

CHINESE-AMERICAN

JOINT COMMISSION ON RURAL RECONSTRUCTION

Rural Health Series: No. 1



PUBLIC HEALTH PROGRAM IN TAIWAN

By
S. C. Hsu, M. D., M. P. H.
and
James C. M. Wang, M. D.



With the compliments

of the

Chinese-American

Joint Commission on Rural Reconstruction

TAIPEI, TAIWAN, CHINA

JUNE, 1953

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GENERAL INTRODUCTION

Since the fall of 1949, JCRR has concentrated its rural health program in Taiwan upon assisting governments of various levels in setting up a province-wide network of rural health agencies in "hsiang" (villages) and "chen" (townships) on a community basis, and at the same time in gradually developing special health projects by tackling main medico-health problems.

The work of establishing the aforesaid rural health agencies was completed as of June 1952 quantitatively with the establishment of 22 health centers and 360 health stations. The health centers were financed by either the municipal or hsien governments, while the health stations were established and supported by "hsiang" or "chen" offices with the encouragement and assistance of JCRR.

During the FY 1952, efforts were made to gradually cut the cash grants for operational expenses as well as free allocation of medical supplies to health stations in order to ascertain their capacity for self-sufficiency under the support of the "hsiang" or "chen" offices. This goal was satisfactorily accomplished. Meanwhile efforts were initiated to improve the quality of health stations along the following two lines, namely: 1) physical improvement by standardizing the buildings, furniture, equipment and drugs; and 2) personnel training by establishing two training centers for conducting refresher courses for the workers of the health stations.

Other special health projects which were undertaken and expanded in 1952 by the Government health organizations with JCRR assistance were rehabilitation of rural water works; province-wide malaria control; tuberculosis control; an extensive school health program, a nutritional study on soy-beans; leprosy control; plague control in Kinmen Islands; further strengthening of the Sera and Vaccine Production; training of health workers; and special projects launched by the international teams assigned by the World Health Organization (WHO).

JCRR was requested by CUSA to direct the sales program of US-aid medical supplies. The result of this operation was so outstanding that

speculation and hoarding of drugs which had earlier prevailed, were completely stopped. Drugs which previously could be obtained only from the black market at exorbitant prices became freely available in the open market at prices even lower than the floor prices set by CUSA/JCRR, and the supply of anti-biotics as well as sulfa-drugs which formerly were so scarce in rural areas and even in cities became plentiful all over the province.

I. Building up Province-wide Rural Health Facilities

Rural health facilities in Taiwan in the form of health centers and health stations were non-existent at the time of V-J Day. In the summer of 1949 when JCRR began its program in Taiwan, the condition and even the number of health stations was little known. Subsequently, with JCRR financial assistance, the Provincial Health Administration (PHA) and the National Institute of Health (NIH) jointly made a survey of rural health organizations. The number of health stations discovered by the survey team was 104, of which 46 per cent were dormant with nothing more than a sign board and a few desks in the village offices.

The first step which JCRR took toward the setting up of a network of health facilities was the strengthening of those health stations already existed up to a basic standard. Based on the joint recommendations of PHA and NIH, JCRR approved in November 1949 a project for the strengthening of 13 health centers, 42 health stations, 1 rural hospital and 1 mobile health unit. A set of requirements for a health station eligible to receive JCRR assistance was made known to the public. A health station should have 1) adequate space with separate entrance completely partitioned off from the "hsiang" or "chen" office; 2) a full time staff of at least three persons, namely a medical doctor, a nurse and a midwife; and 3) a health board organized by public spirited bodies to take care of the raising and disbursement of funds and management of non-technical affairs.

At the recommendation of JCRR, the then ECA Medical Depot made up unit packs of supplies from its available stock for free allocations to those health stations which had fulfilled the three requirements as listed above. The NIH detailed its top technical personnel to the PHA for the

formation of a supervisory team.

JCRR provided funds for the team members to make frequent trips to health organizations for checking, inspection and supervision.

Owing to the policy adopted by the Government during 1949 and 1950 the establishment of new organizations was prohibited. It was evident that any attempt to establish a network of health agencies through the Provincial Government would be impracticable and futile. Therefore communities were approached and encouraged to establish their own health stations. It happened that at that time the Government was following the policy of holding elections for magistrates, mayors, and "hsiang" or "chen" elders through popular votes. The local elections provided an opportunity to campaign for a community health project. The establishment of a health station in a community, by the community, is even more remarkable than that the founding of a primary school, as it involves a new consciousness and pride in improving the people's health, a new concept aroused with JCRR assistance.

Electoral candidates would unanimously announce the importance of health care for the people and they promised to do something about it if they were elected. If a health station was established by the elder of a certain "hsiang" or "chen", the people in the neighbouring "hsiang" or "chen" would immediately clamor for one to be set up in their areas.

During 1949 and 1950, US economic aid to China was very uncertain and of unknown duration, usually three months at a time. JCRR had to adjust its programs to the unsteady circumstances. Its assistance to health stations including those already and about to be extended was in the form of small cash grants in local currency equivalent to about US\$ 30-60 per station per month to cover travel expenses incurred by health personnel in making visits to schools and villages, procurement of equipment such as bicycles, delivery and home visiting bags, locally-made sterilizers, etc., and free allocations of medical supplies. The cash grants were made available once every three months to a number of selected health stations upon the recommendation of the supervisory team composed of personnel from both the PHA and NIH following consultation with health officers concerned on

the merit of improvement accomplished in preventive health work. Curative work which was poor and over-emphasized by the elders and doctors was discouraged by JCRR.

For administrative expediencies Taiwan was divided into six regions. In the past, meetings were held once every three months in each of these regions attended by mayors, magistrates, elders, school principals, health officers of health centers or stations to discuss matters related to the establishment of new health stations and the strengthening of those existing ones. Representatives of the PHA presided at these meetings. In the course of these discussions curative work through whole-day clinics was publicly discouraged by both the PHA and JCRR.

Subsequently two more projects were implemented, one of which being approved in April 1950 was to give aid to 7 health centers and 18 health stations, and the other, approved in August 1950, to give aid to 15 health centers and 63 health stations as well as 30 aboriginal health stations. During the year of 1950, in addition to the strengthening of those 104 health stations already established according to the three aforementioned conditions, the communities had established 148 new ones. To each of these new health stations a unit pack of medical supplies was distributed by JCRR.

Then JCRR reported to Governor Wu on the rapid spontaneous growth of health stations by community effort and requested him to recognize officially those health stations which were *fait accompli*. He was pleased with the development and gladly made an exception in the recognition of these health stations. To help expedite the completion of a province-wide network of health agencies, toward which he was enthusiastic, and in response to JCRR recommendation, Governor Wu kindly issued instructions to all mayors and magistrates to arrange for the establishment of a health station in these "hsiang" and "chen" where such was still lacking. Based on his instructions, meetings were held in each hsien and municipality attended by the magistrate or mayor, the health officer of health center and elders of those "hsiang" and "chen" still without a health station.

