the difficult years between 1921 and 1949.

New Thrust

The *Great Leap Forward* was the result.

Between 1958 and 1960 theoretical foundations were worked out for radical new policies involving a

decisive swing away from the Soviet model. This period saw intensive self-criticism, launching of the people's communes, decentralization of light and heavy industry as symbolized by backyard furnaces, small fertilizer factories, and the emphasis on "redness" rather than "expertness". Chinese-Russian relations deteriorated. Soviet aid and advice were withdrawn.

The Chinese attributed the great difficulties of this period to three main reasons: extremely unfavourable weather; sabotage by Soviet technicians and advisers through contracts defaulted on or projects abandoned in mid-stream; and the confusion caused by the revisionist policies advocated by Liu Shao-chi.

Between 1959 and 1961 China concluded that the changes decreed were too drastic and inadequately thought out. This phase therefore saw a retreat from the excesses of the Great Leap Forward. Successively bad agricultural seasons accelerated this retreat. Output dropped. Confusion and peasant unrest grew.

Second Thought

The leadership tried between 1961 and 1965 to re-establish the main features of the Soviet model. It reversed or modified much of the Great Leap Forward initiatives. Material incentives were re-introduced and private markets encouraged.

Expertness tended to take over from redness; but this was only one aspect of the basic and crucial conflict between the revolutionary line of Chairman Mao and the revisionist line of Liu Shao-chi. Would not the latter lead to a revival of capitalism? Which road should China take?

Because of this conflict, reversal was limited. Certain features of the Great Leap Forward continued, especially the priority accorded to agricultural development. However, this was now conceived in more technological terms.

Chairman Mao's policy, on the other hand, became more assured, *viz.* "Politics in Command"; elaboration of the "Mass Line"; greater people's participation and mobilization; the "Party Rectification Campaign"; "Learn from Tachai", etc.

The masses found that the cooperatives were inadequate. They did not even have the capability to dig canals. So communes were created by the merger on the average of ten advanced producers' cooperatives, but with a qualitatively novel statute from the beginning. One village adopted the name "people's commune". Chairman Mao then popularized the people's "cooperatives as people's communes throughout the country and more communes were organized. Mao formulated the general

line, "Build socialism bigger, faster, better and with more economic results".

The enthusiasm of the cooperatives to organize vast movements to establish socialism came from the peasants themselves.

Deliberate Shifts

The *Great Proletarian Cultural Revolution* from 1966 to 1973 has been interpreted as an all-out drive by Maoists to vindicate the "Mass Line". It implied a renewed and more conscious departure from the Soviet path and a bolder and more clearly planned advance on the basic policy innovations of the Great Leap Forward. Even more fundamentally it was a call by Chairman Mao for a mass effort to reject the Liu Shao-chi line and stem the emergence of revisionism in China. The Soviet Union had betrayed the revolution and degenerated into revisionism. The lessons of this misadventure were summed up by Chairman Mao: it is imperative to educate the people so that revisionism can be detected and eradicated.

The ferment had provided lessons on the techniques of mass education. These lessons emphasized decentralization and the "Mass Line". Also industry was now to serve agriculture, not vice-versa as in the Soviet model. This new policy was articulated thus: "Agriculture is the Foundation and Industry the Leading Factor."

"Walking on Two Legs" [a policy already adopted in the Yan'an (Yenan) days], use of both modern and traditional technology; and "Democratic Centralism", which provided for centrally-directed but grassroots-administered approaches, became the other major new policies. The communes were to continue and be strengthened. The Party, no less than the bureaucracy, needed to be controlled by the people through the innovative "Three-In-One" revolutionary committees. The Three-In-One committees provided contact between (1) the old, the middle-aged and the young; and (2) the Party cadres, technicians and peasants and workers. These committees were established at all levels (except at the

top level) in every production and service unit, from steel plants, to embroidery and fertilizer factories.

Constitutional Sanction

At the time of Chairman Mao's death on 9 September 1976, the turmoil over priority of agriculture and related policies had eased. The experience of this period was critical to the Chinese. This is indicated by the fact that plenary meetings of the two highest constitutional organs of the Republic were convened in the recent past: the Tenth National Congress of the Communist Party (24-28 August 1973) and the Fourth National People's Congress (13-17 January 1975).

At these plenary meetings, new revised constitutions were adopted, both for the Party and the Republic. Both constitutions draw special attention to the lessons to be learned from the Great Proletarian Cultural Revolution and underscore priority for agricultural policy.

The dust has settled, at least of this round, in the "continuing revolution".

Relevance

Like China, other developing countries today are engaged in the process of rewriting their own development strategies in the light of their own histories, institutions, constraints — and the failure of many earlier approaches. It is not an easy process. Mistakes are often costly.

The chapters which follow examine in some detail Chinese approaches as seen from the perspective of the commune. They may offer some useful reference points in learning from the successes — and mistakes — of a unique but also developing nation.

1 Chou En-lai "Report on the Work of the Government", in *Documents of the First Session of the Fourth National People's Congress of the People's Republic of China*, Peking, Foreign Languages Press, 1975 (p. 49).

2 Trengar, T.R. *A Geography of China*, London, Butterworth, 1970 (page 24).

3 Needham, J. *Hong Kong Gazette*, 15 May 1974.

4 Trengar, T.R., *op. cit.* (page 220).

CHAPTER II

AGRICULTURAL DEVELOPMENT: WHY LEARN FROM CHINA?

China's development experience commands today a growing circle of interested observers. There are a number of reasons for this interest.

One is a sense of identification with many of China's development problems.

Many countries in Asia — as well as in Africa and Latin America — realize that they confront similar problems. They are often cash-short, strapped with burgeoning populations, huge pools of agricultural manpower, and obsolete agrarian structures.

Failure's Incentive

Another is the growing recognition that the "trickle-down" development approaches of the fifties and sixties have largely failed. Growth has lagged as the small modern sectors have failed to "take off" because of agricultural neglect. Popular aspirations, in the meantime, are causing attention to be paid to new models.

Then there are China's achievements.

This is a nation that, within 27 years, succeeded in banishing the recurring famines that stigmatized it for centuries. China now provides adequate food, clothing, shelter, medical care, and reasonable security for almost a quarter of the human race. China has mobilized the world's largest agricultural labour force, reversed the flood of people into cities, and kept most on the land.

Landmarks

Given this background, the Mission felt that an analysis of the Chinese agricultural development experience would constitute a useful service for FAO Member Nations. It could well provide them with some useful reference points as they chart out their own development strategies.

The Chinese approach to agricultural development today bears a unique stamp.

A revolutionary leadership seeks to marshall the resources and the talents of a frugal, hardworking people to raise, within a telescoped span of time, both productivity and output. They are doing this in a land seared by a history of extreme deprivation.

The approach that has been designed reflects a

response to the need shared by most developing countries to produce additional food. But the approach also shows the leadership's perception and decision that, in China today, priority should be given to agriculture as the foundation for *all* development. "agriculture (is) the foundation and industry (is) the leading factor", states the Chinese Constitution.¹

To implement this approach, policies of agricultural resource mobilization have been drawn up. They are so all-encompassing that the only comparable image that came to the Mission was that of a war. The Chinese approach constitutes a total war for agricultural production — against backwardness, underdevelopment and poverty. "Every crop is a battlefield", one commune leader said.

A closer analysis of the Chinese approach reveals three basic elements:

1. *Self-Reliance*: This is the basic philosophy. It permeates all aspects of Chinese policy and daily life. Basic food needs are to be met from domestic resources, using all available indigenous technology with selective adoption of modern methods.

2. *Priority Attention for Basic Needs*: The basic drive seeks to eliminate poverty, mobilize the masses, and organize the countryside more efficiently, especially to absorb the shocks of recurring natural calamities.

3. *Agricultural Growth*: Policies are to ensure that the momentum of agricultural growth is maintained and increased. Production targets are set; but there is also a history of these targets being exceeded constantly.

It is within this context that many of China's agricultural priorities and techniques can be understood and perhaps appreciated better. As seen by the Mission, these are some of the significant components of the Chinese approach.

Agriculture — The Priority

China's agricultural development priorities are sharply defined. "Agriculture is the foundation of the national economy and grain is the foundation of agriculture", the Chinese insist. Unremitting use of an extensive communications system has made every citizen aware of these priorities — often expressed in short, pithy slogans.

To the casual visitor, these slogans, written in ideographs and appearing everywhere, present a bewildering spectacle. But there is a sensible communications principle behind them: the axioms are a concise presentation of policy. They are easy to convey — and to remember. Slogans in China do not have the connotation of gimmickry; they are an accepted means for communicating the Party line or policies.

Food Security

Great emphasis is placed on the need to store grain, in preparation for natural calamities or the event of war. "Dig tunnels deep, store grain everywhere, and never seek hegemony", is the way the Chinese quote Chairman Mao.

Grain in the Chinese view is of crucial importance. "Take grain as the key link and ensure all-round development." Yet, stockpiling is not an exclusive government function, but is decentralized and dispersed. Grain is stored by families, by teams, by brigades, by communes and from country to State levels.

There is also effective State control over the sale and distribution of food grain. Along with edible oil and cotton, grain is a controlled item. Wastage is minimal. The Mission found no evidence of speculative hoarding of grain.

Resource Utilization

Most Asian countries are not rich. They can ill afford careless use of resources. Thus, the fact that China is a land of no waste is significant.

The Mission noted that in China every resource is carefully conserved and used. Waste runs against the ethical grain. This approach covers land use, water management, manpower, organic residues, industrial plant capacity, etc. Every sliver of land is cropped. New arable land is being created through terracing and levelling of hills. Even rooftop plots are used. What cannot be used for agriculture is reafforested. "Cover the country with trees", people are exhorted.

Next to food production and distribution, provision of jobs is probably the most pressing concern for developing countries today. China's employment policy stems from its overall policy of resource utilization: every available pair of hands is used for production.

The Mission, for instance, saw children picking straw to be used for fodder and compost after school hours. However little one contributes, the reasoning goes, nevertheless it will increase the size of the cake. And every citizen is entitled, under the system, to a slice

of this cake. It is not "job creation" in the classic sense; but it works — which is probably the criteria developing countries accept as valid.

Soared Land

Slash-and-burn agriculture and lack of rational land use policies have become major concerns in Asian countries as the soil deteriorates.

The Mission found that in China the soil is carefully nurtured. Yearly, enormous amounts of compost and organic material are returned to the soil. Availability of chemical fertilizers is still limited. Use of organic manure, therefore, constitutes an important "buffer" against shortages in the battle for higher yields.

It is the Mission's impression that the quality of the soil is improving due to this care. "There seems to be a love affair between the Chinese farmer and the land", is the way a Mission member put it.

In all areas visited by the Mission, bodies of water were either controlled (irrigation, drainage), conserved (rainwater ponds and reservoirs), and/or utilized (fish-ponds and fertilizer sources).

There is sustained emphasis on water conservation and use. Rainfed farming is abandoned as soon as irrigation becomes available. China seeks production patterns that reduce nature's whims.

River Harvests

The Chinese also appear to have developed the art of utilizing rivers and irrigation canals for purposes other than transport and water supply. These are now being systematically tapped for raising food, organic matter, feed, soil amelioration, fish, ducks and geese.

Water chestnuts are used for food; water hyacinth and water lettuce converted into pig food and compost; silt and mud from canals are used as manure to built up the land for growing upland crops; geese and fish are raised.

These "river harvests" have made impressive yields through the diligent application of simple technology — a point which the river-rich countries may find relevant.

Self-Reliance

Self-reliance constitutes a key phrase in today's development rhetoric. It is one of the cornerstones of China's development policy.

Insistence on relying on national and local resources and the use of initiative and talent, runs through the whole system. This policy is manifested in all spheres:

from finance to engineering, to efforts by every rural production unit — be it a people's commune, a state farm, or a research institute — to produce its own food-grain, fiber, edible oil, or to build its own silos or wells.

Grassroots Leeway

Chinese development administration is decentralized to the lowest level. This is a corollary to the all-pervasive principle of self-reliance. There is a unified centrally-directed national programme; but considerable leeway is given to local units to plan and manage within the framework.

The Central Government has thereby divested itself of a considerable administrative and financial burden. It has encouraged local problem-solving. The tendency, common in many countries, for people to lean on their central governments as a crutch is sharply minimized as state power and responsibility are passed on to the smaller production units at the lower level.

Planning Methods

Under the rural administrative structure, the basic unit — the production team — is very small: twenty to thirty families. For all purposes, it is an extended family and farm. Planning methods tend to be flexible and realistic. The organization of the people's commune into teams and brigades (several production teams make up a production brigade) provides a workable mechanism for securing the full participation of farmers in planning and implementation.

The two-way planning dialogue, especially within the range of the production team to the country level, is vigorous. This makes possible realistic, flexible, and pragmatic micro-planning.

From the State's point of view, this decentralization is facilitated by the presence of the Party Committee at all levels down to the production team. This ensures that "the correct line" is grasped.

The Three-In-One principle provides continuity in all planning and problem-solving activities. The structure for planning and problem-solving rests on the concept of relying on "the wisdom of the masses". It reflects a belief in the ability and capacity of ordinary people to plan and implement.

Integrated Rural Development (IRD)

The Mission noted that the communes combine both management and production functions. This has therefore permitted an effective blending of agricultural and industrial growth, tailored to the different resources

of each locality. The system is based on comprehensive area development. With positive economic incentives it has buttressed existing policies to discourage the flow of people into urban areas and to hold them instead on the land.

Chinese development tends to be pragmatic. When mistakes are made, they are openly recognized and quickly rectified. The decentralized nature of the communes enables the system to respond quickly to practical needs and to immediate problems where they arise.

The communes are not an overnight creation. They are the result of a lengthy progression through various forms of collectives. During this period, the countryside moved, partly for ideological reasons, and partly in response to immediate problems, through the stages of Mutual Aid Teams, Primary Cooperatives, Advanced Cooperatives, and in 1958, to People's Communes. The communes are still undergoing refinements.

"Taming Nature" Approach

Two of the major approaches the Chinese use to raise crop output and productivity area: (1) attempts to modify nature through mobilization of the masses and (2) applications of available indigenous technology.

Through the massive application of manpower the Chinese have drilled wells in rocky places, carved out mountain tops to catch rainwater, levelled hills to fill ravines and terraces, handcarried soil over long distances, built multi-purpose reservoirs, and reclaimed tidal or saline and water-logged land — practices far too costly under conventional project evaluation criteria or banking practices. But these projects have often revolutionized the lives of the people involved.

Crop Technology and Extension

Over the past 25 years productivity and yields appear to have registered steady increases. Compared with other developing countries, yields per ha are high. These high yields have been accomplished through genetic improvement, intensive land use, and excellent field management. Triple-cropping has been adopted over large areas, producing yields from 16 to 18 tonnes of foodgrain per ha and in some cases up to 22 tonnes. Experimental quadruple-cropping has been reported.

Part of this achievement also seems due to the very close relationship between research and extension. Research is problem oriented. At each level of the commune farmers are involved in experiments and investigation. Production decisions are taken only after trials and after full discussion. This reliance on local insights encourages coordination of research and of extension —

and pays off in productivity.

Research

Current research is decentralized and problem-oriented. Results of research are promptly included in production methods. There is no break between research and actual field problems, and practical production and the masses. Trained manpower is well utilized.

China's disease and pest forecasting system appears adequate. There is a stress on prevention of outbreaks rather than on a continued reliance on chemical means. Breeding for pest and disease resistance is given high priority.

Agricultural Education

Relevance of education is a burning issue in most developing countries. China has re-oriented all agricultural schools and colleges to serve the needs of the farmers. Experienced "veteran farmers" are brought in as regular staff members. These veteran farmers ensure that theory and practice are meaningfully related.

Further educational investment is made only in those young people who have worked for at least two years in a commune, who have the respect and support of the poorer farmers, and who show a desire to return to serve their communes. Students and teachers engage jointly in research, extension and food production, spending three to four months each year with the farmers, at the commune level.

Mass Education

The most striking – and famous – example of using the communes as a teaching tool for the masses is offered by the Dazhai (Tachai) People's Commune. "Learn from Tachai", Chairman Mao urged. Since then over six million people – including cabinet ministers and other high-level government officials – have visited Tachai.

The techniques developed at Tachai came from people at the farm level. Since then, the principles of this development experience have been formulated and preached in China.

It is a unique method of teaching a nation.

Mechanization and Local Industry

Many industrial plants which produce farm implements or which process agricultural products have been built in communes. These funnel modern tools into agriculture.

The ultimate goal is to raise rural living standards

to those of city workers. It is also to build up an industrially-skilled labour force and to develop a rurally located industry. "The fundamental way out for agriculture lies in mechanization" is the way the Chinese explain this policy.

The Chinese are sensitive to the drudgery that farm labour implies. They point out that mechanization also seeks to eliminate the "three-bendings-down" involved in pulling and transplanting seedlings, in weeding and in harvesting. China is therefore pressing ahead with mechanization. By 1980, farm operations are expected to be substantially mechanized. This will then release manpower for other activities.

Grain losses in post-harvest operations may be minimized if the areas are served by mobile threshers. Rice processing technology, particularly at the team and brigade levels, is still low, but improving. The technology to resolve these problems is becoming available.

Animal Husbandry

The pressing problem of raising grain and other crops for human consumption has led to a lower priority being given to animal husbandry.

Communal ownership of the land and of "big" animals has resulted in effective control of contagious diseases, *viz.* rinderpest, foot-and-mouth disease, etc. "Self-reliance" approaches have secured modest increases in the number of animals and animal products.

There is an on-going campaign to raise one pig for every mou of land. The objective is to increase supplies of animal protein and organic manure. The policy seeks to avoid using cereals for animal feed and therefore to prevent animals from competing with people for cereals.

Animal disease treatment appears cheap, effective and available everywhere.

Demand for milk, especially in cities and industrial centers, is increasing.

Draught cattle, buffaloes and mules play an important role in agriculture, especially in upland areas. Genetic improvement, management, and feeding of these animals have considerable potential.

Incentives

A broad range of incentives – organizational, financial and ideological – are used to increase farm output. However, the major incentive is political consciousness.

The tax on agriculture is low and fixed. Even more significant is the way China has reversed the traditional

role of agriculture as a supporter for the industrial sector. Twenty three percent more money is given to agriculture by the State than is obtained from agriculture through the fiscal system. Industry, including agro-industry, is expected to underwrite the deficits and generally to support agriculture.

Thus, the standard of living is rising more quickly in rural areas than in the industrial/urban sector.

Purchase prices are guaranteed. Furthermore, the State pays 30% more for grain (and cotton, etc.) delivered in excess of the planned delivery target. Targets are adjusted upwards only at five-year intervals.

Price stability encourages savings.

Above all, economic transactions involving basic needs – food, clothing, housing, health, education, etc. – have been taken from the market place. What emerges is the economics of use and not of profit. The State's ability to control and direct market and economic forces for the fundamental needs of the people provides the mechanism for meeting basic needs and spurring production.

The production team is small enough for the individual to see and feel the impact of the team's successes and failures on his or her own welfare. This gives the team a collective income incentive.

The effort of individuals is also promoted by the fact that the team member's income level depends on the type, quality and quantity of his or her work. These are determined by the other team members.

Equally important are non-material incentives. These range from recognition for peasants who achieve high productivity, to sessions to sharpen political consciousness.

There is, too, "socialist emulation". Performance records between individuals, teams and communes are compared. Recognition for the outstanding is quickly conferred.

China is also implementing a programme of equality of men and women in all spheres. The Chinese women of today have a voice in family affairs that would have been unthinkable a few decades ago.

Nursery schools and primary education are available to all. Health services emphasize preventive medicine and adequately cover the country-side. Convenient childcare facilities free women for manual labour and industrial work.

Examples

There is obvious pride in local and national¹ achievements. Farmers are proud of the accomplishments carved out with their own hands, methods and indigenous materials.

There is also the example set by leaders. There is no ostentation. Leaders are reputed to be people of integrity. Cadres participate in productive labour. This fosters the spread of egalitarian attitudes and give substance to the slogan: "Serve the People".

The New Person

China is clearly in a campaign to create a "new person" who is brought up to work for the welfare of the collective.

The value system that is proclaimed is egalitarian and anti-elitist. The system, therefore, goes to considerable effort to prevent the re-emergence of elitist groups.

Basic to the new economic order is, of course, the new political order. It blends centralized power and standards of individual and social ethics. The content, pace and tone are set by the people's own leaders.

One result is agricultural development practice that has resulted in substantial achievements.

The following chapters will analyze these highlights in more detail.

¹ Article 10, "The Constitution of the People's Republic of China" 17 January 1975 in *Documents of the First Session of Fourth National People's Congress of the Republic of China*, Peking, Foreign Language Press, 1975 (p. 15).

CHAPTER III

THE CHINESE APPROACH TO AGRICULTURAL DEVELOPMENT

To examine meaningfully the achievements of Chinese agriculture and the transferability of China's development experience, it may be useful to consider some of the basic approaches adopted by China since 1949.

Role of Prices

The most obvious starting point for such an analysis is to remind oneself that China has a socialist, collective economy. This enables the State to pursue systematically chosen development objectives and policies. The Mission felt that special attention should be drawn to the function assigned to the price system.

Among other things, price policies are designed: to provide the State with required income; to direct production into lines considered socially and politically useful; to ensure producers steady prices for their output; and to absorb available purchasing power in a systematic way, thus avoiding inflation.

Occasionally the price system is also used to clear markets of surplus products.

These policy instruments enable China to maintain a steady overall price level.

This has benefitted consumers, producers and individual savers; it has also helped to plan production of products other than the main items bought by the State, namely: grain, cotton and oilseeds. These products are mainly made on contract for the various official purchasing agencies. Municipal commercial departments, for example, contract for vegetables and fish produced by people's communes.

Given general price stability, the State has gradually been able to improve agriculture's terms of trade relative to other sectors. There are ideological reasons for this approach. However, the main reason is recognition of the fundamental role of agriculture in economic development.

The Mission did not go into this aspect of Chinese agricultural development in detail. But sources consulted by the Mission stated that since the mid-fifties, the general price level has remained more or less stable. Prices of agricultural inputs, therefore, have kept steady. Agricultural procurement prices, in contrast, increased by

30-50 percent, depending on the years compared.

In terms of trade, this change appears to have boosted agricultural production. It has also raised the relative income levels of rural people. This is in line with the Government's policy of whittling down the disparities between town and country. Agriculture has therefore become a more attractive occupation. Incentive to stay on the farm has become more tangible.

Central price management helps make it possible – in keeping with the principles of self-reliance and decentralization of production – for similar or identical goods to be produced at different efficiencies and varying production costs and yet to be sold at identical prices. Farm machinery and implements, for instance, are produced both in small local plants, and also in large factories situated generally in industrial centres.

An example observed by the Mission is the "price formation" for power tillers, more popularly known as "walking" tractors. These are usually produced in the farm machinery factory of communes. Production cost for a "walking" tractor at a small scale commune factory the Mission saw, was given at 2 000 yuan. The State had subsidized production at about 700 yuan for each tractor. To promote mechanization, the commune itself contributed a further subsidy of 400 yuan for each unit. This sum was drawn from the commune's profits. As a result, production teams were able to purchase locally-produced "walking" tractors at what would be called elsewhere a "give-away" price of 900 yuan each.

This and other examples of administrative pricing reflect the approach expressed by one official rather succinctly; "In China, we do not count economically but politically."

The Chinese concept of "economy", it must be kept in mind, includes a number of extra-economic considerations. Some of these are: the principles of self-reliance, "Walking on Two Legs", decentralization of industry for strategic and development reasons, avoidance of physical waste, full use of resources, and overall socialist objectives.

Economic Incentives

Economic incentives are, in principle, downgraded in the Chinese economic system although they continue

to play an important role.

Many communes allow individuals to sell produce from their private plots in "free markets", though usually at controlled prices. However, the practice is generally frowned on, particularly the purely individual sale of farm produce on street corners. This is considered an expression of "low political consciousness". Institutionally, such private sales are discouraged by limiting the locations and times when such trade can be carried out.

More important from the viewpoint of production incentives is the fact that the production team is the basic (business) accounting unit in most communes. Economic success or failure for an individual depends largely on the overall performance of a reasonably small group.

In today's China, the present principle of income distribution decrees: "from each according to his ability, to each according to his work". This is a half-way house towards full communistic rule where each will contribute according to ability and receive according to need.

In the meantime, however, Chinese application of this principle makes certain that, through the current work point system (which varies in detail between people's communes), the more skilful and active worker will earn more than the less skilful or industrious.

Elbow Room

Plan targets appeared to the Mission to be almost systematically set below the production potential of the production team. Subsequently, the teams are encouraged to exceed their targets for grain sales to the State. The principle of "socialist emulation" is, of course, used as a psychological spur. But there is also the fact that grain sales to the State, above target, enjoy a 3% premium.

Manipulation of target levels also serves an important function: it regulates the flow of purchasing power to individuals or to the rural sector as a whole.

Ideological Spurs

The Chinese approach is characterized by a strong ideological or ethical emphasis. The guardian and promoter of the ideological content is, of course, the CCP. In agriculture, Party Committees constitute an essential part of the structure. They run parallel to that of the State, down to the production brigade level.

The aim, which is of importance in the socio-economic field, is to create a "new person" who subjugates concern for his or her own individual welfare to that of the community under the principle "Serve the

People". A "new society" is supposed to arise, built on these "new people". It will be egalitarian, non-elitist, and based on the "wisdom of the masses".

As a result, any advance in this society requires high "political consciousness", i.e. a full understanding of, and belief in, the "basic lines", namely the Party's policies.

The Party line is not, however, exclusively political. Many Party slogans, through which policy is popularized and transmitted down to the villages, deal with various practical aspects of economic and agricultural development.

The visitor to China keeps hearing and seeing these slogans everywhere: "Grasp the Basic Line", "Go All Out To Do More, More Efficiently", "Always Serve the People", the banners, posters and loudspeakers proclaim. Newspaper banner headlines repeatedly stress development priorities. Teachers and blackboards express the importance to be given to grain production. The entire population appears to be familiar with the slogans. They express the Party's basic approach to economic development.

Going It Alone

Another striking feature of China's development approach is the pivotal role of self-reliance. It permeates the entire planning and implementation system of the country. It governs the country's international economic relations as well.

In rural development, self-reliance means, among other things, that the communes are given the entire responsibility for establishing and operating their educational and public health systems. Of course, there are exceptions provided by State policy, for example, communes which lag for various reasons, including poorer natural endowment (and, presumably, less effective leadership), are given State assistance. But the basic rule of self-reliance remains.

Communes are also responsible for setting up and operating non-agricultural enterprises at the commune and brigade levels. This holds true in food production and supply. Communes are supposed to produce, wherever possible, their own basic food supply. State farms basically specialize — at least in the areas visited by the Mission — in production of non-food items for market, e.g. tea.

Communes and production brigades are also expected to shoulder, to the maximum extent possible, costs of any major works within their own area: water conservation schemes, irrigation canals, etc.

There are communes and brigades, such as the

Dazhai (Tachai) Production Brigade and others, which have made a special point of following this principle, sometimes to extremes that, to the visitor, appear almost unbelievable. These are publicly lauded and cited as objectives of "socialist emulation". This technique appears widely used as an incentive for higher production and greater efficiency. The principle of self-reliance is thus translated into a very concrete approach whereby China mobilizes its resources for development.

Decentralization

Closely linked to self-reliance is decentralization. This shapes China's approach to both agricultural and general planning as well as to implementation. Obviously in a country the size of China, decentralization would, indeed, seem to be a precondition for effective administration. Typically, the 22 provinces of China have populations ranging between 60 to 70 million each. In the areas covered by the Mission, the provincial populations were seldom below 30 million. Even the lower-level administrative unit, the *Hsien*, or county, may have a population several million more than that of some of the smaller countries in the world.

Decentralization is fairly common in most large countries. But this does not tend to be the case in large socialist countries. One of the more interesting — and significant — ways where decentralization operates is in agricultural planning. The Mission therefore studied this aspect in some detail.

China's broad national targets and general policy lines are determined centrally. However, the actual planning process goes through a progression of decentralized rounds of discussion and decision making, reaching all the way to the level of the production team. In the course of this process, directives from above, and locally proposed targets and means of achieving them, are repeatedly compared and adjusted until agreement is reached. The Mission had the impression that there is a substantial degree of local decision making.

More than once the Mission was informed that the matching process between the targets from above and those proposed from below did not, as a rule, result in major changes. The Mission is of the view that this in itself is a result of decentralization. In the process of target formulation at the county-level, intensive decentralized discussion about production possibilities and potentials has already taken place. When overall targets are therefore formulated, they have already incorporated a good deal of local initiative and reflect local knowledge of what is possible. Thus, they are not centrally-formu-

lated bureaucratic directives, unrelated to the capacity of the producing areas and units.

In a planned economy, such decentralization is possible because the Party Committees operate at all levels in rural areas, down to the production brigades. The Committees, and the inclusion of Party members in the revolutionary committees, ensure that decentralization does not allow production units to move away from the Party's base line.

Priority Listing

The Chinese approach to planning is also characterized by unequivocal choice and public statement of the main priorities — and subsequent following up of these statements of priorities by appropriate action.

As mentioned earlier, the practice is to express all the main policies of the Party in the form of simple, easily remembered, and ubiquitous slogans. Since the Great Proletarian Cultural Revolution, the basic development priorities in China have been summarized in the slogan: "Agriculture is the Foundation, Industry the Leading Factor".

The Mission took this to mean that while the spearhead of development is industry, it is recognized — both as policy and as fact — that secure industrial progress is possible only on a firm agricultural foundation.

In the Chinese view, this approach ensures food supplies for the rural and urban population as well as raw materials of agricultural origin. It also provides an increasingly large market for industrial products in the countryside which still has over 80% of the population.

Ancillary measures that support this basic policy are evident in many areas: measures to gradually improve terms of trade for agriculture and the welfare of rural populations; directives instructing the People's Bank to consider, as one of its main functions, the support of agricultural development; recent orders for no less than thirteen large-scale fertilizer factories which come on stream in the latter part of this decade²; an inputs distribution system that channels supplies to production teams when needed; the almost drum-fire glorification of agriculture and rural life (along with heavy industry and oil) in all media.

Full Use of Resources

A policy of single-minded application of all available resources is another basic component of the Chinese approach to agriculture. It is this policy which has led observers to point out that China is a country where nothing is wasted and where there is no unemployment.

This policy is of crucial interest to many developing countries. Thus, it may be worth considering in some detail.

In the Mission's view, the policy is perhaps most commonly misunderstood in manpower use. China's use of manpower resources is not based on the classical concept of ensuring full employment. Rather, it is based on the conviction — evident from many writings of Chairman Mao — that manpower (or "the masses", which is the term used in China), constitutes the country's greatest development resource. Therefore, the potential of the masses must be used to the utmost. This, in turn, will enhance the welfare of the masses which is the ultimate object of development.

If China's objectives were merely to provide employment for all those willing and able to work, one would not see such sights as small children carefully collecting fallen maize leaves from fields after harvest, or collecting fragments of coal beside railroad tracks or manure from the road; or students painting the lower trunks of trees which line virtually all major roads in the country. Nor would elderly people be contributing whatever they can to the work of the collective.

Such use of "peripheral" labour resources goes beyond a policy of "full employment". Rather, it constitutes part of an overall policy of frugality and maximum use of available resources.

China's use of manpower not only covers numbers of people; it also considers their skills and experience. This policy is facilitated by, perhaps even predicated on, the socialist economic system. Under such a system, employment of manpower is not constrained by considerations of marginal productivity relative to the pay scale.

Since the economy is collective; since it is State and collective policy to provide for all the members' basic needs (food, clothing, housing and health within the possibilities of the prevailing income level); since the levels of income and overall welfare are still low by more affluent standards; since many needs remain to be met; and since there is always something useful that can be accomplished by a pair of arms, it only makes sense that all the available arms are, in fact, utilized.

The fact that the product of some of these pairs of arms may be marginal and less than the prevailing *per caput* income is, in a socialist economy, irrelevant. These people should still be provided with basic necessities. And however little they contribute to the production process, nevertheless their contribution is always more than zero.

By this approach China has apparently solved, in

a common-sense way, the problem bedeviling market-economy countries, namely: if there are clear material needs to be met, land, plant capacity and raw materials available, why must huge numbers of workers remain idle, unproductive, and a restive burden on society?

Wide Spectrum

The policy of full use of resources extends also to the use of land. Every bit of land, with agricultural or fish-pond potential, is harnessed. Intensity of land use apparently matches the limits of technology known to or practised by China.

Closely related to this is the recycling of organic wastes. Chemical use of composts stands at per hectare rates unexcelled by most other countries.

Indeed, this approach is expressed in the instruction issued by Chairman Mao "to change nature", so that it can be harnessed for agriculture. This directive forms the basis for many labour-intensive capital projects which typify Chinese agricultural development: construction of water reservoirs, irrigation canals, levelling of hills by hand and shifting of soil to provide additional agricultural land, including large terracing operations. Massive application of manpower, at times, seems to be the major Chinese response to the constraints imposed by rainfed agriculture.

Pragmatism

Though a centrally-planned country, with a basic policy line embedded in a political ideology, China has demonstrated a considerable degree of non-dogmatic pragmatism. No doubt, this has helped its development effort.

A well known example of this is the experiment of the Great Leap Forward, and the subsequent re-evaluation of some of its less successful manifestations.

In the area of the Mission's interest, a case in point is the history of the collectivization of agriculture since 1949. Rather than being imposed through an administrative fiat, collectivization evolved from a process that passed first through simple land distribution to the establishment of mutual aid teams. Then came a shift to primary and subsequently advanced forms of co-operatives. These cooperatives eventually emerge as people's communes only in 1958. The communes themselves were the end-result of a choice between various more advanced collective forms of production, considered necessary for both ideological and practical reasons (e.g. large scale public works).

Communes also appear to have undergone further

changes in size and internal organization since their establishment. The total number is now greater than before 1958 and the average size, therefore, is presumably smaller. And while in broad lines, the organization of the communes is centrally determined — details are now specified in the 1975 Constitution³ — there are a number of local variations e.g. the work point system, existence, size and management of private plots, composition of the revolutionary committees, etc.

Rush To The Cities

The Mission would also like to call attention to the Chinese approach to urbanization.

Like China, most developing countries would prefer to keep most of their population in the countryside, and thereby ease pressure on ill-prepared cities. Most of them would, no doubt, want only such population shifts to cities as are required for development of industries and services. The record of success, however, is not good.

In China, as in other countries, the "city lights" constitute a powerful magnet for rural people, especially youth. China relies on the control that authorities, at various levels, can and do exercise on population movements. Yet, the methods to lessen the pull of cities have not been exclusively restrictive. The aim of keeping people on the land — necessary also because of the emphasis on agriculture in the total economy — has also been manifested in efforts to increase the relative attraction of the countryside, e.g. by gradual improvement

of housing and public facilities in rural areas; by a rise in farm incomes relative to those in cities, and by narrowing existing income differentials.

The Mission concludes that the cities of China have been made much more attractive than they were reputed to be before 1949 through massive tree planting, improved sanitation, etc. However, housing standards in the communes visited by Mission members were, on the whole, more appealing than those in the cities, including the new Workers' Villages in Shanghai.

There has also been much emphasis — partly for purposes of political propaganda — on cultural activities in the countryside. These include theatre and revolutionary opera groups, ballet and folk dancing, orchestras and choruses. Opportunities for travelling outside the home village are provided by visits to national, provincial or county model communes. These visits, incidentally, are considered an investment in raising productivity. They are therefore financed from the *Public Accumulation (investment) Fund* of each production team or commune.

1 Article 9, *The Constitution of the People's Republic of China*, *op. cit.*, (p. 15).

2 Erisman, A.L. "China: Agriculture in the 1970s" in *China: A Reassessment of the Economy*, Washington, Joint Economic Committee of the U.S. Congress, 1975 (pp. 324-349).

3 Article 7, *The Constitution of the People's Republic of China*, *op. cit.*, (p. 14).

CHAPTER IV

THE PEOPLE'S COMMUNE: CHINA'S TOOL FOR AGRICULTURAL AND RURAL DEVELOPMENT

Throughout China's countryside there is a network of people's communes. The commune is the principal economic, administrative, social and political unit in rural areas. Chinese rural development experience is therefore reflected in the commune.

An assessment of what the commune is, and how it works, is therefore necessary for an understanding of China's rural development efforts. The following paragraphs, therefore, are an attempt to provide a general view of communes. For more detailed information, the reader is referred to the by-now vast accumulation of specialized literature, both Chinese and non-Chinese, on communes.

History

The people's communes, as stressed earlier, are not an overnight creation of the Chinese revolution. They are the end-result of an evolutionary process stretching from the Yan'an (Yenan) years of the Party to now. Today's communes have roots in a long period of experimentation under various influences: ideology, technical planning, and considerations of efficient administration – plus the sweat-stained and error-marked experience of day-to-day management of land, labour and other resources within the Chinese setting.

Since 1949, the following stages in the evolution of the commune may be distinguished:

1. *Land Reform*. This occurred during a period of about three years from 1949. It followed, in effect, the precedent established in areas which had come under Party control earlier, and where some 300 million peasants were given their own land. During this period the landlord class, as an institution, was eliminated.

2. *Mutual Aid Teams*. These were created simultaneously with land reform and were built on the ancient mutual aid tradition in villages. This marked a pre-cooperative stage: farmers exchanged work for work to facilitate seasonal operations and construction work for joint benefit. Private ownership of all productive resources was maintained.

3. *Primary or Elementary Agricultural Cooperatives*. This was the first step towards real collectivism. It covered the period 1955-56. Members maintained

private ownership of land, implements, etc., but pooled them for joint management. Distribution of income was based on each participant's input of land, animals, tools and work.

4. *Advanced Agricultural Cooperatives*. This stage occurred between 1956-58. Ownership of land, animals and implements during this phase passed to the cooperatives. Members' incomes were no longer determined by their capital input to the cooperative, but only by their work. It was during this period that many of the characteristics of today's commune began to emerge: e.g. its three-tier structure and the work point system.

New Frontier?

A number of further experiments with other more-advanced forms of collective ownership and management altered the emerging commune structure further. Ideology, and the then-anticipated rapid mechanization of agriculture, apparently dictated much of this experimentation. Even in their advanced form, the cooperatives had also proved too small for effective mounting of large scale labour-intensive agricultural development works.

The Central Government also sought to streamline the administrative structure. It chose to decentralize it to a single economic-administrative unit at the local level. This was the commune.

In ceremonies at Chililing People's Commune in August 1958, Chairman Mao officially sanctioned the setting up of people's communes. Consolidation of several agricultural cooperatives into communes proceeded rapidly afterwards. Borders of the new communes generally coincided with the existing *hsiang*.* By 1959, some 24 000 communes had emerged out of the 175 000 advanced cooperatives that operated earlier. But experimentation continued.

In subsequent years, the majority of communes were subdivided. This came partly in response to the slower-than-expected rate of agricultural mechanization. Also, evidence had accumulated that the communes, as a production unit, were too far removed from the level where work was managed. Thus, by 1961 the number of communes rose to some 77 000. At the same time, the

* A unit below the county (*hsien*) level, sometimes translated as co-towship.

production team (sometimes the production brigade), rather than the commune itself, was made the basic accounting unit.

Further changes took place, particularly during and after the Great Proletarian Cultural Revolution. Compared with earlier transformations, these were relatively minor, particularly in structural terms. However, the changes had political and ethical importance, e.g. the role of private plots and private marketing of surplus products.

By the late sixties, the people's communes had assumed their shape of today.

Structure

Today's commune is characterized by a three-tier organization: the *production teams* at the lowest level, *production brigades* and then the *people's commune* itself. It should be noted, however, that after brief experimentation during the early years, the household has been restored as the basic social unit of the commune. Thus the family remains the nucleus of Chinese society.

In commune statistics presented to the Mission, data on incomes, savings, ownership of bicycles, sewing machines, etc., were normally given in terms of households. The number of households in each commune is a standard part of these statistics.

De facto ownership and management of privately owned items are vested in the household. This includes the house (unless it is rented), simple production tools, and small livestock like pigs. In most communes, it also covers private plots and their produce.

The lowest-level formally-organized unit — and in many ways the most important — is the *production team*.

Typically, the team consists of some twenty to thirty households. Thus, it corresponds roughly to a small village or a hamlet. The team is the basic agricultural production unit as well as the basic accounting unit in the majority of communes.

Ownership of land and of production implements, other than those owned by individuals, is vested in the production team. Detailed production decisions are made at this level. Also, the production team is the starting point of the "from the bottom up" part of the planning process.

In short, the production teams are the heart of the commune. They make the commune tick.

Linkages

The organized unit, on the second tier, is the

production brigade. From the point of view of agricultural production proper, except in politically very advanced communes where the brigade is the basic accounting unit, this intermediate structure serves largely as a planning and administrative unit. Production teams pass their reports and plans through the brigade to the commune. The brigade is also the lowest rural unit at which the Party is formally represented through a Party Committee.

This brigade, however, does undertake a number of economic activities too large for a team to handle: construction and management of irrigation schemes, land improvement, etc. Brigades also run agricultural processing plants, farm machinery repair shops and livestock enterprises. They may own tractors and other machinery for contracting to the teams. They operate schools and health stations.

The *people's commune* is the highest-level local organizational unit. Except in the rare cases where it is the basic accounting unit, it does not own any land, except land attached to commune owned enterprises and uncultivated tracts. The commune assumes responsibility for activities that neither brigades nor teams can handle: bigger irrigation and drainage works, hydroelectric power plants, large scale livestock enterprises, farm machine manufacture, tractor stations, nurseries and experimental farms. The commune also runs middle schools and hospitals.

Along with these, the commune exercises administrative and political functions. Even after the originally large communes, which corresponded with the original *hsiang*, were broken down, a re-drawing of the borders of the earlier *hsiang* (which since then, have disappeared), maintained this correspondence. The commune acts as the link between the teams and brigades on one hand and the higher administrative sub-divisions on the other, in the first instance the county (*hsien*).

Ideologically, the present internal organization of the commune is considered a half-way-house on the road towards more advanced collectivism. At the time of the Mission's visit, no major changes appeared to be planned for the commune. In fact, the position of the production team has only recently been given legal status in the Constitution.

Vox Populi

An apparently adequate mechanism for representing the people exists at all three organized levels of the commune.

The supreme body of the commune is the *people's assembly*. It consists of all members of the commune.

This body elects the *people's council*, typically with about one hundred members.

The second level organization is the commune's *revolutionary committee*. This manages the commune and consists of about twenty members, with a chairperson and several vice-chairpeople. Its chairperson is the chief executive. Members elected by the people's assembly are given various specific responsibilities, e.g. crop production, animal husbandry, water management, education, etc.

The production brigade and all enterprises elect their own revolutionary committee. The production team, too, elects its leader and its leading group.

Aside from this three-tier system of production team, production brigade and the people's commune, also *rural credit cooperatives*, *supply and marketing cooperatives*, and in some cases cooperatives established for special purposes, particularly for the management of enterprises, carry out important economic and administrative functions at the commune level.

The rural credit cooperative constitutes a local agent for the *People's Bank*. The Bank implements the State's monetary and credit policy, mobilizes rural savings, and channels the flow of agricultural and rural credit.

The supply and marketing cooperative, on the other hand, functions both in retail and wholesale trade. It distributes consumer goods obtained from the *state wholesale organization* and the free-market products of commune members. It also acts as purchasing agent for the state wholesale organization. The cooperative places contracts with the input suppliers on behalf of the commune, and distributes the purchased inputs within it.

