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JCRR and
Taiwan's Agriculture

12 Road 5/35
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Mr. Richard H. Nolte
Institute of Current World Affairs
366 Madison Avenue
New York 17, New York

Dear Mr. Nolte,

In October I spent a week in Taiwan, partly to attend a conference of historians and partly to see something of rural development . What I saw in the countryside was a picture of prosperity unmatched in South-east Asia.

From train and bus windows along the west coast and into the mountains I saw some of the most intensive land utilization I have ever seen. River beds are planted with vegetables during the dry season. The coastal plains are well endowed with gravel and stones, used extensively to build retaining walls and terraces. The amount of labor that goes into the utilization of small plots is staggering. One can see stone walls a few feet high running for a hundred yards along a bank just to rescue a few hundred extra square feet of land for cultivation. Luxuriant stands of rice grow right up to the edge of the village, the house, or right up to the factory walls near the larger towns. Bananas and fruit trees sprout from contoured ditches on steep mountain slopes, interplanted with all manner of vegetables.

This picture of high land productivity is complemented with a picture of high living standards in the rural areas. Towns serving no more than a small agricultural hinterland display a wide range of the fruits of modern industry. Electric fans, rice cookers and radios, furniture, all manner of textiles and urban services - tailors, barbers, even beauticians - attest to the purchasing power of the Taiwan peasant. Dotting the countryside are the long, sloping Chinese brick kilns, their chimneys busily belching smoke, trying to keep up with the investment being made in farm homes and buildings.

This view from a distance of prosperity is supported by what I saw on individual farms. One family I visited was just completing a new wing on its house. The courtyard was a large concrete drying ground for rice. Pickled vegetables and soy sauce were being made in large stone jars standing in the sun. Rice stood waist high at the fence and the borders of the path were planted with flowers and vegetables. Inside the house I saw comfortable furniture, electric fans and a radio. The farmer had a well used desk with rows of agricultural pamphlets. The kitchen contained a new brick stove with a tile top. A pan of fly poison standing nearby was doing its job well. In the adjoining wash area individual basins, towels, cups and toothbrushes for the 17 members of the extended family stood neatly on racks. Out behind were a chicken pen and a brick pig house with a cement floor. A huge sow was suckling

half a dozen piglets. No boar was kept; the farmer had merely sent a postcard to the local veterinary, who came to impregnate the sow under the artificial insemination scheme. These hogs, a cross between a Berkshire and a local variety, are all insured and inocluated under the extensive hog raising scheme. From this farm I could see five others, all between five and ten acres. I could see one new house, four with new roofs; one was an old landlord's house. This almost looked more like Denmark than like Asia.

All available statistics point to a surging increase in Taiwan's agriculture. Over the decade of the 1950's Taiwan's net domestic product increased 100%[1], with both agriculture and non-agriculture increasing at the same rate. However, the population growth in non-agriculture was more rapid than in agriculture, so that per capita product increased more rapidly in agriculture than in non-agriculture.

Productivity has increased in all sectors, but again more rapidly in agriculture than in non-agriculture. Total productivity (net domestic product per economically active population) increased 60% over the decade. In agriculture the increase was 96%; it was only 34% in non-agriculture. Although there was no increase in the land area planted in rice, total production increased from 1.4 to 1.9 million metric tons, giving a 35% increase in land productivity. Rice is Taiwan's single most important crop, accounting for 45% of agricultural product over the decade. The next two most important crops are sweetpotatoes and sugar cane, showing respectively 30% and 62% increase in yield per acre. It is difficult to teach the Chinese peasant much about growing vegetables, especially since production is largely determined by the industry of the farmer. In vegetables, yields per acre have increased only about 10%, but total production has increased from 591,000 to 803,000 metric tons, largely through a 25% increase in the land area planted in vegetables. Most of this represents second, third, or fourth cropping, or interplanting of vegetables with other crops.

The Chinese peasant has long been involved in pig raising, but here production is determined by inputs of capital and technique as well as of labor. On all counts the Taiwan farmer has advanced. The total hog population grew from 1.6 to 3.2 million during the last decade, and the average weight of hogs slaughtered increased from about 150 pounds to 190 pounds.