The group of "hsiang" and "chen" under consideration may be divided into two classes, namely poor and rich. The poor "hsiang" and "chen"

were unable to support a health station while the rich ones due to presence of numerous private practitioners in their areas did not feel the need of it. Explanation was given that a health station should primarily emphasize such public health activities as prophylactic inoculation against small-pox, tetanus, diphtheria, whooping cough, tuberculosis, typhoid and cholera which remain a potential menace to the people in Taiwan, plus health education, environmental sanitation, school health, maternal and child health, malaria control etc. Clinics should be conducted by the health stations only in the morning instead of the whole day, chiefly for consultations and of a special nature, such as mothers' clubs, pre-school children clubs, well baby clinics, maternal clinics and trachoma clinics. These kinds of activities had never been undertaken by private practitioners.

Emphasis was placed on the shocking prevalence of certain diseases among school children. Examples cited included trachoma (from 30% in good schools to 90% of the pupils in the salt fields) and head lice (from 40% among female children in urban areas to 80% in some rural districts). Having learned of the true conditions, the recalcitrant elders immediately changed their attitude and volunteered to have a health station organized in the more prosperous areas within a month, while the elders of poor "hsiang" and "chen" became anxious to have such an institution set up. Elders of poor areas then solicited JCRR for a cash grant to assist them; elders of the prosperous ones who did not need outside aid, insisted upon a token contribution from JCRR as a symbol of qualification in getting the US aid.

A sum of US\$100 in local currency at official rate was made available to each new health station established in 1951. For indigent "hsiang" or "chen" a maximum of US\$ 600 equivalent in local currency was made available. Finally a special project for the establishment of 4 new health centers and 92 new health stations was approved by JCRR in January 1951. The results surpassed the planned scope of the project. A total of 4 health centers and 104 health stations were established.

Aid to the existing health organizations was continued. In April 1951, JCRR started another project involving continued aid for a period of 3

months to 17 health centers, 167 health stations, 30 aboriginal health stations and 4 county hospitals.

Included in the FY 1952 health budget, a sum of US\$ 200,000 equivalent in local currency was earmarked for the continuation of free allocations of medical supplies and cash grants for operating expenses of health stations. However, the Rural Health Division wished to ascertain whether these health organizations could become self-supporting without further assistance from JCRR. Beginning in July 1951 no more new projects were recommended to continue the cash grants to the health organizations. Their activities were found not to be affected to any noticeable extent.

Since January 1952, free allocations of medical supplies were discontinued; instead, US-aid medical equipment and drugs procured by ECA for resale were made available by JCRR to health organizations at reduced prices. "Hsiang" and "chen" offices were advised to raise revolving funds for their health stations to purchase necessary equipment and drugs from JCRR on a monthly basis. Health stations were allowed to charge 35 to 40 percent above the cost price to patients who could pay. They were obliged, however, to give free service and medication to persons defined as "indigent" by "hsiang" or "chen" offices (inability to pay housing tax) and who were therefore issued a free-of-charge certificate by the local government offices.

To alleviate the tax burden of the people the Provincial Government considers the raising of funds from people even in the form of voluntary contribution a metamorphic tax. Since January 1952, the Provincial Government prohibited the local non-governmental health boards from soliciting funds from people; thus these boards have become dormant, existing only in name ever since. The municipal and hsien governments were instructed to include in their budget the salaries of personnel of health stations under their jurisdiction and the "hsiang" and "chen" offices to put an item in their budgets for the operational expenses of their related health stations. In other words the health stations which were originally developed as a community project have now become a government enterprise controlled and financed entirely by the Government. The loss of this stimulus to

community health consciousness is felt to be an unfortunate one, for which alternative provisions are being considered.

The Rural Health Division felt justified to utilize the saved budget of FY 1952 originally earmarked for free allocations of medical supplies and cash grants to health stations for launching a campaign to effect standardization of buildings and furniture of health stations. Health officers and elders of "hsiang" and "chen" were contacted. With the help of the Provincial Department of Reconstruction and the Nursing Team of NIH, blue prints of the standard building and furniture were prepared and shown to the health officers and elders. Those "hsiang" and "chen" which could raise one half of the total cost were selected by the local health officers and PHA and were recommended to JCRR to provide the contribution of the other half. Just before the close of the fiscal year on June 11, 1952 JCRR approved the project to attain a standardization of buildings and furniture of 58 health stations of which 46 involved new construction while 12 involved extension of existing facilities. The total cost of the project amounted to NT\$ 4,010,682.00 (US\$ 389,286) of which NT\$ 1,951,592.50 was furnished by the local communities and NT\$ 2,059,089.50 contributed by JCRR. This project is still being implemented at present. In those communities where a new building has been completed, the health station will be moved to the new site and the old building utilized as a staff dormitory which has been wanting.

In recapitulation, the number of health stations increased from 104 in 1949 to 360 in June 1952. During the same period the number of personnel employed by the health organizations was more than tripled from 775 to 2,574 and the total contribution made by the governments and communities was estimated at about NT\$ 62,000,000 as against NT\$ 5,800,000 by JCRR. Of the sum contributed by JCRR, NT\$ 3,795,000 was in the form of cash grants and NT\$ 2,040,000 for free allocations of medical supplies. The following tables show the annual growth of the health centers and health stations as well as projects implemented by JCRR.