Functions

Through this organizational structure, the commune and its sub-units carry out a number of basic functions in China's countryside among which are:

1. Mainly through production teams, they mobilize manpower, work the land, apply resources required, and make the production decisions within planned guidelines.

2. At the brigade and commune level, they handle a number of non-agricultural activities, notably operate light industries of various kinds, e.g. farm tools. In many cases, the industries — once they have developed to a size and degree where they acquire importance beyond the limits of the commune — are usually taken over by the State. But they often continue to be managed by the commune.

The Mission believes that the capability of the communes to establish and operate industrial plants has

not only contributed to the industrialization of China, but also to the diversification of the rural economy, where it has opened new jobs, increased the level of personal income, etc.

3. Communes are responsible for a number of rural education and welfare activities. These include the establishment and operation of primary and middle schools, the establishment and maintenance of the public health system, including the commune level hospitals, brigade level health stations, and support for "barefoot doctors" or paramedics.

Communes also provide for the welfare of elderly people not looked after by families, and other people not in a position to provide for themselves.

4. Communes are responsible too for the mobilization of rural manpower for large-scale construction as well as land and water management and improvement works.

5. In addition, communes muster rural savings, both for investment (through the *Public Accumulation Fund* voted annually by each team, brigade, commune and by their enterprises and cooperatives), and via the workings of the rural credit cooperatives.

6. Communes also engage in trade in rural areas.

7. A number of communes produce hydro-electric power, both for the commune's own use and in some cases for sale into the national grid.

8. Communes contribute importantly to national food security by striving at local self-sufficiency in basic foods, and by organizing the storing of reserves of food grain at both the commune and brigade level and in individual households.

9. Communes help train and equip local militia and manufacture simple weaponry.

10. Communes pass the Party line to members of the commune by active participation of Party members in the organizational and economic life of the commune.

By shouldering these various administrative and economic tasks, communes make it possible for Central State organs to divest themselves of an enormous amount of detailed bureaucratic work. At the same time, this structure enables the system to remain responsive to local needs and to foster local participation and self-reliance.

Income and Finances

Among the communes visited by the Mission, members enquired into income levels in eight cases. In one commune the average income per person in 1974

amounted to 130 yuan. In four communes, the average income ranged between 140 and 150 yuan, while in the remaining three, it was given as 157, 176 and 207 yuan per person, respectively. There may have been slight variations between the communes as to the inclusion or exclusion of income (in kind or cash) from private plots. Incomes per household, in families visited by the Mission, ranged from 587 yuan and 755 yuan at one extreme, through 1 100-1 200 yuan in three cases, to almost 3 800 yuan in one large family, with seven full-time or part-time workers in a family of eight. These figures include income in both cash and kind, and usually also income from sideline occupations.

The Mission also learned that the production team still remains the largest income-earning unit of the commune. However, the trend appears to be that a rising share of the income is earned by the commune itself. This implies a growing level of collectivization.

The situation currently prevailing in the communes in the suburbs of Shanghai — which must be among the most prosperous in the country — was presented to the Mission as an intermediate goal.

In these communes, 30.5% of the total "income" * goes to the commune, 17.5% to the production brigades, and 52% to the production teams.

The Mission found in most communes it visited that this proportion appears to be fairly typical.

Sharing

Distribution of income is based on a number of principles. The basic accounting unit (production team or production brigade) is required to balance appropriately the requirements of the State, the collective, and the individual. Also, costs of administration must be minimized. Distribution of income to individuals must follow the principle "From each according to his ability" to each according to his work"

In practice, distribution of the gross revenue falls into the following four main categories:

1. *Agricultural Tax*. This may be paid either in kind or in cash. Originally, it was fixed on the basis of the productivity of land in absolute terms. Until 1952,

* In all discussions about collective incomes, the term "income" was used for the total gross revenue, without deductions for production costs. "Incomes" of individuals or households on the other hand appeared to refer to the part of the total gross revenue actually distributed to them, or otherwise earned by them.

it was about 12% of gross revenue. This basis has not been changed; but farm production has increased sharply. Thus, the agricultural tax has gradually fallen, usually to some four to five percent of the gross revenue and in some cases (e.g. the Tachai Production Brigade) to even less. For example a brigade which was paying an agricultural tax of 1 000 yuan or 12% of its gross revenue in 1952 today will still be paying 1 000 yuan but this may only represent 3% of its 1976 gross total revenue.

2. *Production Expenses*. These cover purchased production inputs, such as fertilizers, pesticides, tractor contracts, etc. They exclude labour by members of the basic accounting unit. They usually account for some 25-30% of total gross revenue.

3. *Public Accumulation Fund*. This is the investment fund of the basic accounting unit. Purchases of major equipment, such as tractors and transport equipment, as well as the financing of new sideline occupations or enterprises, are drawn from this fund. The fund is a major source of capital formation in Chinese agriculture. Some five to ten percent of the total gross revenue appears to be set aside for it.

4. *Welfare Fund*. About two to three percent of the total is, as a rule, kept for this purpose. It supports schools and health services, and underwrites the care of the aged and the infirm not in the care of their families.

5. *Costs of Management and Administration*. Members aim to keep these within the limit of five to ten percent.

6. *Members' Income*. After these deductions, the balance of the total gross revenue accrues to the members of the production team (or other basic accounting unit) as their income. On the average, members' income accounts for some 50-55% of total gross revenue, and a quarter to one-third of the net revenue.

Distribution of the shares to individuals follows a work point system. Briefly, the income of the individual will depend, aside from the earnings of the production team as a whole, on the kind of work he or she performs, and the hours worked. The range between the lowest and highest earners in a commune may be in the order of 1:3 or 1:4.

It is against this background that some of China's achievements in agricultural productivity may now perhaps be better assessed.

CHAPTER V

CHINA'S AGRICULTURE: SOME ACHIEVEMENTS

There is no magic to the garden-like appearance of China's farms, to the uniformly high-level of cultivation, or to the substantial increases in production.

But the Mission saw considerable evidence of common sense, application, organization, hard work, and a realistic appreciation of both constraints as well as available resources. These have resulted in growth — and a better life for the peasants.

In this chapter, therefore, the Mission examines some achievements of China's agriculture along four broad categories:

1. Technical factors in agricultural production;
2. Development institutions, methods and priorities;
3. Education, research, extension and communication; and
4. Human resource development.

This list or breakdown will not satisfy everybody. Nor does it claim to be perfect. It reflects merely the perceptions of nine people of different disciplines analyzing a complex and dynamic issue.

1. Technical factors in agricultural production

Farm level food security and clay wall silos

China has a long history of recurrent famines. This has shaped Chinese attitudes towards food security. There is near-reverence for grain and concern for its storage. Chairman Mao has given this Chinese view the shape of policy. Everywhere, the Mission heard the Chairman's axiom repeatedly: "Dig tunnels deep, store grain everywhere".

The results of that policy are now clear.

Within 26 years, China has turned from a country of periodic grain shortages into one with sufficient grain to eat. In 1973, grain output is reported to have exceeded 250 million tonnes (t) — more than double that of 1949. Hebei (Hopei), Shandong (Shantung), Henan (Honan), as well as the northern parts of Jiangsu (Kiangsu) and Hubei (Hupei) on the Huang He, the Huai, and the Haiho rivers, were considered traditional disaster areas because of low yields and frequent flood damage. This is no longer

the case. These provinces are now reported to be self-sufficient in grain. Significantly, the ancient dependence of China's northern areas on the south to supply grain has ended.

Data given to the Mission in all communes visited in the provinces of Hebei (Hopei), Shanxi (Shansi), Henan (Honan), Jiangsu (Kiangsu), Zhejiang (Chekiang) and Guangdong (Kwangtung) confirm an overall pattern of substantial increases. In Jiangsu (Kiangsu) province, the commune reported that grain production in 1974 was 160% higher than in 1949. In Chiating county, Shanghai, present grain yields were estimated at 13.5 t/ha. This means an increase of 270% and 330% when compared with production records of 1957 and 1949. In some areas of Henan (Honan) province foodgrain yields were said to have risen from "several dozen jin per mou" to 1 000 jin/mou. This is equivalent to 7.5 t/ha. Also in Zunhua county in Hebei (Hopei) province, average grain production stood at 4.5 t/ha.

Grain output, in normal years, now exceeds current requirements. Overall grain stocks of China are estimated between 40 to 60 million tonnes. A major effort has therefore been mounted to further increase food security through a programme of decentralized grain storage. In this effort, heavy emphasis is placed on self-reliance both in the construction and in the distribution of storage facilities.

Communes and production brigades contribute surplus food grain to the State. Lin Xian county, Henan (Honan) province, for instance, sold 73 000 tonnes of foodgrain to the State. This constituted half of the county's surplus stock. The county retained the remaining 50% as reserve for eight months consumption. This county produces 250 000 tonnes annually. It requires 103 000 tonnes for local consumption and seeds.

Two Examples

Mission members also saw how members of the production brigade of Shashiyu commune, Chung Hwa county in Hebei (Hopei) province, transformed a valley of sand and rocks into arable land. Unremitting application of manual labour transformed this 50 ha sterile valley into Tachai type terraced fields. Yields are now

up to 3½ t/ha.* In 1964 the brigade contributed 17 000 kg of wheat to the State after setting aside what the members needed. With only 1 200 mou of arable land (400 mou for fruit and 800 for crops), this brigade filled four grain silos, each having a capacity of 65 000 kg. In this brigade the Mission learned that 85% of the households had reserved stocks of grain for emergencies.

In Shiang Chiao (Double Bridge) People's Commune near Beijing (Peking), the Mission found that every household had two to three months' stock of rice. As commune members are given rice quotas for six months at a time, the additional stocks are stored in the commune.

The yearly rice quota per person is about 170 kg. But the rate appears to vary from one commune to another. A family in Kung Jan Workers' Settlement in Shanghai received 264 kg of rice for a 20-old son, 198 kg for the mother and 180 kg for the 66 year-old father.

It is the Mission's impression that grain surpluses in homes prevail throughout the country. During a visit to one of the homes in the Chililing People's Commune, for instance, the Mission found a stock of 1 000 jin of wheat grain. This was accumulated from the leftovers of rice quotas issued to the household since 1963. The family stored the grain surplus in the traditional manner in an earthen jar with straw mats on top of it. Accumulated surplus stock can be sold to the commune; but usually families seem to have a preference for holding as much grain as possible on their own premises.

Foodgrain, i.e. rice, wheat, barley, rye, sorghum, millet, maize, oats and soybean, is a State controlled item. Purchases and sales of foodgrain are handled only by the commune and the State or by the supply and marketing cooperatives. Other commodities controlled by the State are edible oil and cotton.

Groundfloor Reserves

The policy of "Store Grain Everywhere" has translated itself into a substantial reservoir of grain, held by households, beneath the level of the State's reserves. Stocks required for local consumption are also kept in simple, easy-to-construct storage units of the production brigades. Surplus grain is delivered to State storage terminals, situated in production areas. What emerges is a highly-dispersed and decentralized food storage system that reduces drastically demands on State facilities.

* At the time of its visit, the Mission was told that these grain yield targets were set by the National Programme for Agricultural Development for areas north of the Huang He river, the Chinling mountains and the Pailung river.

Although the Mission's visit coincided with harvest time in the wheat/maize/sorghum area, the Mission found little evidence of grain stocks lying in the open, exposed to the weather. This may be attributed partly to maximum utilization of storage space, even within households. Another reason is the availability of simple inexpensive storage, built largely at the farm level.

In the northern provinces of China visited by the Mission, small upright cylindrical types of silo are largely used. Their capacity ranges from 65 to 100 tonnes of paddy or wheat. Except for asphalt and cement, they are built entirely of local materials. The walls are built of clay and straw with lime plaster. Cemented stones, using paddy husks and mats as dunnage, serve as the floor. Rice straw and corn stalk are used as binder for the claywork.

Some silos have airvents at the top for aeration. An asphalt layer on the floor keeps them damp-proof. A silo with a capacity of 100 tonnes had a diameter of 4.2 m, a height of about 8 m, and a wall thickness of 20 cm. A silo of this type, with a damp-proof floor, would cost only between 400 yuan to 600 yuan (US\$ 200 to 300) — a point fund-short developing countries may appreciate. With straw used to protect the clay walls and roof from rain and snow, this type of silo could be used for at least 10 years. The main features of this storage facility are its low temperature, low construction and maintenance costs, and ability to provide stored grain with adequate protection against dampness. (Certain areas of India, Nepal and Burma store paddy in small mud-plastered bamboo woven bins mainly for home consumption).

The Mission visited the State Grain Storage Centre in Xu Pu, Jiangsu (Kiangsu) province. There were 45 units of the above type of silo for storing wheat and paddy with a total capacity of 4 500 t. Average moisture content in the grain in these silos ranged from 13.5% to 14%. Paddy is usually stored in these silos for several months. In some cases, grain (wheat or paddy) is stored for two years, with regular turning or restoring to prevent heating in the stack.

The Mission was also informed that there is minimal incidence of rodent or insect infestation, no doubt due in part to vigorous anti-rodent campaigns earlier. Tolerance for impurities (i.e. sand, stone, dust, etc.) in paddy deliveries to the State storage or grain terminal is set at 1.5%.

Bulk Storage

The Mission had an opportunity to view brick-walled flat rectangular storage units used to keep grain in bulk in the Chililing People's Commune. At the en-

trance, a white streamer with red Chinese characters read: "Keep Grain in Stock - Grain Reserves in Case of War and Natural Calamity." The units had damp-proof floors. Commune officials assert that they stored wheat for a five year period without significant deterioration in grain quality. Maize was also stored in this godown which had a storage capacity of 400 t. Maize and wheat were stored with the initial moisture content of 13% and 11% respectively. To prevent stack burn, stocks were restacked or restored every six months. Weight loss in storage was estimated at 2%. Obviously grain was here considered a form of strategic reserve. Hence, the protracted storage period.

Clearly then, those clay-walled silos on the Chinese landscape symbolize an indigenous, low-cost and effective food security system.

Agricultural Mechanization Without "Graveyards"

Travelling between Yanzhou (Yang-Chow) and Nanjing (Nanking), the Mission saw rice areas where harvesting operations were in full swing. Hundreds of workers were in the fields wielding hand sickles till late in the evening.

Men and women, carrying bundles of rice on traditional shoulder-poles, could be seen. Children shooing geese into just-harvested plots, to ensure grain would not be wasted, formed part of the scenery. The area was vast and the amount of manual work utilized massive. Still, it appeared to the Mission that the labour force mustered was insufficient. Members wondered whether the harvest could be completed before the plants started shattering in the field. This scene illustrates why China, despite its vast pool of agricultural manpower, gives farm mechanization priority.

Quotes

As in most areas of Chinese life, a quotation from Chairman Mao is used to emphasize the necessity of introducing modern tools into agriculture. Time and again the Mission was told: "The fundamental way out for agriculture lies in mechanization". Over cups of steaming tea and with plates of apples on the table, commune officials explained this policy's ultimate goal: to raise peasant living standards to equal those of city workers. Constructing an agricultural base for large-scale heavy industry, they stressed, can be reached only when farming is mechanized.

In most of the communes visited, the Mission observed extensive use of the 7-12 HP 2-wheel tractors. These are popularly known as "walking" tractors. The Mission only rarely saw heavy-duty machinery used in

the farms visited. Most commune representatives stressed that they needed more tractors than those available because labour is increasingly absorbed by industrial and sideline activities.

Obviously China's social and political structure facilitates mechanization. The commune is a large collective owned by all its members. It has the area and labour to sustain large-scale basic improvement of land through selective mechanization and scientific farming experiments. Establishment of communes has created large tilling units. These boost the rational use of tractors, harvester combines, etc.

China's tractor-building programme started in 1958. In that year, there were an estimated 45 000 tractors in the country - nearly all of them foreign made. Today, there are tractor plants and factories manufacturing farm machines, motors, and engines in more than 20 provinces, municipalities and autonomous regions. The 1965 output of tractors was 85 000 (in terms of standard 15 HP units). In 1973, the output of tractors was reported as "several times" that of the 1965 level.

Credit Links

The stress on mechanization is reflected in loan policies. Banks provide loans to production teams, production brigades or communes, if they wish to acquire farm equipment. Loans extended for purchase of such machinery are repayable after five years. The interest rate is 0.18% per month. No security or collateral is required.

Farm machines are also made available to production teams at subsidized prices. In the Ho Lei People's Commune, Wuxi (Wu-Hsi), Jiangsu (Kiangsu) province, the production team pays only 900 yuan for a 7 HP transplanter which costs 2 300 yuan. The State gives 700 yuan as subsidy; the commune pays 300 yuan from its collective income. A further subsidy of 400 yuan comes from the production brigade's public accumulation fund.

China's goal is to equip every production team with a tractor by 1980. Officers of the Lin Chang Production Brigade of the Chililing People's Commune, where 90% of tilling is already mechanized, stressed the significance of this target to the Mission by saying that this brigade sets an example. It already operates 12 four-wheel-tractors with a total HP of 548. In addition, it runs 28 threshers capable of processing 10-15 t/day.

The Mission sought to evaluate this goal by observing the degree of mechanization in other communes. In the Ho Lei People's Commune, the Mission found

82 "walking" tractors representing 1 050 HP, 15 transplanters and 95 threshers. About 70% of rice transplanting in this commune is now done by mechanical transplanters. The same pattern prevailed at Hwang Tu People's Commune in Shanghai.

The Mission also observed mechanization in Tian Chuang Production Brigade at the Wan Tou People's Commune. It had one tractor (55 HP), 7 "walking" tractors (12 HP), 35 threshing machines, 10 winnowers, 2 transplanters and 1 harvester for its 10 production teams (546 households). Mechanical power available in this production brigade stood at about 1.7 HP/ha. In Si Nong Tuan Production Brigade in Mu Chia Yee People's Commune, Miyun county, the brigade had 618 households tilling 70 ha. It owned one 4-wheel tractor (55 HP) and 1 "walking" tractor (12 HP).

Exit the Buffalo?

Tractors are also used extensively for transportation. The Mission saw scores of tractors transporting people along country roads. On the other hand, communes show little interest in developing animal-draught power. Chang Chin People's Commune in Suzhou (Su-Chow) had 25 buffaloes; but officials indicated 90% of the ploughing there had been mechanized already. Their aim is to completely mechanize ploughing.

In all communes visited by the Mission, the evidence is that the Chinese are pressing ahead with large-scale farm mechanization. Cropping intensity in China is increasing. Timeliness of field operations is now a critical factor for increased productivity. In fact, Hwang Tu People's Commune in Shanghai offers an example of farm mechanization causing production to spurt. Total area under crops in this commune is 2 100 ha. Mechanical power now available is 2-3 HP/ha. Thus, 95% of ploughing, 60% of transplanting and 100% of threshing are mechanized. This has helped boost grain output to 13.5 t/ha, an increase of 270% and 330% when compared with those harvested in 1957 and 1949, respectively.

Increased production due to mechanization has been reported by the communes in Shanghai, Suzhou (Su-Chow), Suxi and Zhengzhou (Cheng-Chow).

In all communes visited, the Mission noted that there appears to be widespread support for mechanization policies to relieve the strenuous work of the farmers. The Chairman of the Revolutionary Committee in the Ho Lei People's Commune stressed that mechanization would ease some of the physical drudgery of the work and help keep people in the countryside. It would also release labour for commune enterprises and gradually

reduce the difference between city and countryside, between workers and farmers. He added: removal of rice seedlings, transplanting and harvesting would be mechanized by 1980.

Images

The image of the bent Chinese peasant with hands gnarled by work, is etched in people's minds. It symbolizes the exhausting work on Chinese farms.

China has launched a mass campaign to mechanize the back-breaking "three-bendings-down" work involved in pulling, transplanting, and harvesting. It is the Mission's impression that this drive is beginning to show results. Even more significant, replacement of manual labour with modern machinery has released growing numbers of commune members for other work in developing a diversified economy.

Except probably for Japan, transplanting remains largely a manual operation for most of Asia. In rice production, the critical labour peak occurs during transplanting. The Chinese consider transplanting as one of the "three-back-breaking tasks". The other two: removing seedlings from the seedbed and harvesting by sickles.

From the observations of the Mission, China has made much headway in the use of transplanters of local design and materials. 4 HP transplanters, operated by three people, can transplant rice seedlings into an area of 30 mou within eight hours. It would require 40 people, working one whole day, to manually transplant the same area.

The East China Agricultural Research Institute at Nanjing (Nanking) demonstrated its first rudimentary transplanter at a national conference on rice cultivating machinery in 1956. Since then, this transplanter has been continually improved and new models invented. In 1961, experimental models of animal-drawn paddy transplanters were presented to the Governments of Burma, Nepal and East Pakistan by the People's Republic of China.

Commune officers told Mission members: today's rice transplanters have not yet achieved required acceptable standards of efficiency. Problems have cropped up in design improvement of the machines and in trial operations. These were now being tackled through the concerted efforts of researchers, manufacturers and users and by workers, cadres and technical personnel organized in China's Three-In-One structure for problem solving.

During the Mission's visit to the Shanghai Agricultural Exhibition, an experimental machine to pull seedlings from seedbeds was displayed. The machine

is fitted with a 5 HP engine. It is capable of removing seedlings from an area of 0.10 mou in one hour.

Rice harvesting in China is still done largely by hand-sickle. But efforts to popularize both manual and mechanical power harvesters are in progress. The Mission saw three types of mechanical harvesters designed for swampy and hard ground areas. A 3 HP harvester is capable of reaping 3 to 4 mou per hour; a large size (10 HP) harvester could do about 4-5 mou per hour.

Equipment Channels

Most communes are linked to large machinery factories run by the county. Farm machinery repair is organized at three levels: county, commune and production brigade. Most farm machinery repair is done by the county. Larger factories (iron, cement, fertilizer) are run by the State.

There are small machinery factories operating under the communes. The Mission visited a number of these factories during its visit to Ho Lei People's Commune; Wuxi (Wu-Hsi); Chang Chin People's Commune, Suzhou (Su-Chow); and Hwang Tu People's Commune, Chiating county, Shanghai. These factories have workshops to undertake repair and maintenance work. Their main products are agricultural tools, spare parts for small tractors, propeller blades for boats and mud sucking equipment (12 HP), etc.

Success Story

The factory in Chang Chin People's Commune started with two veteran technicians. Today, it has 312 trained workers who gross annually 800 000 yuan. The structure is decentralized, uses local materials, trains local people and comes to grips with location-specific problems because it has functional links at the farm level. One noteworthy feature of local technology seen by the Mission is a 10 HP mini caterpillar tractor. It is designed and produced as a prototype by the Hsiyang County Agricultural Machinery Plant to reach and work high narrow terrace lands. This type of tractor costs 3 000-4 000 yuan and is currently used by the Dazhai (Tachai) Production Brigade.

The Mission did not come across equipment "graveyards". In many countries members of the Mission have seen piles of valuable agricultural equipment lying in the open, idled due to poor maintenance or lack of spare parts as well as to an absence of trained technicians to handle a bewildering variety of makes. In contrast, the farm-level repairshops and factories within communes enable Chinese farmers to keep machines operating with little waste. Maintenance is ensured due to

presence of locally-trained people within the communes. Thus, the absence of machinery "graveyards".

Time to observe harvesting, threshing and other field operations was limited. But from a quick look at these operations, the Mission has the impression that grain losses occurring in the field can be reduced. The work force engaged in the field operations was seen working very hard to cope with the large matured crop areas. Grain losses occur due to shattering at this stage of harvesting and during the hauling of paddy bundles on shoulder poles to the threshing floor. Further losses of grain appear at the temporary threshing floor prepared on a mud ground. Thus, there is scope for using mobile threshers to serve the nearest harvesting areas. Immediate threshing and winnowing on site would greatly help in getting the work done during peak periods when both timeliness and heavy draught work are serious constraining conditions.

The Chinese are fully aware of losses in the field. In order to retrieve as much grain as possible, in one area the Mission saw large flocks of ducks and geese of the production teams being shooed into just-harvested fields for grazing. This is a practical way of recovering harvest losses for animal feed.

The record is better in processing and storage. One commune reports that grain loss, in all stages of post-harvest processing, is estimated at 2-3%. Loss of rice grain, due to unthreshed grains, amounted to only 150 kg from every ha of land.

A "Magna Carta" for Grassroot Technology

China has achieved a steady, significant, but not particularly outstanding, increase in food production. The Mission, therefore, looked into the issue of "appropriate technology".

All the literature available to the Mission indicates that crop yields over the past 25 years have registered steady increases. Compared with other developing countries average yields per ha are high.

In the course of the Mission's visit to various communes, it obtained the following examples of yields by main crops:

Crop	Yield	Communes
Rice (first crop)	7.8 t/ha	Chang Chin
Rice (second crop)	6 t/ha	Chang Chin
Wheat	6.7 t/ha	Chiliying
Barley	4 t/ha	Hangzhou State

Corn	8-10 t/ha	Tachai
Sorghum	8-9 t/ha	Tachai
Millet	8 t/ha	Tachai
Cotton (lint)	1 950 kg/ha	Chiliying
Apple	400 kg/tree	Shiang Chiao

In many areas, the Mission had reports that triple cropping had been adopted. Yields of foodgrain per ha in these triple-cropped areas had reached from 16 to 18 t. Quadruple-cropping is being tried in Hainan. There were some cases where up to 22 t/year had been obtained.

Mission members noted the uniformly high level of cultivation practices. Farmers the Mission talked to attributed attainment of such practices and levels of productivity to the consistent application of the Eight-Point Charter for Agriculture, outlined by Chairman Mao in 1958.

In this Charter Chairman Mao combined traditional Chinese practices with conclusions of known scientific studies, and expressed these as policy directives in the earthy slogans of today's China.

Briefly, the eight points of the Eight-Point Charter for Agriculture are:

1. *Seed Selection.* Use of seed from high-yielding improved varieties.
2. *Soil.* Deep-ploughing and soil improvement, overall survey, planning and rational use of land.
3. *Field Management.* Timely cultivation, irrigation and application of fertilizer, and meticulous care of the crops throughout the growing period.
4. *Close Planting.* Plant the maximum number that can be grown per unit area through close-planting and inter-cropping, and by obtaining adequate nutrition, sunlight and air.
5. *Fertilizer.* Rational application of fertilizer, with the kind and quantity according to the type of crop, nature, and condition of the soil, and needs at the different stages of crop growth.
6. *Plant Protection.* Prevention and treatment of plant diseases and elimination of weeds, insects, pests and harmful birds and animals.
7. *Water Conservation.* Construction of projects for irrigation and drainage, and rational use of water.
8. *Tool Improvement.* Better implements and the use of machinery to raise labour productivity.

There is nothing special about the Eight-Point Charter itself. The eight points are not new. The Charter is a simple compilation of high-yield cultivation practices.

All countries know that these practices increase production; that they are closely inter-related; that maximum results occur when they are taken and applied as a whole, taking into consideration local conditions.

But what the Mission found remarkable is the fact that the Charter is said to be known to all Chinese farmers. It is associated with Chairman Mao's name and therefore is policy. Hence, the Charter really amounts to a first-rate piece of agricultural extension work. An interesting footnote from a communications point of view is that eight Chinese characters suffice to spell out the eight points.

Seeds of Change

With the Charter as a backdrop, the Mission then considered the application of these principles.

In farms visited, members discovered production inputs are planned before planting; hence, they appeared to be readily available at the time needed. The Chinese use seeds of high-yielding improved varieties (HYVs). The current breeding programme stressed development of early maturing HYVs because of the marked trend towards multiple cropping systems. China has moved from single to double and, in some instances, to triple-cropping.

The Seed Production Systems in communes engaged the Mission's attention.

As practised in the communes visited, the system is characterized by simplicity, absence of overly-sophisticated techniques, and legislation. The system aims to enable farmers to use quality seed for planting every season rather than just dipping into grain saved from previous harvests. This is made possible by the fact that production of quality seed is decentralized within communes themselves. Targets are quantities that make it possible for the production teams to renew their seed stocks every year. The system can be summarized as follows:

Breeder seed. After a variety has been selected by either college, academy, county or at the commune experimental station, the seed is multiplied immediately. To speed up rate of multiplication, two generations are generally grown in one year, *viz.* in the case of rice, harvested seeds are sown as a second crop in the same location. Harvested cotton seed is sent to warmer climates, in the southern provinces like Guangdong (Kwangtung), to be grown during the winter.

Multiplication. Breeder seed, so produced, is sent to production brigades and sometimes to production

teams for further multiplication and use. At each commune, there is usually an experimental farm called the *Seed Breeding and Multiplication Station*. There, breeding, testing, selection and multiplication are undertaken. Sizes of these stations vary from 500 to about 1 000 mou, depending on crops grown in the commune.

Furthermore each production team or production brigade, whichever is the basic accounting unit, has its own *Seed Multiplication Plot*. This structure gives seed multiplication capabilities to the lowest unit and thereby brings this service right to the farm level. Distribution problems are therefore minimized. This diffused structure speeds up popularization of new varieties and improved cultivation practices.

Purification. These seed farms also carry out variety maintenance and purification. In the case of self-pollinated crops, single heads or panicles are selected and grown in progeny rows. Off-types are rogued and seed from the rest of the progeny rows is bulked for further multiplication. Commune experimental stations develop corn inbred lines. These are then handed over to the production brigade for maintenance, multiplication and hybrid seed production.

Storage. Each production brigade usually has large-size seed storage facilities to handle seeds produced by the various production teams. A few teams have their own seed storage facilities; but this does not seem to be the general case. Seed storage for each variety differs in size. Each one usually ranges from two to five tonnes capacity. Seed is stored for one season. No seed reserve is maintained.

Testing. Seeds are usually tested for germination only. Tests for other seed characteristics are not carried out.

Requirements. Each commune generally produces enough seed to satisfy its own requirement. In the case of calamities and emergencies, a commune may share its seed, or obtain seed from the county *Seed Corporation*.

Prices. Seed is sold by the commune to the production teams and production brigades at a higher price than grain. This is about 5-30%, depending on the crop, where it is produced, and the economic situation of the production team.

Processing. All operations related to seed processing are performed manually, except in some instances where threshing and winnowing machines are used for cleansing rice and wheat seeds. Corn shellers are sometimes available at the commune.

Seed-Bed Preparation. This is done meticulously

to give optimum and ideal conditions for good germination and for strong and vigorous seedlings. Land preparation involves one deep ploughing, followed by four to eight harrowings, depending on the previous crop and the crop to be planted. For wheat and rice, six to eight harrowings are needed; corn and sorghum, four to five may be sufficient.

The Chinese believe in deep ploughing. This is specified in the Eight-Point Charter for Agriculture. Depth of ploughing observed by the Mission varies between 15 and 25 cm. Some fields are ploughed to a depth of 30 cm.

The New Seeds

High yielding varieties of wheat, barley, soybean, groundnut, sweet potato, cotton and hybrid corn and sorghum have been developed. Use of these varieties is spreading.

High-yielding dwarf and semi-dwarf and stiff straw *Indica* and *Japonica* rice varieties were developed in the early sixties. They are now grown extensively throughout the country and occupy over 80% of the wet lowland rice areas. Improved glutinous *Indica* and *Japonica* rices are also being developed. Rice varieties, with different maturity periods, have been evolved to suit different agro-ecological zones. These include:

Early	80-100 days
(Intermediate) Medium	130-140 days
Late	170-180 days

In double rice-cropping areas, the Mission learned that early varieties are grown as the first crop and medium or late maturing varieties as the second. Intermediate varieties are mainly grown in the central regions of China. The growing season there does not permit the growing of more than one crop of rice of such a maturation period. Late maturing varieties are also bred for regions where the frost-free period does not allow the growing of more than one crop.

At the Research Institute of Agricultural Science of Jiangsu (Kiangsu) province, the Mission noted greater emphasis being placed on the incorporation of blast, blight and stem borer resistance into HYVs. Early maturing rust-resistant HYVs of wheat are also being developed. These particular varieties make it possible both to increase cropping intensity and to move wheat culture to the southern provinces, considered traditional rice areas.

Single and double-cross corn hybrids have been developed. They are predominantly of the yellow flint types. Some with 100 days maturity like Chun Tan No. 2

are suitable for double-cropping. Other hybrids are of 150-160 days' maturity and are for single-cropping areas.

Dwarf sorghum hybrids, with compact heads, are now available. They yield higher than the local unimproved varieties. Although the local tall open-head types yield less than the hybrids, Chinese farmers have retained them. Aside from grain, the stalks are used for fodder, fences and construction work.

There are also improved varieties of soybean. These were mainly developed by selection and hybridization. Apparently, these have been popularized over a wide area in China, in particular in the north and north-eastern provinces. These varieties are of the determinate types. Breeding programmes are directed towards development of high-yield, high-oil, stiff-stem varieties with good adaptability to inter-cropping.

Cotton is predominantly of the *Gossypium hirsutum* type. Chinese breeders have evolved HYVs with a minimum of vegetative branches. These are also early maturing, have a high ginning percentage and are resistant to wilt. They are now grown extensively.

Organic manure takes mainly the form of compost. Green manure is not used because of the intensive land use which does not allow it. Compost is brought to the field by wheel-barrows. It is then distributed in small rounds two to three m apart after the fields have been ploughed and then spread and incorporated into the soil during harrowing.

Rates of application of organic manure vary according to the crop, season, location, soil and type of manure used. Based on the observations of the Mission, the following rates were used on selected crops:

Rice (first crop)	60-70 t/ha
Rice (second crop)	60-70 t/ha
Wheat	75-105 t/ha
Corn	75-90 t/ha
Sorghum	60-70 t/ha
Millet	70-75 t/ha
Soybean	30-45 t/ha
Cotton	70-75 t/ha
Sugarcane (first crop)	75-135 t/ha
Sugarcane (ratoon)	75-135 t/ha plus 675 t/ha of mud from bottom of fishponds.

These are enormous quantities by most countries' standards. They are the main source of fertility for China's farms.

Standing Room

China practises high-density planting. Rice is usually transplanted at six to 10 seedlings per hill, spaced 10 to 20 cm apart; wheat is planted at a rate of about 200 kg/ha; corn at over 60 000 plants/ha; soybean at 170 000 plants/ha; and cotton may reach over 100 000 plants/ha. Commune members gave uniform ripening, and lessening of weeds, as reasons for the high plant population per unit area.

The Mission observed that land is very well levelled and graded to facilitate proper irrigation and drainage of excessive water. Dikes appear to be solidly built and do not allow seepage into neighbouring plots. Chinese farmers adjust plots to crop and topography. On terraced land these are generally small. Some other fields had plots up to 50 by 30 m in size.

Single File

Methods of planting, seen by the Mission, include broadcast, sowing in lines, or transplanting. Wheat, barely, millet, rapeseed and soybean in general are broadcast; but sometimes they are drilled.

At the Dazhai (Fach) Production Brigade, the Mission saw a movie that displayed a sowing-in-row and line-planting method for corn that the production brigade has developed. The Chinese call it "Six-Person Corn-Planting". Six farmers follow one another in line but all have different functions. The first leads two draught animals pulling the plough which the second guides. The third farmer drops seeds into the opened furrow. The fourth quickly applies chemical fertilizer next to the seed. The fifth then covers the seed with soil and the last blankets the covered seed with organic manure.

Mission members saw, in some areas, wheat and millet being transplanted. Wheat is planted in nurseries with the rate of seeding at about 300 kg/ha. Nursery planting allows summer crops like maize, sorghum and cotton to mature, and provides time to prepare the land and to schedule the transplants just before winter sets in. Millet is transplanted in the fields of maize and sorghum to permit early harvest.

Fields are weeded regularly by hand. Weeds are not allowed to compete with the crop at any time. Herbicides, such as MCPA and Dalapon, are sometimes used to control weeds in the fields.

Water management, at field level, appears to be efficient. During Mission tours throughout the country, members noted no water wastage caused by seepage from broken ditches, bunds, or dikes in irrigated fields.

Nor were the fields unattended at any time. Farmers were always on hand to attend the sluices, direct and manage the irrigation process, and to repair ditches and canals and dikes as necessary. Fields and plots appear to be generally irrigated in time, before signs of serious wilting show. Excessive water is drained on schedule.

Chemical fertilizers are usually applied on main food crops and some industrial crops such as cotton, sugar-cane and tea. They supplement organic manures. Split applications are the rule in the fertilization of rice and cotton. Some of the chemical fertilizers used include urea and ammonium sulphate. At the Hangzhou State Tea Farm, which also grows wheat and rice to meet workers' needs, these rates were noted by the Mission:

Wheat

Organic manure	25-40 t/ha
Chemical Fertilizers:	
First application Ammonium Sulphate	300-400 kg/ha (during December/January)
Second application Ammonium Sulphate	225-300 kg/ha (during spring)
Third application Liquid Ammonia	75-150 kg/ha (before heading)

Rice

First Crop

Organic manure	25-30 t/ha
Chemical fertilizers:	
First application Liquid Ammonia	300 kg/ha (at transplant)
Second application Ammonium Sulphate	150 kg/ha (after transplant)
Third application Ammonium Sulphate	75 kg/ha (before heading)

Second Crop

Organic manure	25-30 t/ha
Chemical fertilizers:	
First application Liquid Ammonia	300 kg/ha
Second application Ammonium Sulphate	150 kg/ha
Third application Ammonium Sulphate	75 kg/ha

Tea

Three applications of chemical fertilizer and one application of organic manure are as follows:

Chemical fertilizers – Ammonium Sulphate

First application (during March)	1 500 kg/ha
Second application (during June)	1 500 kg/ha
Third application (during August)	1 100 kg/ha

Organic manure two to four t/ha of rapeseed oil cake.

The lack of chemical fertilizer is made up by the addition of organic fertilizer, mostly compost.

The Watchmen

The Mission also studied the plant protection organization at the commune level. It has a three-tier structure: commune, brigade and team.

At the commune level, the plant protection team is composed of three or four agro-technicians. They plan and organize plant protection activities. One step down in the production brigade, a plant protection group implements and oversees plant protection activities of the various production teams. At the production team level, the group handles day-to-day plant protection work.

The record indicates that pests are controlled and infestation rarely allowed to reach the epidemic stage. Prevention, biological control, cultural practices and pesticides are used to combat pests. Agro-technicians are always present and available to help. Peasants are taught by various means – lectures, posters, etc., ways of controlling pests.

Chemical pesticides like MPC, BHC, DDT are applied. Time and number of applications depend on the type and nature of infestation. Diptrex, Malathion and DDT are used for rice stem borer and leaf hoppers. Communes also report resort to biological control. They raise and release large populations of parasitic insects or micro-organisms mainly for rice stem borer and wheat armyworm.

There is reliance too on use of appropriate cultural practices, i.e. date of planting, reduction of excess moisture in fields, removal of infested plants, ploughing stubble, crop rotation, etc.

Herbicides used include MCPA, DCPA, 2, 4-D and Dalapon for rice, cotton and cabbage. Seeds are also treated. Cotton and wheat seed are soaked before planting in water at 60°C for half-an-hour to control seed-borne diseases. They are mixed with pesticides and covered for 10 days before planting.

At the Research Institute of Agricultural Science

of Jiangsu (Kiangsu) province the Mission was told about a new fungicide called ME which apparently controls a wide spectrum of crop diseases, e.g. groundnut *Fusarium* wilt, black rot of sweet potato, *Aclerotia* blight of rape-seed, loose smut of wheat scab, bacterial leaf blight of rice, grape white rot, blotch of apple and *Fusarium* wilt of apple.

The Institute also has a good collection of specimens of major insects and disease pests of rice, wheat, maize, cotton and a variety of fruits and vegetables. A specialized unit of the Institute prepares samples in large numbers. These are sent on to communes, production brigades and production teams to help agro-technicians and peasants in identifying pests. A preserving liquid has been developed at the Institute which keeps the natural colour of insect specimens.

Early Warning

An important aspect of crop protection is an *Early Warning System*. This prevents outbreaks of diseases and insect pest infestation. The Mission observed the forecasting of insect pests on cotton crops at the Chililing People's Commune.

This commune has an *Agro Technical Centre* for the popularization of scientific agriculture. It also has *Agro-Technical Groups* in 38 production brigades organized geographically into six *Networks*. Each production team has its own technicians.

The entire system therefore involves more than 1 000 people. It includes veteran farmers, agro-technicians and educated youth along the Three-In-One principle. Anyone who notices any unusual build-up of the insect population immediately brings this to the attention of the *agro-technical centre*. This includes the agro-technician who may spot the build-up when making counts of insects found in black-lamp traps. The centre in turn alerts the six agro-technical networks of the commune. Precautionary measures are undertaken promptly. These include: (1) spraying of fields with pesticides, (2) application of cultural practices such as the removal of stubble, draining of water from plots to reduce moisture level, etc.

Each of the six networks sends periodic reports to the agro-technical centre assessing the situation, based on insect and egg counts. If the situation is serious, the secretary of the commune Party Committee calls for an emergency conference. After a briefing from the agro-technical centre, they set pest control as the "main current task". Network leaders then undertake the responsibility for mobilizing the peasants and putting in operation all available dusters and sprayers, spreading

insecticides over cotton fields throughout the commune until the pests come under control.

The county is also associated with the early warning system. The county forecasting station issues bulletins on prevailing weather conditions, data on previous outbreaks, current status and degree of spread of disease and insect pests. These bulletins are published as "Disease and Insect Pest Forecast Newsletter". These newsletters are distributed within the commune, production brigades and production teams, to inform, alert and trigger off precautionary measures.

This system appears to be operating in other communes as well.

System Foundation

Like most Asian countries, the predominant farming system in China is based on foodgrain production. Other crops, livestock, and related activities, supplement food production. The kind of main foodgrain and other supplementary crops produced in a commune depend on the supply of water, rainfall, temperature, soil, and proximity to towns and cities.

In the course of its trip, The Mission noted the following changes in the foodgrain farming system:

1. In the north-east, corn, sorghum and soybean are the main crops;
2. In Hebei (Hopei), Shanxi (Shansi) and Henan (Honan) provinces, winter wheat constitutes the main winter cereal, while corn, sorghum, and millet are the important summer crops;
3. In Jiangsu (Kiangsu) and Zhejiang (Chekiang) provinces, rice is the main crop with wheat, barley and rapeseed as winter crops. Tea is a significant crop in Zhejiang (Chekiang) province; and
4. In the southern provinces such as Guangdong (Kwangtung), two crops of rice are grown in the summer; wheat and barley are the main winter crops.

Winter, spring, summer and fall vegetables are grown throughout the country. They appear to be cultivated more intensively around towns and cities. Groundnut and sweet potato are also grown throughout. Livestock – in particular pigs, chicken, ducks and geese – constitute part of the farming system. These animals are raised both for meat and manure. Whenever water supply is available and abundant, fish also become part of the farming system, as observed in central and southern China.

A variety of cropping systems were studied by the Mission. In all of them the basic approach seems to call for every effort to modify nature, so that land and water resources are fully utilized to raise as many crops as possible within a unit area of land during a crop season.

Communes therefore resort to single-cropping only where moisture and temperature do not allow the growing of more than one crop. The only other exception is where the crop is of special economic importance as to justify its continuous monoculture. The Mission noted this in the Chililing People's Commune. There, late varieties of cotton and corn are planted in April/May and harvested in October/November. Yields of over 1 500 kg/ha of lint and 6 t/ha of corn have been obtained.