The increase in agricultural productivity has affected foreign trade considerably. During the decade of the 1950's agricultural imports dropped from 46% to 33% of total imports, despite a more than 30% increase in population. Increases in agricultural production were keeping well ahead of increases in population. Agricultural exports have provided much needed foreign exchange, about US$ 135 million in 1961 alone. Even more important, however, is that the increases in agricultural production (along with land reform as we shall see) have helped to stimulate and to pay for industrialization. As a result the proportion of total exports made up by industrial products increased from 4% in 1951 to 37% in 1960

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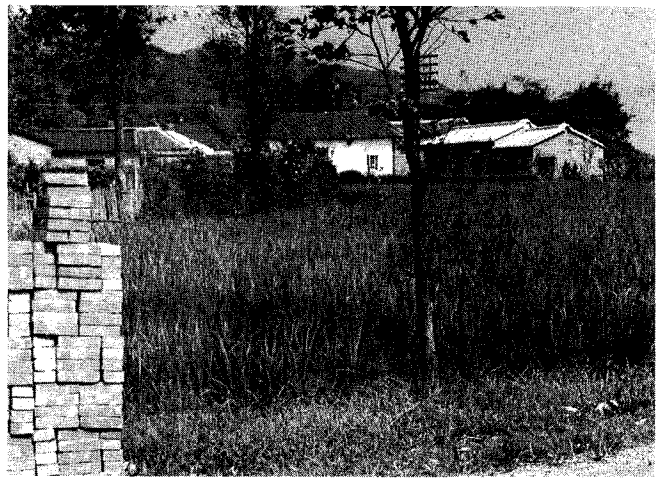
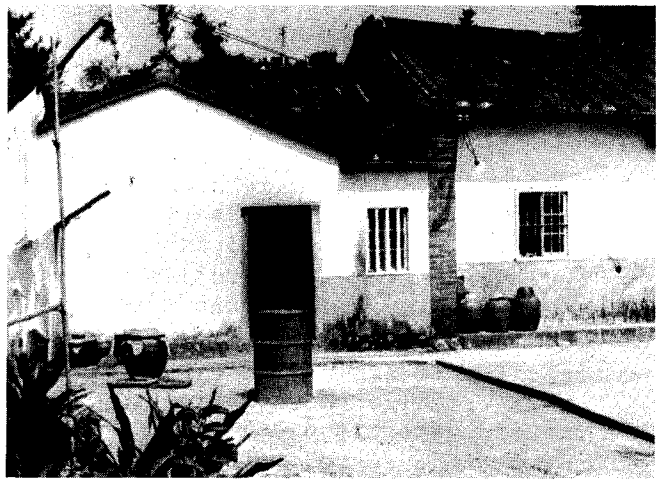
1. This and all other figures are given in constant prices.

The prosperous peasants
of Taiwan



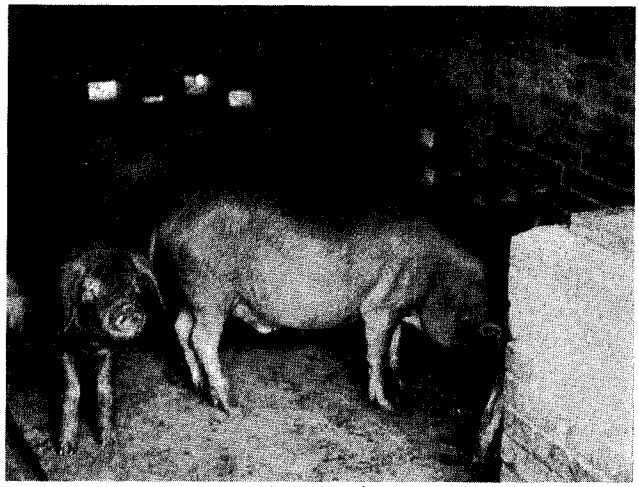
Bricks by the roadside...

a new wing on the family house.



Soy sauce and pickled vegetables;

a new tile-top stove



and the ubiquitous hog.

How has this happened? Whence comes this remarkable increase in agricultural productivity? This is the urgent question asked by all of hungry Asia; in the answer lies an important key to economic development. This kind of agricultural development can provide bigger and better diets for Asia's growing population, but it can do more. It can help to pay for the industrialization that must come if this part of the world is to escape from poverty.

Although many factors are involved in Taiwan's agricultural success, I think three are of prime importance. First, underpinning all government programs or economic forces, is the deeply ingrained industry of the Chinese peasant. To him (and to most Chinese as far as I can see) life is work and work is a very natural part of life. Everywhere I have seen him in Southeast Asia, I have found the Chinese peasant willing to expend great amounts of labor to gain small increases in income. The development planners need have no worry about the positive response of the Chinese peasant; one need only provide minimum inducements to let loose a veritable flood of human energy. This condition, however, is common to Communist China as well, yet there has not been the same increase in productivity on the mainland that Taiwan has experienced. What is unique about Taiwan?