Growth of Health Organizations in Taiwan

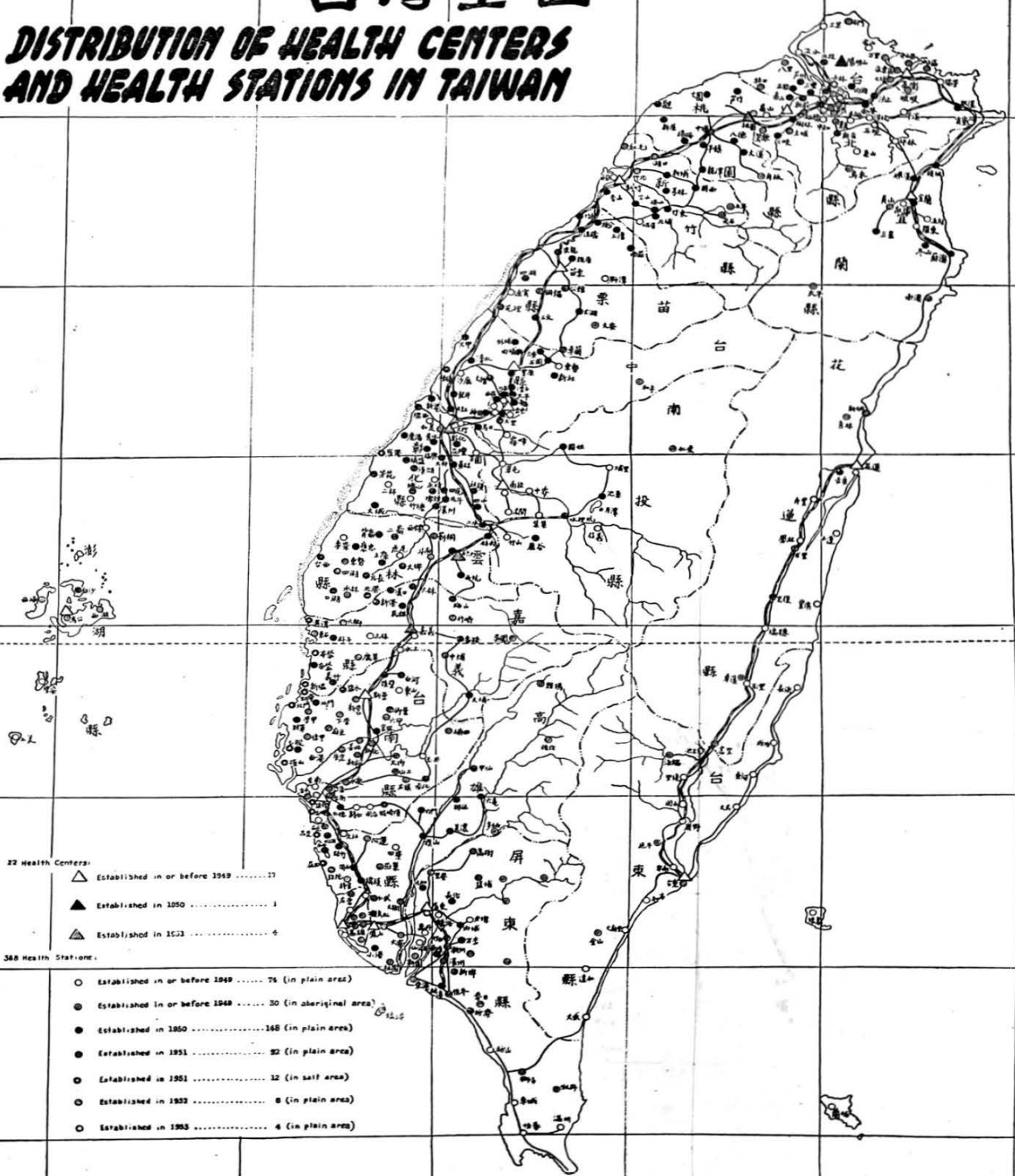
	1949	1950	1951	Jun. '52	Present Total
Number of health centers	17	18	22	22	22
Number of health stations	104	252	356	360	360
Number of personnel:					
Doctors	264	394	501	620	620
Nurses & midwives	234	538	742	788	788
Technicians, sanitary inspectors & others	277	554	965	1,160	1,160
Total	775	1,486	2,208	2,568	2,568
Amount contributed by governments and communities	NT\$ (1946-1949) 13,561,000	NT\$ 13,755,000	NT\$ 18,363,000	NT\$ 16,224,000	NT\$ 61,903,000
Amount contributed by JCRR:					
Cash	—	870,000	866,000	2,059,000	—
Medical Supplies	550,000	495,000	695,000	300,000	—
Total	550,000	1,365,000	1,561,000	2,359,000	5,835,000

Projects for Strengthening of Rural Health Organizations

Project Code	Name of Project	Date Approved	Amount Approved	No. of health Organ. Assisted			
				health center	health stat'n	county hospital	others
TW-F-10	Aid to 13 health centers, 42 health stations, 1 public rural hospital and 1 mobile health unit	Dec. 10, 1949	US\$ 44,200.00	13	42	2	1
TW-F-13	Further Aid to 7 health centers and 18 health stations	Apr. 20, 1950	14,530.00	7	18	—	—
TW-F-18	Continued Aid to 15 health centers, 63 health stations and 30 aboriginal health stations	Nov. 9, 1950	NT\$ 522,160.00	15	93	—	—
TW-F-21	Establishment of 4 new health centers and 92 health stations	Jan. 26, 1951	200,500.00	4	92	—	—
TW-F-26	Continued Aid to 18 health centers, 167 health stations, 30 aboriginal health stations and 4 county hospitals	Apr. 30, 1951	395,830.00	18	197	4	—
TW-F-46	Standardization of buildings and furniture for 59 health stations	Jun. 11, 1952	2,059,089.50	—	58	—	—

台灣全圖 六十分之一

DISTRIBUTION OF HEALTH CENTERS AND HEALTH STATIONS IN TAIWAN



22 Health Centers:

- △ Established in or before 1949 27
- ▲ Established in 1950 1
- ▲ Established in 1953 4

368 Health Stations:

- Established in or before 1949 74 (in plain area)
- Established in or before 1949 30 (in aboriginal area)
- Established in 1950 168 (in plain area)
- Established in 1951 92 (in plain area)
- Established in 1951 32 (in salt area)
- Established in 1952 8 (in plain area)
- Established in 1953 4 (in plain area)

II. Rehabilitation and Extension of Waterworks

After V-J Day the Taiwan Provincial Government with the assistance of UNRRA/CNRRA concentrated its efforts and resources upon rehabilitating waterworks in big cities. However, prior to the summer of 1949 when JCRR began its Taiwan Program very little was known about the conditions of rural waterworks. With JCRR financial assistance, the Provincial Department of Reconstruction (PDR) undertook a survey. The result revealed that there were altogether 139 waterworks in Taiwan, of which 9 were in cities, 3 owned by the Taiwan Railway, and 127 in rural areas. Of the 127 rural water plants, 18 were in good condition, 32 irreparable, and 77 needed immediate rehabilitation. In November 1949 JCRR approved a project for the rehabilitation of 77 rural waterworks of which the PDR was the sponsoring agency. The JCRR contribution approved for this project amounted to a sum of local currency equivalent to US\$ 189,176. Of these 77 waterworks, 50 were located on the east coast and the remaining 27 in the western part. The rehabilitation work was completed as scheduled in 6 months in 1950. The total expenditure amounted to US\$ 201,003.78 of which JCRR contributed US\$ 180,160.73, the Provincial Government US\$ 17,928.68 and the communities US\$ 2,714.33. The total population benefited by this project was 190,791.

The rehabilitation works on the east coast consisted chiefly of the repair to a cement collection tank to receive seepage water or water from small streams on nearby hills, replacement and resetting of cast iron pipes from one to five kilometers in length, and installation of public water taps. Water was carried through the pipe by gravity without special treatment.

As water sources on the western part of the island came mainly from the irrigation canals which contained heavy silt, the rehabilitation of these waterworks also involved construction of sedimentation tanks and slow sand filters in addition to the operations as mentioned above.

The significance of this waterworks rehabilitation project was found not only in providing adequate potable water but also in enabling aborigines and villagers on the east coast to settle in villages and till their land which

otherwise would have been abandoned on account of lack of water for domestic use.