Two systems of double-cropping were observed. The first had wheat followed by summer cereals, food legumes, or industrial crops such as tobacco and cotton. The second consisted of rice, followed by winter cereals such as wheat and barley, and by oil crops like rapeseed or legumes like broad bean.

Triple-cropping appears to be widely used in central and southern China. A warm and long growing season prevails and water is adequate. The system involves the growing of two crops of rice followed by winter cereals, i.e. rice/rice/wheat or barley.

Inter-cropping is widely practised. A wide variety of crops combinations were observed. Farmers seed or transplant a second crop, between rows of the first crop, before it is harvested. The system seeks maximum use of both land and moisture. It also fits double and triple-cropping patterns into the crop-growing season. Wheat fields are inter-planted with corn, sorghum and cotton. Corn fields are inter-planted with sorghum, millet, cotton, soybean, groundnut, sweet potato, sesame and so on. The Mission heard of late rice interplanted in early rice fields near Hangzhou (Hangchow) but did not get to observe this practice.

Relay-cropping is not new. It involves planting of seed in nurseries until the main crop is harvested and land is worked out for planting immediately after harvest. The system is common for rice and vegetables. Chinese farmers practise this to some extent with wheat and millet. Sometimes seedlings are transplanted between rows of a standing crop before harvest.

The Mission learned that quadruple-cropping experiments are being undertaken. But results of these experiments were not available. Nor did the Mission see actual cases of quadruple-cropping.

The Mission has the impression that China has a preceptive appreciation of its resources, problems and constraints. China has shaped its technology to these

realities and has applied it with a remarkable degree of consistency. This has resulted in an improvement in agricultural productivity. The Eight Point Charter for Agriculture presents these insights in a form that is understood by the farmer.

Buttresses

The "bottom-up" structure ensures that institutional support and technical know-how are always there when needed by the production team and the farmers.

There is virtually no gap between research and extension. New findings and techniques are immediately popularized and utilized by the peasants. Agricultural research programmes are oriented towards the immediate solution of practical field problems encountered by the peasant.

Farmers attend evening "study groups" to learn new techniques, broaden their knowledge, and to discuss possible solutions to practical problems facing them.

Great emphasis and importance are given to agriculture in the education system.

Traditionally, the Chinese farmers are hard-working. Farming is a respected occupation and way of life.

The Chinese use indigenous technology and material. They do not rely on imported and sophisticated technology which fails when transferred without modification.

Use of uniform tools, implements and equipment facilitates the interchange of spare parts. Engines used for small tractors, pumps, boats and threshers, for instance, are interchangeable.

The Chinese do not rely on highly-trained sophisticated scientists to lead their agricultural development. Low and middle-level technicians, who have acquired considerable experience and knowledge, are the leadership core in crop production. The Chinese make full use of veteran farmers, agro-technicians and educated youth.

The seed production system allows frequent renewal of seeds.

"Melons on Long Veins": Full Use of Land and Water Resources

Chinese farmers carefully husband every resource. Waste runs against the ethical grain. The Mission considered how this approach shapes the use of land and water.

One of the impressions that struck the Mission

most was the way every available fragment of land is cropped and utilized in China. Border cultivation and home gardens furnished good illustrations. The Chinese sow everywhere: on banks of terraces, rivers, streams, canals, ditches and dikes.

Small vacant spaces such as rice bunds, field margins, and roadsides are planted with a variety of crops: groundnut, sweet potato, soybean, cowpea, mungbean, sunflower, sesame.

Small irregular plots are used, too, by planting them with castor seed, hemp, jute, tobacco, all sorts of vegetables, and mulberry, citrus, poplar and others.

Layers of Green

The Mission also looked at home gardens. These are small, very often not more than a few square metres. Yet, up to seven or even eight strata of crops are grown.

Chinese cabbage, radish, carrot, eggplant, tomato, and sweet potato are raised in the lower stratum. This is followed by another stratum, like tobacco grown for family use; then banana or pomegranate are added, depending on whether the area is temperate or tropical. Another stratum has tall sunflowers (the seeds of which are roasted and eaten and the stems used for construction purposes and fuel). Peaches, apples and mulberries constitute another level while gourd crawls up to the rooftops.

The Mission noted with interest that even rooftop plots are used. In one very neat piggery, creeping squash plants had been planted to provide shade for the outdoor sties.

China brings to land development both a massive use of manpower and a broad concept that includes: expansion, conservation, reclamation, rehabilitation or amelioration, building and consolidation. The Chinese expand through three dimensions and by following their Three-In-One principle. Land is expanded outwards by levelling, upwards by filling up, and downwards by terracing. Waste land is brought under the plough by removing rocks and weeds by hand or small tools. Soil is then transported from distant places, sometimes in baskets and on shoulder poles, and added to the barren land.

At the Shashiyu Production Brigade, the Mission saw how members had bored a tunnel to transport soil from one side of a mountain to the other, where it was needed. Rocks and stones were then used to reinforce terraces, paddy dikes, dams. The brigade brought eroded hills and slopes into production by building stone-embanked terraces to prevent soil erosion and conserve water. Terracing, as such, is not new. But the Mission

noted the speed in constructing these widespread works and the good level of maintenance.

The Dazhai (Tachai) Production Brigade is a showcase. This brigade created about 13 ha of new land by levelling hills, filling gullies and terracing, much of it by hand. Thirty-three hills were carved into terrace. In 15 gullies, the water had been directed into underground tunnels, the land terraced and filled with new top-soils, mostly handcarried from a nearby forest. About 1 458 million cubic metres of earth were handled.

Land was being consolidated to facilitate irrigation, mechanization, and better crop management. Small fields and plots were consolidated by removing old terrace banks, then reconstructed and reshaped.

Hand-tooling

The Mission noted the painstaking application of simple techniques to bring marginal land on slopes into production. Young trees are first planted. Then the farmers dig a hole, about a metre square and a metre deep, like a flower-pot, to trap rainwater for the trees. Thus, steep slopes in Dazhai (Tachai) and elsewhere are increasingly planted with forest trees like pines, walnuts, etc., as well as fruit trees. Thus, the landscape is increasingly green.

Swamps, marshes, coastal and tidal land are being reclaimed and mostly converted into rice fields. Mud and silt from fish ponds and river bottoms are scraped together and then poured on the land to enrich it for growing upland crops.

During its visit to the Chililing People's Commune, the Mission was told of techniques currently used to reclaim land and build up fertility.

In the case of red clay soils, farmers add layers of sand. Then they plough to mix and thereby improve the physical condition of the soil. Silt from the Huang He River is used to adjust soil pH in areas with alkaline soils.

Farmers also bore wells to a depth of about 50 m. Then they pump the water out to lower water tables. They flood the soil to wash away undesirable salts, then drain, then follow with repeated and heavy application of organic manure.

To reclaim and improve waterlogged soils, the Hwang Tu People's Commune members first dug drainage ditches to drain off excessive water and to curb the floods caused by heavy summer rains. Then they dredged rivers and canals to improve drainage and to lower the water tables of waterlogged soils. Finally, they levelled the high lands and moved the soil to the newly-drained land — again with heavy reliance on mobilized manpower.

The Mission observed how the structure and fertility of the soil is improved in the commune. The Dazhai (Tachai) Production Brigade provides examples of how a commune uses waste products, available throughout the country's farms, to cope with certain types of soils.

The methods, in table form, follow:

Soil Type	Organic Manure Applied
Sandy	Ashes
Red	Ashes
White	(1) Draught animal droppings (2) Straw compost
Black	(1) Draught animal droppings (2) Sheep droppings
Brown	(1) Pig droppings (2) Cattle droppings

Production teams or brigades generally handle small-scale land reclamation. In larger undertakings, where a commune or several communes are involved, the State assists in the work. State assistance includes labour payments, equipment and supplies.

Blurred Image

China still has stretches of stark denuded land. But this image is, in many ways, fading because of afforestation for soil and water conservation. Supply of wood and ecological balance are proceeding rapidly both in urban and rural areas.

The visitor to China, who is used to "asphalt jungles", is apt to be startled by the 3½ hour train ride from Hong Kong to Guangzhou (Canton): both sides of the railroad track today are lined with several layers of cool, green trees giving a park-like impression. Eucalyptus, *Populus spp.*, *Casuarina* and pine have been planted on slopes, roadsides and in fields as windbreaks. As the Mission's visit showed, this reafforestation is carried on elsewhere too. The Mission noted that in cities, towns and villages, up to six rows of trees are planted at roadsides. On roadsides in rural areas, fields, river banks and hill slopes, many species of forest and fruit trees have been planted.

Lifeline

Agriculture features prominently in Chinese folk sayings. The current high priority to agriculture is expressed in easy-to-recall slogans that resemble folk sayings. Everywhere the Mission was told: "Water conservation is the lifeline of agriculture". This reflects the Chinese

conviction that water storage, conservation, management and use must be resorted to in order to reduce the vagaries of nature.

The Mission visited the Miyun Reservoir and the Jiang Tu (Kiang Tu) Hydro Junction Project. This project emphasizes the Chinese approach to the use of water. Capital construction projects utilize indigenous material and a large labour force. Invariably, water projects are multi-purpose. They include expansion of irrigated areas, flood control, power, and also supply drinking water and fish culture.

The Search

The Chinese attitude is: don't rely on rain. Water should be found. When found, it should carefully be conserved and brought from its main source to be used for agricultural development. "The person who harnesses water rules the land", commune members told the Mission. Generally, simple tools are used. Manpower is not spared. The criteria of distance, terrain or cost are different from traditional norms elsewhere. But the Mission saw examples of projects, both big and small, where such water projects revolutionized whole communities.

The Red Flag Canal is one of the better known examples of this approach to water. Work on this canal began in the sixties and was completed in 1969. The entire network consists of a main trunk, three branched tributary canals linked to numerous channels, and ditches. All in all, there is a total of 1 500 km of waterways.

During construction, the builders – often referred to as the "unsung heroes of plenty" in Chinese literature – blasted or cut into the sides or tops of more than 1 250 hills, excavated 180 tunnels that add up to a total length of 24 km. They also constructed 155 aqueducts with a total length of 8 km. To do this, they moved 18.4 million m³ of stone and earth – mainly by hand – during the construction period. The unpredictable Chang-ho River, known as the "jungle river" lies northwest of Linxian in Henan (Honan) province. This was dammed to raise the water level. Then water was tunneled to the Red Flag Canal to irrigate 40 000 ha of land. Along the canal, hundreds of small reservoirs were built to store water and serve the local villages.

Then there was the "Valley of the Paupers" – impoverished by lack of water. Rainwater is now collected, conserved and used by a simple system of water tanks and reservoirs, carved out and quarried out of the rocks near the mountain tops. These collect water for drinking and for irrigating crops. Gravity is used too. Cisterns were constructed to collect rainwater and so

connected to each other that when one is full, the overflow pours into the next at a different level to utilize gravity.

"Long Veins"

At the Dazhai (Tachai) Production Brigade, the Mission saw the water system that the Chinese describe as "melons on long veins". Tunnelled canals are bored under the fields and the floor of the valleys. Through them, the waters of flash-floods now flow harmlessly. Numerous medium and small-sized dams have since been constructed. These dams were subsequently connected to each other by main and lateral canals to irrigate surrounding areas. Pointing to these inter-connected pools of water, commune officials proudly note in another uniquely Chinese figure of speech that "irrigation ponds are melons on long veins".

The policy of avoiding waste is reflected in simple water conservation practices. The Mission noted that at night water is channelled into tanks and reservoirs for use during daytime. At Dazhai (Tachai), aqueducts have been constructed over gullies and valleys to transport drinking and irrigation water from distant higher places. The water gradient of irrigation canals is utilized to produce electricity. The Mission saw, in the course of its trip, hundreds of tube-wells tapping underground water resources for supplementary irrigation.

"Where there is water", the Chinese say, "there should be fish" The Mission found this policy implemented with consistency. Fishponds are built whenever water is available. Natural bodies of water are stocked to produce fish. They are not isolated enterprises but constitute part of the farming system and contribute to commune income.

To fully utilize the water, three strata of fish are raised in a fish pond: (1) The "breather", which eats grass on the surface; (2) The "middle layer" type, which feeds on aquatic plants and decomposed organic material; and (3) The "mud-eater", which feeds on mud and other material found at the bottom of ponds. (This approach is described in fuller detail by the FAO Aquaculture Study Mission in its report). Yields of 10 t/ha yearly have been reported to the Mission. This yield level is partly due to fertilization of the water with pig droppings. Crop residues are used as feed, thereby underscoring a complementary policy.

Reaping the Rivers

The Chinese seem to have perfected the art of "river harvests", i.e. harnessing rivers and irrigation canals for purposes other than transportation and water supply.

The Mission saw bodies of water being systematically tapped for the raising of food, organic matter, feed, etc. Fish, duck and geese are found in these bodies. Water chestnuts are also raised and used for food. Water yacinth and water lettuce are converted into pig feed and compost. Silt and mud from canals and streams are used as manure to improve land for growing upland crops.

Throughout the centuries, the crucial role of water in agriculture has always been understood. But not all have gone to the lengths that the Chinese have in locating water and — through "long veins" — bringing it to carefully nurtured land.

The Mission concludes that land and water approaches and uses, described above, form part of the overall policy of full utilization of all resources in an "all-out effort" for development. Other manifestations of this policy include the intensive use of land, recycling of waste (including scrap as raw material for industry) and labour use.

There are a number of elements which reinforce this policy. One is a national characteristic of frugality and hard work. There is also an abundance of labour. Thus growth-oriented goals require combining the abundant labour resources with the scarce land, water and other resources, as intensively as possible. Farmers and workers are also paid in terms of work points when they are mobilized to carry out capital conservation projects. The State usually supplies transport, shelter, food, health and other facilities. Such mobilizations usually occur during slack periods on farms and factories. More rational use of manpower is thereby provided.

The socialist economic system that China has adopted makes it possible to use resources under criteria that a capitalist system, with its reliance on price mechanisms and the individual profit motive, would not be able to accept. This enables China to put into productive use resources which, in a market economy, would not find a market or, more important, would be "too expensive" to develop. Traditional banks, for instance, would have been understandably reluctant to finance the Red Flag Canal construction. It simply was not "bankable" under the usual investment criteria. There may be arguments about the economic returns the Red Flag Canal has brought; but the Mission believes that the human and social benefits this project ushered in have been enormous — nothing short of a complete revolution in the area affected.

China has a tragic history of suffering, deprivation and calamity. It recorded more than one flood, drought and famine every year for over 2 000 years. This acts as a powerful stimulant to hard work. Young people are

now being reminded of this by their elders. This cultural factor influences policies and moulds what is called "national character". Currently, it expresses itself in a determination "to tame nature" and to eliminate the consequences of natural calamities in various projects.

The Mission feels that some elements of this land and water policy are relevant for other countries. There is no reason why the individual farmer will not use land well, provided that the farmer gets a reasonable return and has security. Much depends on character, national and individual, and on social pressure. In a commune, the social pressures are such that all teams try their best under the principle of "socialist emulation". Water development and consideration become easier due to the large area and creation of common interest. These are also within the reach of farmers working outside a socialist framework.

Recycling of Organic Waste and "The Good Earth"

Chinese farmers have a long history in the effective use of organic manure to build up and maintain soil fertility. Everywhere the Mission travelled members saw people — old and young — sweeping animal droppings from streets and loading them into small carts. These are then hauled to nearby production teams or production brigades where they are converted into compost.

Over the last 25 years, China has steadily been able to increase crop yields. Since organic recycling is obviously a key-factor in yield increase, the Mission therefore looked closely at the role organic materials play today in China's agricultural productivity increases. In all communes visited the Mission noted with care organic material used, and methods of application, as well as the reasoning behind them.

The following list of organic material recycled for agricultural use emerged:

1. Night soil (human excrement);
2. Animal waste: droppings from pigs, sheep, cattle, buffaloes, draught animals, poultry and other animals;
3. Crop waste: rice, wheat, maize and sorghum stalks, leaves, rice glumes;
4. Oilseed cakes: rapeseed;
5. Rubbish: city and household waste of plant origin;
6. Ash: ashes from burnt stalks, husks, wood, coal and others;
7. Mud: silt and mud from river bottoms, canals,

lakes and fishponds;

8. Weeds: all "uneconomic" plants weeded from fields and waste land. Of these, some are composted and others used for fodder;
9. Aquatic plants: water hyacinth, water lettuce, water chestnut.

Chinese farmers vary their methods of collection and preparation in accordance with the material handled. But in general, the methods are simple and low cost.

Nerves and Science

Night soil, as expected, provokes most discussion because it touches cultural nerves. From the scientific view-point, it is a fertilizer. There are no cultural "hang-ups" in China over the use of night soil. The Chinese have meticulously developed a new scientific system of treating it, so the threat of spreading dysentery or similar diseases is minimized. Night soil is collected in special tanks equipped with small openings. After the tank is filled and sealed, it is set aside to ferment for a week before use.

Night soil is also mixed in a pit with animal droppings then added to straw and other stalks of crops. Urine and water are added. Then the material is allowed to decompose from one to three weeks before use.

Thus in towns and cities like Shanghai, Beijing (Peking), Nanjing (Nanking), Guangdong (Kwangtung), and others, the Mission saw vehicles of all sorts — bringing these tanks to the countryside. In some cities, members were told that new sewage systems built funnel night soil directly to farms by a system of pipes. Currently, some night soil is imported from Hong Kong for use as fertilizer. As the Mission walked through the villages and countryside, members noted along roads and highways "out-houses" or "privies" for collection of night soil. There are special plants — jasmine, for instance — for which only night soil is used as a fertilizer.

Rubbish collected from towns and cities is also used. First, it is sorted out and that of plant origin is transported to the various neighbouring communes for use in the making of compost.

During the Mission's visit to Si Nong Tuan Production Brigade, members saw farmers preparing compost. The mixture used in this particular operation was finely chopped stalks from wheat and other plants — 30%; earth — 40%; animal droppings (pigs/horses) — 20%; and treated night soil — 10%. These were put in alternating layers into a clay-covered cairn (length 8 m, width 2 m, height 1.5 m) after thorough mixing. The cairn

had a number of chimneys or vents, made of bamboo bound together, from the ground level thrust through the clay crust. This compost is left to ferment in cairns of this type for 15 to 20 days but more in winter. When the temperature inside reaches 60°C (measured with a thermometer), the vents are removed and sealed. After five additional days of fermenting, the farmers consider the compost ready for use.

Mobile Factories

The concept of animals, as walking fertilizer factories, is deeply etched in the Chinese farmer's mind.

Every household, therefore, strives to have at least one pig to supply manure and ultimately meat. The target in China, as set by policy, is to have one pig for each mou of cultivated land.

The Mission saw pig droppings collected systematically in almost all communes. These are dumped into cement pits, about three m in diameter and one to two m deep. Weeds, green grasses and aquatic plants are then added. The decomposition and fermentation period varies from seven to ten days. In a number of communes the Mission saw that pipes had been built to connect these pits directly to the fields.

Pig droppings and rubbish of plant origin are also collected from cities and households. They are mixed in the following proportions: pig droppings - 40%; and rubbish of plant origin - 60%. The period for decomposition and fermentation varies from one to two weeks.

Livestock and/or draught animal droppings are mixed in a pile with straw and stalks. The piles are then covered with mud plaster and allowed to decompose for about one to three weeks, before application and use.

In sheep-raising areas, sheep droppings are applied, especially on black soils.

Service Points

Chinese farmers dig pits to serve as simple containers at points where organic material can easily be collected. Thus, pits dot the sides of paddy fields. Weeds, green matter and animal droppings, collected in fields, are allowed to decompose in these pits. Water is usually added to enhance decomposition. This type of manure is then applied in liquid form.

While walking through fields, the Mission saw compost distributed along the edges of the fields in small mounds or heaps of about 50 to 75 cm in diameter, spaced at about two to three m apart. Farmers then spread the mounds out and incorporated them into the soil during ploughing and harrowing. Organic manure,

particularly night soil, is sprinkled or broadcast.

Timing depends on the type of manure and the crop. The bulk of the compost or manure is usually applied before planting during land preparation. An additional application is made after planting and before seedlings come out of the ground. Rates of application vary according to the crop, season, location, type of soil, and manure used.

Along river banks, similar pits are also excavated. Water hyacinth - along with silt and mud collected from river bottoms, lakes and fishponds - are dumped into the pits to decompose and ferment. Water is also added to this mixture, and the liquid fertilizer is then applied.

The Mission also observed the processing of mud collected from the bottoms of fishponds into fertilizer. During the visit to the Sachao People's Commune in Guangdong (Kwangtung), the Mission saw fishpond mud applied to sugar cane.

Ashes from burnt straw, stalks, bushes, coal, and wood are used, unmixed, as fertilizer.

Annual fodder legumes appear to be used for feed and green manure where winters are mild. Some of the species used are *Vicia sativa*, *Vicia villosa*, *Vigna sinensis*, *Pisum arvense*, *Pisum officinalis*, *Crotalaria juncea* and *Astragalus sinicus*. Seed of the green manure crop is broadcast in rice fields, and the crop comes on after the rice harvest in October-November. During spring, one green cut for pig-feeding is obtained and the stand is later ploughed under as green manure.

Indicators

One significant indicator of the importance the Chinese give to nurturing the soil is the fact that responsibility for preparation of organic fertilizers is given to everyone.

Every household in the commune prepares its own organic manure for use in its home garden and private plot. Organic manure left-over after meeting the household's annual requirements is given to the production team in return for work points. Each production team sets and meets its own annual target. In some cases, a few production teams are assigned to prepare and supply organic manure for the entire production brigade. On the other hand, a brigade may undertake the making of compost and supply all its production teams. Carts, wagons and trucks are used to transport the compost from this central point of distribution to the teams.

Ecological Cycles

The Sachao People's Commune in Shun Teh county, near Guangdong (Kwangtung), offered an interesting example of recycling organic matter. This commune has a diversified economy based on fish culture, sericulture, sugarcane and some rice. Its use of organic matter is equally diversified.

After removing the silk, commune members use the larvae as fish feed. Chopped sugarcane leaves from commune fields are also fed to fish. Sugarcane tops, on the other hand, are fed to pigs and buffaloes. Pig droppings and urine fertilize fishponds. Buffalo and other animal droppings, along with rice waste, go into compost making. In addition, compost and mud from ponds that contain fish droppings and other decomposed organic matter, fertilize sugarcane and rice fields. Thus, an ecologically sound pattern prevails.

Compost making and the use of night soil is not new or unique to China. Many countries also use organic manure to improve soil productivity. What is unique in the Chinese approach is both the intensity of application and the wide range of plant and animal waste used.

For example, where a commune's predominant cropping system is wheat/rice, the total amount of organic manure applied to a ha of land in one cropping year amounts to about 135-175 tonnes. In triple-cropping systems, again of wheat/rice, the total amount ranges between 195-253 t/ha.

As a result, the Mission has the impression that depth of top-soil, in many areas, has been increased due to this intense application of organic manure.

The "Barefoot Vets" and Animal Husbandry Development

"If crops grow well", the Beijing (Peking) briefing officer told the Mission, "then the animals are growing well".

This close linkage between crops and animals characterizes the Chinese approach to animal husbandry. It has been reinforced by the leadership's call to take "grain as the key link and ensure all round-development". This embraces animal husbandry, fishery and forestry.

Basically, the "agriculture" region in China lies east of the line drawn from Harbin in the northeast to Kunming in the southwest. The rest of the countryside is called the "pasture" region. Livestock raising is there the predominant peasant activity. The "pasture" region is mainly in the hands of national minorities.

This particular Mission's itinerary linked communes mostly in the "agriculture" zone. Learning, there-

fore, about the country's vast animal husbandry activities, at closer range, was limited. Within this constraint, approaches to raising animals in the intensively cropped areas were studied instead. Upon the Mission's request, the Government provided a supplementary briefing for the Mission on its return to Beijing (Peking).

First of Six

In the communes within the agricultural zone of China, pig production is the main animal husbandry activity. Characteristically, this production priority is couched in another oft-repeated axiom: "People raise six animals and among them the pig is the first".

Reduced to specific targets, commune members are urged to raise one pig per mou of land. The basis for this target is the current drive to mobilize people to produce organic manure to fertilize the land. The Chinese estimate that a pig provides about 2 500 kg of droppings per annum. From this, they have developed a very practical rule-of-thumb: one pig can enrich one mou of land.

In communes around cities and industrial areas, intensive pig production programmes are also promoted. Here, the target is slightly modified to raise one pig per person.

The pig, therefore, is seen not merely as a source of meat but also as a renewer of the land. Over the long run, this approach promises to ensure large quantities of organic manure and increased numbers adequate to meet both domestic and export demands for pork.

Four Greens

The Mission also saw a strikingly innovative approach in the feeding and management of pigs. Concentrate feed requirements are met by switching weaned piglets to a diet of greens of all sorts. These greens, such as water hyacinth, are meticulously cultivated on available watercourses, bodies of water and the like. Thus, nearly 70 percent of the nation's pig feed requirements — and this runs into thousands of tonnes — are met through this method. Chinese farmers call this method the "Four Greens": (1) Grow Greens — even on water; (2) Collect Greens; (3) Store Greens; and (4) Feed Greens.

Application of this concept has helped to conserve foodgrain for human consumption. It seems to avoid, to a remarkable degree, unnecessary competition between people and animals for feed.

Production teams also exchange certain quantities of grain in return for manure collected by individual

households. Quality of manure is also taken into account in these transactions. A marketing organization purchases pigs from households. It reimburses the cost of the animals partly through provision of grain.

Despite the drive towards full mechanization by 1980, the Government tries to interest communes and production brigades in the agricultural areas to raise "large" animals: cattle, buffaloes, horses, mules, donkeys, etc. Again, these are considered essential for meat, organic manure as well as draught purposes, especially in areas that are not flat. Current policy calls for an increase in their numbers.

This programme also expects to relieve people from the burden of drawing heavily-loaded carts over long distances. In many urban and close to urban areas, the Mission still noted a very heavy reliance on human power for haulage. Thus, the sight of farmers pulling heavily-loaded vehicles is fairly common.

It is in the satellite communes of cities and industrial towns that one sees dairy cattle of exotic strains being raised. The Mission observed here the existence of a growing demand for milk products among industrial workers and urban dwellers. Milk is not yet an important food item in the countryside. By comparison, milk production and consumption are understandably much higher in the pastoral area.

A campaign is being waged to keep milk prices attractive to industrial workers and city dwellers. A special effort is being made to build up the dairy industry to serve industrial workers. Apparently demand for milk rises in winter from summer levels, when most family members take a cup of milk before breakfast. In some industrial plants, the Mission saw signboards calling the workers to collect their milk quota.

The present number of dairy cattle in the country is small, but their management level appears high. The Mission saw a good example in the Second Dairy Farm in one of Shanghai's suburbs where black and white Friesian-type cattle were the milkers. In this farm, mortality among calves weaned at birth is virtually nil. This is mainly due to the adequate feeding regime followed from birth (weaning) to about 120 days.

Sidelines

Sheep and goats are rarely found in the communes of the agricultural zone. They are of great economic and social importance in the pastoral regions of the country. But data were not immediately available.

Poultry, bee-keeping and rabbit-raising constitute sideline occupations. They are meant to meet household needs. At the moment, these are not included in the

current priorities of agricultural production. In northern China, it is usual for peasants to raise chickens; in southern China, the raising of ducks and geese predominates. However, the State runs commercial poultry farms in the suburbs to meet the demands of city dwellers and industrial workers.

The rationale for giving low priority to poultry development appears to arise, in part, from concern over its competitive demands with people for grain as feed. Poultry therefore is fed with waste from households. Post-war research in poultry breeding and management seems well adapted and integrated into the farming practices.

National-level development programmes in livestock have been implemented mostly in the pastoral regions of the country. The once-nomadic pastoral people of these regions appear to be settling down. They are now encouraged to raise livestock. The State provides them with capital construction such as paddocks, development of pastures, underground water, and sheds for animals. Eighty percent of the livestock in these regions is raised collectively at the commune, brigade or team level. Individual families account for the remaining 20%. Present estimates indicate that each pastoral family has one or two sheep per head, a dairy cow and a riding pony per family.

Meat and milk for consumption come both from individual households and from collectives. There is also a two-way trade between the pastoral and agricultural regions in meat, meat products and foodgrain.

In livestock improvement the Three-In-One principle is brought to play. Teams entrusted with such tasks have a cadre, a technician, and a farmer in every group. These groups evolve new breeds, experiment to improve management practices as well as feed and fodder development, seek improvements in the quality of wool, meat, etc. This type of scientific research network is carried out at various levels, *viz.* State farms, communes and brigades.

The State also establishes *Livestock Improvement Committees* in different areas. A committee usually covers two or more provinces, such as the ones in the Beijing (Peking) area, and Shanghai, Kirin (Jilin) and Xinjiang. The committees carry out research activities in sheep, dairy cattle, pasture improvement and the like.

Artificial insemination (AI) techniques appear to be widely practised. Commune members report that AI is practised in horses, cattle, sheep and pigs. Freezing of bull semen seems to be progressing well. The Mission saw sophisticated equipment in these specialized activities.

Figures

Macro-statistics of animal numbers are difficult to get. Authorities at the national level derive the numbers of pigs by cross checking with the number sold to the marketing corporations. Despite this constraint, the Mission has the impression that livestock production is on the upswing. Estimates indicate that since 1949, numbers of pigs have increased roughly by 350%, sheep by 250%, and "large" animals by about 50%.

Key Level

Veterinary services are available at the level where they count: the farms.

Animal husbandry and veterinary services are organized along different levels, *viz.* State, province, region, county, commune and brigade.

At the State level, it is the Ministry of Agriculture and Forestry which is responsible for veterinary and animal husbandry services. At the province level, livestock is a section of the Agricultural Department of the provincial administration. Similarly at regional and county levels, livestock services form a part of the administration of these units.

Organization of these services, from county to team levels, are also inter-related and innovative. At the county level, seven to nine people, mostly college graduates, provide the services. Their functions include organization of disease control work in all communes as well as the provision of advice on animal breeding, management programmes, etc.

Lower down at the communes, the unit is smaller, usually ranging from five to nine college and/or technical school graduates. Their work includes: breed/strain selection; artificial insemination; advice on management and feeding; disease prevention, often through mass campaigns; vaccination drives; and treatment of animals.

Invariably, there is a "barefoot vet" or a "veterinary paramedic" at the brigade level and within disease control staffs. In countries that lay great store on traditional education, these barefoot vets are often called "sub-professionals". In China, they look after animal health problems at the team level and cooperate with animal caretakers and management. The overall effect of this structure is that basic animal husbandry and veterinary services are within easy reach of most farmers. Animal health is boosted. The all-too-familiar phenomenon of highly-trained veterinarians isolated from farmers who need their services is simply not seen. Farmers have also shifted from being passive beneficiaries to being participants. Barefoot vets are drawn from within the farming community and live there. Thus, the training they receive

is immediately put to use.

The Mission heard reports that some counties and communes operate animal hospitals where acupuncture anaesthesia and traditional Chinese veterinary medicine are practised. Unfortunately, the Mission was not able to visit any of these animal hospitals.

Screening

Education in livestock sciences, as in other fields, is designed to open opportunities for children of workers, peasants and soldiers. Education in this field seeks to ensure that veterinary students will come from and return to their original communities. Thus, revolutionary committees are involved in the selection of students.

Veterinary education is based on a combination of both traditional and modern systems. This is an application of Chairman Mao's policy of "walking on two legs". Educators refine what is valid and useful in traditional veterinary systems and blend these with modern techniques. Diseases and availability of feed have constituted obstacles to livestock development. Therefore, current training of veterinarians and other livestock technicians in China today is geared towards removing these obstacles.

Training at college level prepares students to practise medicine and surgery, as well as to provide adequate knowledge in livestock production and management. These students receive training that would be equivalent to a Bachelor of Veterinary Science degree in other countries. Students for this level have completed senior or middle school. Those from junior middle school have had some years of practical experience. The total course is divided into three years, with two semesters each of 20 weeks. Training is carried out in four stages over six semesters. As currently conducted, the course is broken down as follows:

First semester (First stage): students are sent out for practice at a pig or cattle farm, slaughter house, animal hospital, research laboratory or any other livestock establishment.

Second-Fourth semester (Second stage): theoretical instruction and classroom laboratory work are given, covering, among other subjects: pathology, bacteriology, pharmacology, genetics, applied breeding, principles of livestock production and management, parasitology, Chinese medicine (two years), clinical studies, infectious diseases, obstetrics and gynaecology.

Fifth semester (Third stage): Additional practical experience is provided when groups of five to ten students are sent to work in communes or State farms. Special studies may be conducted in scientific or social research during this stage.

Sixth semester (Fourth stage): A final eight weeks of summing up and recapitulation is given. During this stage, special lectures on advanced techniques are scheduled. Specialization is also encouraged.

Throughout the three years in the college, courses in politics, foreign languages and physical exercise are included in the curriculum. Teaching is done both in the classroom as well as in the countryside. In certain subjects, the students and teachers go out for several days and work in communes.

Swelling Ranks

Increasing numbers of students are admitted to the college level courses in veterinary medicine and animal husbandry. In the college visited by the Mission in Guangdong (Kwangtung), 95 students were admitted in 1975, a quarter of them women.

China has abolished the system of granting degrees or diplomas. At the end of the course, written and oral examinations, plus evaluations, are given by fellow students, teachers and by the student. On successful completion of these tests the student is declared competent by the college. The student is then posted to the commune which recommended him or her for the course. Throughout the training period, the commune to which the student will return pays on the work point system.

Open Doors

There are also training possibilities at various agricultural technical schools run by the State. There is a choice of fields *viz.* animal health, animal husbandry and crop husbandry. The lengths of these courses vary, but generally they do not exceed 18 months.

Subjects taught at these schools for animal health and husbandry technicians or barefoot vets include: cultural subjects such as politics, literature and language; science subjects, like physics, chemistry and biology; and technical subjects such as anatomy, physiology, animal management; feeds and feedings; bacteriology and pathology; infectious and contagious diseases and their control; and simple surgery such as castration, rumenotomy, dystocia; urinary calculi, and others, using acupuncture techniques of anaesthesia, and pharmacology and medicine.

In addition, there are also several short-term courses of one, three or six months duration. This system ensures availability of trained personnel at all levels, including that of poultry and animal caretakers. In all these training courses, the Three-In-One team, consisting of a teacher, student and worker/technician is

involved in the planning and execution of the training programmes.

In the Chinese Academy of Agricultural Sciences in Beijing (Peking) the Mission noted there was a division of animal husbandry and veterinary research. Most provinces, municipalities, and autonomous regions have also set up research institutes for animal husbandry and veterinary medicine. In several agricultural research institutes and colleges of agriculture and forestry (equivalent to agriculture universities), there are units concentrating on livestock research.

Results of research are passed through the Ministry of Agriculture and Forestry network to the county and commune level. Results also come via specific communes with which colleges, vocational schools and research institutes have direct links. Since these units are in direct contact with farmers, researchers thus have the opportunity to "Learn from the Masses". Significantly, the research staff are also required to do physical labour at the team level.

The Mission finds that the main contagious livestock diseases have been controlled or eradicated. Rinderpest, the worst killer of bovines, has been eradicated since 1955. Except for some outbreaks along the western borders, foot-and-mouth disease has been effectively controlled. There have been no reports since 1962.

The Mission noted that some of the important animal diseases controlled, but not yet eradicated, are: hog cholera, swine erysipelas, enzootic pneumonia, anthrax, black-leg, sheep-pox and Newcastle disease.

The situation with regard to haemorrhagic septicemia, tuberculosis, contagious bovine pleuropneumonia (CBPP), and brucellosis is not clear.

Communal ownership of "big" animals (cattle, buffaloes, horses, donkeys, asses, etc.) facilitates control or eradication of some highly contagious and infectious diseases. But many pig and poultry diseases are still prevalent. These animals are raised, by and large, in private plots and individual households. Control is therefore more difficult.

Nonetheless, these achievements are substantial. And the system, as symbolized by the barefoot vet, is working adequately.

Farm Input Infrastructure – A Shade Below "Clockwork"

The Chinese policy of intensifying land use is expressed in efforts to apply multiple cropping and intercropping techniques in sown areas. The success of such techniques is possible only if essential inputs –

organic manure, chemical fertilizers, good water management, seeds with shorter maturity periods, and machines — are realistically planned for, and if deliveries, at the farm level, are timely and adequate. Hence, the Mission analyzed the input infrastructure.

There have been sharp increases in Chinese production of chemical fertilizers. From 1960 to 1966, production rose 400%. It doubled between 1966 to 1973. In 1975, China imported one million tonnes to supplement the four million tonnes produced locally. Current production is still far short of requirements. Eight ammonia factories are scheduled to start production in 1978.

China has traditionally made extensive use of organic manure. In 1975, about two-thirds of plant nutrients came from this source. The Mission saw an example of large-scale distribution of compost by the production brigade at the Chilixing People's Commune where mountains of compost were being delivered to production teams.

China also makes extensive use of mud sucking machines. River mud serves as an organic manure when mixed with green matter and suitable treated. A machinery repair and manufacturing workshop in Chang Chin (Evergreen) People's Commune, Suzhou (Su-Chow), is manufacturing, among other things, mud suckers (12 HP). The Mission saw units with a capability of drawing out 6 000 kg/hour.

Compost Cushion

The "buffer" role of organic fertilizer, the use of which permits a steady increase in soil fertility, makes the commune largely independent of any fluctuations in fertilizer supply.

The Mission also observed small chemical fertilizer plants at the county level. Supplies for use in surrounding brigades and teams are drawn from these plants. Commune leaders estimate that fertilizers and pesticides constitute 35% of the total production cost. Nevertheless, there is always a rush for these supplies in order to boost production.

Given that China has a centrally-planned economy, perhaps the most striking feature of the farm input mechanism is the decentralization of both the planning and distribution of supplies.

This is equally true of production — particularly of seeds, machinery, and to a lesser extent, also of fertilizers (though the new major plants that have been ordered will change that considerably).

Requirements of the main inputs — fertilizers, pesticides, seeds and machines — are based on production

plans, drawn up by the production teams or production brigades in relation to their cropped areas. As explained in detail below, the plans reflect actual needs and flow upwards, not vice-versa. The reverse flow, namely distribution of essential inputs, appears to be carried out in an orderly and effective manner. Supplies of chemical fertilizers and pesticides, for instance, flow to communes via the supply and marketing cooperatives which are fully aware of the needs and financial situations of the teams, brigades and the communes.

The main purpose of the cooperatives is to develop effective and economic supply systems. Thus, their functions include the purchase of products of both production brigades and teams; verifying and planning input requirements; organization of supplies and door deliveries as well as retail sale at shops. The cooperatives also undertake delivery of fertilizers in their own vehicles at the production brigade or production team level. Cooperatives work in close collaboration with the price management committees at the county level. Prices of the main agricultural inputs are uniform all over the country.

The Mission has the impression that the input infrastructure functions effectively. It is convinced that China's decentralized planning system, whereby there is a direct two-way link between the production units and the commune on one hand and the suppliers on the other, efficiently determines input requirements realistically in relation to supply situations at the county level. This is a major reason for effectiveness.

The Mission did not get an opportunity to observe seed processing equipment. But it saw seed winnowing machines used for cleaning. Significantly, production brigades usually have seed storage facilities. As explained earlier, there are also State seed cooperatives and seed warehouses. As seeds are given to production brigades and teams by the central seed farm for further multiplication, it appears that obtaining the required amount of seed for sowing is not a significant problem.

Tool Arsenal

Farm machines and equipment are also procured through the supply and marketing cooperatives. Subsidy schemes, as explained above, facilitate the acquisition of machines by brigades and teams for their mechanization programmes. Farm implements and tools, fishing nets, etc., are obtainable on payment and without restriction in the cooperative or production brigades stores.

All available sources of power are utilized for the handling and transportation of agricultural inputs and

produce. Tractor-trailers for transport are used extensively. On the highway to Linchuan from An Yang, the Mission noted all modes of transport: mules, horses, two-wheel and four-wheel carts used with both human and with mechanical power. All vehicles, whether human or animal drawn, have rubber wheels and ball bearings. This increases efficiency enormously.

A unique Chinese adaptation of the traditional wheel barrow is one of the most used means of transport at the farm level. It is widely used because of its easy access to any condition of the terrain. It is fitted with ball bearings and rubber tires to facilitate movement. The load placed on top and on two sides of the wheel lessens the effort of carrying the load as in the conventional wheelbarrow.

Decentralized planning, with full use of indigenous supplies and efforts to increase inputs from local manufacture, is one of the salient features of China's farm input system. It is low-cost and simple. While it does not perform with clockwork precision, efficiency is high. The Mission believes this would be of interest to some developing countries grappling with unwieldy input-infrastructures.

A Glimpse at the Rice Milling Industry

It was a typical scene of a service mill in an Asian rural town. Small lots of rice and wheat grain were on the mill floor, held in baskets and plastic bags. A thin white dust flew from the machine. This was Shiang Chiao People's Commune in Hebei (Hopei) province. Given the fact that loss in processing is of concern to many developing countries, the Mission was interested in rice mills.

In China's grain areas, processing is done at the production team or brigade level. Bulk of the rice milling is done in small steel huller type units which are also used in most of Asia's rural areas.

Rice/wheat quotas in China are generally given in unprocessed form. Commune members, therefore, make their own milling arrangements. The production brigade charges a milling fee of 70 cents for 100 jin wheat (US\$ 7 per tonne) and 40 cents for 100 jin rice (US\$4 per tonne).

The Mission estimated out-turn rates for rice at 70%; bran and pulverized husks mixed, 25%; and small brokens, 3%. Milling by-products are returned to the owner. Due to proximity, milling is done in small lots, depending on consumption requirement. Electric power is used in most of these units.

In Chang Chin (Evergreen) People's Commune in

Suzhou (Su-Chow), the Mission observed a 4 tonnes paddy/hour-capacity rice mill. It was equipped with a cleaner, rubber roller husker, paddy separator, and two polishers (horizontal steel hullers). Polishing is done in two stages. According to the technician, further additional horizontal steel hullers for three to four stage polishing would be installed.

In contrast, most Asian countries have stopped using steel hullers. They feel grain breakage is excessive with such hullers.

The rice processing unit in Shun Teh county, Guangdong (Kwangtung) province is run by the production brigade. The unit has a capacity of two tonnes paddy/hour, operating daily except Sundays and holidays. About 500 tonnes of paddy are milled monthly. Machines and equipment used in this mill were one paddy cleaner; one disc stone huller — for husking; one horizontal steel huller for polishing; and one husk grinding machine. Power is electricity. Milling out-turn, recorded in weight percentages in this unit, showed 71% rice and 29% bran and husk mixed.

By-products of milling in this processing unit are used for animal feed in the following proportion: 10% fine bran, 10% coarse bran, and 80% pulverized husks. Ground groundnut hulls are added in the feed compound. Milling performance produced a high content of brokens. Polishing is done twice on the same steel huller. The milling fee charged was 70 cents per 100 jin paddy (US\$ 7 per tonne) About 60 000 jin of paddy were stored in bamboo woven bins placed in the mill building.

Special Tour

The Chinese Government made special arrangements for the Mission to visit the First Rice Milling Factory in Shanghai. This was a wheat flour mill before 1949. A rice mill had been built in 1955, incorporating some of the flour mill facilities. The factory is now equipped with 12 horizontal abrasive polishers with roller length of 60 cm. Its capacity is as high as that of the old 30 milling units that were originally installed. By 1958, the capacity was 200 tonnes rice/eight hours. Present capacity is 250 tonnes daily (eight hours).