The second factor of importance is Japanese colonial policy. From 1895 to 1945 Taiwan was a colony of Japan, whose policy it was to make Taiwan into a grainery. For the first twenty years Japanese capital extended the cultivated land in Taiwan and produced an average annual increase in total production of 1.4%. The further imrpovement of agricultural technique (the same that had paid for Japanese industrialization) and the extension of irrigation caused the average annual rate of growth to climb to 4.5% between 1920 and 1939. In this period about one and a quarter million acres were brought under irrigation. In addition, farmers were organized into associations that were used to communicate new techniques and to mobilize peasant capital through savings. The Japanese provided a firm foundation of land, irrigation, and organized farmers on which modern agricultural increases could be built. However, something else was needed as well. It seems probable that without some changes in the post-war world, Taiwan's agriculture would have met the same fate as Japan's after 1915, when agriculture became a drain on the economy rather than a dynamic support.

The third and truly unique factor was a complex of land reform and organized assistance to agriculture that began in 1948. Many government agencies, universities, and other organizations have played an important role in Taiwan's agriculture, but perhaps none so important as the Joint Commission for Rural Reconstruction. The story of Taiwan's recent agricultural advance is largely the story of the JCRR and the reform orientation embodied in that organization.

JCRR came into being in 1948, when the Nationalists were still in control of part of the mainland. As a result of an appeal made to the American Congress by James Yen, a dedicated pioneer in agricultural education, a clause was attached to the U.S. China Aid Act stipulating that 10% of all aid funds must be spent for rural reconstruction.

This was to be administered by a five-man commission, three Chinese and two Americans.

JCRR began its work on the mainland in Sgechwan province, "the worst in all China for tenancy," I was told. It achieved some success in its demonstration land reform and crop improvement programs, but its activity was cut short by the Communist victory, which substituted a different kind of land reform program.

With the rest of the Nationalist government, JCRR came to Taiwan im 1949 and began its work there; immediately its problem was cut to 1/100 of its former magnitude. From the beginning until just recently JCRR has been dominated by an orientation to agricultural extension, crop production, land reform, and general education to raise living standards. Many of the staff were trained at Cornell University and by the great and inspiring John L. Buck in China itself.

A basic requirement for increased agricultural productivity in Taiwan was land reform. Before 1950 over 90% of the farm families, with average holdings of less than 10 acres, controlled rather less than two-thirds of the total cultivated land. At the other end of the scale, less than 1% of farm families, with average holdings of over 500 acres, controlled 16% of all land. Only a third of the farmers were owner-operators; 40% were tenants. Under the political leadership of Vice President Chen Cheng, using the guiding principles of Sun Yat-sen, and with the organizational assistance of JCRR, a three stage land reform was launched. By the end of 1953 it was completed and the results were impressive. The 98% of the farm families holding less than 10 acres increased their control of total land from 66% to 86%. The proportion of tenants dropped from 40% in 1952 to 19% in 1954 and has dropped to 14% in 1960. The proportion of owner operators increased from 35% in 1952 to 57% in 1954 and was 64% in 1960. To accomplish this over 350,000 acres of land were purchased from 106,000 landlords and sold to 195,000 small peasants.

The reform was peaceful, piecemeal and rational. The first step involved rent reduction to a maximum of 37.5% of the yield. Previously rents had been between 50% and 70% of the yield. Other unfair practices were abolished, such as rent payments two years in advance and the use of unwritten contracts with no protection of tenure for the tenant. There were evasions to be sure. Traditionally the peasants had never been in a strong position, and the mere passing of a law would not alter that. The law was enforced, however, and the immediate effect was to reduce the value of land and to provide the tenants with greater security and larger real incomes. This allowed tenants to purchase some land, and provided generally for an increase in agricultural productivity.

The second step involved the sale of more than 200,000 acres of public land. These were lands expropriated from Japanese individual owners and corporate bodies when Taiwan was returned to China in 1945. The sales were carried out in five separate programs from 1948 to 1953. Existing tenants were given first option, after which lands would be sold to other small peasants. Of the approximately 240,000 acres sold, 50% went to peasants with less than 2.5 acres; 99% went to peasants with less than 10 acres. The land was valued at 2.5 times the annual yield of the

main crop. Payments were made in five to eight equal installments depending on the quality of the land. Again the result was to increase peasant incomes and agricultural production in general. More important, however, was the experienced gained; it proved valuable in the next and most crucial step in land reform.