In the process of rehabilitation work, elders of "hsiang" and "chen", realizing the importance of adequate and safe water, began to approach the Rural Health Division for assistance for more waterworks.

Taking advantage of this opportunity, the Rural Health Division informed the elders that the JCRR's policy of assistance is to arouse the communities to take the initiative and responsibility and advised them that in the next phase of the project the communities concerned were expected to raise one third of the cost with the Provincial Government matching one third, and JCRR contributing the balance instead of bearing the entire amount as it had done in the past. In the year of 1951, the Provincial Government included for the first time in its budget a sum of NT\$ 4,500,000 (US\$436,893) for waterworks.

JCRR then defined a rural area to which it might consider the granting of its assistance for a waterworks. This area should have a population of less than 15,000. In March 1951, a second project for the rehabilitation and extension of 11 waterworks was approved by JCRR. At this stage extension of waterworks was given special consideration as the existing plants could not meet the demand of the rapidly growing population.

The work was completed before June 1952. A total of 74,600 persons have benefited from this project. The final cost of the entire project amounted to US\$ 428,583.78 of which JCRR, the Provincial Government and the beneficiary communities shared approximately one third each.

Meanwhile the Provincial Government undertook the rehabilitation and extension of six more waterworks which have since benefited 153,000 people. The final cost for these six waterworks totalled US\$ 443,962.98, of which the Provincial Government subsidized two thirds while the beneficiary communities raised one third.

In the current year of 1952, the Provincial Government earmarked a much larger budget providing US\$ 2,000,000 for the rehabilitation and extension of 22 waterworks of which one half is borne by the Provincial

Government and the other half by the local governments and communities.

Since the Government has furnished enough budget to carry out its waterworks program, contribution from JCRR is no longer necessary. This waterworks project may therefore be considered as one of the most satisfactory projects carried out in accordance with the JCRR principle of US Aid toward self support and initiation.

III. Malaria Control Program

JCRR assistance to the Malaria Program in Taiwan began in November 1944. This timely aid to the Taiwan Provincial Malaria Research Institute (TMRI) established in 1946 through the assistance of the Rockefeller Foundation, was of special significance in that it enabled the organization to continue its work when direct financial contribution from the Foundation was discontinued. The outstanding operations in the Malaria Program of FY 1952 are summarized as follows:

A. The Local Malaria Stations:

The 144 local malaria stations, which were reopened in the previous year by the local communities concerned with JCRR assistance, were incorporated into their related health stations. In recapitulation, each local malaria station was managed by one malaria technician who received a 4-week training course in 1951 conducted by the TMRI at JCRR expense. The "hsiang" and "chen" offices furnished a microscope and office space in addition to the salary of the technician, while JCRR provided him with a bicycle, laboratory supplies and equipment other than the microscope, as well as drugs for treatment of malaria patients either free of charge or at a low cost. Monthly cash grant for travel expenses in local currency equivalent to US\$ 10 for each technician, furnished after his malaria station was established, was discontinued in 1952. The main activities of these malaria technicians were to carry out periodical mass surveys and treatment in order to maintain the working capacity of farmers. Beginning this year, they helped the TMRI to undertake a simultaneous malaria survey of the whole island and some of them were trained as foremen in DDT spraying. The periodic blood examination of rural inhabitants, as well as treatment of those whose blood harboured malaria parasites, were continued by the 144 malaria stations.

The total population covered by the malaria control program was about 2,500,000. During fiscal year 1952, the number of villagers who received blood examination was 452,631 of which 72,381 or 16.0% were found to be

harboring malaria parasites, and were adequately treated with paludrine provided free of charge by JCRR. The corresponding figure in the preceding fiscal year was 481,326 persons examined of whom 73,745 or 15.3% were found to have malaria parasites and were given free treatment.

The prevalence of species of plasmodia found during this period in Taiwan remained about the same, i.e., 54% being *P. vivax*, 41% *P. falciparum* and 3-4% *P. malariae*. About 19% of the positive were gametocyte carriers.

With the establishment of the 144 malaria stations throughout the island, simultaneous malaria parasite surveys became possible. Free allocation of additional micro-slides was made to these malaria stations through the TMRI, and the malaria technician of each station was requested to make blood films from 100 pre-school-aged children in villages of his area on a single day, December 17, 1951. These films were then sent to the TMRI for microscopic examination by a group of more experienced technicians. As a result of the mass examination, Dr. K. C. Liang, Acting Director of the TMRI was able to point out that Taiwan could be divided into four zones according to the degree of malaria incidence, viz: (1) a coastal zone with about 2,000,000 inhabitants who are almost free from malaria; (2) a plain zone with about 3,800,000 population, a place of low to moderate endemicity with an average of 2.5% pre-school children harboring malaria parasites; (3) the foot-hill regions with about 1,500,000 population, a hyper-endemic area with a 12% parasite rate among pre-school children and a spleen rate of 50% among the children between the ages of six to eight; and (4) a mountainous area with about 120,000 to 150,000 people, chiefly aborigines, a place of high endemicity with 9.6% of pre-school children harbouring malaria parasites.

B. Taiwan Provincial Malaria Research Institute:

During the fiscal year 1952, the main activities of the Institute were (1) determination of vector anophelids; (2) training and supervision of personnel engaged in malaria control; (3) preparation of island-wide DDT residual spraying.

a. Determination of Vector Anopheles:

A. minimus, a stream breeder, now has been definitely proved to be the vector. The infected ones were found only among those anopheles caught in the human dwellings. Of 2,692 *A. minimus* from human dwellings dissected, three gland and nine gut infections were found, giving a total infection rate of 0.45%. *A. hyrcanus* var *sinensis*, which formerly was believed to be a malaria transmitter, is considered not to be a vector of importance in Taiwan. From 1946 to 1950, the total number of *sinensis* dissected was 52,117 of which eight gland infections were reported without a single positive gut involvement. One smear positive for sporozoite, which was kept by the Institute, later was ascertained by several specialists to be flagellates. Another entomologist, who dissected 7,800 *sinensis* from January 1951 to June 1952, found one gut infection and a number of specimens positive for flagellates which could easily be mistaken for sporozoites. The number of species of Anopheles found in Taiwan remained to be 16 as follows:

<i>A. aikeni bengalensis</i>	<i>A. annularis</i>
<i>A. barbumbrosus</i>	<i>A. jeyporiensis candidiencis</i>
<i>A. gigas baileyi</i>	<i>A. fluviatilis</i>
<i>A. insulae flerum</i>	<i>A. hyrcanus sinensis</i>
<i>A. leucosphyrus</i>	<i>A. lindesayi</i>
<i>A. ludlowii</i>	<i>A. maculatus</i>
<i>A. minimus</i>	<i>A. splendidus</i>
<i>A. subpictus indefinitus</i>	<i>A. tessellatus</i>

b. Training:

Emphasis of the training was laid on the preparation of DDT residual spraying. A four-week course was given to 75 malaria technicians who were sent by various health centers and health stations. For the DDT spraying program a two-week course was given to 28 foremen who in turn with the assistance of TMRI conducted in their own respective area one-week course to 113 spraymen. The TMRI also continued to provide technical supervision to the 144 malaria stations.

c. First Year of 4-Year Province-wide DDT Residual Spraying:

Encouraged by the MSA, WHO and JCRR, the Provincial Government decided to enlarge the malaria mass treatment program into a 4-year malaria eradication project including island-wide residual DDT spraying of houses. This multi-phase program is designed to give protection to some 5,000,000 people from the dreaded disease at an estimated cost of more than US\$ 2,000,000. It is a gigantic task in which the Provincial Government, the local governments, MSA/CUSA, WHO, and JCRR all participate.