The main objectives of this mill are to supply rice for Shanghai, and to mill for exports, if required. The factory is controlled by the State. The Grain Department of Shanghai Municipality coordinates activities of grain processing factories. The revolutionary committee, composed of one full-time member, two workers' representatives, and three technicians, constitutes the management. There are 260 workers, including a workshop staff of 30. Total output of milled rice from this

factory amounted to 100 000 tonnes in 1974. The mill works 16 hours in two shifts during the harvest season. The mill operates 10 to 11 months yearly. Paddy supplies for the factory are received from the communes; rice obtained from milling is immediately issued for distribution through the department concerned. Apparently, there is no storage problem.

This was the only large commercial rice mill visited by the Mission. Technological data of this mill are given below.

1. Rice varieties milled: "Shin" and "Rung" varieties (both of *Japonica* type).
2. Quality/grading factors: moisture, brokens, damaged grains, paddy seeds, small brokens, and dusts. Grades for content of paddy and damaged grains are determined according to the number of defective grains on a given weight.
3. Degree of milling for home consumption is much lower than that for the export grade. The milling out-turn (conversion ratio) for home consumption grade (in weight percentages) is rice 71% to 72%, bran 7%, and husks 18% to 20%.
4. Bran received from milling is sent to oil extraction plants. Oil extracted from raw bran amounts to about 14% of the raw bran weight. Extracted bran (bran cake) is used for animal feed.
5. One pair of rubber rollers can be used for milling of 80 to 100 tonnes of paddy. Approximate cost of one pair of rubber rollers is 100 yuan/pair (about US\$0.50/t of paddy).
6. Horizontal stone polishers are used for polishing. Polishing is done in two stages for the home consumption grade of rice. Owing to the high pressure applied in the polishing process, the grain is hot after polishing.
7. Paddy separation from brown rice is done through a series of sieves.
8. A mobile stacking machine is used.

Levels

Judging from the total production of 100 000 tonnes of rice in 1974, the Mission considers the management of the mill extremely efficient. There are not many state mills in Asia which operate at near maximum capacity. Apparently, the Three-In-One combination of Party cadres, workers, and technicians in the management and operation has contributed to this production record.

A technical deficiency observed was the heating of grains in the polishing stage as a result of friction. Heated grains lead to discolouration. Retention of bran meal on the grain, owing to inefficient polishing, could also produce a powdery appearance lowering the keeping quality.

Husking is done by rubber rollers. The use of rubber rollers is fairly widespread in Asian countries but low durability of rubber rollers keeps processing costs high.

It is a common sight in most Asian rice mills to see hundreds of workers carrying heavy rice bags (weighing 70 to 100 kg) on their backs during rice milling and handling operations. In the First Rice Milling Factory in Shanghai, at least, there was little heavy manual work involved in the handling of rice products. The 100 kg rice bags are handled mechanically. The rice bags, once sewn, are moved on conveyor belts to the point of storage where a mobile automatic piler builds up stacks of rice bags to a height level of 11 bags (100 kg) at the rate of 300 bags/hour. The mobile automatic piler was also designed and built by the workers of the First Rice Milling Factory.

2. Development Institutions, Methods and Priorities

Agricultural Plans That Breathe

Chinese agricultural planning methods, as seen by the Mission, have a number of striking features. They are flexible, decentralized, and secure active participation by farmers. Thus plans are more realistic and relevant to local needs; they are well understood and supported by the farm population.

The Chinese conviction of the effectiveness of decentralized planning is so deeply engrained that it is even written into the Constitution of 17 January 1975. Article 23 provides: "The local people's congresses at various levels and the local revolutionary committees elected by them ensure the execution of laws and decrees in their respective areas; examine and approve local economic plans, budgets and final accounts..."²

The Mission verified that targets, at the level of production units (usually the production team), are not handed down by some higher level planning authority without concern for, or knowledge of, local conditions and potential. They are set after a continuous dialogue between different levels of authority and among the individual members of the production unit. This procedure ensures that targets are realistic and reflect the objective conditions of each production unit.

Even more important, this procedure helps to ensure support from individual farmers since they actively participate in the decision making. This has an obvious impact on the success of plan implementation.

Elbow Room

At the same time, the targets set through this dialogue are not allowed to press too hard against the ceiling, despite current drives to raise political consciousness and to aspire to reach "impossible" objectives. Targets are deliberately drawn up so as to provide a certain amount of leeway. This leeway ensures, on the one hand, that even if natural conditions deteriorate, the production team still has a reasonable chance of meeting its targets. On the other hand, it makes it possible for a team, either through good luck or good management of its resources, to exceed its targets, including its target for grain delivery to the State.

This procedure forms a foundation for successful performance and thus builds up the self-confidence of team members. It also adds to cash income, particularly since delivery of grain to the State, in excess of the target, is paid a premium of 30% above the basic price.

The Mission noted further that the use and availability of inputs — notably fertilizers and pesticides — are planned in full cooperation with the local (commune) supply and marketing cooperative and the credit cooperative. These organizations are equally decentralized; they are therefore familiar with both the input needs, the financial situation, and the cash needs of each production team, as well as the overall supply situations.

Agreed types and quantities of purchased inputs are therefore available when required. At the same time, this input planning assists the team in its preparation and use of organic manure which appears to be an important "buffer" between production targets and the supply of chemical fertilizers.

The dynamics of this system can perhaps be best illustrated by describing how such a plan was formulated in 1974 in one particular production team at Shashiyu (Sha Shi Yu), located in a semi-arid area northeast of Beijing (Peking). Interviews, conducted in other communes, indicate that the procedure described below is typical.

The annual planning cycle for 1974 started after the autumn harvest of 1973, in October.* At that time,

* Only the small plan is broken down to the production level. The five-year plan is broken down only to provincial and county levels. At lower levels, too, there are five and six-year plans; but these appear to be largely internal to the production unit in question, and to provide the unit with its own medium-term framework for its efforts to raise output and productivity, make investments, mechanize, etc.

the revolutionary committee of the brigade called all production team leaders in to take stock of the year's results and to start planning production for the next. This is mainly a maize/wheat producing area. The most immediate task therefore was to decide how much land to set aside for winter wheat and, subsequently, to plan the land use and yield/production targets for other 1974 crops.

To guide their deliberations, the brigade had on hand commune proposals for the amount of land which might be used for each crop. These represented a breakdown of the proposed target for the commune given by the county. These breakdowns were based on past performance, soil suitability, and specialization of each brigade in the commune. Commune targets and their breakdown were based on discussions between cadres from the county Department of Agriculture and leaders of teams, brigades, and the commune. These covered conditions of production in the different teams and problems faced.

Following these discussions, several processes took place. Production team leaders evaluated targets proposed for each team with members of their teams. The purpose of these discussions was to assess whether targets were feasible, and what modifications and steps were necessary to meet the targets. The teams' collective views were subsequently brought to the brigade level. There, another attempt was made to reconcile differences between the proposals and the adjustments suggested by the teams.

Discussions were also carried on between the production team and the brigade's scientific research team. The objective was to find ways in which yields might be increased. In this particular commune, the 1973 maize yield had been disappointing. The brigade's scientific research teams had therefore been instructed to focus on methods to raise yields and to examine how larger areas could be brought under double-cropping. Some proposals had, in fact, been prepared by the scientific research teams. These were then incorporated into the 1974 plan.

Targets proposed by the production teams and brigades and those from the county were subsequently matched at the commune level. Where differences existed, discussions were again held as necessary, both with the lower (brigade and team) level and with the higher (county) level.

The Mission was told however, that in actual fact the differences between the commune's own plan and those from the county level were rarely divergent to a fundamental degree. This was due to the intimate knowledge of production conditions and the potential of the various communes and their sub-units on the part of

county cadres. Where differences did appear, production teams tried to find additional methods to resolve them.

In the actual case cited, the problem was not too difficult: team members were steadily improving the quality of the soil through various measures, including heavy use of compost and shifting of soil to increase topsoil thickness, and did not find it difficult to increase output.

After agreement has been reached between the commune and the county, further rounds of coordination and reconciliation take place at the regional and provincial level. Finally, all plans are assembled at the *State Planning Commission*.

The annual plan appears, however, to remain reasonably flexible to take account of the need for leeway and for contingencies which may arise. If necessary, further discussions between different levels are carried out in the course of the year. The planning process, in effect, is therefore a continuing one.

All the discussions within the Shashiyu commune took place against the background of the commune's longer term aims. Targets and means for achieving these aims in the commune and in each team over the next several years were indicated in the plan which used the Eight-Point Charter for Agriculture as its guide. The longer term plan had been drawn up in an analogous manner, i.e. in close consultation between the various levels involved. It did not appear to have a fixed link with the national five-year plan.

Problem Areas

It appeared to the Mission that there is some potential for contradiction at the production team level. There will be internal pressures for preferring greater profitability for the team and therefore for its members. There will also be pressures for a low grain delivery target, since excess grain in surplus of the target can be sold to the State at a premium price.

From enquiries in various communes, the Mission found instances where teams had in fact tried to keep targets deliberately low. But the Mission was informed that due to the generally high political consciousness of team members, these instances were not numerous.

The Mission also found on enquiry, that, at least in some communes and brigades, the gap between the delivery target and the actual delivery is so wide - the actual sales in the Dazhai (Taichai) Production Brigade exceeded the delivery target in 1970 by 200% and in 1973 by about 90% - as to suggest that there is a deliberate policy of encouraging overfulfilment, perhaps as a means

of raising the cash income of these particular teams or brigades.

Furthermore, yields and outputs in many communes are rising rapidly. Since delivery targets are revised only at five-year intervals, a gap between the two tends to develop almost automatically.

Planning for input supplies proceeds on an equally participatory basis. Supplies proposed to be made available by the county are based on the past requirements of each production team. Changes in production conditions that might affect requirements - e.g. if the irrigated area has been increased, more fertilizers will be needed - and the proposed targets for production are considered. This, too, is done in consultation at all different levels (commune, brigade, team) and with the commune supply and marketing cooperative. The figures which finally emerge at the county level are then submitted to the region and province, which eventually either modify or approve them.

Purchase Orders

On the basis of the final plans by various communes, the county commercial department then places contracts with different fertilizer factories for eventual delivery to the supply and marketing cooperatives.

By all accounts, this delivery system seems to work well. Cooperatives have always on hand an apparently adequate working stock from which they can start selling to the teams as soon as the plan has been approved. Repeated queries in many communes about the timely availability of fertilizers tended to puzzle commune or brigade members interviewed. Apparently the idea that the inputs might not be available, as scheduled, had never occurred to them. The explanation of the reasons for this curiosity - the frequent failure of the input delivery system in many developing countries - became a cause of hilarity mixed with pride.

Planning methods followed in China contain features that permeate much of the Chinese political and social system, namely: decentralization of administration; fostering of local self-reliance, and delegation of responsibility and decision making power to local units; and the respect for the "wisdom of the masses", which forms one of the corner stones of the Maoist philosophy. As such, these approaches are typical of today's China.

Despite the obvious differences in political structures and values, other developing countries can learn from the Chinese agricultural planning experience. The benefits of "agricultural plans that breathe" are also obvious: flexibility, realism; and popular support, and

an excellent vehicle for teaching people participating roles in self-government.

Incentives to Production and Spurs to the Spirit"

The visitor to China cannot help but be impressed by the unremitting application of productive efforts by Chinese farmers. It is hard to resist the temptation to draw comparisons between the sight of Chinese multitudes working at a steady and relaxed, but purposeful and productive pace — to the point where fields often look more like factory floors — and the listless masses of idle people so often seen in other developing countries. This is now a well-documented fact and the visitor, on returning from China, is often asked: what makes Chinese peasants work so hard?

The answer, in detail, is complex. But in the Mission's view, it may be summed up in three factors: material incentives, tradition, and political consciousness.

Which of these is most important is difficult to say. But material incentives certainly play a significant role. They are built into the organization of production within the commune system. Perhaps the most important among them is that it is possible for each member of a production team to see and enjoy the fruits of his or her work.

Income

The major share of the team's total income — whether in cash or in kind — is distributed as income to team members. Aside from income in kind, the earnings (actually, the total gross revenue) are derived from a number of sources: proceeds of grain delivered to the State; sales of other products either to the State or through the supply and marketing cooperative to consumers, both inside the commune, (e.g. factory workers) and outside it; income from the team's sideline occupations; and to a very limited extent from sales of produce from private plots, or of privately fattened pigs and small livestock.

Of the total income only a very small portion — typically amounting to some four to five percent of gross revenue — is paid as taxes to the State. Another five to ten percent is set aside for the public accumulation fund, i.e. for investment (although in the Dazhai (Tachai) Production Brigade, this share was about 24%). Some two to three percent is reserved for social expenditures (health services, schools, etc.). A fraction of one percent goes to management. After deducting production costs — which include costs of preparing land for the next crop, amounting typically to some 30-35% — the balance comes to approximately 50-

55% of total gross revenue. This is distributed as direct income among team members.

It seems clear that exploitative elements are absent in the commune system. There are no rapacious middle-men. Exploitative indebtedness, a dreary characteristic of many agrarian systems in poor countries, has been eliminated. The predictability of the income, and one which apparently has so far been steadily rising, reinforces this structure.

A number of other factors further form the basis for this system. They include:

1. Price stability (except to the extent that the terms of trade have deliberately and gradually been moved in *favour* of agriculture);
2. The guarantee of market outlets. Grain delivery quotas are fixed for a five-year period. Once contracts have been passed for the sale of, say, vegetables or fish, any minor change in retail prices necessary for clearing the market is the responsibility of the State or municipal commercial department which made the contract. Losses are not passed back to the producer;
3. The history, at least so far, of steadily increasing yields per ha, and consequently rising total income;
4. The apparently reliable planning of input supplies, which enables each team to plan its production with reasonable confidence; and
5. The fact that agricultural tax is fixed in absolute terms. It thus becomes a gradually diminishing portion of the total income as production increases and may amount to only 0.7% of gross revenue.

Production Spurs

Efforts to produce more than what is needed for consumption and for meeting delivery targets of basic foods are encouraged by two factors.

One is payment, by the State, of a 30% premium above the fixed price for sale of cereals to the State in excess of delivery target.

The other is that the delivery quota itself is fixed at a level below — sometimes very much below — the capacity of the team to deliver. This remains so even when the quota is adjusted upwards at five-year intervals. In effect, this raises the average price received above the fixed level.

Furthermore, the team which may have accumu-

lated grain from its share of the distributed total can, if it so wishes, sell the surplus to the State, at the fixed price. This applies to the individual as well.

Efforts by the individual are also stimulated directly by a number of factors. One is the current basic principle governing income distribution: "From each according to his ability, to each according to his work".

In practice, this means that workers in a team are awarded work points on two grounds: the kind of work they perform (the quality) and the hours they put in (quantity).

As the system works today, the standard daily work point value of each worker is assessed and periodically reviewed (once or twice a year) collectively by his or her fellow team members, on the basis of a per-day evaluation and the hours of work actually performed.

In one commune, in Wuxi (Wu-Hsi), the Mission learned that the annual income of team members approximately ranged from 650 yuan for an "able bodied man" to 325 yuan for an average worker and to 175 yuan for a "weak" worker.

The production team usually consists of some 20 to 30 families. The unit is therefore small enough for each member to see the fruits of his or her labour actually materializing and affecting income. This is true even when applied to less-immediately productive tasks such as land improvement, water control, etc.

Moreover, the team has a certain amount of freedom within the overall plan of the commune. It can shift resources from the production of such basic goods as grain to say, fish, fruit, or vegetables for urban markets, or other sideline occupations, where these are available, and which may offer opportunities for greater income.*

Further material production incentives, as seen by the Mission in visits to various communes, include availability — in addition to the necessities — of a reasonable selection of consumer goods: radios, bicycles, sewing machines, clocks, wrist watches, cameras, etc. — produced under the active stimulus of State policy to promote light industry.

There is evidence that supply of these products may not yet fully meet demand. Availability is greater in some areas than others, with Shanghai in particular being considered as something of a shoppers' paradise.

* Aside from ideological considerations, this same fact is one reason why Chinese authorities favour a shift to a higher degree of collectivism. Here the brigade, or even the commune, rather than the team, would become the basic accounting unit. In such a situation, income differentials between teams would be eliminated.

An incentive to higher earnings is also provided by the possibility of private ownership of housing in rural areas. The cost makes it possible for many rural families to own their houses. In the case of one particularly prosperous family in Chililing People's Commune, the Mission saw three 3-room houses built around a courtyard.

The Amenities

Ownership of consumer items, according to the Mission's observation, is clearly increasing. Cameras are now a common sight in cities. In department stores, customers are eyeing television sets which seem to be within the financial reach of a rural family of several workers, if they so wish. Availability of television, however, seems limited still.

Another new object of expenditure, beginning to be seen in increasing numbers in cities, is the light motorcycle. A motorcycle costs about 300 yuan. However, it was not very clear to the Mission whether at this stage these were still predominantly "service" vehicles.

Bundle of Intangibles

Important as they no doubt are, material incentives do not tell the whole story. In addition, there are a number of powerful non-material incentives that propel the Chinese farmer to work diligently.

An important series of motives are those factors which, in China, are grouped under the heading of "political consciousness"*. This term covers the understanding and application of the political and ideological teachings of the Communist Party.

Political consciousness is not however limited just to these teachings. An important part consists of the ethical precepts of Maoist philosophy. Among these are those principles that put emphasis on service to others ("Serve the People"), working for the greater strength of the country as a whole ("Building Socialism"), and competing, not for profit, but in the spirit of "Socialist Emulation".

It is this attitude that helps make it possible for the commune, county or provincial governments, to mobilize — with no more coercion than is constituted by the obvious social pressures — large numbers of people for extensive labour-intensive land improvement and water management works.

* Exhortations that come under the label of political consciousness also include a number of statements on the major policy lines of the State and the Party. Several concern agriculture, such as those expressing the priority given to agriculture in economic development.

Furthermore, individuals participating in such projects are, as a rule, paid work points by their commune. Thus, the collective, rather than the individual, feels the immediate diversion of labour from other activities.

These attitudes are also fostered by the application of the principle of socialist emulation. There is genuine pride, no doubt, in the achievements of people for the benefit of the commune, province or the country.

This pride is strengthened in the case of older people by vivid memories of the "bad old times". The seriousness of this is brought home to the post-1949 generation through films, exhibitions, and other propaganda material.

Participation of the various age and educational groups is ensured by the application of the Three-In-One principle. This brings together, for such tasks as agricultural research and experimentation, representatives of "educated youth", "veteran farmers", and cadres.

Other non-material rewards that shape the attitudes of workers include the dignity which Chinese Communist ethics attributes to physical labour. Recognition is swiftly given to good workers in terms of the esteem of their peers. The well-publicised position of agriculture as the foundation of the economy reinforces this further.

Rural workers, moreover, tend to contribute to common welfare also because they are authentically involved in planning, production, and investment decisions. Opportunities for upward mobility are provided to good workers, trusted by their fellows, by the elective system. This opens up appointment as cadres for work at different levels of the commune. There is also evidence that money, which is set aside for investment and social welfare purposes, is indeed used for this.

Open Books

The Mission found that teams also practise "open accounting", i.e. public posting of annual accounts of the team on a bulletin board or blackboard. This disclosure is followed by public discussion at a meeting of all members of the year's economic results. The example apparently set by leaders at various levels, through attention to their duties, participation in manual work, and the apparent absence of corruption, acts as a psychological spur. These no doubt give support to the social pressure for conformity and "acceptable" behaviour inherent in a collective organization.

Finally, an important intangible factor, as pointed out by many observers, is the traditional work-oriented ethic of Chinese peasants. The Chinese are by no means the only ethnic group to demonstrate this trait. Yet

there is little doubt that it is an important ingredient in the mixture of factors responsible for the readily evident bent of the Chinese to work hard — not only in China, but wherever they have settled.

Mobilization of Rural Savings

China's agricultural credit system reaches every village in this vast land. The Mission concluded that credit is available with a minimum of bureaucratic red tape and at low interest rates. The system appears to have curbed usury and farmers' dependence on money-lenders and thereby has made a significant contribution to agricultural growth and rural development. Partly because of this, the countryside has been almost completely monetized.

Together with agricultural taxation and the self-financing of investment by the production teams and other basic units of accounting (production brigades, or brigade or commune operated enterprises), through their public accumulation funds, the rural credit system has, at the same time, mobilized the increasing capacity of the rural sector to save.

The organization of the rural credit system has also provided the Central Government with a mechanism for influencing the direction of rural development and for regulating the rural credit and cash flow. At the same time, it has also apparently contributed to the evolution of a spirit of local self-reliance within production teams, brigades and communes.

The Mission was informed that the 1975 target for agricultural loans represented an increase of some 740 percent above that of 1954. In 1974, the outstanding balance of agricultural loans was 300 percent more than 20 years earlier.

Components

Today's credit system consists of two closely inter-linked parts: the People's Bank and the rural credit cooperatives.

The People's Bank combines functions of a "commercial" nature such as accepting deposits, making loans and clearing payments, as well as those of a central banking nature such as regulation of the overall credit and cash flow, issuance of bank notes, control of foreign exchange, etc. The Bank also acts as the centre of business accounting for the State.

The Bank works at four levels: central, regional, county and branch. In rural areas branch offices are located in the communes. Sometimes, a branch may be shared by several communes.

In addition to its banking functions, the People's Bank also carries out propaganda and political work. It also assists teams, brigades and communes in book-keeping and in helping to diversify the economy, and assists communes in setting up new enterprises. The Bank performs these functions through some 1900 cadres located in selected communes throughout the country. Most of these cadres came originally from communes. They are therefore familiar with the problems of the latter and provide useful feedback to the higher tiers of the Bank organization.

At the commune level, the People's Bank works in close cooperation with the local rural credit cooperatives. While these cooperatives are owned collectively by their members, they work in accordance with the principles laid out by the People's Bank and the State, and follow their policy directives.

Credit Funnel

Virtually all loans to the rural sector pass through the rural credit cooperatives, and most of the rural savings are deposited in these cooperatives. The cooperatives are thus *de facto* an extension of the People's Bank. This link results in a system that reaches from the centre down to the village level. It provides another example, this time in the vital field of credit, of how the Chinese development administration is decentralized. Through this means, the State has divested itself of a host of local functions, cut bureaucratic red tape, and reduced its administrative burden.

Local collective ownership and operation of the credit cooperatives also ensures that full account is taken of local conditions. Participation of people is thereby ensured.

The Mission identified loans flowing through this system as follows:

1. One year production loans to State-owned rural enterprises (State forests; fish, livestock and other farms, etc.) to supplement their working capital,*
2. Annual production loans to production teams, brigades and communes. These loans assist units facing difficulties in financing the purchase of current production inputs, tractor contracts, etc.;
3. One to five-year loans for production and transport equipment, small scale irrigation projects, etc.;

* Longer term investment needs are made available through the central budget.

4. One-year loans, which can be extended if necessary, for purchase of foodgrains in case of natural calamities;
5. Loans for annual working capital of rural credit cooperatives; and
6. "Distress loans" to individuals (see below).

As may be expected, one of the criteria in loan policies is local self-reliance. Loans are made only in case of demonstrated need. They supplement the production unit's own efforts. This is one reason why all loans are locally channelled through the credit cooperative which is most familiar with the needs of the basic accounting unit and individual. The local cooperative also has the duty of checking with the local supply and marketing cooperative that goods for which credit is requested are in fact available.

An effort is also made to coordinate the various forms of financing provided through the State budget, the People's Bank and credit cooperatives, and through advance payment on deliveries. (The latter generally amounts to 30-50% of the value of the delivery). Financial resources appear to be carefully used.

Loans are made to individuals only when they face objective difficulties such as illness of the bread-winner. Pressing economic needs that cannot otherwise be met such as the need to purchase materials for construction of a house, acquisition of small farm tools, or a pig as a side-line occupation; funeral expenses, etc. can also qualify for loans. No security is required for loans.

Personal loans are not extended for "comfort" purchases, e.g. bicycles, sewing machines, etc. These must be financed from the individual's savings.

Loans carry interest rates of 0.18% a month in case of annual production loans, and of 0.36% a month in case of medium-term (one to five years) loans. Credits are usually included in the annual plan. If an urgent need arises, they can be made outside of it. Requests are then acted upon in an average of about three days, but often much more quickly.

The rural credit cooperatives derive their funds mainly from the deposits of individual members and those of production teams, brigades, and communes. Only individuals, however, can be members.

Other income accrues from interest paid on the cooperatives' deposits in the People's Bank, and from interest on loans to members and production units. Originally, moreover, shares were sold to members (a maximum of 10 shares per member) to accumulate initial working capital; this practice has, however, been discontinued.

Interest paid by cooperatives to their depositors apparently varies according to the depositor and the nature of the deposit. Information acquired by the Mission is not quite clear on this point, but it would seem that all cash deposits accrue interest at the rate of 0.18% a month. Fixed-term deposits, in excess of one year, are paid 0.27% in case of individual member deposits, and 0.18% in case of deposits by production teams, brigades and communes.

The Mission had lengthy discussions with officials of rural credit cooperatives in a number of communes. A concrete illustration of the working of a credit cooperative is that of Hwang Tu People's Commune some 35 km from Shanghai. This commune is possibly somewhat above average in level of prosperity. Its credit cooperative had been established in 1954 (before the commune was formed), with deposits in that year totalling about 60 000 yuan. Two-thirds of this came from members, the remainder from production units and enterprises. By 1958, when the commune was established, the total had risen to about 385 000 yuan; by 1965, the figure was 1 475 000 yuan, 900 000 yuan of which came from members. In 1974, the total had climbed to 3 325 000 yuan, with 2 220 000 yuan representing deposits of collectives and 1 105 000 deposits of members.

The Mission understood these figures to refer to the year-end balances. Of the 5 000 households in the commune (with a total population of 23 000), some 2 000-3 000 households were members of the credit cooperative, with both the membership and the number of short-term deposits fluctuating. This is due to the fact that commune members are paid their income share twice a year. The surplus over immediate needs is usually deposited in the cooperative and drawn on as required.

Of the total deposited in this credit cooperative, the credit cooperative had, in turn, deposited some 3 050 000 yuan into its account with the People's Bank. Only some 275 000 yuan was thus either held as a working reserve or lent out directly to members or basic accounting units in the commune.

This proportion indicates the amount of savings which a relatively prosperous commune like the one studied can mobilize and make available for use by the credit system.

In 1974, the income in the commune for an average family, consisting of three adults and two children, with 2.5 labour force members, was reported to be 1 200 yuan. Of this, some 700 yuan were said to be required for current living expenses. Some 400-500 yuan were thus available for savings. Savings mobilized are this

way one source of finance for supporting, through loans, other less prosperous communes.

In discussions with the Mission, the director and the officer-in-charge of credit operations stressed that one of the original purposes of establishing the credit cooperative had been to stamp out usury. Today, usury no longer existed. But it was one of the functions of the cooperative to prevent its re-emergence.

This particular commune had both a branch of the People's Bank and a credit cooperative. The latter had no branches in teams or brigades in the commune, but its three credit officers (total staff, seven) spent much of their time visiting the teams and brigades.

Deposit Plateau

The Mission was told that the rate of increase of deposits by individual workers had slowed down in recent years, as the purchasing power of individuals had increased and as a greater number of consumer goods had become available. Apparently, most of the recent increase in deposits had come from collectives.

The cooperative is run by a *Management Committee*. Its officers are elected by the commune's people's assembly. Membership of the management committee indicates clearly that the functions of the cooperative are wider than merely to serve the economic needs of members: the management committee includes representatives of the revolutionary committee of the commune, the Party branch of the commune, each production brigade (there are 16 brigades in the commune in question), leading cadres of the commune, and representatives of the members of the cooperative.

The management committee meets quarterly. At the end of the year, the leading member of the commune informs the commune's people's assembly about the work and achievements of the cooperative. He or she makes suggestions for decisions by the people's assembly, e.g. how profit could be distributed between the public accumulation fund and the members, etc.

As a rule most of the profits are deposited in the public accumulation fund (70-80%). The remainder is shared about equally by the members and the commune welfare fund. In 1974 the profit of this cooperative was 34 925 yuan.

The setting up of an all-pervasive credit system of this nature is, no doubt, helped by the existence of a centrally planned economic system as well as by the decentralization of development administration, and the reliance on local participation. It is a system that has improved the farmer's lot and has removed one of Chinese agriculture's ancient scourges: the usurer.

3. Education, Research, Extension and Communication

Agricultural Schools without "Drop-outs"

The reliance on what passes today for agricultural education is a burning issue in many Asian countries. Questions are being raised as to whether investments in agricultural schools have paid off. The Mission therefore probed into China's agricultural education structure in the course of this visit. Members also analyzed training systems.

This enquiry shows that in China today education is made to serve both politics and production. Agricultural education, therefore, is designed to support and promote agricultural production, including fishery, forestry, crops, and livestock as well as ideology.

Agricultural production in China is in the hands of the farmer. Agricultural education is therefore focussed on the needs of farmers, especially "the poor and lower-middle" farmers. In basic terms, this means that agricultural training is only given to the level required for specific farming needs. China does not believe in over-education.

Guidelines

Farmers are members of production teams in each commune. It is the production team that decides whether it is in its interest to nominate or sponsor a member (or the son or daughter of a member) for special agricultural training.

The guiding philosophy in selection is: "From the Team, to the Team". Those who are sent, therefore, return to help their own production team.

Training is, therefore, very functional. It must prove useful to the sponsoring production teams, and production brigades. Otherwise, support for such nomination and training would wither.

The Mission feels this grassroot level pressure ensures that agricultural education serves agricultural production directly. Control is in the hands of the farmers. Thus, agricultural education stays relevant to their needs. The contrast to agricultural education systems in other countries is marked.

The above principles appear to be universally applied in China. Yet there is great flexibility and variety in the methods used to achieve these ends.

Mission members were frankly told at the highest levels: "Agricultural education today is undergoing a profound revolution". Many approaches are being tried. The Chinese believe no one yet has the full answer.

Experimentation is being encouraged.

The pattern now emerging, and which shows real promise, the Mission was told, may not be the same one five years hence. The objective of serving the farmers remains constant; but the means will be flexible and the approach pragmatic — all qualities characteristic of China's development efforts.

Structures

To understand the agricultural education subsystem, one should first understand the philosophy and structure of China's formal education system.

Universal education is the overall policy. Formal education follows a $5+2+2+3$ pattern: five years primary school, two years middle school, two years high school and three years college.

The educational system, from kindergarten to university, is designed to teach students: "Serve the People" and to promote production. Tendencies towards elitism and academic study for study's sake are quickly squashed.

Agricultural production currently enjoys the nation's top priority. Over 80% of the people to be served are engaged in some aspect of agriculture. It naturally follows, therefore, that the entire educational system, in both urban and rural areas, has a heavy bias towards farming and related productive activities.

Three-In-One

No matter what his or her level may be in the system, each student is expected to perform three functions: learn established knowledge; discover new knowledge (research); and perform productive labour.

Students spend one-quarter to one-third of their time in productive labour, either in agriculture or in factories.

One of the Mission's interpreters said that her daughter's class in a primary school in Beijing (Peking), spends several hours weekly in a neighbourhood factory, helping with simple tasks. Twice a year, the class visits a commune for a few days. At harvest time, small children glean the fields after the harvesters are finished. Her son's class, in middle school, spends three weeks a year helping on a commune.

Even children in kindergartens are required to contribute to production — and thereby to learn the dignity of labour. The Mission visited a kindergarten class in a model housing development area in Shanghai. Members of the Mission saw students between five and six years of age with their chubby fingers busily folding

cardboard containers to hold flash-light bulbs. Some of their mothers were producing the bulbs in an adjacent neighbourhood factory. The children work for only half an hour daily. Some may brush this aside as a token gesture; but it does develop a positive attitude towards service through production.

While visiting a Hangzhou (Hangchow) public park, the Mission noticed, purely by chance, primary schoolchildren lining up, two abreast, under the direction of their teacher. They were waiting for their turn to trim the grass and pull weeds growing along a footpath. At this site, only eight could conveniently work at a time. The teacher was obviously conducting a "productive labour" class in which both productive work was done (i.e. the grass cut) and the community benefitted (i.e. the park beautified).

Clearly, these examples indicate the system's appreciation for group work and its approach in promoting that value to strengthen attitudes towards collective effort for the common good.

Students are also expected, if possible, to discover new knowledge. Members observed students and teachers of a middle school, located in a commune, who were responsible for some experimental field plots. Experiments were jointly conducted by the students and teachers and the farmers of one or more production teams. Thus the students both helped the production teams with their work and, in the process, discovered new knowledge.

Today's China has also stamped the more traditional function of every student — that of learning existing knowledge — with its unique characteristic. As in all societies, Chinese teachers are given the task of passing on this accumulated wisdom to the next generation. What is new and different is: teachers are not limited to just the normal trained educators. Workers and farmers, who possess vast practical experience, are now used extensively in regular classroom teaching.

Peasant Geometry

For the Mission's visit to a school in Hwang Tu People's Commune near Shanghai, an effort had clearly been made to show the school in full swing and at its best. Nevertheless, the visit was illustrative of some of the approaches and methods used in schools in China today. Thus the Mission was struck by seeing an experienced metal worker teaching geometry to a middle-school class. He used spare parts from a tractor to illustrate the relationship of radius to circumference, etc.

In the next classroom, a veteran farmer helped the science instructor teach students the effects of soil

fertility on root growth, using actual rice plants with their root systems intact. Of the total teaching staff of about 70 at the joint middle and high school of this commune, 11 were experienced practical workers, with no formal technical training.

This example illustrates another basic principle of education in China which holds that: wisdom comes from the masses and knowledge from practice. Cadres, officials, and persons holding leadership positions are constantly being reminded: "Learn from the Masses". This is not just rhetoric; it is a fundamental tenant of belief as far as present day China is concerned.

It is also significant that teacher training appears to receive little importance. Teaching appears to be regarded more as an art than a science.

In the communes where the Mission enquired, none of the teachers who had joined since the Great Proletarian Cultural Revolution had received training in "how to teach". In fact the Mission found it difficult to get the interpreters to understand questions on this subject. In response, school administrators stressed that high "political consciousness" constituted the most important pre-requisite for any teacher, followed by practical work experience with the masses. It was taken for granted that anyone who had proven helpful to farmers or workers had both the necessary knowledge and the ability to teach.

After discussion, the Mission concluded that the following eight points are the most significant features of China's agricultural education system:

1. Teaching is based on the needs of the majority of those farming. (i.e. the small farmer or "the poor and lower-middle peasants", as they are described in China)

This contrasts markedly with the teaching of most agricultural schools and colleges in most developing nations. There, emphasis is placed on teaching agricultural science of use to the more progressive farmers who are the minority, not the poor farmers who constitute the vast majority of cultivators.

This focus on the masses is achieved in several ways.

1. Teachers are encouraged to leave their classrooms and to establish several "points" at the commune level where they learn from and work with farmers. In this way, the teachers gain first-hand experience of the real problems facing farmers. The teachers also benefit from the practical field experience of the local veteran farmers.

The Mission visited the Guangdong (Kwangtung) College of Agriculture and Forestry on the outskirts of

Guangzhou (Canton). The College had five such "key points" throughout the province. Here, teachers and students spend up to one-third of their time in learning from experienced farmers, conducting problem-solving research, and engaging in actual production with members of production teams.

2. Outstanding farmers are recruited as full-time teachers for agricultural schools or colleges.

Guangdong (Kwangtung) College of Agriculture and Forestry had a teaching staff of 600. Of these, 15 were veteran farmers from different production teams. Their teams and communes had agreed to release them from regular duties for one to two years to help with college teaching. They continued to be given their regular work points.

The Mission observed one of these veteran farmers demonstrating the harvesting of rice on the college farm, along with a regular teacher and about 10 students. All were working together.

The head of the Agricultural Technical School of the Chililing People's Commune told the Mission that a production brigade supplied one of his four full-time teachers. This teacher continued to receive his work points from the brigade while teaching at the school.

3. Agricultural schools admit only those students who have had two or more years practical farming experience at the production team or production brigade level. This ensures relevance. Such students know the real situation at the field level. They "know what they don't know". Thus, they cause teachers to teach material relevant to day-to-day problems confronting the average farmer.

Triple Shifts

Furthermore, students keep in touch with field problems during formal training by what the Chinese refer to as the yearly "Three Ups and Three Downs". Three times a year, students are sent "down", or back, to their original production teams. This enables them to keep up-to-date with local problems, the needs and aspirations of the people, as well as to help with production and to solve problems.

For example, students at the agricultural school run by the Chililing People's Commune return to their production teams for 10 days during the spring season. This is the first "down". The "second down" comes in summer for 20 days of weeding. The "third down" of 20 days is in autumn, enabling students to help with the harvest and the planting of winter wheat.

All this is in marked contrast to most developing countries. There, the vast majority of agricultural students enter with next to no farming experience. They have very little, if any, contact with typical farmers during the period of their training. As a consequence, they find it difficult, if not impossible, to serve the average (i.e. small) farmer upon graduation.

2. A decentralized network of agricultural schools and colleges serves farming at the local level, based on community responsibility and initiative

In 1970, Chairman Mao directed that agricultural schools and colleges move from urban to rural locations. School managements were to seek direct working links with specific farm communities, thus making each more responsive to the needs of the other.

This is now called the "open-door policy". It encourages both staff and students to leave their "ivory towers" for the countryside to help in production, research and extension.

The Mission noted that, in addition to establishing five "key points" for field work, Guangdong (Kwangtung) College of Agriculture and Forestry also opened two sub-branches in more remote corners of the province. Regular course work is now conducted there. The Faculty of Forestry also opened an education base in a remote forest area. Through better integration of teaching, scientific research and production, service to the people is improved.

Another method used to secure this community-school involvement is the "three plots" approach. These are located at different key points throughout the geographic area to be served by any institution.

In cooperation with selected production teams, teachers and students join efforts in establishing three different plots: a high yielding plot, an experimental plot, and a seed-breeding plot. Management of these plots is the joint responsibility of a Three-In-One leading group made up of poor and lower-middle peasants, teachers, and students.

The high-yielding plot is primarily an extension tool. It shows the commune what can be done through optimum use of known improved practices. Inputs and labour are mainly provided by the local production team.

The experimental plot on the other hand is to discover improved methods. The third aims at seed breeding, selection, and multiplication of improved strains.

This three plots approach is now being used in most schools, from middle school to agricultural

college level. The only difference is the degree of sophistication of the work undertaken on the plots by the students and teachers.

The agricultural education network consists of:

1. Technical agricultural schools with one to two year courses at the commune level. Usually there is one per commune although a few of the communes visited by the Mission still relied upon the regular middle school to produce their trained agricultural workers;
2. Normal agricultural colleges, at the district or provincial levels;
3. Spare-time agricultural colleges, organized at the county level. The latter depend on the availability of qualified teachers and the initiative of leadership in the area.

Initiative for starting a commune level school, the capital cost of buildings, day-to-day maintenance, and management and responsibility for the school's continuation, rest primarily with the commune. The State pays only for the salaries of professional teachers.

In agricultural colleges, management is provided by a provincial level committee. The strategy is one of securing maximum community participation, particularly from the poor and lower-middle peasants. This is vital to the achievement of working-class leadership, a key goal of present day China.

**3. Students identify totally with the peasants
Upon graduation, they return to serve
their communes**

This is probably the greatest single achievement, to-date, of the new agricultural education policy in China. The rest of Asia grapples with the problem of agricultural school graduates who refuse to work in rural areas, to say nothing of serving the small and low-income farmers, tenants, share-croppers, and landless agricultural workers. The exact opposite is the case in China.

Government policy requires all students, upon graduation, irrespective of level, to return to their last place of work from where they were initially selected for further studies. This is in keeping with the political philosophy of "From the Masses to the Masses".

There are no private sources of employment. Thus, one may cynically conclude: the system works in the absence of alternative opportunities. This is undoubtedly true.

But the Mission also believes that there are several other factors of equal if not greater importance in the long run which facilitate willing implementation of this policy. These include:

1. Members of the production team make the initial selection of each student. Even while students, they remain full members of their team. In fact, they return several times a year for productive labour. In this way, students are constantly reminded: they owe everything to the peasants

2. The theory and practice of agriculture are taught in combination. This gives the student confidence in his own ability to deal with both the "how" and the "why" of a problem, even at the field level. It is a basic tenet in China that education must be combined with productive labour; that it blend theory with manual labour, through part-time work and part-time study, even when attending formal school.

At Guangdong (Kwangtung) College of Agriculture and Forestry, the Mission learned that students spend two days a week in productive labour on the college farm. Agricultural engineering students work part-time in a nearby farm machinery factory. In teaching plant physiology, for instance, photosynthesis is explained in connection with rational close plantings in the field. Lectures on carbon and nitrogen metabolism are related to the changing colour of crop leaves. In this way, the students' perceptual knowledge is raised to the level of theory. The theory they have learned is, at once, tested and applied in the practice of production.

While at the Agricultural Technical School in the Chililing People's Commune, the Mission observed a very pragmatic approach whereby theory and practice for each subject of crop are blended and linked to the season. At peak farm periods, students may spend whole days in practical work in the school farm; in off-season, days may go by with only classroom study.

Theory does not suffer. Members learned that 50% of curriculum time is devoted to theory, 30% to practical work and the rest to political studies. During a three-year course at Guangdong (Kwangtung) College of Agriculture and Forestry, between 1 500 to 1 600 hours are apportioned to theoretical studies.

3. Students keep abreast of the nation's political life and day-to-day provincial politics by taking part in political movements during their agricultural education. This breaks from the traditional pattern in Asia where agricultural students, especially at the college level, are generally apolitical. This increases the motivation of Chinese agricultural students to return to rural areas and advance the cause of the poor and lower-middle peasants.

4. A fourth possible reason for which students willingly return to their production team and commune, upon graduation, is the system whereby their teachers

keep in touch and arrange to up-grade their technical knowledge and skills, through periodic short courses. This assurance that they will not be forgotten and allowed to fall behind technically, removes the need, felt by many students elsewhere, to continue with schooling, instead of going out to apply what they have learned.

5. There is always a need for new cadres. Candidates are drawn from the ranks of new graduates. Thus, education provides the promise of a possible shift to more prestigious cadre posts.

6. Even students who show exceptional promise as future scientists, teachers or cadres know they must return to their original commune to "serve their own people" for at least a time. This is a necessary condition for selection to higher technical or administrative responsibilities.

Thus in China all promotions in all fields come, at least technically, from the ranks. Even the most ambitious know they must constantly renew their mandate from the people.

4. Peasants welcome agricultural students back to the rural areas. They strongly support agricultural training

This phenomenon deserves special mention. It is unique relative to the rest of Asia, where farmers are either suspicious or resentful of educated youth who try to help them. Many consider the knowledge students have to be irrelevant to their conditions of poverty.

There are probably several reasons why the Chinese peasant is different in this respect.

1. The peasants helped select the student initially from among their own workers. They also kept in touch with the student during his or her studies. Thus, it is only natural that they warmly welcome the student back.

2. The peasants made an investment in one of their own members. Therefore, they are anxious to have this person back to help them improve their own productive capacity. This is particularly true in the case of a commune level agricultural school, such as in the Chililing People's Commune. As mentioned earlier, their veteran teacher was paid, on a work point basis, by one of the production brigades.