The main part of the land reform program came in 1953 under the banner of Sun Yat-sen's Land to the Tiller ideology. A maximum of 7.5 acres (3 chia) were allowed to any single farm family. Lands in excess of this were compulsorily purchased by government and sold to the tenants or to other peasants with less than the maximum allowed holding. Land was valued at 2.5 times the annual yield of the main crop and purchasers paid in 20 equal semi-annual installments. (For single crop lands payment would be made in ten equal annual installments.)

Under the expert advice of Wolf Ladejinsky, a noted American agricultural economist who had assisted in formulating Japan's land reform program a few years earlier, it was decided to pay the landlords in part with land bonds in kind and in part with industrial bonds. This was to undercut landlord opposition and to provide for just compensation. Prices paid in kind gave the landlords a fair price that stayed fair in the face of mounting inflation. Ultimately the landlords were given 70% of the price in land bonds in kind (the landlord collected rice or sweetpotatoes), bringing 4% interest and redeemable in equal installments over 10 years. The other 30% was paid in stock in government enterprises. This was in four large enterprises taken from the Japanese in 1945 and valued at NT$ 970,000,000[1] in 1953. Of this a total of NT$ 660,000,000 was paid to landlords in compensation for their lands. This had the effect of pushing the landlord into the role of a modern industrial investor, no mean accomplishment for an agricultural society.

A good part of the success of the land reform program was government's firm decision to push it through. The decision could be firm in part because landlords were without effective political power, and there was considerable pressure on government to do better what the Communists on the mainland were trying to do. I asked JCRR people if they thought they could have had the same success on the mainland.

"Well, if we went back now," one replied, "there would be no trouble because all the old landlords have been liquidated."

They also point to the successes they had in Szechwan, but this was really quite limited. It would have been no easy matter to find the finance and the administrative ability, to say nothing of the political determination, to carry out the same program in a population of over 500,000,000.

JCRR's role in land reform was crucial. At every point the staff assisted in the technical surveys and the land evaluation required for reform, and helped to draft the proper legislation. They also helped to organize the local committees that performed much of the adjudicating functions required under the program. These local committees contained representatives of landlords, peasants, and tenants. At first they were in danger of being subverted. Peasants simply would not speak up and press legal claims

1. US$ 1.00 equals NT$ 40.00.

in the face of their traditional superiors. JCRR and government field men helped the tenants to understand and to assert their rights, and they kept watch for illegal practices behind legal facades. Perhaps the most important task was that of extensive land classification, in which each piece of land and each farm family was recorded on card files, cross-referenced so that local authorities could readily determine who had what, who had to give up what and who had a claim to what.

Not all of JCRR's effort, or even a major part of it, has been in land reform. In the case of that program, JCRR merely helped government to decide upon, plan and carry out what was basically a large scale legal program. There are two other types of tasks important to agricultural development. One concerns the education of the farmer, and might be called a cultural problem; the other concerns providing the physical facilities for development, and might be called an economic problem. In its early days the cultural problem was most important for JCRR.

For the first few years of its existence, the largest portion of JCRR's funds went into crop and livestock production and into rural health. The problem was to teach the farmer how to increase his productivity immediately, and how to use his increased income to make his life more healthy and even more productive. To this end JCRR helped to establish and run experiment stations, to study soils and fertilizer requirements, to find new crops and new ways to grow old crops, and to fill the peasants' spare time with other productive sidelines.

In rural health JCRR has assisted in establishing village clinics and has worked closely with doctors and nurses in health education. Staff members from these clinics spend about half their time on home and community visits working on programs essentially aimed at preventing disease. JCRR home economists have designed an improved kitchen stove that cuts fuel costs and have given instruction in the more healthful preparation of foods. Improved village water supply systems have been subsidized by JCRR. In all phases of rural health JCRR cooperates with a wide range of health organizations from local authorities to international organizations like UNICEF.

In educating the farmer one of the most useful methods is to get him organized into local associations. JCRR has strengthened and increased the scope of existing Farmers' Associations. They have been made more democratic and new ones have been established until now the entire country is covered by them. A normal association combines a savings and loan society, a marketing coop, a purchasing coop, rice mill, and agricultural extension unit. One can find sewing classes, food preparation classes, first aid classes, instruction in new agricultural techniques, the use of pesticides -- all manner of activities -- emenating from these associations.