In May 1952, WHO assigned to Taiwan an International Malaria Team composed of a malariologist, an entomologist, and a sanitary engineer. To help the first year program beginning 1952 get along which was planned to cover an area with a population of 150,000, JCRR and MSA China Mission contributed funds totalling US\$ 96,222 in local currency to cover procurement of necessary equipment, materials and operation expenses. Approximately one half of the amount was spent on the procurement of 23,390 pounds of 75% water wetttable DDT, 500 hand sprayers of 3 gallon capacity, 500 T-jet nozzles, 1,000 stainless steel orifices, 2,000 ft. hose, 690 bottles of chloroquine hydrochloride and 30 bicycles from the MSA/CUSA/JCRR Medical Depot. These equipment and supplies are currently in use. After procurement of these items a cash balance of US\$ 48,724 was left which was paid to the Institute on monthly basis principally to provide lodging, travel, and per diem expenses of the International Malaria Team, and for the support of the Institute together with its three Research Centers. To date, a total cumulative appropriation of US\$ 167,624 has been made by MSA/JCRR. Of the sum JCRR provided US\$ 120,186 and MSA US\$ 47,496.

Chao-chow and Chi-san of Ping-tung hsien were selected for the DDT spraying program for this year. Spraying was scheduled for completion in July-August, 1952.

IV. Tuberculosis Control Program in Taiwan

With JCRR assistance, a Tuberculosis Control Program was launched

in December 1949 by the Provincial Taipei Tuberculosis Center. The initial project approved by JCRR provided for the establishment of a BCG producing laboratory, tuberculin testing of 50,000 school children in Taipei City and its immediate vicinity, vaccinating the non-reactors with BCG and fluoroscoping the reactors. UNICEF took part in the program in October 1950 and provided: supplies (especially jeeps for BCG teams), additional equipment, and a fellowship on TB Control. Active participation of WHO began in May 1951 when an International Team of three arrived in Taiwan and started organizing and training 23 local BCG teams (each composed of a doctor, 2 nurses, a clerk). JCRR continued to make its contributions required to keep the whole program in full swing, including travel expenses for local teams; travel expenses, per diem and accommodation for the international team; operational expenses of the TB Center at Taipei and Chia-yi. The International Team left in January 1952.

In order to conform to WHO standards, the Government started building a new BCG Laboratory in October 1950 to which JCRR furnished the matching funds. The new Laboratory began BCG production in June 1952. From January 1951 to June 1952 UNICEF provided BCG imported from Manila, with JCRR paying the freight.

In 1951, JCRR provided aid for the rehabilitation of an abandoned building at the Sungshan Sanatorium into a ward of 30 beds for tuberculous children. It is the first children's tuberculosis ward in China, and has since given medical care to a sizable number of children stricken with this dreadful disease. JCRR also provided funds for construction of a dormitory at the Sanatorium for the staff of the Taipei TB Center. The Sanatorium is now the best on the island, and has always a long waiting list of patients.

From December 1949 to June 1952, JCRR gave aid to six projects with a total appropriation of US\$ 94,340 equivalent (approved) of which US\$89,496 (equivalent) was paid for the aforementioned activities.

A. Tuberculin Testing & BCG Vaccination :

From January 1950 to June 1952, 1,080,000 children were tuberculin tested, exceeding the original goal by 80,000. An analysis of statistics

was submitted to JCRR by Dr. J. C. Tao, Director of Taipei TB Center. Of the 190,137 tuberculin tested children below five, 12.7% were positive reactors; of the 871,377 school children between 6-12, 32.2% were positive reactors. The infection rate was found to be considerably higher among children in cities than those in rural regions (65% for school children in Keelung, a congested port city with an average of 270 rainy days a year, against a low rate of 18% in Tao-yuan, for the same age group). BCG was given to those who showed a negative reaction to tuberculin test (BCG vaccine is given only to negative reactors, as it is of no benefit to those already infected). Among the pre-school age group, 162,405 of 165,908 negative reactors, or 97.9%, received BCG vaccine. Of 590,720 primary school children who were negative reactors, 576,973, or 96.8%, received BCG vaccine. Of 14,979 teachers and others who showed negative reaction to tuberculin tests, 14,130, or 94.3%, were vaccinated.

B. X-ray Examination:

From January 1950 to June 1952, 69,148 primary school children positive to tuberculin tests were X-rayed by the Taipei TB Center. From 0.98% to 1.32% showed significant pulmonary tuberculosis, depending upon the age groups. Of 3,071 teachers in the same schools examined by X-ray, 3.92% suffered from clinically significant pulmonary tuberculosis.

C. Future Prospects:

A province-wide anti-tuberculosis campaign is now underway, with strong support from Governor K. C. Wu, the Provincial People's Assembly, MAAG, MSA and JCRR. In order to widen the scope of case finding, the Rural Health Division is contemplating a program of mass sputum examination along the pattern of mass blood survey for malaria parasites. As soon as simple laboratories are set up in health stations (as part of the standardization plan) and enough technicians and trained health officers are available such a plan will be carried out. Attempts will be made to segregate these patients at home, with follow-up visits from health stations nurses.

V. School Health

School health program in Taiwan is a new development which is growing rapidly. Since May 1951, with JCRR encouragement and assistance, the Provincial Department of Education (PDE) has launched a province-wide school health program based on a new understanding and approach that school health work from then on should be considered as an inherent responsibility of primary school teachers.

Teachers should include health in their teaching of pupils at least in equal proportion to language and arithmetic. Because of the limited number of health personnel of health centers and health stations, as compared with that required by the primary schools, the public health personnel should function only in the capacity of an advisory body. Along the above policy, from May 1951 to June 1952 JCRR implemented three projects on training, provision of facilities, and supervision. For the three projects JCRR made a total contribution of US\$ 93,254.36 (NT\$ 960,520) while the sum provided by the PDE amounted to US\$ 174,134.27 (NT\$ 1,793,583) and by the communities as well as recipient schools for improvement of school sanitary facilities was US\$ 90,356.08 (NT\$ 930,667.65).