3. A strong movement exists, particularly since the Great Proletarian Cultural Revolution, to combat elitism. Peasants understand that people with additional education are not special or of any higher rank; they are only better equipped "To Serve the People". Education only increases a person's ability to contribute to society.

4. Based on past experience, the peasants know that the returning student will have considerable new knowledge and skills to offer them. The student will prove useful.

5. In the selection of students for further agricultural training at every level, priority is given to those of peasant/worker/soldier origin while maintaining a proportionate representation of youth from all classes

There are four steps in the selection of students. They are:

1. Personal application by the prospective students to the leadership of their commune;

2. Completion of at least two years of work, as members of a production team/brigade of a commune, and selection by the poor and lower-middle peasants of the team;

3. Approval by the revolutionary committee at the brigade and commune level;

4. Academic acceptance by the agricultural school or college.

These steps comply with the directive issued by Chairman Mao on 21 July 1968: "Students should be selected from among workers and peasants with practical experience and they should return to production after a few year's study".

Mission members were informed that, at production team and brigade levels, the masses tended to favour youth of peasant worker or soldier origin. Basic data on student composition at the Guangdong (Kwangtung) College of Agriculture and Forestry seem to confirm this. Of the 1 000 students presently enrolled, about 93% came from this background. About seven percent were "educable youth" whose parents formerly belonged to the class of middle or rich peasants, landlord or educated elite. This percentage appears in proportion to past class stratification. Thus, the stratification is not discrimination against the former upper strata but redresses former bias against the lower strata.

The Mission encountered no married students in any of the three agricultural schools visited during the study tour. Students may be married; but general preference is given to those with "light" family responsibilities.

At the Chililing People's Commune, the head of the one-year practical farm school said: "Students between the ages of 18-25 years were preferred, although older veteran farmers might be selected to attend". None of the present 47 students were from the veteran

farmer category.

6. Length of agricultural education and training has been compressed but quality has improved

Agricultural colleges have cut the length of the training period from four to three years. This is one of the educational reforms drawn up during the Great Proletarian Cultural Revolution.

Primary and secondary schooling has been reduced from a 6+3+3 to a 5+2+2 ratio. At the same time, the quality of education, in terms of applicability and usefulness to agriculture and the farmers, appears to have greatly improved. The cost of education and training has been reduced.

The length of formal training has been shortened by carefully removing from the curriculum all extraneous and "knowledge-for-knowledge sake" material. Only those subjects which help the three "essentials for the revolution" - have been allowed to remain.

At the same time improved teaching methods were adopted. These accelerated learning, based on integrating theory with practice, and the use of problem-solving. In turn, this could only be done through improving the teachers themselves. Chairman Mao pointed this out earlier saying: "In the problem of transforming education, it is the teachers who are the main problem".

At the Guangdong (Kwangtung) College of Agriculture and Forestry, the Mission was told: "The students have changed, now the professors must catch up". This was considered to be both essential and at the same time inevitable, since "if water rises, the boat must also rise".

Efforts to improve the knowledge and attitude of teachers include going to production teams and learning from veteran farmers. The professor's special role in this is to take "the wisdom of the peasants, acquired through hard struggle", and translate it into scientific terms, thus giving knowledge its theoretical base.

The Chinese believe in re-education, even of teachers. They encourage teachers to adopt new attitudes. Introduction of veteran farmer instructors and agrotechnician teachers to help the regular teachers has accelerated the re-orientation process. Outstanding students, produced by this new system, are identified and encouraged to return as new "peasant teachers", after they have worked on their communes.

A Guangdong (Kwangtung) College of Agriculture and Forestry professor of horticulture demonstrated vividly the value of the problem-solving approach to teaching. There, students majoring in vegetable produc-

tion plant their own vegetable fields and live in huts at the edge of the field. Thus, the students observe plant behaviour and see each problem as it develops and are able immediately to consult their teacher and fellow students on the action to be taken.

"Brain-storming" techniques with fellow students are also encouraged as a means of finding new and better ways to solve specific problems. Problems identified by alert students, in turn, form an important part of the research programme of the college. Cases where teachers and students, working together with production team members at the commune level, have solved specific problems, were cited to the Mission.

7. There is full employment of graduates

This is achieved through a combination of "top down" and "bottom-up" planning whereby the manpower needs of each production team in every commune are passed for handling to the appropriate level. Thus no student is sent for further training who does not have assured employment when completed.

At Guangdong (Kwangtung) College of Agriculture and Forestry for example, officials told the Mission that communes in the province select members of production teams who want to receive further training. They pass the names through the normal planning channels to the provincial Department of Agriculture.

The provincial Director of Agriculture told the Mission that he makes the final allocations to the different faculties. These allocations are based on the expressed needs of the communes and the State research and extension network. In 1975, for example, the Department of Plant Protection of the College received 30 new students while the Faculty of Animal Husbandry and Veterinary Science received 95.

There are no "drop-outs" in China. Since prior selection of qualified students is so rigorous, no one quits.

In addition there are no "failures". All who enter, finish their training. Some students need more attention than others; but in no case are they permitted to fail. Each student is challenged to reach his or her maximum capacity for service to the farming community.

8. Farm-workers can study while still working

A relatively new development in the field of agricultural education is the spare-time agricultural college. These are now being tried in several provinces of China.

The Mission visited one such college on the Hangzhou State Tea Farm, Zhejiang (Chekiang) province.

There 38 part-time students were following a two-year course. The students are regular workers on the tea estate. They are given time off from their regular duties to attend the classes.

Class schedules are designed to mesh with the slack work periods on the tea farm. Thus, there is a minimum disruption of production. Teaching is provided by professional staff from the nearby State Experimental Tea Farm and by regular teachers of the Zhejiang (Chekiang) Agricultural College about 40 km distant. Theoretical classes are conducted in spare classrooms of the local middle school. These are followed by practical work in the fields or in the tea factory.

The Shanghai Machine Tool Factory first developed the idea of spare-time colleges in response to Chairman Mao's call in 1968 for workers and farmers to attend colleges and universities. But the application of this idea depends on local initiative. It was not until March 1975 that the first students were admitted to the spare-time college at the Hangzhou State Tea Farm.

Across the nation, a variety of approaches for part-time study and part-time work are being experimented with in the field of agriculture. They include: spare-time agricultural schools; short-term training courses run by agricultural colleges for commune members; mobile classes; and high schools offering up to one year courses.

These experiments also respond to the demand for more knowledge in agriculture from the farmers themselves who are constantly being challenged to "Learn from Tachai". The experiments also reflect the steady revision of traditional formal school structures, as part of a nationwide effort to make agriculture the foundation of national development.

Test Tubes and Peasant Practice

The gap between agricultural research and the farmer in China must be one of the narrowest in the world. The time between research findings and practical application has been considerably telescoped. The uniformly high standard of crop production observed by the Mission during the course of its travels in six provinces (with visits to 12 communes, one State farm, one agricultural research institute and one college of agriculture and forestry) remains vivid.

The Mission has the general impression that agricultural research is not, in some respects, as highly developed as in several other developing countries in Asia.

Yet, the speed and extent to which proven research findings are being applied at the farm level was second to none. And this is a country where there are no direc-

tors of extension or departments of extension. This is evidence of the full integration of research discovery into agricultural practice. The Chinese put it quite succinctly: "In China, all agriculture is extension".

Native Roots

As with many things in China, a system evolved on the basis of local conditions, serving local needs, and utilizing local techniques. This appears to be the key to success in bridging the gap between agricultural research and putting proven results into immediate practice.

The system is interlocking, straddling several levels, and is responsible for both experimentation and popularization of improved findings. It has a network of institutions and collaborators from provincial and county to production team level. As in so many other cases, it links several levels of economic management, thus forming a capillary system reaching from the top down, and providing for feedback from the bottom up.

Mission members discussed this structure on many occasions: at Nanjing (Nanking) Research Institute, at Guangdong (Kwangtung) College of Agriculture and Forestry, and during county briefings with brigade and production teams. The Chinese stressed that they always try out results in a field situation, in several sites, before they publicize research conclusions.

The general pattern of the agricultural research/extension network throughout China, appears to be as follows:

Level	Organizational form
Province/ county:	Academy of Agricultural Science; Agricultural Research Institute; College of Agriculture
People's commune:	Agro-Technical Centre
Production brigade:	Scientific Research Group, attached to an Agricultural Experiment Station
Production team:	Technical Production Group, attached sometimes to a "Popularization Plot".

The key institution in this network, which characterizes the system, appears to be the scientific research group at the brigade level. Research is carried out at its experimental station. The group focuses on solving problems confronting the production teams, the brigade, or the commune in which it is located.

The group is generally composed of a scientist from an institute or college stationed at the brigade, a veteran farmer, and an agro-technician (agronomist). Thus, it is a Three-In-One combination of people with scientific training, field experience, and practical production technology.

Each scientific research group is given these functions: to plan, conduct and evaluate scientific trials on major crops and activities undertaken by that brigade; to ensure availability of improved seed; to organize demonstrations and help conduct short-course training for production team members as required. The group also ensures that experimentation has direct applicability to problems experienced by the farmer.

In some communes, the Mission noted that even production teams conduct their own experiments. These include variety selection, testing, and other cultural practices. Characteristically, great emphasis is placed on self-reliance, even for agricultural research, and the rapid popularization of research findings.

Capillaries

Through this mechanism, China is able to organize agricultural scientific experimentation on a massive scale, securing the participation and releasing the talents of its farming masses. The Mission also learned that over 13 million farmers throughout the country were taking part in such activities in an organized manner.³

Similarly, it is through the same mechanism that China rapidly disseminates research findings nationwide. Furthermore, since veteran farmers, often drawn from production teams, are involved in the research, they require little further motivation to adopt any improvement discovered.

Evening study groups are organized in the commune. Here, research group members lecture to farmers and workers on their findings. This enables the farmer to be continuously informed of recent findings. In agricultural research, as in so many other areas, the basic philosophy is: "From the Masses to the Masses"

This also means that research institutes gather the experience from the people, study, systematize, analyze and return it to them in the form of "new techniques". This has promoted the quality and practical orientation of research work.

The network for mass experimentation is guided by full-time professional staff of the various research stations and research institutes at commune and county levels. The Mission was informed that since the Great Proletarian Cultural Revolution, it is normal practice for about one-third of the staff of research institutes to be

working at the grassroot level at any given time.

The Mission's visit to the Research Institute of Agricultural Science of Jiangsu (Kiangsu) Province in Nanjing (Nanking) confirmed this. Of its 600 staff members, at least 200 were working in communes, guiding the scientific research groups attached to brigades and teams, helping solve problems, and identifying research topics in the light of production needs.

In addition, the Institute also conducts study classes and training courses in different forms, including courses for farmer-technicians. The staff also print and distribute scientific and technical materials.

The Mission felt that the leadership example, given by the professional researchers in coming to the farmers and learning through working with them, gives impetus to the mass movement for scientific experimentation at the farm level. At the same time, this seems to have promoted the quality and relevance of research work of the various specialized institutes.

Spread Effect

One effect of this system has been to share with farmers what before was the Government's sole responsibility for agricultural research and extension. This has reduced costs. More importantly, it has spurred localized experiments, so important in farm production, where conditions vary tremendously even within short distances. The system ensures that work of research institutes is not abstract and academic, but down-to-earth.

Another feature of this system is the way it opens doors for veteran farmers and educated youth from the communes to enter agricultural research stations and specialized institutes. These follow-up in a more systematic way some of the highly successful local practices discovered "through hard struggle". Even the most advanced research institutes now follow this "open-door research policy", with great benefit to agricultural production. "We go out and they come in" was how the scientists described this policy to the Mission.

In China there is no clear separation between research and extension as is often the case in other developing countries. On the contrary, integration of scientific research with production is seen as a major device for raising levels of research.

Chairman Mao described this approach saying: "With us, therefore, the raising of standards is based on popularization, while popularization is guided by the raising of standards". In this connection the Chinese also like to quote Friedrich Engels: "If society has a technical need, that helps science forward more than

ten universities''

The organizational network described above, including its institutions and groups, tends to be called research. But the functions the network actually performs cover both research and extension. The so-called scientific research workers do both research and extension work as part of a team approach to problem-identification and problem-solving.

In actual practice, it appears that team members with scientific training take the leadership in research matters. Cadres and veteran farmers lead in popularizing these findings. They also provide the lowest level of feedback. Again, unlike most other developing regions, China has no separate category of agricultural extension workers. Those engaged in experimental work also do extension work.

The overall impression that emerges, therefore, is that in China the entire Party and Government organization forms one vast agricultural extension system. It is Party and thus Government policy to give top priority to agriculture.

Probably nowhere else in the world is there a developing nation where government workers and politicians alike are so familiar with farming practices and problems and are so committed to their improvement.

Article 12 of the 1975 Constitution of the People's Republic of China provides that "scientific research work must.... serve proletarian politics, serve the workers, peasants and soldiers, and be combined with productive labour".⁴ The Mission believes that in China this is occurring.

Painted Hillsides and Mass Communication

At first, the attention of a visitor to China is struck by what appear to be the typical characteristics of mass media: huge, flamboyant signs displaying Chinese characters streaming across gates, roads, or painted on mountainsides; wall newspapers; thousands of bulletin boards, martial Chinese music coming from thousands of loudspeakers. However, after a time, the visitor discovers that, with few exceptions, the difference is not in the medium but in the message.

China has a vast network of newspapers, magazines, and radio and television stations. Except in the case of the omnipresent radios, it is difficult for the outsider to judge how many readers or viewers are reached, particularly in rural areas, by newspapers and television. As a supplement, posters are used extensively. China's films, plays, operas, songs, paintings and poems carry messages, just as similar means of communication do in other countries.

What is perhaps significant in China is the nature and the content of the message. A good two-thirds of the time or space in the media is set aside for agricultural development messages.

A second striking feature is: it is difficult to avoid receiving the message. Radios are everywhere. Posters and slogans cover the walls of public buildings. They are in meeting rooms, at railway stations, in public parks. They are imprinted in stone along mountain ranges. Thus, they become monuments, even works of art. The use of Chinese ideograms gives them a particular appeal — at least to the western eye. Those which the Mission saw — and they were many — were well painted, in vivid red or pristine white.

The media emphasize themes like: "In Agriculture, Learn from Tachai; in Industry Learn from Taching". Or "Take Agriculture as the Foundation and Industry as the Leading Factor". These slogans, when applied to the media, translate into a vast quantity of stories, reports, features, graphs, etc., all devoted or related to agriculture.

Posters and slogans are cited first because they attract one's eye when visiting China.

Yet, at first they have a somewhat negative effect on the visitor. However, the visitor gradually comes to admit that, as a medium, they are no different from the advertisement signs one sees in virtually all countries promoting soft drinks, a car, a film or a detergent. Nothing new. Except the message: "Agriculture is the Foundation".

Airwaves

Radio constitutes the most important channel of communication in China.

There are national, regional, county and commune broadcasting stations. Radio programmes are broadcast on a saturation basis. In the villages there are loudspeakers, hooked up to radio receivers, both in the fields and in orchards, as well as inside homes. Every citizen is invariably within reach of a loudspeaker.

This reflects a policy which on 15 September 1965 Chairman Mao made into an axiom. He wrote that broadcasting "should be run well, with enthusiasm and that it should serve the Chinese people and the people all over the world".

The Mission studied the broadcasting station at a commune near Suzhou (Su-Chow).

A broadcasting network was set up at the time of the establishment of the commune in 1958 with some 1 500 loudspeakers and a 250 W transmitter. Today

the network, which is a cable or wire network, reaches 4 700 loudspeakers. Total potential output of the station is 2 600 W. Every household, the Mission was told, had a loudspeaker. In every village there were also speakers outside a number of homes.

Broadcast operations are conducted under the revolutionary committee of the commune.

The State, for its part, provides most of the equipment. Some 28 people work part or full-time, in broadcasting as well as in maintenance of equipment.

Six full-time workers, four announcers who have received specialized training, and two electro-technicians who handle maintenance, constitute the technical staff. The station broadcasts 17 to 18 hours daily.

Reporters

The staff is further assisted by about 170 "reporters" or "communicators" who are commune members with a special interest in broadcasting. They assist the full-time announcers by collecting material for the programmes.

At the time of the Mission's visit, the main programme of the commune was entitled: "Learn from Tachai". It dealt with the agricultural techniques and achievements of this model commune. The station also monitors and re-broadcasts national news from Beijing (Peking) and regional news from the province and county. Most of its "air time" is devoted to local interest stories.

Broadcast times change with the season. In summer, transmissions can start as early as 04.30 hours and last until 22.0 hours (with interruptions). On Sundays, programmes continue until 23.00 hours. In winter, they are considerably reduced.

A typical broadcast schedule leads off with revolutionary music - "The East is Red". This is followed by a weather forecast. Then comes a "production programme", usually devoted to agriculture, giving information on the latest developments and techniques. At 06.30 hours comes the news from Beijing (Peking). The rest of the day follows:

07.00	Music
07.15	Study period
07.35	Weather forecast
11.00	Music
11.10	Learning from Chairman Mao
11.15	Weather forecast
11.20	News and information relayed from Shanghai
11.30	Programme of rural interest from Shanghai

12.00	Relayed news from Beijing (Peking)
12.30	Weather forecast
14.30	Music
14.40	Educational programme for peasants and soldiers.
16.00	Weather forecast
18.30	Songs
18.40	Weather forecast
18.45	Revolutionary opera music
19.00	News items for peasants and soldiers, and music.
19.30	Agricultural information of direct interest to the commune (replaced, on Sundays by a programme for children)
20.00	News from Beijing (Peking) and information of county interest.
20.30	Weather report
20.40	Music and evening political school

The Mission noted the frequency of weather forecasts. Agricultural communities value such forecasts.

Broadcasters stressed to the Mission that their programmes could be interrupted at any time in case of emergencies. Bulletins on typhoon-warnings, pest infestation etc. are aired.

This "early warning" feature of the communes' radio-networks is not a unique feature. Many countries have such systems for storm warnings.

What makes the Chinese system probably unique, however, is its capacity to bring immediate massive response. There is immediate mobilization of all concerned. Outdoors loudspeakers and those located in every home can effectively communicate with all able-bodied commune members. They are rushed off to the canals or dikes, in case of a flood, or to cover delicate plants, such as jasmine, should there be any danger of frost, etc. The system is also used extensively in the case of pest infestation.

Reverse Flow

Two other features of the Chinese radio-networks are: (1) they are used extensively for training purposes; and (2) they carry a considerable amount of "feedback" information.

It may not be obvious from the programme schedule given above yet much of the information broadcast is of practical value for farmers. Farmers are kept informed about the latest experiments regarding their crops. Experienced farmers give interviews on their achievements and issue warnings to prevent costly mistakes. Teachers, at all levels, give lectures.

The substantial number of part-time reporters contributes greatly to the feedback of information to the broadcasting stations. The stations help commune members make their own programmes by collecting ideas from "the field".

In some cases as much as an hour a day is used to broadcast letters from commune members. These letters range from a complaint by a production team asking parents to keep their children from playing in planted fields, to information about a successful experiment.

Local content and participation appear to contribute to the credibility of the radio-stations. Commune members feel they are their own stations.

In many countries the central government is often wary of decentralized broadcasting stations. There is a fear that such stations may be used for anti-government propaganda. On the other hand, if a station is under too strict government supervision, it may lose its credibility, since listeners tend to believe that the radio merely echoes the government line.

Innovations

The Chinese also use a number of existing media techniques in their own unique innovative way. These range from exhibitions, to field visits, to the use of blackboards.

On the walls of public buildings, factories or commune headquarters, one sees smoothed-out and black-painted rectangular surfaces: simple low-cost but effective blackboards.

Their uses are many. Slogans are chalked on them. They announce meetings. They may carry a success story, supported by detailed statistics on how the commune achieved a bumper crop. The Mission was told the boards also carry criticism against those who do not follow the Party line. Doodling on the boards, or graffiti, does not appear to be a problem.

Exhibits

In nearly all the major cities or county seats which the Mission visited, the Mission was shown through an agricultural exhibition. Through museum-like displays the visitor is guided through the story of the region. The visitor is constantly reminded — with dioramas, models and pictures — of how "bad" times were before 1949. This is contrasted with present day achievements. Large charts, carefully kept up to date, trace the story of these achievements.

The displays have a substantial agriculture component. Locally designed and produced agricultural im-

plements are shown. So are samples of local products. Considerable effort is taken to make peasants proud of their achievements. At the same time, guides constantly remind visitors: there is no room for complacency; there are still short-comings and scope for improvement.

Field visits to particularly successful communes also play a very important role in the transmission of the priority-for-agriculture message.

This is most obvious in (Dazhai) Tachai, the production brigade which turned a barren mountainous area into fertile terraced farmlands.

Chairman Mao's call — "In Agriculture Learn from Tachai", — is followed to the letter. Some two thousand visitors a day troop through the fields of Tachai. Special guides lead visitors along a planned itinerary. Yet it is difficult to take fully, at face value, the claim of the members of the Tachai Revolutionary Committee that the constant flow of visitors does not disturb the Tachi farmers at all. But the message, in this carefully-designed tour, comes across very clearly: all this was mainly accomplished through hardwork and arduous struggle, in the spirit of self-reliance advocated by Chairman Mao.

Communication systems in China constitute an important instrument in the development of agriculture. There are no new or revolutionary media equipment and techniques. But there is an effective harnessing of the media to support agriculture and other developments.

The choice of using the radio — particularly on a local basis — for technical extension programmes, for early warning rather than for purely entertainment, is a question of priorities and choice. These painted hillsides and wall posters mean simply that China has opted to use low cost media systems for agricultural development rather than for soft drink promotion.

4. Human Resource Development "No Room for Beggars" or The Full Use of Manpower

Throughout this report the Mission has referred, time and again, to the full use of manpower and other productive resources in China. Clearly, this is one of the outstanding characteristics of the Chinese development experience — one which distinguishes it very sharply from most developing countries.

This practice, which is one of the mainsprings for China's economic development, is apparent at every turn. It takes a number of forms.

The most obvious form is the fact that everybody in China is a member of one or another work or neighbourhood unit. Administratively these units provide employment and food.

The more impressive aspect of it is that useful work seems to have been found for everybody. In agriculture, as well as in industry, this seems largely a question of technology being used at levels which make it possible to utilize, to the full, the most ample resource of the country: people.

As pointed out earlier, the application of socialist principles of political economy, and the use of the price system to support them, makes possible labour intensive production methods, side by side with more mechanized and capital intensive approaches, both in agriculture and industry. Obviously, it also facilitates an orderly transfer towards more mechanized and industrialized methods of production, as capital accumulation proceeds.

Full use of labour itself plays an important factor in building up capital. Taking, again, advantage of the possibilities offered by the socialist economic system, China has turned manpower into capital, particularly through its application in large labour intensive construction projects, as noted so widely abroad in the sixties: irrigation systems, terracing, land levelling, land improvement, etc.

The Mission also observed that work is found, not only for the able-bodied men and women of the labour force, but also for old people willing to work — if only to tell stories to nursery schoolchildren. Schoolchildren, after classes, are marshalled to pick up fallen heads of grain after harvest, gather loose maize leaves for animal feed, paint tree trunks along highways, etc.

At the peak of agricultural operations, particularly harvesting, there is clearly a shortage of manpower at the present level of mechanization. Additional hands are mobilized by schools and commune-operated factories and by bringing civil servants and university students into the countryside.

The main emphasis is on the use of this resource for economic development. But the policy also serves various non-tangible purposes. Everybody in a position to contribute his or her labour does so. This saves people from the corrosive indignity of unemployment.

Furthermore, people who have retired from full time work for reasons of age or health, still make part-time contributions. The Mission heard from a middle-aged woman, afflicted with a light chronic ailment, that she works voluntarily in harvest operations when labour requirements are at their peak. A 75-year-old man uses his time to manage a grain storage facility. There are, of course, no beggars. The 40-year-old manager of the power station at Miyun reservoir offered another example. In 1949, he was 14 years old and had never been to school. Under the new Government, he went through

five years' primary schooling, then served for three years as an electrician apprentice. He joined a power plant as a worker for ten years, becoming manager of this plant in 1968. Management training is practical and responsive to actual needs.

An interesting footnote the Mission wishes to add is: in the resettling of farm families displaced from the whole storage area of the Miyun Reservoir, authorities did not merely provide essential utilities such as schools, clinics and recreation areas; fields and houses provided as substitutes were better than before. Even more significant was the decision to keep the original village together, to the extent that neighbours were not split up. They all stayed together as a village, and were not scattered when relocated. Thus, the displaced families felt that they were moving to a better place.

In such instances, as indeed in many manifestations of a collective system at work, the resemblance with a family farm is striking.

Beyond Numbers

Full use of manpower is not limited to numbers. The system also provides opportunities for the development of talent, both through education and experience, and takes good advantage of it, once developed. Education is universal. As explained elsewhere in this report, it is also relevant to the needs of Chinese society today. The Mission saw examples of people with essentially only on-the-job training in managerial positions. These were posts of a technical nature: manager of a commune operated factory, or of a power plant on a multi-purpose reservoir scheme, etc. In most other developing countries, these posts could only have been filled by persons holding a formal diploma or degree.

The elective system for positions such as those of leader or accountant of a production team, or chairperson or loan officer of a credit cooperative, etc. also provides a channel for talent. Recognition can be gained and skills utilized independently of formal educational qualifications.

Chinese society also benefits from the policy of stressing that "educated youth" serve the people by returning to their original surroundings and using their learning in concrete development tasks. The majority of educated young people today come from people's communes. The Mission considered this a wise use of educational investment, particularly if compared with the phenomenon of white collar unemployment in many other developing countries.

Return of the Native

The practice of educated youth returning to their home villages is obviously intended to stress the importance and dignity of manual work, and the danger for the evolution of a classless society that would result from a cleavage between masses and cadres, if an elite group was permitted to evolve.

Partly for ideological and partly for practical reasons, the system endeavours to derive full benefit from the experience gained by workers over the years. The role of veteran farmers in agriculture is therefore stressed. Veteran farmers are used as lecturers in schools and colleges. They serve as discussion leaders in spare time study groups, and participate — together with representatives of "educated youth" and trained cadres — as members in the Three-In-One scientific research teams of production brigades.

The Mission concludes, after observation and interviews, that full use of labour does not mean the labour force of the people's communes is regimented for relentless work, with parents leaving their children to collective nurseries, and with the task of food preparation and feeding of families left to communal canteens.

But it appears that the family has now regained its position as the basic social unit around which the family's life turns. Nurseries are provided so as to enable mothers to go to work; but the grandmother continues to play her important traditional role in child care. Commune canteens are considered a matter of convenience: to save time and to facilitate peak harvest season work by bringing meals to the fields. A country that can make full use of the hands that are available is bound to command interest in a world where inadequate production and lack of jobs create tense development dilemmas.

Integrated Rural Development: A View from the Commune

"The rural people's commune is an organization which integrates government administration and economic management at the present stage (communes) generally (take) the form of three-level ownership with the production team at the basic level, that is, ownership by the commune, the production brigade and the production team, with the last as the basic accounting unit".⁵

The rural areas of China are being transformed at a rapid rate today. Rural development, as an integral part of national development, is succeeding. There are

those who question the scale and intensity of China's success. But the Mission, which had members long involved in the task of promoting integrated rural development (IRD), thinks that achievements are so substantial that they are — in the words of one member — "breath taking".

One of the key factors in this achievement has been China's ability to integrate government administration and people's initiatives into a massive action programme for rural development. As with so many other achievements in China, it has also been a matter of political will and organization.

For the rural areas, the People's communes are the organizations that forge integration at the local level. Thus the Mission believes that the commune is, indeed, the key institution responsible for the systematic and integrated development of rural China today.

There are four functions of today's communes that vest them with a capacity to effect integration. All four merit close study. The functions are:

1. The commune permits area development planning

It is now recognized in Asia that area development planning provides the most viable basis for achieving integrated agricultural and rural development. This is borne out by China's experience.

One reason why China found it necessary to press beyond the advanced cooperative stage (which it had reached by 1957) to the commune system, was the clear need to tackle area development on a comprehensive basis.

As explained earlier, the Chinese went through the stages of several forms of peasants' cooperatives. Invariably, they came up against the same need: an area approach in solving the basic agricultural problems of soil conservation, reclamation, irrigation, and flood and drought control.

It was largely for this reason that the average size of the first communes was huge. Initially, the nation was divided into only about 23 000 communes. Later, these were split up into 70 000 to make them more administratively manageable. There was also the question of the ratio between the amount of available farm mechanization and land area.

The Mission learned that the geographic area finally assigned to each commune is primarily decided on what is perceived to be the best mix of existing human and physical resources. When blended, these resources offer a development potential of their own.

Every commune visited further convinced the

Mission of the validity of the area planning approach to development. Members saw evidence of how yields had gradually increased through rational and systematic development of each commune's physical infrastructure.

Within the area plan of each commune, China uses a step-by-step approach. Farmers start with simple improvements of what exists. In this way, the farmers gain immediate benefit; at the same time, they see for themselves what additional improvements are necessary.

This approach also provides a double motivation — financial and technical — to undertake more comprehensive, labour-intensive physical development projects such as irrigation canals, dams, flood-control dikes, etc.

Today's commune structure permits and encourages planners to take a total look at the resources and potential of each commune. Agricultural and non-agricultural activities can therefore be fully integrated.

China's priority is food production. But because of area planning, each commune is able to add non-agricultural enterprises which support, complement — or at least do not compete with — scarce resources required for agricultural production. This is not the general rule elsewhere in Asia.

2. The commune permits rational use of manpower, resulting in full employment

In China, the rural masses actively participate in the development process. They are not passive observers. Their productivity is increasing as well as their income. So is their ability to purchase and to save.

Most other developing countries, on the other hand, are impaled on the horns of a cruel dilemma: there is massive unemployment precisely at a time when so much needs to be done. China has largely solved this dilemma through a development approach that, among other things, designed the commune. In the process, it unleashed a tremendous force for development.

Everyone willing⁶ and able to work, falling within the administrative control of a commune, is guaranteed productive, remunerative, and socially satisfying employment. Workers are assigned either to production teams, or to service units like schools, clinics, repair stations, etc. at brigade or commune levels.

Production team members work primarily in agriculture. But during slack periods, they may be assigned to one of the commune or State-run enterprises or to a labour-intensive infrastructure development project, e.g. construction of a flood-control dam, irrigation canal, etc.

Mission members spoke with women and young girls working in a variety of commune factories such as carpet-making, embroidery and silk weaving. All were earning salaries. Nearly all said they were also members of a production team. During peak farming periods, they did farm work (for which supposedly they earned work points). It was not clear how work points and salaries were kept separate or equated.

The Chinese were always rather puzzled by questions regarding possible unemployment and under-employment. Members of the Mission tended to ask these questions during the early stages of the Study. Given China's massive population, the Mission just assumed "there would be a problem of unemployment".

However, as the Mission progressed, members began to realize that each commune manager stressed that there were "many miles to go"; that instead of worrying about their apparent excess labour, they were, in fact, complaining of labour shortages. Commune officials frequently spoke of the urgent need to accelerate mechanization of agriculture. This would release manpower for other development tasks. Clearly, then, China has a structure where people are considered a valuable resource to be utilized, so that they can contribute to development.

Organization of a commune appears to allow timely allocation of available manpower in accordance with the work needs within its clearly-defined geographic area.

Large-scale capital development projects, such as flood control works, bring several communes together. Each contributes skills, labour and equipment as necessary. The basic motivation is that members know, in the end, that everyone will benefit materially.

The Mission saw a striking example of this in the construction of the gigantic Miyun Reservoir north of Beijing (Peking) (capacity: 4 375 million m³). Here, 180 communes provided a daily work force of up to 200 000 people. Each worker was paid in the form of work points by his or her own team. The project started on 1 September 1958, shortly after the people in the 13 counties which were in the project area had been organized into communes. Without the commune structure, the Mission was told, such development would never have been undertaken. Members visited one of the "new villages" below the dam and talked to the people. There was no question in their minds that their earlier labours had indeed paid handsome dividends.

3. The commune permits a high degree of decentralized decision-making and ensures maximum people's participation

It has been China's experience that rural development, by its very nature, requires decentralized decision-making. To achieve this, three levels of decentralization exist within the commune structure: the team, the brigade, and the commune itself. As stressed earlier, each level seeks maximum people's participation in planning, implementation and evaluation.

The Chinese philosophy of development is based on self-reliance and hard work. In keeping with this principle, each commune is challenged to effect its own development, largely on its own efforts and initiative. Responsibility is placed squarely on the smallest unit of production — the team. As the basic accounting unit, the team is responsible for its own welfare and survival. Assistance, as required and considered necessary from the brigade and the commune itself, can be provided.

Through this structure, the Mission observed that integrated rural development (IRD) is being achieved through a bottom-up approach. Farmers, at the team level, decide what services are required from above. The farmers are responsible for seeing that the brigade and commune level cadres integrate their action to meet these needs. Thus, coordination or integration is achieved, not from "top-down", but through "bottom-up" pressure.

Members have seen, too frequently in other parts of Asia, so-called "successful rural development projects". Many of these remain isolated or constantly dependent on infusion of outside resources. They fail to take root.

This trip renewed the Mission's conviction of the basic importance of one cardinal principle for rural development, namely: to make sustained headway, long-range commitments from both government and people are required. China has given both and benefitted immensely from them.

Any approach which has grown and prospered so well over a period of over 15 years must receive the serious attention of anyone interested in the development of the people and the resources of rural Asia. China's approach is one such case.

4. The commune organization achieves effective integration of rural institutions and services

The effective coordination of all the different institutions and services in a commune never failed to amaze the Mission. By the questions, the Chinese could see Mission members searching to find the key to func-

tional integration.

The fact that the required amounts of fertilizers and insecticides seemed always to be available and on time; that the education system so fully reinforced the production activities of each commune; that the agricultural research network was working on the real and immediate problems of farmers; that spare-parts were on hand for farm machinery; that irrigation water flowed when required — all these provided a startling contrast to the Mission's past experience with agricultural and rural development activities elsewhere.

Such integration is promoted by a variety of forces: industry, dedicated leadership, and the high "political consciousness" of the masses. But it also could not have been achieved without a logical organizational structure.

Women's Contribution to Development

To acquire an insight into the role of women in China today, and the services available to families, the Mission visited people in their homes, at work, in hospitals, clinics and schools. Discussions were held with individuals of various ages and standing, in both towns and rural areas. In a brief visit of one month, it is only possible to see certain aspects. But the aspects covered were, in the view of the Mission, relevant.

Overview

China is implementing programmes of equality for men and women in all fields. "Times have changed. Today men and women are equal", Chairman Mao taught, "Whatever men comrades can accomplish, women comrades can too". Mao also stressed that "without the awakening of women, who comprise half the Chinese population, China's war of resistance will not be victorious".

Both the ideology and organization of Chinese society encourage women to be full participants in community building. From what was seen and told to the Mission, it is obvious that Chinese women have benefitted from these programmes. Since 1949 the social structure of the country — and the role of women in it — has been completely changed. Since the advent of the new Marriage Law in 1950, women may no longer be treated as chattels. Family life has been revolutionized. Women today can be seen working side by side with men and seemingly on an equal footing. While women acknowledge that they must continue to press for full emancipation, their progress and status in the equivalent of a generation are without parallel in other countries.

Women make up 30 to 40% of the labour force today. With the establishment of communes in 1958, women started to receive equal pay for equal work.

There are new laws to protect the rights of women. A deliberate policy and ideology to guarantee these rights exists and a massive use of the media supports this policy.

There is, too, a comprehensive range of practical facilities such as laundries, bakeries, tailoring and mending shops, nurseries, creches, and kindergartens to reduce the burden in home making and child care. These structures and organizations ensure that services and information are available at the household level.

Old Society

In China's traditional society, women were denied all rights. They were, in effect slaves.

This situation did not change overnight.

From the beginning of this century, various women's groups in China pressed for a new role for women in the family and in society. Women were also ardent supporters of the 1949 Revolution. One of the first policies the new Government established on coming into power was a new policy on women. The Marriage Law of 1950 promptly abolished arranged marriages and bigamy. It established monogamy and equal rights for both sexes, and guaranteed the right of divorce to both sexes.

Nationwide land reform reinforced this policy. When land was redistributed to the peasants, women received their allotments in their own names. At this time, the Government also gave priority to the further organizing of women's groups. Raising the literacy of women had special priority.

When China introduced the system of work points, women found that they could now work and earn points. Hard manual labour was accorded more work points. Thus men earned more points. At that stage, remuneration was made to families rather than to individuals, thus maintaining the interdependence of family members. With the establishment of communes in 1958, women started to receive equal pay for equal work.

With China's increasingly diversified economy, more women were trained to operate modern farm tools. Women served as technicians in water conservation, forestry, fishing and meteorology, etc. In the cities, housewives also set up and worked in the small factories that were then mushrooming everywhere. In the process, they gained experience and skill — and a greater measure of equal rights.

Apart from factory and agricultural work, women today perform a variety of jobs: policewomen, doctors, teachers, nurses, pilots, engineers, cadres and as members of the People's Liberation Army. Over 50% of all medical students today are women. Women exceed men in pediatrics, psychiatry, internal medicine and obstetrics. A substantial number of barefoot doctors are women. All nursery and kindergarten teachers and midwives are women. Women are also active in literature, art and sport.

The legal protection accorded women is now written into the revised Constitution of 17 January, 1975. The Constitution specifically provides that: "Women enjoy equal rights with men in all respects".⁷

Political Clout

Women play an increasingly important part in political affairs as more are admitted into the Communist Party and Youth League. At the time of the Mission's visit, in the Fourth National People's Congress, the country's highest organ of power, 22% of the deputies were women. Three vice-chairpeople and 39 members of the Congress' Standing Committee were women.

Women have acquired power at the local level. Their social pressure to promote change through organized campaigns is substantial. Through meetings, discussions and study, women motivate people politically and socially to act for or against given issues. They know the local people and are trusted by them.

The State actively creates conditions which make it possible for women to combine home life with productive work outside the home. The Constitution specifies: "The state protects marriage, the family, and the mother and child".⁸

To free women for work outside the home, nurseries, creches and kindergartens care for children from the age of 56 days to seven years. Nursing mothers can take two half-hours off to feed their babies during the working day. Most factories have clinics. Public cafeterias and dining rooms help to relieve working women of household chores.

Many neighbourhood committees run service centres where laundry, tailoring, and mending, and many other jobs are done for women. In cities, there is an effort to house workers adjacent to factories. In rural areas, small enterprises located in the commune are within walking distance of the home. All these make it easier for women to work.

In China, family planning goals are pursued through late marriages. Contraceptives are free, and a wide range

is available. In their approach to family planning, the Chinese emphasize maternal and child health, i.e. that small families tend to ensure better health for mothers and children and free the mother for productive labour.

Women employed in State enterprises are given 56 days paid maternity leave. Light work is also assigned to them. Women may also retire at 55 years of age, and receive a pension equivalent to 70% of their former earnings.

Home Front

Homes are relatively modest. Some are spartan and others more comfortable. All homes visited had electricity. Most had tap drinking water; and for those that had not, a convenient source was nearby. Furnishings were simple.

Space around homes is invariably used for vegetable gardens, poultry and pigs. Even roof tops are used to grow creepers and dry nuts. What homes lack in space and landscaping is made up partly by tree-lined roads and green belts around villages.

Auxiliary services of communes ease some of the drudgery associated with housekeeping. If, for some reason, small children are not in creches and schools, grandmothers and other family members take on this task. Generally, the day's work is so divided that during the long noon break it is possible for the mother to return home and do some housekeeping as well as to rest. Again lighter work tends to be assigned to women; but this sometimes also results in lesser earnings even though the motto is: "equal pay for equal work". Committees and cadre members make it possible for women to gain further education through part-time schools and vocational classes. Women also have time to attend political and social gatherings.

Women's organizations also work within the revolutionary committees at the commune level. The vice-chairman of the revolutionary committee of a commune visited provided the information given below.

Within the women's organization in this commune, there were 17 committee members; one chairwoman, two vice-chairwomen and 14 ordinary members.

To understand the system within which women's groups work, it is first necessary to appreciate the decentralized system of services in China.

Cities in China are divided into districts of several hundred thousand people. These districts are further split into neighbourhoods or streets of about 50 000 people. The neighbourhoods themselves are sub-divided

into residents' committees or street or lane committees, of about 5 000 people. Residents' committees are then broken into groups of about 100 people.

Services are decentralized to the lowest level at which they can be given. Many social services are provided at the group level by elected group leaders and deputy group leaders. Residents' committees usually have health stations. Personnel in such stations are local housewives or retired people.

In each brigade, factory or clinic, there are committee members of women's organizations. Cadres in each team or brigade are elected by women. They act as assistants to the Party in carrying out the Party line. Also they instil political consciousness in women by organizing groups to study political documents. Such organizations bring together retired people to provide education for children about the "bitter past" and to do health work.

Civic organizations also take action to mobilize for given campaigns. Women's federations undertake propaganda work at brigade, team and commune levels. They also run political night schools for women which usually combine courses in literacy, and in social and political work.

At meetings, women learn how to organize seminar groups for study and for discussion and planned action. Women's federations are active in family planning. Social pressure encourages young people to limit their families to two children. Residents' committees women's groups organize study groups, arrange story-telling sessions, run table tennis and other games for young people and also other out-of-school activities. These activities include civic action: keeping the neighbourhood and streets clean, and sweeping up garbage, etc. Women members actively participate in the residents' and neighbourhood committees to study political theory, sanitation, health work, etc. They help in public security work. Women's federations arrange for the transport of sick people to hospital.

Apart from these, women's organizations do their share of work in the fields and factories and maintain close contact with people in their area.

Village Level Health Care

The image of the barefoot doctor or paramedic has symbolized to much of the world the delivery of health care in the remotest of villages. The Mission therefore studied health care systems, especially within the communes.

As early as 1950, China emphasized the priority given to public health by stating that "to defend the life

of the people by wiping out diseases means to protect the most important wealth and the most important productive force in the world".⁹

Prescription

In 1950 the Government defined four fundamental principles in securing adequate health care for all as follows:

1. Health care must serve the common people;
2. Priority must be given to prevention of disease;
3. Western and traditional medicine should be integrated and
4. Health campaigns should be coordinated with other mass campaigns.

These principles continue to be the basis for today's services. They have ushered in radical changes in medical education and practice and have brought about the training of vast numbers of auxiliary medical personnel. Health care resources have been redistributed from those who had most to those who had least. What emerged from systematic implementation of these principles was a low-cost and basically indigenous health system whose services were readily available in villages.

This service bears the stamp of Chairman Mao. He directed in 1965. "In medical and health work put the stress on the rural areas". Thus, the focal point in establishing health delivery systems is to teach the people, 80% of whom live in the countryside.

To ensure medical care for rural areas, thousands of workers were sent to join rural mobile medical teams. Middle level medical schools were established to train paramedical personnel. This saw the flow of greatly increased numbers of midwives, pharmacists, technicians and sanitarians into the system. These, in turn, were organized to establish anti-epidemic stations, maternal and child care services, and health education and vaccination programmes.

In addition, people were mobilized to perform health related tasks. Campaigns against specific diseases were undertaken. People were encouraged to keep their neighbourhoods clean and to build sanitation facilities. In all these health campaigns, it was repeatedly stressed that health is important, not only for individual well being, but also for the family, the community and the country.

With the coming into being of the communes in 1958, health units were integrated into this system. These units became responsible for health care in the commune and environs.