Shu Lin Township (Chen) Farmers' Association, which I visited was rather characteristic of the associations in the rice growing areas. It had 2400 members, 1200 of whom were associates. Of the 1200 farmer members, almost 1,000 were owner operators, 200 were tenants. The yearly sale of farm supplies included 4.5 million pounds of feedstuffs, 2.2 million pounds of fertilizer, and 220,000 pounds of rice. There is a barber shop

which earns about NT$ 85,000 per year by clipping 40,000 heads; a nursery school cares for 250 children; the sewing class graduates between 50 and 100 students per year. The savings and loan bank increased its deposits from NT$ 63,000 to NT$ 5 million over the past deacde; loans went up from NT$ 14,000 to NT$ 2.2 million.

The general manager, hired by the elected board of directors, received his training under the Japanese. After completing high school, he worked in the government extension program, then joined the forerunner of the present association, which was then a credit coop, 30 years ago. After the reorganization in 1953, he was hired as general manager. Together with an older brother, the manager owns slightly less than 10 acres of land, which had previously been his fathers. Now this farm is the center of a double family of about 30 people, many of whom earn an income off the farm. The manager's salary, NT$ 2200, is about equal to the income from 1.5 acres of rice land.

By building organizations like this, by helping the farmer to learn more about the techniques of improving his own agriculture, and by teaching the farmer a wide range of skills to make his own life healthier and more productive, JCRR has built continued increases of productivity into Taiwan's agricultural system. The culture has been changed; the farmer now has the idea of innovation and scientific farming. There are many new sources of information and he knows how to get at them. He knows how to spot his own problems and to find ways to solve them. While it is necessary to work at the maintenance of the institutions that support this kind of continued increase, it is now possible for JCRR to turn its attention to other problems as well.

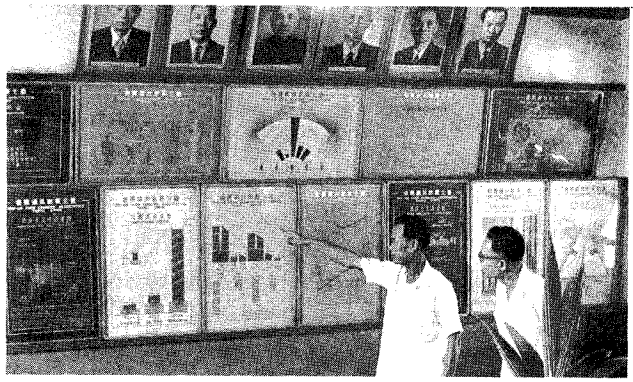
A recent survey found that one of the major requirements of all farmers is credit. This represents a real advance, however, for in this case it is not simply credit for working capital that is needed. Taiwan farmers now want credit to extend their operations, to increase their productivity. To meet the new needs of the farmers, JCRR started a Unified Agricultural Credit Program, which will coordinate the work of the Land Bank and the Cooperative Bank with that of the Farmers' Associations. The Americans provided US$ 7.5 million to be used by the unified program primarily to build up the reserves of the Farmers' Associations. An American farm credit expert is directing the program from JCRR's office. Started two years ago, the plan is to provide a permanent, self-sustaining agricultural credit institution to meet all the needs of the farmers for well-supervised credit by 1965.

About half of JCRR's finances now go to water use and flood control, a problem that took only about 25% of its finances early in the 1950's. After what the Japanese accomplished, additions to irrigation and water control are costly and require extensive investigation. Tidal lands can be reclaimed, resevoirs must be built, irrigation ditches previously dug need to be lined to prevent water loss. Costly and slow as it may be, this type of work is vital to the extension of farm land and the increase of land productivity; and it is the kind of thing the farmer cannot do by himself.

There is a part of this program in which the farmer can have a direct hand, however. Part of the water control program involves the consolidation

Shu Lin

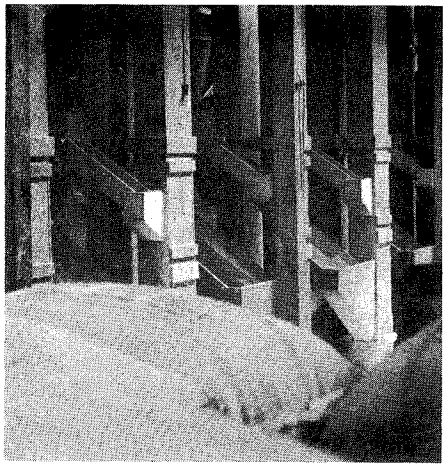
Farmers' Association



Manager Wong and the FA's progress display.