To begin with, in the summer of 1951, one teacher from each of the 1,240 primary schools was selected by the PDE to attend a two-week school health training course conducted jointly by the Public Health Nursing Team of NIH and PDE. A total of 1,138 teachers in three classes completed the training. This was followed by the training of school nurses. From April through September 1952, it was planned to train 240 nurses and nurse-aides. Up to the end of June 1952, a total of 197 (44 qualified nurses or midwives and 153 nurse-aides) completed a 4-week training course by rotation. The training of nurses or nurse-aides was a unique example of joint effort of four organizations, namely: PDE, NIH, NDMC and JCRR. The PDE was responsible in selecting and ordering trainees to attend the course besides providing funds matched with JCRR contributions for expenditures. The NIH Public Health Nursing Team conducted the training while NDMC (National Defence Medical Center) kindly furnished

dormitories, class-rooms and personnel to assist in the teaching course.

Facilities distributed to each primary school consisted of 700 sets of physician's scales, 1,240 medicine kits, 1,240 sets of posters for health education (30 posters per set) and 1,240 sets of forms for keeping daily records of activities and making monthly reports.

Improvements in sanitation were made in 396 schools of which 236 had their latrines repaired or renovated, 183 added additional drinking facilities and 250 built hand-washing installations, 135 had either made improvements in drainage, garbage receptacles or both facilities installed. The improvement of school sanitation will be further emphasized and extended to more schools as time goes on.

In providing supervision, the PDE has organized a strong staff of full-time members composed of one chief and six medical doctors with one serving as a liaison officer between the Department and the Provincial Health Administration.

Correction of physical defects among school children began in March and was limited only to headlice, tinea of scalp, scabies and trachoma. Medicine for the treatment of these defects was distributed to schools by the Medical Depot. The school health teachers and nurses were taught in the training courses of the methods of application of these drugs. A health monitor corps was organized in each class of all the schools. Morning health inspection of pupils was carried out daily by health monitors and class teachers. Every school has reserved a sizable room for health activities; such as the weighing of pupils once a month and keeping daily records of health activities.

During the period from March to June 1952, 1,219 primary schools sent in monthly activity reports which covered a total of about 930,000 pupils. Absenteeism due to sickness was found to vary from 1.20 to 1.35 per 100 school days. Of over 700,000 children weighed regularly about 60 per cent showed increase in body weight, 22 per cent remained unchanged, while 18 per cent decreased in body weight. The campaign of eradicating headlice with 10 per cent DDT powder produced immediate results which, however, was soon nullified by the prevailing chance of reinfestation at home.

A plan is being made to extend such an eradication project to include family members of the pupils as well.

The school health program, presently being carried out chiefly by the school health teachers who may be assisted in some schools by a nurse or nurse-aide, will be enlarged in the coming year so that all teachers will be required to help in its enforcement. ABMAC has also decided to start a school health course in normal schools with the intention of preparing these students beforehand to become health teachers in primary schools after graduation.

VI. Nutritional Study of Processed Soybeans

A. Introduction:

In 1950, General Sun Li-jen informed Dr. Raymond T. Moyer, a former member of the Joint Commission and concurrently Chief of China Mission, ECA, that soldiers complained of hunger and fatigue after drilling and he requested investigation and help. While members of the Joint Commission were pondering the problem, the headquarters of ECA in Washington inquired whether Taiwan would conduct a large-scale feeding experiment on processed soybeans. A project was therefore approved in April 1951, stipulating a) procurement of 100 tons of processed soybeans and 50 tons of raw soybeans, valued at US\$ 48,526.14; and b) a grant of NT\$ 34,830 for operational expenses to the National Defence Medical Center (NDMC) as sponsor. Upon arrival of the soybeans (90 m/t processed and 60 m/t raw beans) feeding experiments soon began with 15,182 soldiers and 800 civilians. Adults were given 100 grams of soybeans daily (raw or processed) for 80-90 days; juveniles 50-65 grams daily for 150-160 days. Duration of experiment: July 1951 to April 1952.

B. General Findings:

Prof. Joseph C. Chen of the NDMC, Executive Director of the project, has prepared a lengthy report herewith summarized: a) the average basal metabolic rate for males between the age of 20 and 40 was 1,450 calories;

for females of 20-25 years of age 1,400 calories (group studied included 387 health personnel); b) the daily caloric requirement for soldiers was 3,300-3,500 calories; c) diet survey included a group of 130 mess units of soldiers (130-200 persons per unit) for 16 months. Total fat intake was low: 46.5 grams from all foodstuffs providing 12 per cent of calories. Average total intake of 94.6 grams of proteins was adequate but poor in quality with only 5.2 grams of animal protein. Excepting B2 there was no deficiency of other vitamins and minerals in the diet surveyed.

C. Dietary Effects of Soybeans

1) Soybeans replaced much of the proteins formerly provided by rice before study.

2) Daily fat intake of soldiers increased from 46.5 to 62.5 grams.

3) Every 100 grams of supplementary soybeans saved 65 grams of rice.

4) Addition of soybeans to diet stopped complaints of hunger and exhaustion after drilling.

5) Increase in height and body weight: After three months of soybean diet, 86 per cent of the soldiers made an increase in body weight varying from 1.5 to 29 pounds, the average being 8-12 pounds. An even more remarkable result was the growth made among juveniles, as manifested by the rapid increase of height and weight in comparison with a control group in the same camp.

6) Increase of nitrogen balance: a number of 15 youths aged 20-28 at the beginning of the feeding experiment gave a nitrogen balance of 6.00 on the average (extremes: 2.00 to 10.41). The average increased to 9.4 after soybean feeding.

7) Utilization of rice protein: It is in inverse proportion to the amount of rice ingested. The maximum amount of rice protein capable of being utilized by the body is 37.5 grams (6 grams of nitrogen) contained in about 1 pound of rice. The protein utilization amounted to 94.0 per cent when daily intake of rice was 1 pound; it dropped to 70 per cent when total rice nitrogen intake reached 13 grams.

8) Plasma protein and hemoglobin: Before the experiment, plasma protein was found to be within normal range. Of the 4,885 soldiers examined for hemoglobin content, and a total of 1,000 soldiers and civilians examined for red blood cell count and cell volume, 30 per cent was below normal standard for Chinese; 60 per cent had macrocytic anemia. After 3 months of soybean feeding, increase of hemoglobin ranged from 1.5 to 3.62 grams per 100 cc. of blood. But there was no improvement of macrocytic condition.

9) Dark adaptation of eye sight: Before experiment, more than 50 per cent of 1,873 soldiers examined showed impaired adaptation, indicating vitamin A deficiency. After three months of soybean feeding, 43 per cent of those with severely impaired vision showed marked improvement.

10) Processed soybeans versus raw beans: Processed soybeans were found by experiments to be better utilized by human bodies than raw soybeans as indicated by the further elevation of positive nitrogen balance values, as well as higher urinary nitrogen and low fecal nitrogen excretions. The daily consumption of 100 grams of soybeans was found to be in excess of the level for maximum utilization.