Various levels of health units have three features in common:

1. All health units carry out both preventive and curative work, including health education and sanitation.
2. Decision-making is decentralized. Thus, each health unit has the responsibility for dealing with its own problems.
3. A referral system inter-links all, whereby lower health care units depend on higher ones both for more complex medical advice and treatment. This system allows each unit to make the best use of its resources, within its own responsibilities.

Decentralization of health services and the referral system have enabled the Chinese to establish health units throughout the country. Services are therefore easily available to almost all citizens.

To reduce the burden of medical care on the larger institutions the Chinese have extended the outreach capacity of hospitals by creating small health units, such as factory health protection stations, and street health stations. Factory health stations provide emergency care, health education, and family planning.

Each county in China is served by a hospital. It is financed by the Government. At the next lower level is the commune hospital. This varies in size, depending on the number of commune members and their ability to finance health services. At the brigade level, there is a health centre. It functions as an outpatients centre and concentrates on child care, treatment of common ailments, care of pregnant mothers, family planning and health education. At the production team level, there is also a health station. It is generally staffed with one or two barefoot doctors who work in the fields, when not treating patients.

Village Physicians

Barefoot doctors are peasants trained for a four month period, usually in the commune or county hospital. During this time, they go through an abbreviated course in anatomy and learn to spot symptoms and causes of common diseases and their treatment, using both traditional and western practices. They are also trained in environmental sanitation, health education and first aid. The paramedics became known as barefoot doctors to indicate their peasant origin and village level service. They are selected for training by their fellow workers because of a record of serving others and because of their educational level. Clearly, they are respected by the people who know and trust them.

The barefoot doctors, in turn, train *junior health aids* who usually undertake many of the sanitation tasks. Immunizations and birth control work are also part of their responsibilities. Periodic training periods and supervision ensure their skill is upgraded and the quality of their work adequate.

Barefoot doctors usually work in health stations at the production brigade level. But much of their work, both medical and agricultural, is done with fellow members of the production team. They earn work points for medical work, just as they do for farming.

Workers doctors receive shorter training than the barefoot doctors. They provide primary health care in factories and health centres. The worker doctors perform health work part-time, while continuing their other duties. They are paid a salary similar to that of other workers in the factory.

The *Red-Guard doctors* on the other hand are usually housewives. They have less training than barefoot doctors or worker doctors. But they have close contact with the people of the area in which they live, and can refer patients to the facilities they need. They also do home visits. Apparently they have considerable influence on families in relation to family planning.

Rural midwives are generally trained for six months. Aside from providing birth control information and mother and child care, rural midwives provide pre-natal care and handle deliveries. The midwife usually knows the women of her brigade well. Usually, she has strong persuasive influence, especially in family planning. At every level of the health care structure, personnel are required to spread information about birth control. Factories, urban neighbourhoods, and communes have family planning committees which bring Party members and medical personnel together to carry out government policy. Family planning workers keep records of women in the areas for which they are responsible. They do home visits, and give information on family planning.

Marriage Freeze

Family planning goals in China are pursued through late marriage, abortion, contraception, and sterilization.

Government family planning programmes combine a medical and also a social and political emphasis. Couples are told not to marry early, with the recommended age for men being 26 and for women 23.

Contraceptives are free and a wide range is available. The pill is the most popular contraceptive because it is easy to use and because of its effectiveness. IUD's are also popular. Tubal ligations are common for women who do not want any more children.

Abortions are free and are performed when requested. Most are done in a commune clinic using vacuum aspiration. The woman is usually able to return home after a few hours.

Other factors contribute to the reduction in the birth rate. Due to a marked improvement in health care for mothers and children, traditional families no longer need to have many children in order to make certain that one male heir will survive.

Above all, the improvement in the status of women, their equality with men, their right to work, and heightened social consciousness, are contributing to acceptance of a smaller family.

Ounces of Prevention

The approach to maternal and child care in China is to emphasize prevention. Massive inoculation programmes for children are provided. These programmes commenced in 1950 and focussed on the eradication of smallpox, cholera, and tetanus. Very few cases of these diseases have been reported since that time.

In addition, there is a programme to inoculate every child against other common diseases. When children are brought into hospital for physical examinations they are routinely given BCG tests.

To pay for rural health service, the Government has encouraged the development of cooperative medical schemes. These schemes usually operate at the brigade level. Each brigade member pays a minimal amount (usually one to two yuan per year) for the service, and the brigade fund covers the balance. The money goes towards the maintenance and facilities of the services, and covers treatment costs. If the patient needs to be sent to a higher unit, the fees are paid by the brigade.

This report does not cover all aspects of health care. Nor does it imply that the system as outlined is a complete success. But from Mission visits to hospitals, clinics, and nursery schools, and discussions with concerned personnel, as well as studying some of the more recent literature on this subject^{10 11}, certain points are clear.

The Chinese regard good health as very precious. It is clear that the vast majority of rural people in China today no longer feel a sense of anxiety in case of illness. Services are available and within the financial reach of all.

Above all, the Mission noted that there is a sense of participation and unity among the people themselves in providing their own health system. The Chinese approach has been largely one of using common sense and relying on their own resources. Their equipment is locally produced and traditional medicine is not spurned. Nearly

all doctors have some knowledge of acupuncture. The Chinese are innovative in their use of manpower resources to disperse health services. People are trained to the level needed to do a given job, and the supervisory system ensures it is well done. A vast number of full-time professional workers are being trained and there has been an increase in the number of part-time workers.

The Chinese realize that effective health care depends on the best possible distribution of scarce resources: money and manpower. They are the first to admit that their system is not perfect, that much remains to be done — that programmes must remain flexible, training periods must be reviewed constantly, and that the system of services must be available to all. The Mission feels there is every reason to believe that this innovative and extremely practical village level service will continue to improve.

People's Participation

The critical importance of people's participation is now widely acknowledged as one of the principal lessons of development experience. Yet, there is little agreement on its meaning, even less on its practical application.

To the politician, participation is the common person's exercise of the vote. The bureaucrat understands the term as little more than consultation with the people. For the economist, participation means employment levels in terms of the theory of the marginal productivity of labour. The technocrat sees participation as the extent to which acceptance is secured for particular prescriptions of technological change.

In more recent times, the radical activist or social worker in the extra-governmental sector has insisted that "people should be the subject, not the object of change". The activist therefore regards participation as the voluntary self-involvement of people in action that follows from their "conscientization" and critical awareness of the reality of their situations.

All these approaches fall within two broad categories: the paternalist (the politician, the bureaucrat, the economist and the technocrat) which seeks people's cooperation with government; and the populist (the radical extra-governmental social worker) which aims to secure government cooperation with the people.

Most developing countries struggle to apply varying combinations of the paternalist approaches. But they have begun to realize that they are unable to generate authentic participation — and support — of the people.

On the other hand, they remain wary and mistrustful of the populist approaches. In fact, these are

suppressed when considered to be going too far, or are carefully restricted by registration to marginal activities of social welfare. Increasingly, the more successful populist approaches tend to become covert or subversive.

One of the Mission's principal observations and strongest impressions of the Chinese commune system is the degree of success it has achieved in synthesizing the paternalist and populist approaches. Modes of people's action are authentically participatory. They are also effective in generating increased productivity, heightened political awareness, and greater social well-being.

The Mission was reminded constantly of the Chinese belief in the Marxist dictum: "Of all the instruments of production, the greatest productive power is the revolutionary class itself". Marxist theory also makes the distinction between "production forces" and "production relations". It is argued both by the Chinese and others that the Soviet model emphasized "production forces" (technology, mechanization, industrialization, material incentives for human labour). The distinctive Chinese achievement, on the other hand, is the *clear priority given to rural production relations* (the relationship of the farmer to the land, to work, its surplus value, the social conditions of agricultural production, and non-material incentives).

The nature and high degree of people's participation in China observed by the Mission can be traced to this concern for the over-riding importance of the social relations of production. This is combined with the practical application of the Leninist principle of Democratic Centralism and the specifically Maoist principle of the Mass Line. Two quotations from Chairman Mao illustrate the Chinese attitude to participation:

On Democratic Centralism:

"We must conscientiously bring questions out into the open, and let the masses speak out.... Criticism and self-criticism is a kind of method. It is a method of resolving contradictions among the people and it is the only method... We must bring about a political climate which has both centralism and democracy... Without democracy there cannot be any correct centralism because people's ideas differ.... What is centralism? First of all it is a centralization of correct ideas, on the basis of which unity of understanding, policy, planning, command and action (the Five Unifiers) are achieved. This is called centralized unification. If people still do not understand problems, or if they have ideas but have not expressed them, or are angry but still have not vented their anger,

how can centralized unification be established?.... If there is no democracy, if ideas are not coming from the masses, it is impossible to establish a good line, good general and specific policies and methods. Our leading organs merely play the role of a processing plant in the establishment of a good line and good general and specific policies and methods. Everyone knows that if a factory has no raw material it cannot do any processing".¹²

On the Mass Line

Even more illuminating is Chairman Mao's description of the Mass Line. Its practice is constantly urged as essential to the dynamic and continuous interaction between the centralizing and processing functions of the leadership and the critically participatory role of the people:

all correct leadership is necessarily from the masses, to the masses. This means: take the ideas of the masses (scattered and unsystematic ideas) and concentrate them (through study turn them into concentrated and systematic ideas), then go to the masses and propagate and explain these ideas until the masses embrace them as their own, hold fast to them and translate them into action, and test the correctness of these ideas in such action. Then once again concentrate ideas from the masses and once again take them to the masses so that the ideas are persevered in and carried through. And so on, over and over again in an endless spiral, with the ideas becoming more correct, more vital and richer each time".¹³

In this interaction at practical day-to-day levels the participatory role of the people is the prior and fundamental one. Subjectivity of individual opinion and action expressed through full participation is translated through the processing functions of the leadership into the objectivity of community agreement.

An instructive manifestation of people's participation is seen in the continuous cyclical process that produces the annual development plan.

In the early autumn of each year the State Planning Commission distributes the relevant parts of the Draft Annual Plan to the 21 provinces, the five autonomous regions, and the three municipalities. The draft is based on past performance and on tentative assessments of future needs. Significantly, the draft itself has emerged from the actual experience, adjustments and discussions among people at the lower levels during the past planning period.

After study, the draft is further divided and distributed with tentative proposals to the next layer of administration, and so progressively to the basic organizational units in rural and urban areas, *viz.* the street committees and the production teams.

The Mass Line begins to operate most conspicuously and effectively at these basic levels. All members of the production team are involved in the detailed consideration of their relevant plan sections. After detailed discussion, they confirm collectively or modify the details of the plan as it relates to them: production quotas, farm inputs required, timing of agricultural operations, capital expenditures required, assistance needed from brigade, commune, county or other levels, etc.

Agreement is reached after several sessions of exhaustive discussion, questioning, studying and reference, where necessary, to other offices and units.

After this process, the primary plan at the most basic production team level then begins its way up to the next higher level, *viz.* the production brigade, which reconciles and coordinates its own plan with those of its component production teams.

The brigade plan, in turn, moves upwards cumulatively through the commune, county, region and province, where similar processes of reconciliation and coordination take place. Finally, all plans are assembled at the national level by the State Planning Commission.

Made in this way, the plan, at this stage, remains flexible, and subject to constant adjustments that may arise from contingencies and variations made in agreement between the various levels. The planning process is therefore a continuous participatory exercise, often necessitating alterations throughout the year. The groups concerned continue to participate till consensus and decision are reached.

The experience of the year is, meanwhile, constantly transmitted upwards in stages to the centre where, digested and processed, it then becomes the basis for the draft proposals to be launched downwards again in the next year's planning cycle.

The participatory role of the individual is particularly emphasized and stimulated at the most basic level: the production team. The latter is therefore deliberately kept small — rarely more than 15-30 families. This makes for maximum intensity and frequency of interaction and of community action and control.

Basic also to the participatory potential of the production team are three other factors:

1. Reinforcement in coordination and services provided by the two higher levels of the commune system — the production brigade and the commune;
2. Collective ownership of land and the principal means of production at each level; and
3. Recognition of the production team as the "basic accounting unit". These features are considered essential elements in the social relations of production, and are now specifically provided for in Article 7 of the Chinese Constitution of 17 January 1975.

The position of the production team (or in some instances the brigade) as the "basic accounting unit" gives it legitimacy. The production team is the principal collective source of power and responsibility for virtually all the activities and interests of all its members within its territorial jurisdiction.

The Mission had evidence from many fields (other than in the planning example) of how this exercise of collective power and responsibility at basic levels is being translated into genuine and fruitful participatory activity. With the support and coordination of the brigade and commune, the active guidance of Party cadres, and the State, policies of "positive discrimination" in favour of the peasantry result from this process.

Production. With definite annual plan targets to meet, the production team has clear objectives before it. These are known to all members. Ways to fulfil these objectives are the subject of constant discussion among team members. Help and guidance, where needed, come from the brigade and commune personnel, as well as from Party cadres.

The role of the State is particularly important. The State provides incentives for participation (always to the collective not to the individual) — *viz.* the guaranteed price for the production quota, the 30% premium for over quota sales, sometimes subsidized prices for farm inputs, and deliberate "positive discrimination", through market intervention and other ways, in favour of the farmer.

Particularly disadvantaged production units are always noted for preferential attention by the State. Except in these special cases, the ideal to be striven for — in emulation of Tachai — is total "self-reliance" and independence of State and other external aid.

While organization and participation are geared to production, they are never allowed to degenerate into mere "economism". Maoist guidelines are constantly employed by Party cadres, at all levels, to ensure that the people do not lose sight of the overall purpose

of participation, *viz.* "political consciousness", of the need for increasing peasant solidarity in the continuing class struggle.

Investment through Mobilization of Human Resources. Popular participation, made possible through the institution of production teams, brigades and communes, has marshalled massive capital in rural areas, through mass campaigns involving human labour.

The Mission saw examples of this everywhere. The most striking perhaps were the Miyun Reservoir, the Red Flag Canal, the work of the "Paupers Brigade" at Shashiyo (Sha Shi Yo) and the production brigade at Dazhai (Tachai). In all these cases the initiative, organization and sustained effort came almost entirely from the members of the teams or brigades. They responded to their own collective needs by common participatory action.

Similar instances of massive mobilization campaigns were described to the Mission in major water conservation and control projects on the Huai, Haiho and Huang He Rivers. These involved the investment of millions of days of human labour.

In day-to-day production work, allocation of labour to specific tasks is done by the elected team leader. Work-day records are kept by a group recorder or a work point recorder for purposes of assessing work points. Unemployment or idle labour does not pose a problem because there is no individual wage system. There is always work to be done, if labour is at hand: collection of manure on roads, repair of fences, whitewashing of tree trunks (assigned to children in one unit we visited). Labour used on these is a net gain to the community.

The concept of marginal productivity of labour, as a principle for the deployment of human resources, has as little meaning in the production team or brigade as it has in a large family.

On the contrary, the nature of the Chinese rural institutional structure makes for the maximum investment of the "disguised savings potential": unemployed human resources which, in other countries, tend to run to waste.

The Mass Campaigns. The numerous mass campaigns launched in China since 1949 represent another form of intensely-participant activity. One particularly apt example is the "Make China Green" campaign, started in the fifties. Expansion of cultivable land, which earlier caused extensive forest denudation and soil erosion, has been countered by a continuing mass people's action programme in reafforestation. Over a 100 percent increase in viable forest area had been achieved by 1971. The

visual evidence is there too: all throughout the Mission's travels, members saw kilometre after kilometre of tree-lined urban and rural roads.

Mass campaigns have also been directed towards the improvement of the biological environment and public health, especially in rural areas. Among these were the early mass campaigns to eradicate flies and mosquitoes, to promote the obligatory fermentation of night soil (which brought down the incidence of dysentery), and to stimulate the construction of hundreds of thousands of new wells to provide safe drinking water.

In all these campaigns, the methods used were directed towards the creation of a psychological climate among the people (through study groups, wall posters, radio, etc.). This helped generate the necessary collective participatory effort to achieve the objectives with minimum reliance on the State machinery.

The Mission considers that there is little doubt these campaigns achieved the results intended. They have also contributed to greater social awareness of the need to improve and maintain high standards of public hygiene, as an essential element in the development process. Mission members will not soon forget the sight of five waitresses, in a Guanzhou (Canton) restaurant, grimly chasing two stray flies!

Income Distribution. A particularly illuminating illustration of the quality and range of participation in China is the system adopted for the distribution of the income earned by each collective (production team or production brigade). After numerous experiments in the early stages, the simple work point system in the national model of Tachai is beginning to receive general acceptance. The Mission studied the Tachai work point system in some detail.

Income distribution, among Tachai Production Brigade members, is based on work points. These are awarded once a year at a full brigade meeting based on the results of self-assessment by individual members, subject to comment and ratification collectively by the brigade. Work points are not related merely to the type or nature of work assigned to members. Political consciousness is the most important factor in determining a member's work point norm (on a scale of one to ten). The method is described as "self-assessment and mass appraisal". In one variation or other, it is becoming universal in rural China.

Mission members examined the printed work point record book used by individual members of brigades or teams. Apparently, this book is now considered unnecessary because of the greater mutual trust and higher degree of political consciousness.

The Tachai Production Brigade or "group" recorder simply notes the days or half-days worked by members in one book for all. The earnings entitlement of each is then tallied at the year's end by multiplying each member's agreed work point into the number of days he or she worked.

Next, the total of all work point workday entitlements of all members is then divided into the net brigade income (i.e. the yuan value left after tax, accumulation fund, etc.). The resultant figure is the monetary value (in yuan) of each brigade work point that year.

Finally, this value multiplied by each member's total work points earned for the year gives his or her individual gross income in yuan.

In 1955, 10 work points were valued at 0.3 yuan and per caput income was 66 yuan. In 1974, 10 work points were valued at 1.5 yuan and per caput income was 176 yuan. From the later figure is deducted the value of advances made during the year for grain, vegetables, fuel, medical charges. In 1974, after these deductions, the average per caput "take home" cash income was 116 yuan per year, or an average family income of approximately 500 yuan per year.

(Per caput grain consumption averaged 260 kg per year. The brigade's grain reserve was 150 000 kg excluding the amounts in individual family stores).

Production figures for Tachai in 1974 were as follows:

1974 Grain Production Plan quota	160 000 jin
Total production	770 000 jin
Total sales to State	300 000 jin
(The State Plan Quota has been 160 000 jin since 1971)	
Reserve for seed	6 000 jin

It would seem that the State delivery quota has been kept deliberately low, so that the brigade can earn 20-30 percent more. The State buys above-quota-grain at 30 percent higher than quota grain. This accounts for the brigade's ability to enlarge its public accumulation fund for capital and welfare works. The quota can also be regarded as a concealed subsidy, even possibly a reward for political advancement.

Tachai income figures are as follows:

1974 total income	198 859 yuan
Production costs	61 437 yuan
Public Accumulation	
Fund	46 961 yuan (24%)
Tax (agriculture only)	1 610 yuan (less than 2%)
Total net income per head	176 yuan (per year)

Tachai's unusually low agricultural tax (less than 2% compared with a general average of 5-7%) reflects the extent to which its production has increased since 1950 when the agriculture tax was first fixed.

Sideline occupations now account for 36 percent of total brigade income.

Tachai's heavy rate of investment drawn from its public accumulation fund (24% in 1973 and 1974 as against 4% in 1955) reflects again its relatively higher socio-political consciousness.

After analyzing the Tachai system, the Mission considered that the following features merit closer study:

1. Members of the brigade are solely responsible for and in control of both the accounting exercise and the decisions it reflects, e.g. the amount to be distributed as income, public accumulation fund, etc.
2. Brigade members themselves also collectively decide on the items on which the public accumulation fund is expended — housing, investment, welfare, tractors — e.g. the decision to build the impressive housing block in Tachai's main street was made by the brigade members — apartments are rented to members at 3-5 yuan a year (inclusive of gas, electricity and water).
3. Tachai since 1964 has been a nation-wide "model of excellence" not so much for its feats of productive effort as for its high degree of "political consciousness".

When the Mission was leaving (5 October 1975), a national meeting on Tachai began its sessions to launch a special "Learn from Tachai" mass campaign. Tachai is thus the epitome of the Chinese collective spirit and the Chinese ideal of the participatory community.

A somewhat distinct but particularly important feature in the participatory process is the small group ("hsiao-tsu"). It is deliberate Party policy to promote small group activity as extensively and intensively as possible among the Chinese population.

The small group network is, as it were, another dimension of the participatory process encouraged by "Democratic Centralism". Small group activity forms part of the more specific objectives of participation such as a mass campaign or the planning process. But more often, it is used for wider and more general purpose: political study, mutual criticism and self-criticism; mobilization of social pressures to change attitudes and conduct; as a means to translate Government or Party policies in terms of daily rural life and experience; to elicit dialogues and constructive criticism of local and national events.

Small groups are also particularly important in the day-to-day process of communication within Chinese society. They translate ideology and policy in terms of the local milieu. The groups spur individuals to be more analytical about their actions and the reality of situations in which they are placed.

Small group activity is also a means of training in careful reflection and analysis which can contribute to informed participation as citizens of the national community.

The Mission found micro-statistics of development activity available at the levels of production brigade or team, as witness to the quality and intensity of participation. In all the numerous briefings the Mission received on its field visits, the detail and range of these micro-statistics presented to us by farmers and their leaders left no doubt of the widespread local awareness, vigilance, and understanding of community problems.

The Mission was constantly reminded — in briefings, detailed discussions, by field evidence, films, etc. — that this growth of participatory activity constantly contends with "commandism" in bureaucratic, technocratic and political forms.

A major objective of the Great Proletarian Cultural Revolution, Mission members were reminded, was to cleanse the system of growing threats to this intensity of participatory activity. The post-Cultural Revolution institution of the Three-in-One revolutionary committees included worker participation in management at every level from province to production team. This was deliberately created to ensure the effectiveness of people's participation and people's supervision against the spreading "contagion" (even from the Party and Party cadres) of "bureaucratism", "economism", and "commandism".

Other chapters of this report provide further details of how participatory activity, by the people, is extended to local scientific research and experimentation, to the selection of young commune members for higher study, and to the collaboration with youth groups in specific

studies and surveys.

It is the Mission's impression that in every area, whether at levels of decision-making or action, there is a substantial degree of informed involvement of the people through their local organizations.

The brigade and commune are designed to provide support and coordination, and progressively enlarge the scope of participatory activity. The State (from the centre to the county) is also committed to policies that deliberately focus on promotion of the collective interests of the production team. Popular participation may therefore be said to have become institutionalized in China.

The Mission pinpoints the following conditions and factors that have made possible this intensive participation activity in China:

1. The acceptance and application of the Marxist theory that basic changes in production relations must precede (and are indispensable for) the development of production forces. In terms of policy, this has meant a fundamental land reform programme and structural changes. These resulted in the organization of people in functional collectives in the commune system;
2. The early experience of the present Chinese Government and community during the pre-1949 period in securing the support and participation of the rural peasantry in the common struggle against the Kuomintang and the Japanese;
3. The commitment of the Chinese Government and Communist Party to the political system of "Democratic Centralism". This makes for greater centralized control, direction and guidance by the State and Party cadres, while still permitting a much greater degree of decentralization of power and responsibility to the people;
4. The firm and single-minded commitment of Chinese leadership to the priority interests of the majority of the Chinese people -- the peasantry -- as expressed in "positive policy discrimination" in almost all other economic sectors (including direct control of market forces) in support of this priority.

The relevance and applicability of China's lessons in participation to other developing countries are obviously limited. There are constraints imposed by very different political, historical and socio-cultural circumstances. Nevertheless, the Mission feels that certain elements of the Chinese experience do offer possibilities of adaptation, if not replication, by other countries.

One area of promise is organization of the rural peasantry in small functional production units, especially of small and disadvantaged farmers. These would be similar to the production teams of China, so that these could serve as more effective "receiving mechanisms" for a government's distribution network of farm inputs, and services. Significantly, this has been suggested too by FAO's Small Farmer Programme in Asia.

Another approach that seems to have potential would be the gradual promotion of collective production units, beginning with mutual aid groups, in which seasonal collective agricultural operations are encouraged, without interfering with individual land ownership rights. Most countries have traditional forms of mutual aid which can be revived. One method of encouraging collective agricultural operations is to provide greater incentives to such collective units, than to individual producers.

1 *New China's First Quarter Century*, Peking, Foreign Languages Press, 1975.

2 Article 23, *The Constitution of the People's Republic of China*, *op. cit.*, (p. 23-24).

3 *Peking Review*, No. 46, 14 November 1975, (p. 11).

4 Article 12, *The Constitution of the People's Republic of China*, *op. cit.*, (p. 16).

5 Article 7, *op. cit.*, (p. 14).

6 "The state applies the socialist principle: 'He who does not work, neither shall he eat' and 'from each according to his ability, to each according to his work'", Article 9, *op. cit.*, (p. 15).

7 Article 27, *op. cit.*, (p. 27).

8 Article 27, *op. cit.*, (p. 27).

9 Quoted in Paterson, E.H. and Riskin, S.B., *Health Care in China: an introduction*, Geneva, Christian Medical Commission, 1974, (p. 18).

10 *ibid*

11 Sidel, R., *Women and Child Care in China - A First Hand Report*, Harmondsworth, Penguin, 1974, (p. 207).

12 Schram, S. (Ed.), *Chairman Mao Talks to the People: Talks and Letters, 1956-1971*, New York, Pantheon, 1974, (p. 158-187).

13 Mao Tse-tung "Concerning methods of leadership" in *Selected Works of Mao Tse-tung*, Vol. 3, Peking, Foreign Languages Press, 1967.

CHAPTER VI

PEOPLE'S ORGANIZATION: TRANSFORMING A "SHEET OF LOOSE SAND"*

The Chinese claim that a principal factor responsible for their development breakthroughs — described in earlier chapters — is the organization of the Chinese people. Through communes, the people are organized simultaneously for productive effort, community action and group and individual self-development, through popular participation and self-reliance. The communes translate into practice Chinese concepts and policies regarding people's organization. Hence, the Mission felt this aspect merited close study, especially in the light of Sun Yat-sen's despairing remark, made half a century ago, that the Chinese peasantry constituted a "sheet of loose sand".

Today, misunderstanding persists regarding the nature and role of people's organizations in China. Ideological differences give rise to varying concepts of the State, society, the individual; democracy, government, and what is "public" or "private".

Questions are, therefore, raised: What do the Chinese consider to be people's organizations? What are their main distinctive features? How do these resemble people's organizations in other countries? etc.

The Mission believes that an understanding of people's organizations will help place a study of Chinese agricultural development in a better perspective. Therefore, this report provides extended treatment of these questions.

View From Without

Outside China, the term "people's organization" loosely describes a variety of voluntary, autonomous associations and institutions. Together, these are commonly known now as the "non" or "extra-governmental sector". These terms have an accepted place in the Charter of the United Nations and its agencies.

Common to all is their claim to a "voluntary" non-profit character, independence of direct government control and freedom from "political motivation".

Equivalents for the new indigenous groups in developing countries have been the "non-governmental" voluntary agencies that emerged in Europe and the USA.

* Also translated as "a *tray*" or a plate of loose sand".

In developing countries, government attitudes towards their indigenous groups have generally been laissez-faire. The attitudes are tempered on the one hand by government supervision through registration, and on the other by varying degrees of active promotion. This is true especially in regard to primary groups (cooperatives, rural development organizations, etc.).

A trend to integrate indigenous groups more closely in national development efforts coupled with closer supervision has emerged in recent years.

View From Within

China's people's organizations have roots deep in their traditional predecessors. The Chinese view is shaped by that history. Like all other countries, China developed over the years its own traditional rural organizations. As elsewhere, these were basically of two kinds, reflecting the distinction between State and society. For tax collection, the State imposed the *pao chia*; for policy and administrative control, it introduced the *li chia*. Both were artificial administrative groupings of rural households.

Within the "natural" village society, the constant pressures of war, famine, external oppression, and natural calamity generated spontaneous forms of mutual aid and work organization. In the border regions, when the Chinese Communist experience was moulded in the Yan'an (Yenan) period, there were traditional forms: the *pienkung* (labour cooperation), the *chakung* (collective hiring out of labour), the *huonin* (joint use of work animals) and the *huochingti* (joint tilling).

Most of these grass-root village work organizations were kinship groupings, based on clan and family. They were often short-term, limited to specific purposes. Generally, they were dominated by clan elders, rich peasants, or the local rural elite.

Over and above these village organizations were the secret societies, the earliest traditional Chinese form of "mass organizations". These tended to be the foci of people's resistance to feudal oppression, and the organizational centres for the numerous peasant rebellions.

These traditional organizations rarely reached the lowest levels of peasant society. Economically and poli-

tically, the Chinese farmer remained an isolated and powerless figure.

The Chinese frequently use, both in authorized English translations and through interpreters, the phrases: popular organizations, people's organizations, social organizations, mass organizations, etc.

If one were to apply the categories of western sociology to people's organizations in China, *primary groups* would mean the mutual aid teams based on earlier traditional village organizations, the farmer associations of 1949-52 and those set up in the sixties, the production teams, the smaller production brigades, and in the cities the residents' committees and the neighbourhood groups. In all these, member relations are "face to face", direct and frequent. *Among secondary groups* we would include four main types of what the Chinese generally call "mass organizations" or "social organizations":

1. The National Trade Union Federation, the Women's Federation, the Communist Youth League, the Students' Federation and the various Red Guard groups that emerged after the Great Proletarian Cultural Revolution.
2. The many friendship associations, committees and institutes for promoting relations with other countries;
3. Professional or technical associations;
4. The vestigial remnants of the old democratic parties that formed part of the early United Front with the CCP.

Transmission Belts

It may not be relevant to describe these secondary associations in any detail. We need only note that their main purpose, especially those in (1) above, is to serve as transmission belts or extensions of the CCP for its ideological and educational programmes. Some continue to have other service, welfare, and executive functions (e.g. the Women's Federation in relation to the Marriage Law and women's rights; the Trade Unions' Federation in relation to labour insurance, etc.). The Great Proletarian Cultural Revolution showed that in certain circumstances the Chinese socio-political system has room for national and local pressure and civic groups to emerge and play an active role (e.g. the Red Guard groups, student activists, etc.).

Freedom of association is written into the Constitution of 17 January 1975.¹ Clearly this freedom is subject to restrictions based on ideological and political consideration. All mass associations are required to be registered; and to conform to certain regulations, the principles of democratic centralism, and the Party line. In these re-

spects, China's practice is in no way unique. Similar restrictions are imposed in all other countries.

There are other groups in China which cannot be easily classified as primary or secondary. The most important of these are the communes, and the larger brigades. They may be called *intermediate groups* — intermediate in the sense of being in varying stages or forms of transition from State control to direct people's control. The commune is the nearest to having made this transition. It still retains certain State officers, but has now replaced the *hsiang*, the earlier State administrative unit. On the other hand, it is not a small "face to face" primary group. Nor is it a "mass organization" in the sense of those described above. The commune and the large brigade also have another intermediate function, as coordinating and service units to the primary groups and as links with the State administrative, planning and commercial organs. In all these, the key Chinese concept is : changing the social relations of production has priority over development of production resources.

Included among intermediate groups are the commercial organizations, e.g. the supply and marketing cooperatives, which are in fact State-controlled and resemble similar large "cooperatives" in other developing countries. They too are neither "face to face" groups, nor "mass organizations" yet, and are at the earliest stages of transition from State to people's organizations.

Primary Groups

The Party's epic Long March in 1934 became a quest not only for new rural base areas but also for new policies of relationship to the peasants, and more effective forms of organizing the farmers for production, ideological education, and mass support. The Yan'an (Yenan) period 1934-49 was one of agonizing trial and error. On 1 October 1943, the Party Central Committee issued its directive entitled "Starting a Movement to Reduce Rents, Produce, Support the Government, and Love the People". This directive made clear the vital importance of basing rural organization for production on traditional mutual aid practices. The Party had finally begun to sink its roots in the traditional mutual aid organizations of the "natural" Chinese village.

Seen in retrospect, the Party directive of October 1943 was the seed from which grew China's people's organizations of today: through the stages of the farmers' associations, the mutual aid teams, the low-level agricultural production cooperatives, the advanced agricultural production cooperatives into the full bloom of the three-tiered structure of the people's communes.

In the Chinese language, a people's commune is "gung she". "Gung" means public; "she" translates into

organization. In China, therefore, public organization is equated with people's organization.

It is also significant that when the Chinese translate "gung she" into English, they use the phrase "people's communes".

It is against this background that the Mission outlines what it considers to be the significant features of people's organizations in China. One is the principle basic to people's organizations in China: collectivity.

Stages

China is a State committed to socialism and advancing towards communism. It is, therefore, a fundamental belief that individual ownership must yield to ownership by the whole people. The Chinese Constitution of 17 January 1975 distinguishes two main forms or stages of ownership at present: "socialist collective ownership by the working people" and "socialist ownership by the whole people".²

Even with the early phase of land reform, it was clearly intended that individual peasant ownership was only a temporary phase. Despite individual ownership of land, the poor farmer still remained isolated, insecure, and vulnerable. Ideology, reinforced by experience with the peasantry, taught the Party that only with solidarity could the farmer progressively grow in productive strength and freedom from oppression.

The Chinese, therefore, see ownership as part of a continuously expanding process of collectivization. Full ownership of the means of production and the "basic accounting unit" are to move progressively upwards: from the production team through the production brigade, as already with Tachai, to larger collectivities (at commune, county and provincial levels). Consummation will be achieved when ownership, operation, and accounting are entirely by the society (or organization) of the whole people.

Thus, the Mission observed that one objective of the national conference on Tachai, held in October 1975, was to launch a campaign to carry the present stage of collectivization another step forward.

Production

A priority Chinese concern continues to be people's organization for production. The Chinese regard it as the basic pre-condition. The individual small farmer, on a small holding, is too isolated and poor to hold his or her own against larger farmers.

Three implications flow from this principle. Collective organization of people is directed to: (1) collective

production; and involves (2) *collective* incentives, and (3) *collective* self-reliance.

These factors contrast sharply with people's organizations in most other countries. In the latter, organization through agricultural production cooperatives or farmers' associations is not to *promote collective production*, but to *service individual peasant production*. Incentives, though organized through credit, and marketing and supply cooperatives, are directed to individual effort. They are intended to stimulate the individual member. Self-reliance likewise is conceived in terms of the individual.

Outside China, people are organized to help them serve their own interests better. In China, people are organized so that individuals can help each other to serve common interests. Individual well-being then flows from the total well-being and achievements of the collective.

The right of peasants to manage their own concerns (as in the team, brigade and commune) underpins the collective structure. A social consciousness is generated, as is a sense of recognition, participation and belonging. An assurance of personal security and of protection against both domination and neglect — bogeys that have haunted peasantry, always and everywhere — are also generated.

Employment and Mobilization of People

It is the collective principle in people's organization that has made possible, especially at the production team level, full employment and mobilization of rural manpower. People's organization ensures maximum investment of the "disguised saving potential" in human labour for rural infrastructural projects. Collectivized organization for production and investment eliminates labour as a market commodity and the individual farm wage as a direct incentive. Chinese theory and practice simply run counter to the economic principle of marginal labour productivity as the determinant of rural employment levels. The production team modernizes the flexibility and human intimacy of the old extended family.

Each individual is a member of a primary collective: the production team. Where the size of the work is beyond the capacity of the primary collective, the resources of the "intermediate" collective — the brigade and commune — are drawn upon.

In effect, the Chinese concept of the collective is basically that of a family unit designed to expand or contract to match the demands of work with the supply of workers.

The responsibilities of the collective can stretch,

as the Mission observed, from the assignment of children to gather manure, to the mass mobilization that made the Red Flag Canal a reality. In this way, literally billions of days of human employment have been created for productive and meaningful work for the collective.

What motivates people for such collective work?

The Chinese are keenly aware that the larger the collective and objectives, the weaker the motivation tends to be.

The Chinese answer is a combination of material and non-material incentives. Workers receive pay in terms of work points. They are also constantly subjected to social pressures: discussion, criticism, and study of the collective needs.

Security and Welfare

The same principles explain why visitors to China see no beggars. Every person in China is automatically a member of his or her primary collective group — production team in the village or neighbourhood group in the city — as he or she is a member of a nuclear human family.

Membership of a primary people's organization in a village or city is, thus, involuntary, if not overtly compulsory. The individual is bound to the group through a ration card. Each individual's ration card for grain, oil, cloth, etc.) is attached to the store of the primary group. The ration card is not transferable, except with the group's permission.

Paradoxically, beggars and vagrants abound in countries where membership in primary people's organizations is based on "voluntary" membership.

In the basic rural primary group — the production team — care of each member is the collective responsibility of all. Each team has a separate welfare fund from which it provides for the genuinely disadvantaged — the sick, the old and handicapped. Here also, the collective interests of the primary group, its social pressures, public criticism, and local leadership, combine to eliminate the loafers or malingerers. "He who does not work", as the 1975 Constitution puts it, "neither shall he eat".³

Similarly, all other aspects of public security, health and welfare, administration, and the settlement of disputes, are the first and basic responsibility of the primary group of people's organizations.

Integration and Linkages

People's organizations blanket the whole of China. There is no person in China who is not a member of one (often more than one) people's organization. State ac-

ivity is regarded as necessary, but is subject to criticism. The Chinese distrust of "bureaucratism" and "commandism" is rooted in generations of oppressive mandarin rule.

Alongside the ubiquitous nature of people's organizations in China is the constant effort to integrate them into the total socio-economic system by an intricate network of horizontal and vertical linkages.

The flexible and dynamic planning system was described in previous chapters of this report. A less well-known illustration is the way the mass organizations like the Trade Union's Federation, the Women's Federation, the Communist Youth League, the Red Guard groups, etc., are linked to the commune structure. These mass organizations serve as auxiliaries to the Party in the latter's educational/ideological programmes, and as reservoirs for new basic level cadres.

Since the Great Proletarian Cultural Revolution, a most important means of linkage is the system of revolutionary committees (from the provincial levels to the communes). These committees combine Party cadres, technicians, peasants and workers to form the new permanent management organs. The critical new element in this Three-In-One combination is the active participation of actual workers and peasants at the management level in all units. Every briefing session the Mission had, during its visit to nearly 40 work units, was with the members of each unit's revolutionary committee, never with a single official or Party member.

Spark Plugs

The meaning of "cadre" in China is simply a leader, whether in the army, the Party, or a State or commercial organ, or in a people's organization. The term is used not only with reference to the Party. As far back as 1938, Chairman Mao referred to "the need for many leadership cadres possessing both ability and virtue". In his call for "non-Party cadres", he urged that the fullest use be made of the "great leadership talent that exists outside the Party".

The concern has always been for more quality cadres to work with people's organizations *at the basic rural levels*. There was massive recruitment of such cadres from demobilized People's Liberation Army (PLA) personnel during the revolutionary upsurge of the Great Leap Forward.

Nevertheless, recruitment and training of cadres to cover the country's network of people's (and other) organizations still remain a problem. Four massive campaigns were underway at the time of the Mission's visit to create a nationwide human reservoir of cadres to

fill the two basic needs: the quantitative need for an adequate supply, and the qualitative need for "redness" with expertise.

The first mass campaign was the Great Proletarian Cultural Revolution itself which generated the still continuing momentum of the Red Guard Movement; the second, the special May 7th Cadre Training Schools launched by Chairman Mao in May 1966 "to train (potential or present) social lords into social servants"; the third, the encouragement of regular mass youth work-camps in the countryside; and the fourth, the revolution in education that aims to make all society a school, to cater to "worker-peasant-soldier students", and to integrate political consciousness with relevant specialist knowledge and skills.

Top Bracket

The relationship between people's organizations and political leadership in China is not seen in the terms (familiar outside China) of a sovereign benign Government and a "voluntary" non-governmental sector, based on "freedom of association".

In China, the paramount political authority is not the Government but the Party. Legitimacy for the Party's political leadership derives ideologically from Marxism-Leninism and from Mao Tse-tung thought and, legally, from the National Constitution. Together these two sources give expression to the more basic moral legitimacy of the Party as "the core of leadership of the whole Chinese people". Many provisions of the 1975 National Constitution and the 1973 Party Constitution underline the supremacy of the Party over the State and its special role.

The State (i.e. Government) in China is the instrument of the Party. The Party, now comprising a membership of 30 million, is responsible for the organization of the people, using State organs where necessary.

Two startling conclusions emerge: people's organizations are indeed non-governmental or extra-governmental in China. What is more significant, the Party is the supreme people's organization in China. The Party is also not merely non-governmental or extra-governmental, but supra-governmental. Through the Party (the supreme body), people's organizations are meant to control and direct the Government.

The Chinese point of reference is the people, not the Government. The distinction the Chinese make is between the people's sector and the non-people's sector, rather than between the governmental sector and the non-governmental sector. The rationale of the people's commune is that it represents the first major stage in the

absorption of the Government by the people's sector at the level of the *hsiang*, i.e. "socialist collective ownership (and management) by the working people". From this stage, it is envisaged that absorption will continue progressively to "socialist ownership (and management) by the whole people".

Political Consciousness

People's organization has vital relevance as a principal objective of the Chinese leadership — the development of the Chinese people's political consciousness.

During field visits ranging from kindergartens to pig farms to embroidery and jade factories, one of the most common terms the Mission encountered was "political consciousness". Like most other visitors to China, conditioned by Western connotations of the word "politics", it took time for the Mission to appreciate the meaning which the Chinese give to the term.

A simple definition of political consciousness would be a sense of the priority of community over the individual, and a sense of the priority of the working class over all other classes; and an understanding of the implications of these priorities for both individuals and groups, in terms of the power, duties and rights of each in relation to the other.

The area of action that the Chinese consider political is, therefore, far broader than that in other countries. Almost every act that has significance or exemplary value for the collective, is political: collection of manure, conscientious swatting of flies, the care of tools, coming to work on time, etc.

People's organizations are the channel through which their "lead" organ — the Party — inculcates this socio-political awareness in the Chinese. This awareness, in turn, is the basis of the non-material incentives for stimulating change among the masses.

Bitter Speech

The Mission observed how even Chinese museums, parks, art galleries, etc., are made deliberate tools of a process — simultaneously political, educational and ethical — whereby people are made aware of the inequities of the feudal and colonial past and of the need to overcome these through collective class struggle. Similarly pensioners and old people, with experience of pre-1949 suffering, are deliberately employed in the conditioning of the young by "speaking bitterness" (i.e. relating their sufferings of the past).

In Shanghai in the Kung Jan Workers' Settlement Kindergarten for six-year-old girls, members observed

how a young teacher, with the help of flip charts, stimulated animated group discussion on a story illustrating the need for a sense of community. The Mission was told that it was watching a kindergarten lesson in "political consciousness".

The Chinese do not believe that private greed results in public good. On the contrary, it is firmly held that concentration on the public good is the best means of satisfying private need.

China's leadership is the first to admit that the general level of political consciousness is below ideal levels. The continuing struggle between the "two lines" is evidence of this. Nevertheless, what impressed the Mission was the intensity of the leadership's effort to strive towards its goal. Already China has shown that a developing country need not necessarily be a "soft State".

"Quis Custodiet...."

In this massive effort at political conscientization, a crucial factor is the relationship between the Party as the "lead" people's organization, and other people's organizations. The relationship constantly sought after reflects the organizational principle of "Democratic Centralism" and the operational principle of the "Mass Line".

Why is this relation so critical?