Credit, and...

consumers' coops, along with



rice mill, and...

storage and marketing facilities (typical Taiwan motorized trike).

of scattered farm plots. An estimated 50% of all farm holdings are scattered about, some in more than three places. JCRR is working with the government Land Bureau to consolidate these. Like most JCRR programs this begins with trial plots so that the problems can be worked out in detail in manageable proportions before the program is extended to the entire country. Under JCRR supervision the farmers agree to consolidate their lands. JCRR does the survey and the new plots are mapped out. Feeder roads and irrigation canals are designed into the system, with each farmer giving up a portion of his land for common use. Then the rationally organized rectangular strips are marked out on the ground and parcelled out to the farmers in proportion to the amount of land they originally held. The costs of consolidation, about NT$ 1,000 per acre, are borne jointly by JCRR, government, and by the farmers. The irrigation will increase the productivity of the land, and the rationalized layout increases the productivity of the farmer. On the trial plots it has been found that consolidation reduces labor requirements by about 20%. The time saved by the farmer can be put into the production of other sidelines. Already 25,000 acres have been consolidated. A new plan for 1962-71 calls for the consolidation of 750,000 acres, about a third of Taiwan's cultivated land.

With the cultural problem largely solved, JCRR can also turn its attention to other types of economic problems, such as the subtle problem of long term planning for agriculture. Future increases in agriculture will be built upon refinements in the entire sector, and a closer articulation of agriculture with the growth of the entire economy. This requires different kinds of operations from those that dominated JCRR's activities a few years ago. More specialized and more sophisticated statistical and analytical techniques are required to locate inefficient areas in agriculture and to plan for the coordination of agricultural products and non-agricultural demands. JCRR's adaptation to this new set of problems is seen in its new chairman. Dr. S.C. Hsieh is a sophisticated and well trained agricultural economist, one of whose recent publications bears the title "An Analytical Review of Agricultural Development in Taiwan - An Input-Output Productivity Approach." There are internal strains, to be sure, when an organization turns from agricultural extension to bureaucratic planning, even if those changes are called for by the very success of the organization in its earlier efforts. It is much to the credit of JCRR that the organization is sensitive to the broader goal of agricultural development, so that it can make whatever changes are necessary to achieve that goal.

In almost any terms JCRR is a good organization. In open defiance of Parkinson's Law, its administrative costs have grown far more slowly than its total expenditure. In 1950 administration took about 25% of JCRR's total budget. By 1961 this was reduced to 3% of a budget that had grown to twenty times its earlier size. One of the major reasons for this, and indeed for the entire success of JCRR, lies in the large resevoir of skilled manpower on which the organization draws. Probably no low income country in the world has such a high concentration of trained scientists and administrators as does Taiwan. This is certainly one of the most crucial elements in any development program. As far as I can see, competent technicians and administrators constitute a shortage

more serious that the shortage of capital in the development programs of almost any country in Southeast Asia.

In part, too, JCRR success is due to American aid. Since 1950 we have put in about US$ 7 million, probably one of the most effective expenditures of U.S. aid funds. This is one of those salutary cases in which American assistance has gone to support competent and dedicated reform elements in the host country. It is not often in this part of the world that there is an alternative to extreme right or left totalitarian organizations and to all manner of incompetent and corrupt organizations, and it is hopeful to see American aid supporting one of the few really excellent alternatives that do exist.

There is a good deal of publicity about the agricultural success of what is called Free China. There may be some debate about how free it is, but there can be no doubt about the success. Perhaps the most significant freedom that does exist on Taiwan is the freedom from a dogmatic theory of history. However much the administration's spies and secret police may operate, however much criticism of the regime can be harmful to one's constitution, however dictatorial the government, there is no preconceived doctrine to which economic development policy must conform. This means that there can be a rational and piecemeal approach to economic or agricultural development, an approach that aims at immediate increases in output. It seems to me that it is this kind of freedom, as minimal but profound as it is, that enables the competent men of JCRR to accept the reform aid of the American government and to utilize it in helping to produce more bread for all to eat.

Sincerely,

Gayl D. Ness

Gayl D. Ness

The Chinese American
Joint Commission on Rural Reconstruction
Taipei, Taiwan

Received in New York January 18, 1963.