D. Effect of Findings on Army Rations

The Chinese Government has been deeply impressed with the effect of soybeans on the health and morale of its soldiers. With the assistance of MAAG and MSA the diet of the Chinese Armed Forces has been improved since February 1952. Main item added is 32 grams of soybeans for each soldier per day in addition to other supplements. However, it is still undecided whether processed or raw soybeans should be used as supplementary ration. Although processed soybeans are better utilized by the human body, there are two disadvantages: 1) they cost more than twice as much as raw soybeans; 2) they can not be prepared in a variety of dishes whereas raw soybeans can be used for bean curd, bean sprouts, fermented beans etc. The monotonous eating of soybean meal due to lack of variety makes it less palatable even if it does not affect the morale of soldiers.

VII. Leprosy Control

Leprosy is a disease of importance in Taiwan. The actual number of cases is, however, unknown; but estimates range from 3,000 to 6,000 according to different authorities. Since there are only two leprosaria in Taiwan, one governmental with a maximum capacity of 600 and one belonging to a missionary group with 30 inmates, compulsory isolation of all lepers is impossible. The Government Leprosarium is rather poorly managed and overcrowded. Facilities for the detection of leprosy in Taiwan are virtually non-existent. JCRR's contribution in this field has been to assist the Government in improving its leprosarium, establishing "homes" to take care of newborns of leprous mothers, and conducting field surveys.

Regarding the improvement of the Government Leprosarium, an effort was made to persuade the United Board of Missionaries of America to send out missionaries to Taiwan, especially those evacuated from mainland China. Due to their established policy, they could not accept the invitation by sending out any one, particularly those who came out from the mainland.

The local foreign missionaries were often confronted with requests from the leprous mothers of the two leprosaria, particularly the Government one, to remove and take care of their newborns, lest these infants be infected with this dreadful disease. Mrs. James R. Dickson of the Canadian Presbyterian Mission who had raised NT\$ 75,000 (US\$ 7,281) requested JCRR to contribute toward the establishment of a home for taking care of such babies. In January, 1952 JCRR approved a project with a grant-in-aid of NT\$ 51,604 (US\$ 5,010). With these funds, a prefabricated wooden house was erected in Taipei City with an annex to look after the "untainted" babies who were taken away from leprous mothers immediately after birth. A separate brick building in the Happy Mount Colony, a missionary leprosarium, located 22.7 kilometers from Taipei city, was remodelled as an observation home to take care of "tainted" children who had lived with their leprous mothers for some time after birth.

An American nurse with the assistance of Taiwanese girls is in charge of the Home, known as the An-lok Babies Home, for the "untainted"

children. A trained Taiwanese nurse under the supervision of an American missionary woman doctor of the Happy Mount Colony looks after the Observation Home. Three babies born of leprous mothers in the Government Leprosarium who were immediately isolated after birth and cared for on the compound of the Canadian Presbyterian Mission, are now removed to the An-lok Home. This Home can accommodate six to ten babies. At present there are seven babies in the An-lok Home and five in the Observation Home.

In the preparation for conducting field surveys, Dr. Y. F. Chao, a Taiwanese medical doctor recommended by the Canadian Presbyterian Mission, was selected by JCRR and sent to Hongkong in May 1952 on MSA/CUSA/JCRR Technical Assistance Fellowship for a year of practical training in the Leprosarium of Hongkong University. As soon as he comes back, field survey teams will be organized by the Government for the detection and segregation of leprosy cases. Treatment of those patients, whose segregation is considered unessential, will be rendered by the health centers and health stations.

VIII. Plague Control

Plague has been endemic in the Kinmen Islands for more than 40 years. Kinmen consists of two islands: Kinmen (Quemoy) proper and small Kinmen. It is located about 140 knots west of Keelung, Taiwan.

Kinmen proper is shaped like a dumb-bell, twelve miles long and three and half miles across at its narrowest part in the middle. Small Kinmen lies to the west of Kinmen proper and has an area of about 15 square kilometers. The total area of the two islands is 176.91 square kilometers. There are 40,000 civilians on Kinmen proper and 5,000 on small Kinmen. The number of military personnel, which is a military secret, is evidently much larger than that of the civilian population.

The territory is a part of Fukien Province, only a few kilometers away from Amoy. The Province fell with mainland China, but these two islands remain as strategic outposts of Free China.

Back in 1900, an epidemic plague invaded the islands and took a toll of at least 8,000 persons which constituted more than 20 per cent of the entire population. Thereafter, a major outbreak occurred every two or three years, which became a yearly affair from 1946 to 1951, resulting in annual deaths varying from 20 to 200 persons.

In 1951, the total number of cases was 47 (33 civilians and 14 military) with 25 deaths. Twenty were reported to be cases of pneumonic plague. Fortunately, the epidemic which was brought under control by the government authorities did not break out in full force during the past few years. Fear that the plague at Kinmen might spread to Taiwan, however, caused great excitement and anxiety.

Realizing the seriousness of the situation, the Joint Commission approved a project in February 1952 for the control of plague in Kinmen. A sum of NT\$ 70,800 (or US\$ 6,874.70) was appropriated to assist the related government organizations to launch a campaign ahead of time before outbreaks occur in the spring. As facilities and personnel were inadequate, a cooperative effort among all related government organizations in Taiwan was organized to pool their resources to assist Kinmen in plague control work. Aside from JCRR, the other organizations which either sent personnel, or drugs, vaccines and supplies, or both, were the Surgeon General's Office of the Combined Services Command, the National Defence Medical Center, Taiwan Provincial Health Administration, and the National Institute of Health. Under the leadership of Dr. J. Heng Liu, Chairman of the Medical Coordination Committee, a special sub-committee on plague control was organized.

A training class of officers, who were sent to Taiwan by the Military Commander and Government on Kinmen to acquaint them with plague control techniques, was conducted by the NDMC. Dusting of all dwellings on both Kinmen Islands with 10 per cent DDT powder and compulsory inoculations with plague vaccine of both civilian and military population were thoroughly carried out. So far, not a single case of plague has been reported and the plague season is now considered over. This is the first year in a decade that due to human efforts plague did not break out on

these islands. A plan is being made to establish a permanent plague control organization by the local health center of Kinmen.

IX. Strengthening the Production of Sera & Vaccines

Prior to 1951 there were in Taiwan two laboratories producing sera and vaccines: the Hygienic Laboratory of the Provincial Health Administration and the Department of Bacteriology and Serology of the Research Institute of Tropical Medicine of National Taiwan University. Both were inadequately equipped and poorly managed. Proposals to amalgamate the two organizations were raised by UNRRA/CNRRRA (United Nations Relief, Rehabilitation Administration and Chinese National Relief Rehabilitation Administration) and government officials in the past, but this was not acceptable to both parties. As the quantity and quality of their production could not meet the increasing demand of the rapidly growing health program in Taiwan which had been stimulated with JCRR assistance, this Health Division approached the related authorities on the problem of amalgamating and strengthening these two organizations. The response was favorable. During his visit to Taiwan in September 1950, Dr. J. B. Grant of the Rockefeller Foundation approved our plan and helped us greatly in winning the support of authorities concerned.