These two principles — the organizational one of "Democratic Centralism" and the operational one of the "Mass Line" — are fundamental. It is only through them that the Party's roles as vanguard and leader are guaranteed.

The Chinese record is not one of undiluted success. Rather its chief lesson is one of conscious, constant struggle against failure.

Yet the preoccupation and emphasis on the People — Party interaction to ensure purity of political will has resulted in one other outstanding feature: *viz.* the much greater identity of interests between the people and their political leadership than is evident in other developing countries. In China, more than elsewhere, the needs of the people are the priorities of their leaders. Political will of the leadership is seen as a function of the political consciousness of the people.

The Chinese experience is witness to the fact that this identity of Party and People is not easily won; and once won, not easily retained. As elsewhere, the tendency always exists for the leadership to become alienated from the people through "commandism", "bureaucratism", "economism", and the corruption of power and vested interest to which all leadership is vulnerable.

Who then is to purify the Party, to guard the guards, to lead the leaders?

Chairman Mao had a forthright answer: it is the People themselves who must purify their Party, guard their guards and lead their leaders. The people must be led to exercise mastery over their leaders.

In China, the organization of people through nationwide people's communes is the first major stage in their quest for this mastery. Enviable levels have been reached of cohesive self-reliant organization, of community consciousness, and of discipline and action. The success is neither unqualified nor final. Yet, the Chinese surely no longer answer to Sun Yat-sen's sad description of them a half century ago — as "a sheet of loose sand".

1 Article 28, *The Constitution of the People's Republic of China*, *op. cit.*, (p. 27-28).

2 Article 5, *op. cit.*, (p. 13).

3 Article 9, *op. cit.*, (p. 15).

CHAPTER VII

TRANSFERABILITY OR RELEVANCE OF THE CHINESE EXPERIENCE

The visitor returning from China is often asked: "Can it be done elsewhere?" It is a question that is often addressed by the visitor to the Chinese host.

The Chinese invariably respond that their achievements are inextricably bound up with China's political, economic and social system. Thus, they are not transferable in isolation from it. The Chinese also insist that socialism is a common human goal; but the people of each society must seek their own unique ways to achieve it.

At such a level of generality, the answer is correct.

In fact, the social and economic organization of production in China today — and the ideas and values on which it is based — seem to permeate the system thoroughly. Consequently, what at first sight may appear to be purely technical approaches, on closer examination, often turn out to be functionally and organically part of the Chinese system. They are rarely transferable to other environments — at least without modification.

Still China has learned (by positive no less than negative examples) from the development theory and practice of the West. China owes its own ideology to a Western philosophy.

Beyond this, China teaches a fundamental lesson: that its own learning process has assimilated, selected and "sinified" both Marxist and Western development experiences.

In this Chapter, the Mission tries to break down the successful aspects of Chinese agricultural and rural development into their component parts. The Mission feels that, through this process, many of these achievements can, in fact, be applied in other political, economic and social environments, if not completely, then at least in relevantly localized forms.

In the application of relevant experience, a crucial question concerns the decision-making processes in other countries: "who decides what, when, how?" This question is also fundamentally a political one. And China, as seen earlier, provides its own significant lessons.

The Mission feels that even in cases where Chinese experience is not transferable or cannot be adopted, it frequently contains features that developing countries cannot afford to ignore.

An attempt at such an analysis is, therefore, contained in this chapter. The examination is based on two assumptions: (1) that most developing countries share certain broadly defined development goals, in the pursuit of which China has been notably successful; and (2) that other developing countries would, therefore, like to consider the relevance of these achievements to their own circumstances.

Some of these broad common goals are:

1. A high priority for agricultural development, self-sufficiency in basic food supplies, and food security;
2. A planning process that reconciles the need for centralized guidance with the need for decentralized participation;
3. Full employment and mobilization of human resources;
4. Full employment of material resources, appropriate technology, and selective modernization;
5. Self-reliant, integrated rural development.

The Mission tries to relate to these common goals the specific Chinese achievements described in Chapter V. An attempt is made to extract and analyze the principles behind these achievements and the potential for applying these principles to bring about needed changes in other countries.

In response to the Chinese challenge, four main kinds of change are identifiable: those involving technology, policy, attitudes and ideology, in descending order of acceptability.

Where changes are likely to involve technology only or even policy only, they may perhaps receive widespread acceptance. In most instances, however, acceptability involves also attitudinal and/or ideological changes. These are only possible over time. In such cases, the most that can be expected, in the short run, is the stimulus to an earnest search for local modifications or equivalents of proven Chinese achievements.

Agriculture: the Priority Sector

A basic Maoist tenet is that "Agriculture is the Foundation and Industry the Leading Factor".

Agricultural surplus is the basic source of national wealth. The Chinese quote Marx's statement: "Agricultural labour productivity exceeding the individual requirements of the labourer is the basis of all societies".

China's principal achievement is the single-mindedness and consistency with which it has adopted and carried out a national development strategy which deliberately discriminates in favour of food production, agricultural development, and the peasant majority that comprises the agricultural sector. This has meant the removal of food and labour as market commodities. It has meant State mastery over market and economic forces to provide guaranteed prices for farm produce, assured supplies of farm inputs at subsidized prices and low taxes on farm outputs, and has controlled pricing policies that have progressively improved the terms of trade in favour of the rural sector. Other strategies have been adopted to gear light industry, heavy industry, education, research, and State and People's institutions, to the priority needs of the rural agricultural sector.

In the single-minded application of this general strategy for the rural majority, China has illustrated the indivisibility of the economic, social, political (one might also add, moral) components of national development. In other countries, the separation of these three sets of components is reflected in the continuing inconsistency of macro-economic fiscal, industrial and trade policies (which in fact favour the urban elite minority) with agricultural and rural development policies (which aim to benefit the rural peasant majority).

In China, Chou En-lai, quoting *The Communist Manifesto*, underlined the difference: "all previous historical movement were movements of minorities, or in the interest of minorities. The proletarian movement is the self-conscious, independent movement of the immense majority, in the interest of the immense majority".

In China, as in other Asian countries, there was a time-lag before the agricultural sector won priority recognition. The early Chinese emphasis (1950-56) influenced by the Soviet socialist model was on heavy industry. However, with other Asian countries, it was the influence of Western capitalism that led to false starts with industry. In China, the realization of error was sharper and resulted in a more definitive and clear sighted change of course.

In April 1956, Chairman Mao's major policy statement "On the Ten Great Relationships" constituted for China the critical stocktaking that resulted (among

other things) in the fundamental policy change in favour of the rural sector. This policy statement was a watershed in Chinese development planning and was of cardinal importance in guiding the harmonious growth of all sectors of the Chinese economy with "Agriculture as the Foundation".

Many Asian countries have, in fact, now acknowledged the primacy of the agricultural sector and have adopted policies of market intervention, subsidies, guaranteed prices and State procurement. But these are either negated by policies in the more powerful private business sectors or pre-empted by the rich and influential, or rendered otherwise inaccessible to the vast peasant majority in the disadvantaged rural sectors. Overall national development policies tend, therefore, to be still heavily weighted in favour of the socially and politically influential minority, and against the poor and powerless rural majority.

To the extent that governments in other developing countries are implementing these measures of "positive discrimination" in favour of the rural majority, it may be said that predisposing conditions already exist in these countries for the harmonization and further extension of these positive discriminatory measures. What other countries could do now is to take careful stock of these measures; to identify the points of inconsistency and contradiction with measures in other planning sectors; to uncover areas where unstated practices negate stated policies; and to assess and strengthen the political determination needed to resolve these inconsistencies.

Food Security

A related goal shared by China with all developing countries is food security for its people. In 1950, China started from a situation in which famine was endemic. By the early seventies, China had realized this goal.

It has been estimated that in 1972 (a relatively sub-average crop year) China's production of food staples stood at 255 kg per caput. This was the second highest in Asia.

Comparative figures for some other Asian countries for the same year are illustrative: Thailand 279 kg; India 172 kg; Pakistan 157 kg; Indonesia 146 kg; Bangladesh 134 kg; Sri Lanka 80 kg.² In more recent years (which have in general been poor crop years for most countries), it is likely that China has outstripped Thailand. There is evidence that China continues to forge ahead.

These figures do not reflect higher average levels of yield per acre (about 50% higher than India but well below Japan), or a higher growth rate of food production per year (this is barely 2% per year). Here, China's record

has been of no more than an intermediate order. Clearly, there is scope too for increasing its leading position in food production per caput with the increasing modernization now being planned.

China's achievement in this field seems to offer other countries these lessons:

1. The necessity for a realistic appreciation of its agrarian structure and the consequent priority given to agriculture.

2. Promotion of maximum production of food staples at the lowest possible local level and smallest unit. Priority over commercial crops and other forms of economic activity has been firmly established.

3. Organization of peasants to overcome obstacles — insecurity, powerlessness, and lack of supportive facilities — that otherwise beset the individual small farmer. In China, this has meant collective ownership of land and collective production units at the lowest basic level (the production team). These are functional units: large enough to ensure maximum mutual support yet small enough to preserve individual interest and initiative.

4. A comprehensive State-controlled system designed to equalize food production *and* distribution throughout the country. This includes: agreed and fixed production quotas for each people's commune, guaranteed food procurement prices for the agreed quota, plus bonus prices for above quota purchases; a definite but low agricultural tax fixed as a percentage of total production and paid in kind; and liberal consumption quotas in the form of a rationing system for basic foodstuffs. All these allow for accumulation of food reserves, at all levels, from the home through the production team and commune to county and province.

5. Maximum decentralization of food distribution power and responsibility to local levels beginning with the production team. The system of collective organization ensures that everyone has a claim to, and a stake in, the production of the team. The latter, in turn, has an obligation and responsibility to feed everyone. There is a conspicuous freedom from the landlessness, unemployment, and destitution that elsewhere mean fear, insecurity, beggary or starvation. Insurance against all these exists primarily at local levels in the elastic, extended family of the three-tiered commune structure.

6. Organized drives against food waste, infestation, etc., such as mass anti-rodent campaigns. These are undertaken when and where necessary in China under the spur of "political consciousness" and strong people's organizations.

Applications of these lessons in other countries involve a degree of ideological and organizational change. These are slow or difficult to come by. Nevertheless, most countries offer opportunities for a breakthrough because of the priority they now increasingly accord to: agriculture; new village and community development movements; increased subsidies, allocations, and guarantees for food production, and the beginnings of deliberate control of market processes in favour of the peasants.

At present, these measures are relatively ineffective. They are negated by inconsistent policies that favour more powerful sectors (e.g. rich farmers, industry, commerce, aid). As earlier Chapters showed, China deliberately subordinates all policies to an overall and consistent bias in favour of peasant agriculture.

For other countries, therefore, it would seem that solutions may lie first in carefully objective investigations of these policy inconsistencies, followed by pragmatic measures:

a. To increase general "political consciousness" of the results of these reviews, and thereby;

b. To promote public discussion and pressures which could shape the leadership's political will to bring about indicated changes in policy.

7. "Store grain everywhere" is a simple policy directive universally applied in China from household to province as described earlier.

Local storage of this kind contributes substantially to national food security. It is a technological innovation that involves little or no implications for policy direction. No attitudinal or ideological change is called for in the widespread promotion of such decentralized storage systems. Local storage is, therefore, one of the simplest, cheapest and easiest of Chinese lessons to replicate in other countries. Advantages to the State are obvious in the much lower costs of transportation, distribution and decentralized storage.

A possible difficulty is the incentive for such local storage. In some places, people are accustomed to look to governments for solving their problems. They have little incentive to store. It makes better sense to sell their products and keep the cash. This is because the market determined price system often gives no real incentive to more than within-the-season storage. Price benefits are usually passed on to the consumer. This is one reason why few care how much storage costs.

But it may be possible for a government to introduce various incentives. One could be a system whereby government grants a loan against grain stored locally

under the supervision of some kind of an agent or village representative. In some countries, e.g. India, such a system is operated by banks and cooperatives on the basis of storage receipts which can be discounted. Unfortunately, the benefits now accrue mainly to large and medium farmers. Ways could be explored to extend such systems more widely so that grain (1) would be stored at lesser cost, (2) would be available where it is needed, and (3) would thus save on transport and handling costs.

Blending Central Direction and Decentralized Participation in the Planning Process

The concept of planning is not an intrinsic part of the stock-in-trade of the Western liberal *laissez-faire* capitalist model which many newly-independent countries adopted. Its origin lies in the experience of the Soviet Union between the two World Wars. The now widespread acceptance of the planning concept, among most developing countries, is an interesting instance of the transferability of experience from a Communist country to developing countries.

The Chinese also started with the Soviet planning concept but transformed it in very important ways. However, the Chinese development context is more akin to that of other Asian countries. Thus, the Chinese mode of planning is likely to be more relevant to them and, "a priori", possibly even more transferable.

This observation may be seen in the context of the current widespread disillusionment, within an increasing number of developing countries, over current planning methods. These countries relied heavily on central planning organs, for both the formulation and the monitoring of implementation. Despite considerable lip-service, these centralized structures contain only minimal systems for feedback from the grass-roots level. They make even less concession to "planning from the bottom up". Nor has there been any significant spread of the benefits of planned development among the great majority of the people in developing countries.

Clearly, there are serious obstacles to the decentralization of both the planning and implementation process. The bureaucracies of most developing countries are based on hierarchic and centralized administrative structures. Few governments offer compelling ideological or other incentives for maintaining reasonable cohesion to an overall planning effort involving decentralization.

In many countries, moreover, bureaucracies in charge of development planning are conservative in their approach and suffer from inertia. Because of historical experience and the alien educational and cultural background of many civil servants, they lack genuine belief

in the ability of villagers to order their own affairs.

This, in turn, has fostered over time an attitude among village people of depending on the central administration. This tendency in many cases is further strengthened by elected representatives striving to ensure electorate support through patronage and the allotment of development funds from the centre.

The obstacles are thus difficult. But the stakes are also high. The relative failure of the planning approach hitherto generally followed, the continuing poverty and insecurity of rural peoples, and the constant threat of food shortages in many countries, call for a serious reassessment of the entire approach to planning.

The Mission feels the Chinese experience in this regard warrants close study and adaptive emulation. The major challenge it presents is that of providing both opportunities and incentives for genuine participation by the people, in planning and plan implementation, in the confidence that they themselves will be the prime beneficiaries; and in providing, alongside with increased decentralization and reliance on local initiatives, a cohesive framework within which local efforts can fit effectively into a centralized national pattern.

In China, the planning process is a vehicle deliberately used by the Party as "the vanguard of the proletariat" to direct political intervention in economic processes in favour of the majority of the peasants.

The Chinese approach is a constantly interacting blend of centralized guidance and decentralized participation. Because of the attitudinal changes necessary, adaptation of such a system in other countries would be slow and difficult but hopefully not impossible. It would call for initial studies as to how in each country:

1. Centrally formulated plans can be decentralized meaningfully to lower levels of administration and people's organization;
2. Formation and strengthening of people's organizations to ensure their effective participation in drawing up local plans, forming collective decisions, monitoring progress, exercising pressures on the centre, and responsible implementation;
3. Information, communication and education programmes to publicize these decentralized plans at local levels;
4. Cadres of full-time development workers (separate from "extension" staff) to assist in the three functions cited above and to guide discussion at local levels;
5. Determination through this process of development project requests, production quotas, services

and other local plan responsibilities agreed between the centre and local levels;

6. Integration, reconciliation and harmonization of the agreed plans to ensure the fullest internal consistency of the overall annual plan between sectors, between regions, and between macro-economic and micro-economic levels.

The initial studies suggested would indicate stages and practical changes to be adopted, relevant to conditions in each country. These would seek to move realistically towards a more people-based and people-oriented planning system. In such a system, bias towards minority elite interests, where found, would be progressively reversed by policies of "positive discrimination" in favour of the rural majority.

Obviously, such a system would increasingly necessitate changes in agrarian structures to transform the balance of power in rural areas; the formation of viable farmers' groups; central intervention in market processes; and adoption of extra-economic policies to meet local needs as they emerge with greater force and better articulation from the people themselves.

Full Use of Manpower

The Chinese achievement in the full use of their available manpower results from basic features in the Chinese system. The ideological source of all these features is a distinctive Maoist interpretation of Marxist theory.

Maoist theory holds that changes in the "relations of production" must take priority over development of the "forces of production". In the Western developmental model (including the Soviet), priority is given to the "forces of production".

In non-ideological language, "relations of production" in agriculture, refer to certain critical relations common to the rural people of all countries. Broadly these are: relations of man to land; man to community; man to work and the fruits of work; and man to technology and other material resources. By the "forces of production" is meant mainly technology, mechanization, the material means of production. Even here, Maoist China makes an important qualification: the principal productive force is constituted by the producers themselves.

The Man/Land Relationship

Most developing countries are moving from feudalism to "modern" money economies. In these transitional societies (quasi-feudalistic or quasi-capitalistic),

the relations of production tend to consist of an ideological mix of feudalistic rights and obligations, and capitalistic modes of individual ownership of land and capital. In this mix, the capitalist component tends to increase. The average peasant in whom this ideological mix is internalized seeks a relationship with the land to provide at least an adequate income, security and incentive. The peasant increasingly regards the ideal form of this relationship as ownership of a viable plot of land.

Yet, prevailing political, social and economic forces in these societies, unless regulated by State action, tend invariably towards the familiar rural scenario: a few big landlords dominate a structure composed of some medium and small peasant landowners, and (given increasing populations) a constantly increasing number of tenants, sharecroppers, landless labour, and unemployed or under-employed rural labour. It is a situation in which manpower utilization lags below optimum levels.

Given the existing ideology in many countries, State policies of land reform have been conceived mainly in terms of distribution of either unused land or the excess from large estates to landless labour, sharecroppers and tenants in small free-hold units. This appears to be the currently accepted ideal of the man/land relationship.

In these "land-to-the-tiller" programmes, the pace and extent of redistribution have been limited.

One reason has been resistance from big landowners with more political power than the prospective landless beneficiaries.

Another reason is the mathematics of redistribution. The growth in rural population is increasing the number who want land in relation to the amount that is available. The unit of distribution in many places is shrinking below the level of viability.

This has been the history of the early land colonization and land settlement schemes in many Asian countries. But even within this limited framework, benefits to the farmer tend to erode with time. The farmer's isolation, insecurity, and dependence increase. The farmer loses accessibility to the services and inputs provided by government. The Chinese found that without other supportive relationships, mere freehold tenure does not guarantee the small farmer's viability; that the small farmer tends to be bought up by the richer farmer. It is a matter of time before the old oppressive rural scenario reasserts itself.

Man/Community/Land Relationship

For the landless, the sharecroppers and the tenants, there is an alternative to the illusory – and in many cases, rapidly receding – ideal of self-employment on freehold land in a direct man/land relationship, namely: employment for, or mediated by, the community.

In early clan and tribal times, and partially in the feudal period, this constituted the predominant form of man's employment and relationship to the land.

Under Asian conditions of illiteracy, poverty and insecurity, plus a high – and constantly increasing – density of rural population, this is a more realistic and human relationship. Resistance to this comes from the landowners (both big and small). Most have been able to retain or acquire their own land. The disadvantaged peasants, at the same time, are conditioned by the existing ideology of individual land ownership.

A community/land relationship involves the organization of the rural population into cooperative production units. Peasants can thereby help and sustain each other. China moved early into such stages (comprising the mutual aid teams and the elementary cooperatives) in which individual private ownership of small holdings was *not* affected. For many Asian countries, whose peasants and leadership alike are committed to the principle of private ownership of land, even in the context of a rapidly expanding rural population, this stage of China's experience carries particular relevance.

Most developing countries have long had their own basic level cooperatives or farmers' associations. Almost all of these, however, have been in fact "service cooperatives" (for credit marketing, inputs, consumer goods) to serve *individual farmers' interests*. They also tend to be pre-empted by big farmers. In contrast, China's mutual aid teams and the succeeding cooperative forms were organized for *cooperative productive effort* or *cooperative capital building enterprise*. These started in the early fifties and continue today in their latest collective form: the production teams of the communes.

To other countries, the early Chinese experience holds this possibility: organization of basic level cooperative farms capable of undertaking both common production efforts, as well as local infrastructural capital building (irrigation works, roads, land reclamation, etc.). In practice, these would take forms compatible with the interests of the more disadvantaged rural sectors, as well as those of individual small holders.

In India, Gandhi and Nehru strongly favoured cooperative farming of this kind. The Gandhian inspired

Bhondan and Gramdan movements, which swept India in the fifties under Vinoba Bhave's leadership, were to be the basis of the new cooperative farms. Gandhian ideology permeated the first three Indian five-year-plans. The last of these estimated that, by 1964, over 5 000 such cooperative farming societies, covering half a million acres, had been set up. Later developments have not justified this early promise. Nevertheless, the example of these early initiatives remains and is perhaps ready for renewed activation.

In Bangladesh, the initiative taken by the Comilla Academy, in its rural works programmes, illustrates on a major scale how local farm groups can be organized on labour intensive programmes of rural investment.

In Sri Lanka, there have been recent developments in the organization of cooperative farms on land distributed under the Land Reform Programme, in a return to traditional forms of mutual aid, and in the widespread acceptance of "Shramadana", both by the Government and in the extra-governmental sector. Many Asian countries have also begun to experiment successfully with a variety of functional forms of "group production farming" bringing together low income farmers with similar interests and problems. This is an approach advocated also by FAO's Small Farmer Programme. All these examples provide receptive conditions in other Asian countries for the selective adaptation of Chinese experience.

It is interesting to note the report of a visit by an official Indian delegation to China in May 1957, which could have contributed to the early impetus for cooperative farming, even as far back as 20 years ago. The report commented that "the Chinese success appeared no less than a miracle..... A revolution is afoot in the countryside, the dominant motive of which is not fear but a ferment in people's minds which no administration by itself could have brought about".³ Although in India, as well as in most other Asian countries, this early interest in a community approach to the worsening land and employment problem has faded, many factors (including the further advance on these lines in China) seem now to provide favourable conditions for a resurgence of interest.

Subsequent developments in China suggest that such community collectives be kept small enough to retain the full employment and mutual aid potential of an extended family. Yet, they must be large enough to undertake local-labour investment projects and work-combined individual holdings as a large family farm.

The Man/Work Relationship

In China now, the individual peasant is an integral part of a small viable functional unit (the production team). It *owns* and *runs* the previous individually-held land units as one collective unit. This basic collective is, in effect, an extended family farm. The unit is managed for and by an extended family (the production team).

The extended family analogy highlights a significant and radical feature of the Chinese approach to employment and the man/work relationship. In the Western model of development, labour is a factor of production and a market commodity. Employment and wages are determined by the supply and demand for labour in an employment market. *In China, labour has been removed from the market. It is not a market commodity.*

Several important consequences flow from this cardinal principles. A peasant's labour power cannot be sold, or bought by another. Since the peasant is an organic part of his (or her) extended family (the production team), the peasant can no more be hired and fired than he can be in his own "natural" family.

Also, as in work for his "natural" family, the surplus value or profit from his work accrues now to his extended family (the collective production team). It returns through the team directly and tangibly to him in increased social amenities, and gradually increased income as collective productivity increases.

In the small collective, the peasant also participates directly in the assessment of his work points by his peers; through this, the labour value of his work is determined and translated into cash income or income in kind (the advances of food rations, etc.).

Employment security and basic welfare are guaranteed to all as in the "natural" family. These are limited only as in the "natural" family by the work capacity and resourcefulness of the collective as a whole.

These achievements have called for a unique role by the Chinese leadership. Prior institutional changes were, of course, involved in the gradual progress to collectivization from mutual aid teams to the commune. Subsequently, the State, guided and directed by the Party, introduced a radical complex of inter-related and mutually reinforcing policies. These converged simultaneously on full local employment, mobilization of local investment resources, and maximum local production.

Another example may help to clarify the rural employment structure in China: the State emerges as virtually the sole employer; but its employees are not individual peasants but the peasant collectives.

In turn, the collectives deploy their members in accordance with the investment and production plan agreed between the leadership and the collective members. The State pays its employee, the collective, through purchases of the collective produce. Prices are guaranteed and fixed at levels which provide for subsistence, welfare, and collective investment programmes. The tax levied by the State was fixed in quantitative terms in 1950 and is, therefore, a dwindling proportion of annually increasing production. It represents that portion of the total product which the State as employer retains as "profit" or original "rent".

The bulk of the collectives' surplus value is retained by the collective for increased individual income and welfare *and as the basis for generating local capital investment in conjunction with labour.*

In a sense, therefore, labour generates its own capital. This can – and does – result not only in new agricultural infrastructure (roads, reservoirs, channels, soil conservation, etc.) but in the growth of small rural agro-industries and light industrial units. These offer constantly increasing job opportunities to a growing rural population. The system has the flexibility to absorb youth, women, children and even old people in employment as required.

This system necessitates the deliberate restriction of labour to the collective to which it is ascribed. This is one objective of the rationing system. It makes each peasant's ration card non-transferable to collectives other than his or her own. The exception is by agreement between collectives, in accordance with State regulations.

There will be those who see this as a restriction on the freedom of the individual to hire out his or her labour to the highest bidder. The Chinese answer is: given the oversupply in the labour market of developing countries, this is no more than the hollow freedom of Hobson's choice between unemployment or increasingly oppressive employment.

To expect wholesale and instant adoption of the Chinese model and its complex of associated policies would be both unrealistic and unwise. Nevertheless, conditions now exist in many countries which would permit experimentation. Country or region-specific adaptations appear feasible.

Among these conditions are: long experience with rural cooperatives, rural development, market intervention in favour of the peasant through subsidies; guaranteed prices; land colonization and land reform programmes.

Ideologically, in India and South-Asian countries, the Gandhian and Comilla development philosophies

bear a remarkable similarity to the Maoist. The increasing acceptance of the need for some form of cooperative farming; for effective techniques to stimulate participatory development; for more viable schemes of integrated rural development and for intensive focus on a "basic needs" approach — these are some of the pre-disposing features of a development climate receptive to approaches that resemble the Chinese experience.

In most countries, the small village or hamlet is a potential "extended family" collective. Much of its human resources now run to waste, unutilized. A number of these units, grouped in a larger complex, could form the target of a pilot programme in which the main principles of Chinese policies (adapted as needed) could be applied. The results could indicate the feasibility, nature and direction of such a programme, if adopted on a larger scale.

The Chinese experience also clearly emphasizes the crucial importance in such a programme and its extension of two elements: peasant motivation, and the associated need for the training and deployment of cadres of people variously termed in other countries as change agents, village or development workers, animators, etc. Most countries have interpreted this as a need for government technical extension officers. The Chinese have relied instead on "political" cadres (in the broader sense of the word "political"). These serve as "human" extension agents, catalysts of the local community, and mediators between the leadership and the people. The relevance of this aspect of the Chinese experience is discussed later in this chapter.

Full Use of Material Resources, Appropriate Technology and Selective Modernization

The Maoist view conceived technological and economic development in the rural areas in terms of a "dialectical spiral".⁴

The peasantry begin with little more than their own manpower and traditional techniques. Through mutual aid, surplus labour by the community is invested in new agricultural construction work. The results of this — by pressure on the available labour — creates a demand for simple technological aid. Costs of the latter would be met by profits accruing from benefits of earlier capital construction work. In the next season, with improved technology, more investment would take place in capital works. This leads to further pressure on labour, more demand for better tools, and more savings to pay for them.

This spiral process in the Maoist view would work its way, in time, through progressively advancing stages

of technological improvement, subsidiary occupations, and ancillary industries. Investment at each stage pays for the innovations of the next. In due course, this process would lead, naturally and logically, to increasing mechanization of agriculture. This implies also progressive industrialization in rural areas.

A Party Conference held at Chengtu in March 1958 on "Opinions on Agricultural Mechanization" described this concept of "natural" mechanization at length. This concept has been, to a large extent, the pattern reflected in the technological progress of Chinese agriculture and rural growth.

Three principles are implicit in this concept and subsequent Chinese experience, *viz.*

1. That technology should be a function basically of the scarcity and requirements of existing manpower;
2. That technological improvement could be a means to more intensive and efficient use of available labour; and
3. That costs of this progressively increasing technology should and could be met from the profits and savings that it creates.

In countries where land is privately owned but cultivated by hired labourers, share-croppers, or tenants, the continuous progress of this spiral growth is blocked at each stage. This is due to the tendency of most land-owners to siphon off the profits and savings for private uses other than reinvestment on the land or in the community.

Similar blockages in the process also prejudice the unorganized small-holder cultivators. They remain vulnerable to market forces, have limited resources, and have uncertain access to credit, inputs, marketing facilities, and other farm aids.

The strength of the argument for collective ownership of land, as in the Chinese production teams, or at least collective management of privately owned land (as in cooperative farms), lies in the fact that it eliminates or minimizes these blockages. It also enables collective profits and savings to be used for local investment, social need and individual well-being.

Appropriate Technology

Chinese experience also helps to define more sharply and meaningfully a concept still vaguely understood but now widely accepted: "appropriate" or "intermediate technology".

Criteria for "appropriateness" emerge clearly:

1. Does the technology in use or proposed (whether farm inputs, tools or equipment, or farm mechanization), enhance labour productivity or the intensity of use of labour?
2. Does it make good the significant labour shortage experienced seasonally or permanently?
3. Does it save "time-bendings-down"? This is important where multi-cropping appears feasible, and the timing of a series of agricultural operations is a critical factor.
4. Can the particular community or individual concerned locally produce the farm equipment and at the same time afford to meet the costs of its adoption, use, maintenance and repair from current or anticipated resources? Can these resources be supplemented, where necessary, by appropriate assistance from external sources (governments, cooperatives, the private sector, foreign aid)?
5. To what extent do answers to these questions reflect the consensus of concerned groups or individuals?

The authentic "appropriateness" of technology turns out to be a highly specific function of a complex set of variables: time, location, local resources, existing manpower, current crop patterns, farming systems, and effective and guaranteed marketing arrangements.

Clearly, very few countries possess the institutional and organizational arrangements, at the basic rural levels, to articulate a pattern of demand to help governments or markets create the supply of genuinely appropriate technology. In the absence of such institutional arrangements, the actual supply of technological inputs and aids in a country tends to be determined by the richer farmers. They have the means, influence, and power, to pre-empt the market and/or the decision-making apparatus.

Consequently, a pattern of technological supply emerges which is geared to the needs of rich farmers. This is then expected to "spread downwards" or "trickle" to the base.

But such a mix of technological supply, suited to the rich farmer, does not reflect truly the technological demand of the poor farmer. This process of the "downward spread" therefore tends to be forced through at very high social cost: rising unemployment, high levels of urban migration, increasing rural debt and — with a constantly multiplying rural labour force — increasingly debilitating mass poverty.

The development of Chinese agriculture illustrates the possibility and advantages of a two-way process. This is basically a process that begins as an "upward spread" due to popular participation, stimulated and "diffused among the people". It also generates its own downward spread from the responsive support of the State.

China's experience would appear to suggest a mix of three approaches to technological development for other Asian countries, given their different ideological and historical contexts.

Priority would be given to the *first approach*: This would apply to the vast mass of traditional subsistence level small farmers. It would base itself on their existing traditional techniques, organization and tools or work.

A *second approach* would be applied to farmers who already show signs of readiness and capacity to absorb new agricultural technology.

The *third approach* (also the lowest in priority) would take realistic account of the fact that there is a small class of rich and/or progressive farmers who could — and do — make use of advanced modern technology.

1. The Basic Approach: Traditional Techniques, Organization and Tools

China began with land reform and a land-to-the-tiller programme. This involved the creation of 80-100 million peasant small holder households on a total area of 700 million mou (or 45 million ha) of redistributed land (about 45% of total arable land). Production had to be carried out almost entirely through mobilization of traditional inputs: labour, natural fertilizer, draught animals, traditional tools, etc. In this stage, the resources of traditional forms of mutual aid — labour sharing, labour exchange, pooling of draught animals — were called upon. Seasonal and permanent mutual aid teams were formed both to increase production on the individually-owned lands and to utilize collective manpower for essential farm capital construction works.

Land was soon found to be gravitating back to rich peasant ownership. The process towards forms of cooperation and collectivization, therefore, found increasing acceptance.

At the same time, demand for local tools and equipment encouraged the growth of rudimentary local workshops, blacksmiths, etc. — the seeds of later rural industrialization.

The fact that grain production increased in the first three years (1950-53) by 6% per annum is evidence of the potential scope latent in traditional farming, given the small initiative released by land reform,

and the use of traditional forms of work organization.

In contrast, other Asian developing countries began during the same period with high technology, e.g. import of western tractors into Sri Lanka and India in a context of small landholdings and large estates. Here, the small farmer was, in the main, not a freeholder but a labourer, tenant or sharecropper, exploited by large landowners.

In the early sixties, Asia (outside China) comprised a total of 96 million landholdings. Of these 66 million did not exceed two ha; 20 million were between two and 20 ha, and 10 million over 20 ha.⁵ No comprehensive later data are available. But it would be reasonable to expect that inheritance laws, increasing rural populations and labour forces have largely offset the effects of subsequent sporadic and piecemeal land reform and other measures of tenurial improvement.

In many instances, the initial emphasis on modernization was obviously premature. It bypassed the needs and absorptive capacity of at least two-thirds of the small holdings. It would seem that the bulk of Asia's small farmers, in the seventies, are still barely at the level of China's 80-100 million small farmers in the early fifties.

The Chinese experience suggests that most developing countries should consider a temporary and selective moratorium on current plans for comprehensive diffusion or "transfer" of technology, among these most disadvantaged farmers. These farmers need instead more intensive policies of tenurial improvement and selective, if not wide-scale, measures of land reform; progressive upgrading of traditional tools and equipment; more intensive use of local resources such as organic manure, and compost and small bio-gas plants; and the mobilization of traditional forms of peasant cooperation and mutual aid for both production and rural capital formation.

All these would prepare both peasant and land for increasing receptivity to more advanced inputs of modern technology and more viable and functional forms of peasant organization.

This should be accompanied by the promotion of village blacksmith units, village workshops and village polytechnics. For assistance to these small, still largely subsistence level farmers, experience has proven that reliance cannot be placed wholly on government technical extension staff. There is enough evidence to show that the latter, in general, have not been outstanding in dedication and local knowledge; few have won the confidence of local villagers. Even fewer live and work with them.

Essentially, the need in these village communities is for local leadership. This is best stimulated and built up by the "development missionaries" of various indigenous voluntary non-governmental organizations whose services are now largely untapped by governments (e.g. in the Philippines, India and Sri Lanka).

The experience acquired by FAO's own Small Farmer Programme in collaboration with governments has confirmed that the need for special and priority attention should be given to this most disadvantaged group of small traditional farmers. A series of problem identifying and problem solving techniques has been developed and is now available.

2. Adoption of Improved Technology

A second approach would be more appropriate for the more technologically receptive areas of Asian developing countries. In these areas, the trickle down process of modern technology has begun to reach some small, and most medium, farmers. It is creating a demand for some elements of modern technology. Even these areas call for intensive institutional efforts, both at the government level and improved organizational forms at the farmer level. The most conspicuous success of this second approach is perhaps the Korean Saemaul Undong Movement. In Korea, 99% of the total individual holdings are below four ha and comprise 86% of the cultivable land.

The Korean example illustrates how, in a totally different ideological context from the Chinese, strong and purposeful government action can create the conditions for a meeting of both the "downward spread" and the "upward spread" of technological progress. Between 1971 and 1974, the total acreage under *tongil* (IR667) which is the main Korean high yielding rice variety increased from 2 750 ha to 300 000 ha. This constitutes 25% of Korea's total rice cultivated area. In other areas as well (e.g. rural marketing, credit, rural infrastructural works, community training, cohesion and discipline), Korea has registered marked progress.

The spread of HYVs among farmers in most Asian countries is still much less than in China. Like other Asian countries, China also began its HYV drive in the mid-sixties. By 1974, China was reported to have introduced its own HYVs in 80% of its paddy lands and 70% of its wheat lands. With coarse grains and minor crop varieties, the evidence suggests that China has advanced more than other countries. In India where 90% of the world's production of millet and sorghum is grown, only 7% and 8.5% respectively of the total millet and sorghum areas were planted in HYVs.

The wisdom of the Chinese system in first strengthening the cooperative and collective organization of peasants is witnessed also in the field of mechanical equipment, both for irrigation and agricultural operations. There has been a phenomenal expansion of mechanical pumping equipment in China since 1960, especially in the drought prone north-east. This enabled China in 1974 to claim that 33 million ha of farmland can have harvests guaranteed in spite of drought or flood.

Tractor cultivation was insignificant in China till the early sixties; this has since expanded rapidly, particularly with the advances in multi-cropping.

Curiously, the Mission saw no evidence of machine threshing in the areas it visited, but it is reported that machine threshing is widespread in Hunan and the Pearl River Delta.

There is also general evidence of a growing emphasis and rapidly increasing use of mechanical methods of rice transplanting, tubewell and pump irrigation, rice processing and even machine sowing of wheat.

An account of Chinese technological and mechanical advances is contained in Chapter V of this report. It would be misleading, however, to believe that these examples can easily be adopted or replicated in other countries, where the characteristic economic unit is the individual small farmer (often a tenant or sharecropper). These mechanical aids are beyond the individual small farmer's reach for many reasons: prohibitive price, high cost of energy, land use scale, technical and management expertise, lack of access to repairs and spare parts, etc.

Under Asian conditions, policies to promote widespread adoption of mechanical technological inputs cannot be based on individual small farmer use. Required are collective or cooperative organization of groups of small farmers. These enable sharing of use and costs, economies of scale, and provision for maintenance, repair and spare parts. Studies of two examples of small scale mechanization in Asia illustrate this point:

1. For use of a 8-10 HP power tiller, the land area needed to equate costs with benefits is 14.5 acres (5.8 ha) in Pakistan and between 8 acres (3.2 ha) and 26 acres (10.4 ha) in Korea, depending on the crop cultivated and intensity of land use. The cost of a small power tiller ranges between US\$400-900.⁶
2. To establish a tubewell, the minimum economic area is between 6 acres (2.4 ha) and 12.5 acres (5 ha) in Pakistan and the cost between Rs. 5 000-7 000.⁷

In addition, with both the power tiller and a tubewell with pump set, there are high costs of operation and

maintenance.

The evidence is clear that prices, and economies of scale, place power tillers and tubewells beyond the capacity of individual Asian small farmers. The widespread adoption of even such small scale mechanization would need to be based on collective or other cost sharing forms of ownership and operation.

A less satisfactory alternative is a system of machine rental services from governments, private contractors, or rich farmers.

Objections to this alternative are well known. But it may serve as a temporary transitional policy, if effectively supervised by governments. An example of such a machine rental scheme is a Malaysian Government-sponsored and controlled scheme of power tillers rented by private contractors to individual small farmers.

Time and again, the Mission found itself reverting to the fundamental lesson of Chinese experience, *viz.* that in the context of Asia's crowded farmlands the main (perhaps only) hope for the Asian small farmer is decentralized and authentically cooperative — if not wholly collective — farming. This must be backed by responsive and well-administered institutional services provided by governments.

Resistance to this is one major reason why Asian agriculture continues to prove so intractable. The small cooperative farm experiments begun in Sri Lanka since the recent land reform, the strong "service cooperative" system in Korea, the innovative pilot schemes in group farming, and the hopefully still continuing inspiration of Gandhi and Nehru that led to the Indian cooperative farm movement of the fifties, are some indications that offer — in different ways — new possibilities for a revival of Asian agriculture.

3. Promotion of Advanced Technology through Progressive Farmers on a Capitalist Framework

The third approach would supplement the first two with a pragmatic adaptation of a carefully considered proposal earlier made by Gunnar Myrdal in *Asian Drama*.⁸ Myrdal has been frankly sceptical of the prospects of radical land reform for collective/cooperative forms of peasant organization (both of which however he himself advocates). He therefore proposes that "a deliberate policy choice be made in favour of capitalist farming by encouraging the progressive cultivator to reap the full rewards of his enterprise and labour". The issues of small farmer employment and security, and institutional reform, would then need to be approached "from a different angle and by different policy means".

Paradoxically, such a policy may prove unaccep-

table precisely because it is too close to present political realities and too far from present political pretensions. But it could have a place, if restricted to certain geographical areas and certain sectors of agricultural development best suited to entrepreneur capitalism. Also, it would have to be combined with the other two approaches, and not exercised as a single nation-wide policy.

Such an approach would provide scope and incentive for the present minority of large landholders with capital and enterprise. Legislation, taxation, and other government policies would be essential to promote labour intensive agricultural practices, exemplary conditions for the labour employed (including small privately owned homestead plots), and to discourage highly capital-intensive development, absenteeism and the other familiar evils of capitalistic or feudalistic landlordism.

At the same time, the system should promote the educational management and organizational skills of the labour employed. Thus, in due course, the capitalist entrepreneur would yield control of the farm unit to collective or cooperative control by the farmers themselves.

Subject to these limitations maximum scope and incentive would be provided to these capitalist farm units to avail themselves of the economies of scale and other advantages of advanced agricultural technology and farm mechanization. As a corollary, as well as a corrective to this approach, there could be a parallel system of State farms run on the same "welfare capitalist" lines.

In the conditions of other Asian countries, one or a combination of the three approaches suggested would perhaps constitute a practical application of the Chinese lessons. It may be recalled that China itself from the early Yan'an (Yenan) days adopted a pragmatic mix of similar approaches (including a modified form of private and State capitalist agriculture and industry till the middle and late fifties). What distinguished Communist China's pragmatism, in even its earliest days, is that concession to private enterprise was carefully determined by the calculus of present (or clearly planned) social costs and benefits. At no time was private profit regarded as a simple and automatic equation with the public good.

In a discussion on the optimum use of material resources, two other major features in China's experience merit the attention of other Asian countries. These are the Chinese practices in animal husbandry and in the recycled use of organic waste. Both have been discussed in Chapter V. Concerning the former, the following supplementary comments may be added.

Animal Husbandry Practices

In the eastern "agricultural" half of China, as distinct from its western "pastoral" half (which unfortunately the Mission could not visit), the pig is the main object of animal production and husbandry. The relative dearth of meat cattle and buffaloes has a characteristically Chinese explanation. These animals would be active competitors for grain in Chinese conditions of intensive land use to feed the human population. The pig on the other hand, with its multiple uses and easy management, is ideally suited to these same conditions. A pertinent application of Chinese common sense to the conditions of small farmers in other countries is the introduction of the pig in the family farm or — where this meets with cultural obstacles — the wider use of the goat. The latter is even now regarded as the "poor man's cow".

The Mission reviewed various animal husbandry practices in China. It calls attention to the following as possible techniques that could be adapted and transferred to other countries.

Feeding pigs from the weaning to adult stage with various greens ("watercrops") such as water hyacinth, water lettuce, water chestnut, as a substitute for concentrate feed, is an innovation worthy of transfer. About 70% of standard concentrate feed requirement can be met through this means.

The raising of pigs, on the basis of one animal per mou of land, is a simple extension technique. It can be promoted among South East Asian countries to secure organic manure for grain/vegetable fields and to increase protein supplies.

Integration of indigenous and modern systems of veterinary medicine for animal treatment is worth considering. It also underscores the value of traditional technology and self-reliant national attitudes. Almost all countries of Asia have century old systems of veterinary medicine. But these stagnated due to the bias given "modern" veterinarians. A revival of the indigenous systems may be called for. These indigenous systems should be taught alongside modern systems at universities as well as incorporated into the training of veterinary/animal husbandry auxiliaries.

Veterinary auxiliaries called "barefoot vets" in China follow a training programme ideally suited to conditions throughout Asia. The adoption of such training programmes could bring livestock health and husbandry services to hitherto unserved rural areas.

Acupuncture appears to be a technique in surgical practice that can be taught to university veterinary undergraduates and to veterinary vocational students.

The skill would automatically take operative surgery to the villages and directly benefit small farmers.

Self-Reliant Integrated Rural Development (IRD)

Another goal, shared by China with other developing countries, and which the Mission selected for comment, is what is now becoming known – outside China – as integrated rural development (IRD).

In Chapter V the main features of the Chinese model of IRD were described. In this section, the previous descriptive account is supplemented with an analysis of the model's relevance to conditions in other countries.

Integrated rural development is defined in current literature as the operation of a "systems approach", in contrast to the more selective or welfare approach of community development as earlier conceived. IRD takes into account the "inter-relationships of socio-political, economic and technical factors" in a given development situation; and relates these in turn meaningfully to the broader contexts of the national and even international systems. It means rural transformation in an indivisible continuous process starting with agricultural development.

In this sense, IRD is a substantial reality in China today.

For many other developing countries, this rural transformation is becoming an urgent development objective. Much of the increasing acceptance of IRD can be attributed to a forced realization of the imbalances, distortions, and injustices that attend the current process of development.

Self-Reliance

The Mission agrees with many students of China that if a simple definition was required of the overwhelmingly dominant feature of China's rural development, it would be: *community self-reliance*.

Community self-reliance seemed to the Mission to mean much more than the anaemic concept of "self-help" that directed the early efforts of community development in other developing countries. At the same time, Chinese self-reliance succeeds in steering clear of an autarchic, anarchist populism.

Self-reliance in China appeared to the Mission to be the result of a continuous search for a balance between paternalism and populism: the paternalism of a national leadership (the Party working through the State) whose interests are in tune with those of the people; and a populism striving to fulfil its potential for creative self-directed change.

It is this balancing between paternalism and populism that also accounts for effective horizontal and vertical linkages and underpins successful IRD in China. The following aspects merit closer examination:

Area Development

There is widespread theoretical acceptance that IRD must be based on units of comprehensive self-reliant area development. In China, this has been translated into practice. The communes comprise a national network of approximately 50 000 units of area development. Each commune is a unit of both self-government and *self-development*. Outside clearly defined areas of State and Party policy, the role of the State *vis-à-vis* each commune is to enable and facilitate rather than to direct.

The State in China has not simply decentralized its authority to its own officers at local levels; it has also delegated it to the people themselves organized in the three-tiered commune structure. The communes are, thus, simultaneously people's agencies and State agents. The communes are responsible and autonomous in virtually all aspects of *both government and development*: or from investment and funding, to industry, health, education and police.

Other developing countries also have their own nationwide local authorities. But the significant difference is that these are not units of area development. Their responsibilities, authority, and finances, are limited to local "governmental" functions. They have sharply limited revenue-raising powers, local savings, and investment capabilities.

Development functions are "line" responsibilities of the centre. They run up a vertical hierarchy of officials employed by, and responsible "upwards to, ministries of the central government, and not downward to the people.

In effect, this means that even in a small county a bureaucracy at the centre tries (and often fails) to deal directly with the development of millions of individual rural peasants. In contrast, the State in China works with much greater economy of effort – and better chances of success – through no more than 50 000 people's agencies.

Major new settlement schemes, such as the many multi-purpose river basin schemes of most developing countries (e.g. the Damodar and Bhakranangal schemes of India) are, in theory, large area development units. But these are managed by autonomous development boards which, again, reproduce the hierarchical line structure of the central government. They tend to be weak in area linkages and in responsible self-reliant community control.

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Other major area development units, such as the "blocks" in Indian community development, have also been victims of bureaucratic line authority. In many cases, benefits to the rural peasantry tend to be little more than the fallout from the paternalism of local and central politics.

The Mission noted that the Chinese leadership, while maintaining a few line linkages, has provided deliberate incentives to expand the range of area linkages through the commune system. The self-reliance that seems an indelible feature of the Chinese rural scene (use of labour as capital, recycling of waste, maximum use of local material resources, etc.) is partly a result of these area linkages.

China's experience therefore indicates that much may be gained if line linkages are reduced and if area linkages are expanded. Most countries are now receptive to small pilot programmes in area development in which a beginning is made with the most disadvantaged groups of rural poor. Development is pursued through local problem identification and solving, leading to progressively broader degrees of integration. These pilot projects can explore the implications of area development for national policies: in market control, subsidies, training, local organization, light and medium industry, etc.

Diversification of Area Development

The "five smalls" (small steel works, small coal mines, small cement works, small fertilizer factories and small farm implement units) are common features of the Chinese countryside. These were set up in accordance with local potentials, local employment needs, service and growth, plus local investment capabilities based on the increasing local agricultural surpluses. These in turn were made possible by State pricing, taxing and other incentive policies. Decisions to launch and operate these enterprises are taken by the communes themselves, with guidance and facilities provided by the Central leadership. Thus, it appears to the Mission that area development greatly facilitates diversification.

Many developing countries are prevented from benefitting from these area-based small and medium industries because of resource allocation systems determined by economic considerations of profit and of the "free" market. Very often, these exclude considerations of social costs and benefits and similar non-economic factors. Freedom of the market and freedom of enterprise tend to become luxuries available only to the better-off. The challenge facing the governments of most developing countries is how far the small beginnings, already made by them in "positive discrimination" for

the disadvantaged, can be further extended to discipline these "freedoms", now exploited by the few, in the greater interests of the freedom of the many.

Organization and Participation

This section returns to the critical importance of people's organization and participation in China in order to emphasize their roles as essential contributory factors in self-reliant IRD.

The Chinese also regard the people's commune as the *basic organization of social power*. In the circumstances of the small farmer, self-reliance must necessarily be conceived in community or organizational terms. Individually, the small farmer is too weak to respond to the increasingly urgent calls for self-reliance and participation. The small farmer needs solidarity and strength, through organization, in a peer group. Only through organization can the small farmer acquire both responsibility and power.

In other developing countries, is it not fear of this that is the source of the opposition to peasant organization? And yet, without the responsibility and power that organization brings, people's participation — now universally accepted as essential for development — cannot be generated.

The Chinese experience provides two points:

1. That transfer of power and responsibility to the peasantry, through peasant organizations, is not necessarily a zero-sum transaction, i.e. what the people gain, the leadership loses. On the contrary, the transfer can be mutually reinforcing.
2. That leadership which claims to represent the majority of its people (the peasants) should be responsive to the needs of that majority for power, responsibility, self-reliance and participation. It is this identity of interests between leadership and people (achieved through the "Mass Line" and "Democratic Centralism") that is one of the most striking characteristics of Maoist China.

There are encouraging signs that governments are moving to adopt pragmatic policies for planned, progressive, transfers of power and responsibility to peasants through viable peasant organizations. These signs include: the increasing concern for the small farmer; the search for modes of stimulating people's participation; a readiness to experiment with new forms of group production and cooperative farming; the Convention and Recommendations accepted by ILO and endorsed by FAO in 1975 on Rural Workers Organizations; the spreading interest in appropriate technology and Technical Co-operation between Developing Countries (TCDC); the

acceptance by Asian governments of a UN Inter-Agency Committee on Integrated Rural Development and the impact of China's own achievements.

Cadres

Chinese experience also offers further lessons in activating viable area development units of peasant organizations. A return to, and a fresh beginning with, traditional forms of mutual aid may be a necessary preliminary stage. The Chinese did this in the late forties and early fifties. Buddhist countries, such as Sri Lanka and Thailand, are rich in traditional modes of functional organization for production and sharing, centered round temple and priest. From these, new group forms can draw nourishment for collective peasant motivation. The traditional *Pesantren* network can serve a similar function in Muslim Indonesia. In India, the Gandhian constructive programme *Sarvodaya* is still a potential force of inspiration for peasants nurtured in the cultural traditions of Hinduism.

In other countries, conditions may be ripe for a re-orientation towards genuinely functional forms of cooperative farming or small group production units. These can involve the most disadvantaged farmers. In practice, disadvantaged farmers are generally excluded from conventional cooperatives because these have either been pre-empted by rich farmers or bureaucratized by government control.

Governments may need to permit experiments with a variety of new forms. But in all experiments, a new breed of cadres will be called for to stimulate the process of people's organization. Experience has proved the inadequacy of the traditional technical extension worker or rural development officer employed by and responsible to governments. The need is for "human" extension cadres similar to Chinese Party cadres: men and women committed and responsible to the communities they work with, capable of articulating, and identifying with community interests, and enjoying community confidence.

There is evidence that such cadres are usually found in what is commonly known as the "non-governmental sector" — which comprises the field workers of the national churches and other national voluntary agencies. Governments may find it in their interest to involve this sector more meaningfully than has been done so far, as valuable aids to peasant awakening and motivation. It would perhaps not be stretching an analogy too far to regard the more committed elements in this sector as the equivalent of the Party cadres of China.

Political Consciousness

As in China, the task of the new cadres needed will be basically to stimulate a "political consciousness" among the peasantry. This term tends to generate alarming — even subversive — connotations.

Yet, as described earlier, its essence appeared to the Mission to be in fact a social ethic that subordinates personal interest to community and national well-being; a social ethic that emphasizes hard work, service to the people, self-reliance, self-criticism, and action based on constant group discussion, critical awareness, and informed consensus. The strongly ethical flavour of Maoist development ideology impressed the Mission, as it has other students of China.

Detached from its Marxist setting, this moral flavour has strong affinities with the emerging social consciousness in religious and humanist thinking in such widely different Asian national contexts: Korea (the *Saemaul Undong* Movement), India (Gandhian *Sarvodaya*), Sri Lanka (*Sarvodayan* Buddhism and its National Heritage Programme), and the Philippines (Catholic Social Action).

The absence of this social consciousness in Asian countries is to some extent responsible for the conditions (ranging from apathy to nepotism and corruption) that have earned them the name of "soft states". Yet, most Asian countries possess the background, cultural traditions, and resources in personnel, which should make it possible for them to change these conditions. Chinese experience is evidence of how critical a role "political consciousness" will play in future national programmes of self-reliant IRD.

Before 1950, China was itself a member of this unfortunate league of delinquent "soft states". Today it has ceased to be one.

- 1 Chou En-lai "Report to the Tenth National Congress of the Communist Party of China", in *The Tenth National Congress of the Communist Party of China* (24-28 August 1973), Peking, Foreign Languages Press, 1973.
- 2 Starvis, B. *Making Green Revolution — The Politics of Agricultural Development in China*, Rural Development Monograph No. 1, Cornell, Rural Development Committee, Cornell University, 1974 (p. 65, Table 1-14, based on FAO data).
- 3 *Report of the Indian Delegation to China on Agrarian Cooperatives*, New Delhi, Government of India Planning Commission, 1957 (pp. 86, 94).
- 4 Gray, J. "The two roads: Alternative strategies of social change and economic growth in China" in Schram, S (Ed) *Authority, Participation and Cultural Change in China*, Cambridge, Cambridge University Press, 1973 (p. 119).

5 *Report on the 1960 World Census of Agriculture*, Vol. V, Rome, FAO, 1971.

6 Hamid J. "Agricultural mechanization – A case for fractional technology". in *Teaching Forum*, New York, ADC, No. 33, September 1973.

7 West Pakistan University of Engineering and Technology, *A Study of The Contribution of Private Tubewells in Development of Water Potential in West Pakistan*, Lahore, Planning Commission, Government of Pakistan, 1970 (p. 58).

8 Myrdal, G. *Asian Drama*, New York, Pantheon, 1968.

CHAPTER VIII

SUGGESTIONS FOR CHINA/FAO COOPERATION

Following its return from China, the Mission submits the following suggestions for expanding the areas of cooperation between the People's Republic of China and FAO.

Farm Mechanization

China has undoubtedly made great strides in mechanizing its agriculture and in decentralizing the production of tractors and other agricultural machinery. The selection and adaptation of available mechanization technologies to suit local farming and manufacturing conditions have been an outstanding feature in Chinese farm mechanization programmes.

Considerable progress has been achieved in recent years in the development of power-operated paddy transplanters. The new Chinese transplanters have potential for application in developing countries. This is one area where China/FAO cooperation would be invaluable in the development of mechanization programmes in developing countries.

Integrated Agricultural Production

The following visits to China are proposed:

1. Mission by three FAO staff members (Agronomy/Livestock/Production Economist) to study the utilization of cereals/pastures/livestock in rainfed areas; duration - 30 days; date - April/May or May/June.
2. Study tour for farmers from developing countries in Asia to observe the intensive utilization of natural resources (soil, water, organic waste, etc.). Farmers to be selected from those who will be settled around newly developed and irrigated lands.
3. Study tour for extension officers from developing countries in Asia to see the popularization of high-yield agricultural practices in communes, and the way in which the gap between research findings and their application, and adoption by the peasants, is bridged.

Visits by Chinese to Asian Countries

1. Visit to Japan: tour of institutions doing research on temperate fruits and vegetables, particularly apples and peaches.
2. Visit to the Philippines: to observe the Corn Improvement and Production Programme.
3. Visit to India: to observe research advances in sugarcane and cotton.
4. Visit to Sri Lanka: to observe work on tea.

Livestock Development

1. Training of lecturers of surgery in the veterinary schools of the Asian region in the techniques of acupuncture. Almost all countries would welcome this assistance.
2. Obtaining case studies of various types of crop/livestock/fish integration practised in different parts of China. Either an FAO regional team should carry out this work, or Chinese national experts should be in a position to prepare these reports for dissemination to other countries in the Asian region.
3. A full account, including details of the syllabus and methods of demonstration utilized in the training of barefoot veterinarians should be distributed in the Asian region.
4. A full account of the housing and management of ducks, geese and pigs should be written up, scientifically justified, and distributed in the Asian region.

Extension and Training

1. *Chinese Support for Visits of FAO Sponsored Teams of Individual Government Field Workers (village level preferably) from Countries in the Asian Region*

These field workers could be given opportunities to live and work in different Chinese communes (especially at brigade or production team levels) for periods of three to six months. On their return home, these field workers could be required to apply China's experience

to local conditions through peasant organization pilot projects, with special emphasis on small farmer families. The Small Farmer Unit in FAO's Regional Office for Asia and the Far East could coordinate this programme. The Programme could be funded from the Chinese yuan funds with UNDP.

2. *Similar Chinese Support for Visits from Teams of Individual Community Field Workers and Leaders Representing People's Organizations in the Extra-Governmental Sector*

There is a considerable demand for such visits by the extra-governmental sector. The coordination of this programme could be undertaken by the Regional Freedom from Hunger/Action for Development Division in FAO's Regional Office for Asia and the Far East, in consultation with Regional Extra-Governmental Organizations. The funds for travel, study and accommodation in people's communes could be provided from extra-governmental sources, without any charge on Chinese or other national or intergovernmental funds.

3. *Village Level Training*

The lending of Chinese field personnel to other Asian countries to stimulate and assist the latter in the practical training of farmers at the village level. This programme could include Chinese extension and/or research personnel with experience of working with production brigades and production teams. This project could be combined with 1, above.

4. *Transfer of Chinese Experience in Aquaculture and the Development of Small Fishermen*

Chinese acceptance of Asian field personnel for training in order to stimulate aquaculture in Asian countries. One such project involving the visit to China of a team of field workers in aquaculture has already been initiated in Sri Lanka.

5. *Village Technology*

Chinese cooperation in a programme to distribute Chinese experience in the identification and application of local resources and expertise and technology to specific Chinese examples of village self-reliant development, such as the use of small bio-gas plants using recycled village waste, could be identified, collected, and distributed as part of this programme.

6. *Small/Medium Scale Fertilizer Plants*

Chinese experience in setting up and using such

plants could be transmitted through FAO to Asian countries, or directly to the latter through visits to China by FAO or national technical personnel, or by the despatch of Chinese technical personnel (directly or through FAO) to other Asian countries.

7. *Distribution of Rural and Agricultural Development Information Material on Chinese Experience*

Relatively little information of this kind is available in forms accessible to rural people in other Asian countries. Slides, film strips, and films would be the best means of communicating this experience. FAO could discuss with the Chinese Government the best means of transmitting this experience from the Chinese people to the people of other Asian countries. Funding is obtainable from the extra-governmental sector.

Communes as an IRD Mechanism

This is probably the feature of Chinese experience in which there is most interest in other countries. There are, of course, numerous studies on the people's communes, and much can be learned from them. But no study can accurately convey the same as a visit.

A project or projects could, therefore, be formulated which would make it possible for considerable numbers of people from developing countries, both officials in charge of planning IRD activities, and field level workers and farm leaders, to learn first hand about the Chinese IRD experience.

The emphasis of such visits should be on the totality of the commune system, rather than on its component parts (organization, management of land and labour, role of women, etc.). For while there are no doubt a number of specific features that offer useful lessons, it is the system as a whole that is most impressive and instructive.

Decentralized Planning Methods

Developing countries in the Far East Region are becoming increasingly aware of the short-comings of their current planning systems, particularly the effective combining of bottom-up and top-down plan formulation and implementation methods. The FAO Regional Conference in Manila in August 1976 mentioned China as a country which has been successful in this regard.¹

Many developing countries would probably be interested in a study tour in China on this subject. The participants should be a mixture of "top" and "bottom" people, and the programme should cover both discussions with authorities and theorists, and many examples of

practical application of the scheme at the production team, production brigade and commune level.

Chinese Experience with Rural Cooperatives

While the commune is an evolution of the original cooperative forms of production in agriculture, it calls for a degree of collectivization that may not be acceptable to many, in fact most, other developing countries. It would seem, however, that many of the practical advantages of the present system were already being achieved by the primary and advanced cooperatives.

This suggests that other developing countries would have much to learn from the earlier Chinese experience with cooperative development, both in terms of its contribution to rural progress, and in terms of the problems encountered in the process.

China could, therefore, be asked to prepare a study of the pre-commune cooperative experience. This could perhaps be formulated as a UNDP project, but if not, the FAO Regular Programme could probably finance it.

The Human Resources, Institutions and Agrarian Reform Division of FAO has in its programme a series of national case studies of this nature, and the China study could constitute a part of this series. A standard outline exists, and a number of countries, including Hungary, Italy, Poland, Yugoslavia, Tanzania, Philippines, India, Indonesia and Japan, have already either prepared such a case study, or have been requested to prepare one. All of these studies are entrusted to nationals of the country in question.

1 Report of the Thirteenth FAO Regional Conference for Asia and the Far East (Manila, 5-13 August 1976) Rome, FAO, 1976.

APPENDIX
**LIST OF MAIN LOCATIONS VISITED WITH NAMES OF
 PRINCIPAL OFFICIALS AND PEOPLE MET**

<i>DATE</i>	<i>LOCATION</i>	<i>NAME</i>	<i>TITLE</i>
9.9.75	BEIJING (PEKING)		
		Li Yung-kai	Director, Bureau of Foreign Affairs, Ministry of Agriculture and Forestry
		Kung Chan-tung	Vice-Director, Bureau of Land Reclamation and State Farms, Ministry of Agriculture and Forestry
		Chang Shih-chau	Bureau of Foreign Affairs, Ministry of Agriculture and Forestry
		Hsu Ching-hwa (Mrs.)	Interpreter
		Liu Peng-hsin	Interpreter
		Chu Cheng-hsuan (Mrs.)	Interpreter
		Chu Yu-lung	Interpreter
		Wang Yung (Miss)	Official, Ministry of Agriculture and Forestry
		Kuong Jian-ying (Miss)	Official, Ministry of Agriculture and Forestry
10.9.75	BEIJING (PEKING) (General briefing)		
		Same as day before plus	
		Hsu Kuo-chang	Official, Ministry of Agriculture and Forestry
		Wu Tian-hsia	Official, Ministry of Agriculture and Forestry
		Tsao	Expert, Bureau of Agriculture, Ministry of Agriculture & Forestry
		China-nan	Expert, Bureau of Agriculture, Ministry of Agriculture & Forestry
11.9.75	MIYUN Reservoir, Miyun County (Briefing and visit)		
		Tsao Yin	Vice-Chairman, Revolutionary Committee
		Li Chiu-fang (Miss)	Staff member
		Ko Ching-yen	Manager, Power Station
		Pao Chin-te	Manager, Fisheries
	SI NONG TUAN (New Village) Production Brigade, Mu Chia Yee People's Commune (Miyun County)		
		Wang Shen-yuan	Vice-Chairman, Revolutionary Committee

DATE	LOCATION	NAME	TITLE
12.9.75	SHIANG CHAC (Double Bridge) People's Commune, on outskirts of Beijing (Peking)	Chuang Ho-shan	Vice-Chairman, Revolutionary Committee
		Hsu Re-fong (Mrs.)	Family member
		Hsu Chong-wei	Son of Hsu Re-fong
	BEIJING (PEKING) (Meeting with Rural Monetary Department, Ministry of Finance)	Wang Li-cheh	Director, Rural Monetary Department, Ministry of Finance
		Ho Tian-chou	Official, Ministry of Finance
		Ting Yun-shan	Official, Ministry of Finance
13.9.75	XUANHUA (ZUNHUA), Tang Shan Region, Hebei (Hopei) Province (Briefing on county and region)	Sueng Chan	Vice-Director, Department of Agriculture and Forestry, Tang Shan Region
		Chang Kuo-chuan	Vice-Director, Department of Agriculture and Forestry, Hebei (Hopei) Province
		Tsao Fu	Staff member, Department of Foreign Affairs, Tang Shan Region
		Tung Wang-shen	Staff member, Department of Foreign Affairs, Tang Shan Region
	SHASHIYU (SHA SHI YU) Production Brigade, Hebei (Hopei) Province, near Xuanhua (Zunhua)	Yiang Pei-yi (Mrs.)	Vice-chairwoman Revolutionary Committee
		Liu Shiu-yin	
14.9.75	XUANHUA (ZUNHUA) (Overnight stop-over visits to exhibition of industrial and agricultural products and to factories)		
	BEIJING (PEKING)		
15.9.75	ANYANG, Henan (Honan) Province (Stop-over and briefing)	Ma Hai-yi	Leading member, Regional Department of Foreign Affairs
		Kuan Lian-chun	Staff member, Regional Department of Foreign Affairs
	LIN XIAN, Lin Xian County, Henan (Honan) Province (Visit to Red Flag Canal and area)	Fang Tsui-ki	Vice-Director, Department of Foreign Affairs, Lin Xian County

DATE	LOCATION	NAME	TITLE
		Kuo Weng-sheng	Director, Department of Agriculture, Lin Xian County
		Kuo Tai-tu	Staff member, Department of Foreign Affairs, Lin Xian County
17.9.75	ZHENGZHOU (CHENG-CHOW), Henan (Honan) Province (Briefing)		
		Chang Gian-feng	Leading member, Department of Agriculture and Forestry, Henan (Honan) Province
		Li Yu-kao	Division leader, Department of Foreign Affairs, Henan (Honan) Province
		Shi Hong-hsiu	Staff member, Department of Foreign Affairs, Zengzhou (Cheng-chow)
		Chang Chin-wu	Staff member, Office of Foreign Affairs, Department of Agriculture and Forestry, Henan (Honan) Province
		Tsao Fa-cheng	Staff member, Department of Agriculture and Forestry, Henan (Honan) Province
	CHILIYING People's Commune, Xinxiang County, Henan (Honan) Province		
		Tian Shiu-ching	Chairman, Revolutionary Committee, Chiliying People's Commune
		Chang Ching-wang	Vice-Chairman, Revolutionary Committee, Chiliying People's Commune
		Lu Shu-mei	Chairman, Revolutionary Committee, Chiliying Production Brigade
		Li	Accountant, Chiliying Production Brigade
		Song Kwa-sing	Work point-recorder, First Team, Chili- ying Production Brigade
		Tsang Shu-sing (Mrs.)	Vice-Chairwoman, Linchang Production Brigade
		Liu Ming-fu	Family member, Chiliying People's Commune
18.9.75	NANJING (NANKING), Jiangsu (Kiangsu) Province (Briefing, visit to city)		
		Tsung Yue	Vice-Director, Office of Agriculture and Forestry
		Hsu Sung-ling	Leading member, Agricultural Bureau
		Li Hsu-chi	Director, Agricultural Bureau
		Feng Hsun	Section leader, Agricultural Section, Agricultural Bureau
		Shao Kuang-yi	Secretary, Agricultural Bureau

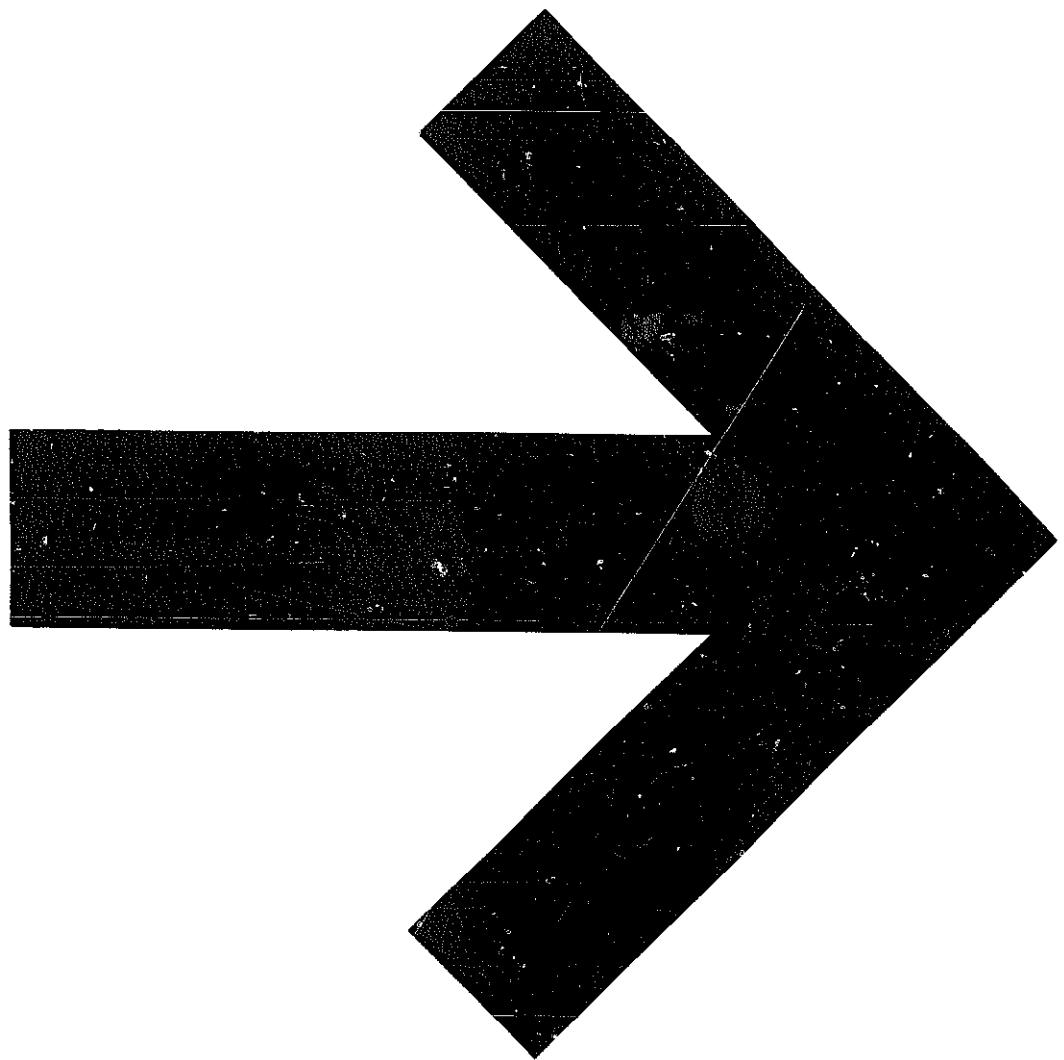
DATE	LOCATION	NAME	TITLE
19.9.75	NANJING (NANKING) Research Institute of Agricultural Science of Jiangsu (Kiangsu) Province	Wang Tien-li	Staff Member, Department of Foreign Affairs
		Giao Hse-chang	Staff member, Department of Foreign Affairs
		Sheng	Interpreter
		Qsu Shu-feng	Vice-Director, Revolutionary Committee
		Tsuing Wei-ling	Researcher
YANGZHOU (YANG-CHOW), Jiangsu (Kiangsu) Province	Yuan Tu-chang	Staff member	
	Yin Tsien-an	Leading member, Department of Foreign Affairs	
	Wu Mang-yung	Staff member, Revolutionary Committee, Yangzhou (Yang-Chow)	
	Chou Shi-de	Chairman, Revolutionary Committee	
	Tu Hsing-fang	Family member	
20.9.75	JIANG TU (KIANG TU) Hydro-junction project, Jiang Tu (Kiang Tu) County Jiangsu (Kiangsu) Province	XU PU People's Commune near Yangzhou (Yang-Chow), Jiangsu (Kiangsu) Province	Chairman, Revolutionary Committee
		Chen	Chairman, Revolutionary Committee
		Wu Chao	Leading member, Department of Agriculture and Forestry, Wuxi (Wu-Hsi)
		Yu Ching-hua	Production group leader, Department of Agriculture and Forestry, Wuxi (Wu-Hsi)
		Fung Huei-chun	Head, reception group, Department of Agriculture and Forestry, Wuxi (Wu-Hsi)
Lu Arh-pang	Member, reception group, Department of Agriculture and Forestry, Wuxi (Wu-Hsi)		
Luo Lin-cheng	Interpreter		
21.9.75	WUXI (WU-HSI) Jiangsu (Kiangsu) Province		

DATE	LOCATION	NAME	TITLE
HO LEI People's Commune, Wuxi (Wu-Hsi), Jiangsu (Kiangsu) Province			
		Liu Wi-pin	Chairman, Revolutionary Committee, Ho Lei Production Brigade
		Tin Mao-sein	Bare Foot Doctor, Ho Lei Production Brigade
		Wang Shu-cheng (Miss)	Chairwoman, Women's Federation, Ho Lei Production Brigade
		Wong Chu-ying (Mrs.)	Family member
		Sun Chin-hong	Family member
22.9.75	SUZHOU (SU-CHOW), Jiangsu (Kiangsu) Province		
		Wang Cheng-hsi	Leading member, Department of Agriculture and Forestry
		You Hsi-lin	Head, production group, Department of Agriculture and Forestry
		Chu Chung-ki	Head, Department of Foreign Affairs, Suzhou (Su-Chow)
		Chou Yi-hua	Staff member, Department of Agriculture and Forestry
		Cou Wen-yi	Interpreter
CHANG CHIN (Evergreen) People's Commune, Suzhou (Su-Chow), Jiangsu (Kiangsu) Province			
		Feng Keng-shrei	Chairman, Revolutionary Committee
		Wang Tu-keng (Mrs.)	Chairwoman, Women's Federation
		Sueng Pin-sheng	Secretary
23.9.75	SHANGHAI		
		Pan Li	Vice-Director, Agriculture Bureau, Shanghai Municipality
		Hu Cu-jen	Division leader, Agricultural Bureau
		Yan Yu-cheng	Staff member, Agricultural Bureau
		Chang Kan-cu	Staff member, Agricultural Bureau
		Jan Kei-ji	Staff member, Agricultural Bureau
		Wang Feng-yi	Interpreter
24.9.75	HWANG TU People's Commune, Chiating County, Shanghai		
		Hsu Pao-lung	Vice-Chairman, Revolutionary Committee

<i>DATE</i>	<i>LOCATION</i>	<i>NAME</i>	<i>TITLE</i>
		Sueng Pei-yan	Vice-Chairman, Revolutionary Committee
		Yang Shiu-jin (Mrs.)	Vice-Chairwoman, Revolutionary Committee
		Kung Fu-pao	Staff member, Commune Office
		Hsu Chuan-chiang	Expert in animal husbandry, in-charge of livestock farm
		Chiang Kwang-chu	Livestock member, Department of Agriculture, Shanghai Municipality
25.9.75	SHANGHAI		
	Agricultural Exhibition		
		Chen Pu	Leading member, Agricultural Exhibition
		Chao Ho-hsing	Staff member
		Chian Pei-hua (Miss)	Guide
		Lo Kuo-ching (Miss)	Guide
	First Rice Milling Factory		
		Ying Chi-chi	Leading member, Revolutionary Committee
		Ling Ong-chang	Member, Revolutionary Committee
	Second Dairy Farm		
		Chen	Leading member, Revolutionary Committee
		Koo	Veterinarian
		Hsu	Animal husbandry technician
		Chiang Kwang-chu	Livestock member, Department of Agriculture, Shanghai Municipality
26.9.75	SHANGHAI		
	Industrial Exhibition		
	Kung Jan Workers' Settlement		
	Retired Workers' Home, Kung Jan Workers' Settlement		
27.9.75	HANGZHOU (HANGCHOW), Zhejiang (Chekiang) Province		
		Ko Da-maw	Member, Revolutionary Committee
		Ling (Mrs.)	Member, Revolutionary Committee
		Sung (Mrs.)	Member, Revolutionary Committee

DATE	LOCATION	NAME	TITLE
		Chao Hsian-ki	Leading member, Department of Agriculture, Zhejiang (Chekiang) Province
		Wang Cheng-huei	Leading member, Department of Agriculture
		Chi Tien-lei	Technician, Department of Agriculture
		Wu Ying-rh (Mrs.)	Technician, Department of Agriculture
		Wu Liang-yu	Secretary, Department of Agriculture
		Hsu Teh-jen	Secretary, Department of Agriculture
		Chian Wen	Interpreter
	HANGZHOU State Tea Farm (Lungjin tea)		
		Chang Jia-chi	Chairman, Revolutionary Committee, Experimental Station
		Teng Ark-keng	Vice-Chairman, Revolutionary Committee, Experimental Station
		Li Ching-mu	Member, Revolutionary Committee, Experimental Station
		Chao Ching-lian	Leading member, Scientific Research Office
		Chian Wen-hua	Livestock technician
		Shi Kui-ying (Mrs.)	Woman cadre
		Cheng Jian-hu	Youth cadre
28.9.75	HANGZHOU (HANGCHOW), Zhejiang (Chekiang) Province		
	Hangzhou Brigade Factory		
		Gao Ta-mao	Leading member, Revolutionary Committee
		Lin Ching-yi	Secretary, Revolutionary Committee
		Sheng Keng-hua	Secretary, Revolutionary Committee
30.9.75	BEIJING (PEKING) (Briefings)		
		Cheng Hsin-chie	Leading member, Department of Animal Husbandry and Veterinary Service, Ministry of Agriculture and Forestry
		Kung Chan-tung	Vice-Director, Bureau of Land Redamnation and State Farms, Ministry of Agriculture and Forestry
		Hsu Ching-hwa (Mrs.)	Interpreter

DATE	LOCATION	NAME	TITLE
2.10.75	DAZHAI (TACHAI) Production Brigade, Hsiyang County, Shanxi (Shansi) Province		
		Kia Lei-keng	Vice-Chairman, Revolutionary Committee
		Shi Jiu-chang	Staff member, Reception Station
4.10.75	GUANGZHOU (CANTON), Guangdong (Kwangtung) Province		
		Wu Tung-jian	Vice-Director, Department of Agriculture, Guangdong (Kwangtung) Province
		Hsili Wen-pin	Leading member, Department of Agriculture
		Han	Staff member, Department of Agriculture
	College of Agriculture and Forestry		
		Chao Shan-kei	Vice-Chairman
		Li Ta-pang	Leading member, education group
		Hwang Chao-wu	Professor, Department of Agronomy
		Lo Chi-pin	Teacher, Department of Livestock
		Hwang Shi-fang	Student, Department of Agronomy
		Lo Lin	Student, Department of Agronomy
		Cheng Chuang-jin	Student, Department of Horticulture
		Lu Shi-hsiang	Leading member, Administration Office
5.10.75	SACHAO People's Commune, Shun Teh County, Guangdong (Kwangtung) Province		
		Mai	Chairman, Revolutionary Committee



Detailed Table of Contents

	<i>Page</i>
Chapter I: Background to Chinese agricultural development	1
Land ratio	1
Rainfall	1
Siltage	1
Capsule background	1
The modern period	2
The post-1949 record	3
New thrust	3
Second thought	3
Deliberate shifts	4
Constitutional sanction	4
Relevance	4
Chapter II: Agricultural development: why learn from China?	5
Failure's incentive	5
Landmarks	5
(self-reliance, priority attention for basic needs, agricultural growth)	
Agriculture — The priority	5
Food security	6
Resource utilization	6
Scared land	6
River harvests	6
Self-reliance	6
Grassroots leeway	7
Planning methods	7
Integrated rural development (IRD)	7
“Taming Nature” approach	7
Crop technology and extension	7
Research	8
Agricultural education	8
Mass education	8
Mechanization and local industry	8
Animal husbandry	8
Incentives	8
Examples	9
The new person	9
Chapter III: The Chinese approach to agricultural development	10
Role of prices	10
Economic incentives	10
Elbow room	11
Ideological spurs	11
Going it alone	11
Decentralization	12
Priority listing	12
Full use of resources	12
Wide spectrum	13
Pragmatism	13
Rush to the cities	14

Detailed Table of Contents (*Continued*)

	Page
Chapter IV: The People's Commune: China's tool for agricultural and rural development	15
History	15
(land reform, mutual aid teams, primary or elementary agricultural cooperatives, advanced agricultural cooperatives)	
New frontier?	15
Structure	16
Linkages	16
Vox Populi	16
Functions	17
Income and finances	17
Sharing	18
(agricultural tax, production expenses, public accumulation fund, welfare fund, costs of management and administration, members' income)	
Chapter V: China's agriculture: some achievements	19
1. <i>Technical factors in agricultural production</i>	19
<i>Farm level food security and clay wall silos</i>	19
Two examples	19
Groundfloor reserves	20
Bulk storage	20
<i>Agricultural mechanization without "graveyards"</i>	21
Quotes	21
Credit links	21
Exit the buffalo?	22
Images	22
Equipment channels	23
Success story	23
<i>A "Magna Carta" for grassroot technology (seed selection, soil, field management, close planting, fertilizer, plant protection, water conservation, tool improvement)</i>	23
Seeds of change	24
The seed production systems	24
(breeder seed, multiplication, purification, storage, testing, requirements, prices, processing, seed-bed preparation)	
The new seeds	25
Standing room	26
Single file	26
The watchmen	27
Early warning	28
System foundation	28
Buttresses	29
<i>"Melons on long veins": full use of land and water resources</i>	29
Layers of green	30
Hand-tooling	30
Blurred image	31
Lifeline	31
The search	31

Detailed Table of Contents (*Continued*)

	<i>Page</i>
"Long veins"	32
Reaping the rivers	32
<i>Recycling of organic waste and "the good earth"</i>	33
Nerves and science	33
Mobile factories	34
Service points	34
Indicators	34
Ecological cycles	35
<i>The "barefoot vets" and animal husbandry development</i>	35
First of six	35
Four greens	35
Sidelines	36
Figures	37
Key level	37
Screening	37
Swelling ranks	38
Open doors	38
<i>Farm input infrastructure – a shade below "clockwork"</i>	38
Compost cushion	39
Tool arsenal	39
<i>A glimpse at the rice milling industry</i>	40
Special tour	40
Levels	41
2. <i>Development institutions, methods and priorities</i>	41
<i>Agricultural plans that breathe</i>	41
Elbow room	42
Problem areas	43
Purchase orders	43
<i>Incentives to production and "spurs to the spirit"</i>	44
Income	44
Production spurs	44
The amenities	45
Bundle of intangibles	45
Open books	46
<i>Mobilization of rural savings</i>	46
Components	46
Credit funnel	47
Deposit plateau	48
3. <i>Education, research, extension and communication</i>	49
<i>Agricultural schools without "drop-outs"</i>	49
Guidelines	49
Structures	49
Three-In-One	49

Detailed Table of Contents (Continued)

	<i>Page</i>
Peasant geometry	50
1. Teaching is based on the needs of the majority of those farming	50
2. A decentralized network of agricultural schools and colleges serves farming at the local level, based on community responsibility and initiative	51
3. Students identify totally with the farming peasants. Upon graduation, they return to serve their communes	52
4. Peasants welcome agricultural students back to the rural areas. They strongly support agricultural training	53
5. In the selection of students for further agricultural training at every level, priority is given to those of peasant/worker/soldier origin while maintaining a proportionate representation of youth from all classes	53
6. Length of agricultural education and training has been compressed but quality has improved	54
7. There is full employment of graduates	54
8. Farm workers can study while still working	54
Test tubes and peasant practice	55
Native roots	55
Capillaries	56
Spread effect	56
Painted hillsides and mass communication	57
Airwaves	57
Reporters	58
Reverse flow	58
Innovations	59
Exhibits	59
4. Human resource development	59
 "No room for beggars" or the full use of manpower	59
Beyond numbers	60
Return of the native	61
 Integrated rural development: A view from the commune	61
1. The commune permits area development planning	61
2. The commune permits rational use of manpower, resulting in full employment	62
3. The commune permits a high degree of decentralized decision-making and ensures maximum people's participation	63
4. The commune organization achieves effective integration of rural institutions and services	63
 Women's contribution to development	63
Overview	63
Old society	64
Political clout	64
Home front	65
 Village level health care	65
Prescription	66
Village physicians	66
Marriage freeze	67
Ounces of prevention	67

Detailed Table of Contents (Continued)

	Page
<i>People's participation</i>	68
Production	70
Investment through mobilization of human resources	70
The mass campaigns	70
Income distribution	71
 Chapter VI: People's organization: transforming a "sheet of loose sand"	74
View from without	74
View from within	74
Transmission belts	75
Primary groups	75
Stages	76
Production	76
Employment and mobilization of people	76
Security and welfare	77
Integration and linkages	77
Spark plugs	77
Top bracket	78
Political consciousness	78
Bitter speech	78
"Quis custodiet..."	79
 Chapter VII: Transferability or relevance of the Chinese experience	80
<i>Agriculture: the priority sector</i>	80
Food security	81
Blending central direction and decentralized participation in the planning process	83
<i>Full use of manpower</i>	84
The man/land relationship	84
Man/community/land relationship	85
The man/work relationship	86
<i>Full use of material resources, appropriate technology and selective modernization</i>	87
Appropriate technology	87
1. The basic approach: traditional techniques, organization and tools;	88
2. Adoption of improved technology;	89
3. Promotion of advanced technology through progressive farmers on a capitalist framework	90
Animal husbandry practices	91
<i>Self-reliant integrated rural development (IRD)</i>	92
Self-reliance	92
Area development	92
Diversification of area development	93
Organization and participation	93
Cadres	94
Political consciousness	94

Detailed Table of Contents (*Continued*)

	<i>Page</i>
Chapter VIII: Suggestions for China/FAO cooperation	96
Farm mechanization	96
Integrated agricultural production	96
Visit by Chinese to Asian countries	96
Livestock development	96
Extension and training	96
Communes as an IRD mechanism	97
Decentralized planning methods	97
Chinese experience with rural cooperatives	98

Detailed Table of Contents /Continued)

	<i>Page</i>
Chapter VIII: Suggestions for China/FAO cooperation	96
Farm mechanization	96
Integrated agricultural production	96
Visit by Chinese to Asian countries	96
Livestock development	96
Extension and training	96
Communes as an IRD mechanism	97
Decentralized planning methods	97
Chinese experience with rural cooperatives	98