A budget of US\$ 100,000 for the purchase of equipment and supplies from USA and NT\$ 500,000 for operational expenses was earmarked for Firm Requests by the Joint Commission and concurred by the ECA Washington in November 1950. However, the sudden death of President Fu of the University from apoplexy in December 1950 greatly affected the progress of the merger which had practically come to a standstill until the appointment of President Chien. The movement gained momentum when Dr. Arthur W. Tallman, ECA Special Consultant for Vaccine Production, visited Taiwan in May 1951. With the assistance of local experts, Dr. Tallman was able to complete in ten days lists of equipment, supplies and reference books before his departure. Consequently, before the close of the fiscal year 1951, the Joint Commission finalized the project on strengthening the production of biologics with a slight increase in US\$ budget which

amounted to US\$ 110,000.

The Central Trust of China (CTC), a Chinese Government Agency, was entrusted to handle the offshore procurements. Because of the multiplicity of the numerous items involved and the small cost on each individual item, open bidding on item by item basis was not possible and final orders were placed in groups by CTC through reputable firms in the United States. Since the handling charges could be paid to the agency in local currency, only the actual cost of procurement was approved in US dollars by the Joint Commission. Because both the procurement and the amalgamation would take time before the new organization could be ready to function, the Joint Commission approved for the interim a symbolic sum in local currency of NT\$ 3,000 to cover operational expenses.

On September 25, 1951, the Taiwan Provincial Government and the National Taiwan University took the necessary steps and officially amalgamated the two biological laboratories into a new organization which is now known as the "Taiwan Sera and Vaccines Laboratory of the Taiwan Provincial Government and the National Taiwan University". The newly amalgamated organization is located at Shih-lin where all the buildings of the former laboratory of the bacteriology and serology department of the Tropical Disease Institute of the National Taiwan University have been utilized. On that day, the University turned over to the new organization its selected personnel, budget, and the entire property of its Shih-lin Laboratory. The Provincial Health Administration did not complete the transfer of its biological laboratory until February 1952.

At present, the amalgamated Laboratory has a staff of 102 persons through the selection of and transfer from the two merging parties, as follows:

Type	National Taiwan University	Taiwan Provincial Government	Total
Technical Staff	27	18	45
Non-technical Staff	13	4	17
Office and Laboratory Helpers	36	4	40
Total	76	26	102

The selected technical staff of the new organization is quite competent. Three of its staff members who had passed the ECA/JCRR competitive fellowship examination, were sent to USA for one year special training in the summer of 1951. Another two who have also succeeded in this year's examinations, have been selected by the Fellowship Committee for further training in the States. They will be sent out in July or August 1952. Prof. L. C. Yen, Head of the Bacteriology Department of the Medical College of National Taiwan University, is now the Director of the amalgamated laboratory.

In April 1952, JCRR approved an additional appropriation of NT\$ 20,000 to cover the handling charges of the Central Trust of China for placing the procurements. On June 27, just before the close of the fiscal year 1952, the Joint Commission approved another project with an appropriation of NT\$ 476,635. Out of this fund, NT\$ 361,335 were earmarked for remodelling the main laboratory building, repairing a barn, a stable, and an immunology laboratory, and reconstructing a dormitory which was destroyed by typhoon. Of the remaining NT\$ 105,300, NT\$ 43,300 are earmarked for maintaining the animal colonies of laboratory cows and horses, and NT\$ 92,000 for subsidizing the general maintenance, including the salaries of three senior staff members.

X. Training of Rural Health Personnel

The number of experienced health workers in Taiwan can not meet the increasing demand for its rapidly growing health program which has been stimulated with JCRR assistance. This shortage has been acutely felt, especially for nurses. Health personnel in health organizations and public schools are mostly not familiar with public health programs. More schools of nursing, strengthening the existing ones and offering refresher courses for health personnel are therefore essential to the success of JCRR's Rural Health Program. Following is a resume of activities in which JCRR made contributions in connection with training.

A. Strengthening of Existing Nursing Schools

Prior to the fiscal year 1952, there were in Taiwan three nursing schools, the School of Nursing of the National Taiwan University Hospital, the Provincial School of Nursing and Midwifery, and the School of Nursing at the National Defence Medical Center. Besides free allocation of teaching materials from the available stock of the ECA/JCRR Medical Depot to each of these schools, JCRR also granted financial aid to the first two schools and subsidized the establishment of a new school of nursing in Tainan City.

In March 1951, JCRR approved a project submitted by the University Hospital for the renovation of a building to accommodate an International Hospital Nursing Team which was invited by the Central Government to help the nursing schools. In the project, a sum of NT\$ 115,105 (or US\$ 11,175) was granted for building repairs and NT\$ 11,662 for local travel and per diem of the four team members. The renovation work was completed in May 1951 and the building is ready for the team members who are expected to arrive Taiwan soon.

In order to speed up the training of nurses, an attempt was made to add a special one-year short course providing free education in addition to the regular classes at one of the existing nursing schools. The curricula of this short course would be so arranged that after completion of one year training these students could be fit to do the nursing work in the health stations. Those who have served satisfactorily for one year in a health station are allowed to come back to complete the remaining three years of education at government expenses. This school would be able to turn out in each year two classes of students, one class of regular graduates and the other of preparatory nurses. The year of service after the preparatory training will give these girls time to make up their minds whether they want to take up nursing as a life-long career.

Convinced of this philosophy, the Provincial School of Nursing and Midwifery agreed to undertake such an extra class and the Provincial Department of Education (PDE) was able to increase the budget of the school for engaging additional teachers as well as providing room, board, uniforms and books for these students.

In February 1952, JCRR made a cash grant of NT\$ 539,830 (US\$ 52,410) against government appropriations of NT\$ 266,120 (US\$25,837) for the construction of a new building and the general maintenance of the special short course. The building is now well underway.

B. Establishment of a New Nursing School

The Provincial Tainan Hospital was almost completely destroyed by aerial bombardment during the latter part of World War II. With UNRRA/CNRRA assistance, the Hospital's main building was rebuilt. There was one demolished wing with a skeleton of walls still standing to remind people of past US air raids. JCRR conceived the idea of rebuilding the wing and starting a new nursing school which would fulfill a real need in southern Taiwan. The local leaders were aroused to launch a campaign for the proposed school. Nine hsien and municipal governments in southern Taiwan formed a committee for the establishment of a nursing school at Tainan City. A total of NT\$ 226,360 (US\$ 21,976) was raised by the local governments, and the Provincial Health Administration (PHA) appropriated NT\$ 46,760 (US\$ 4,540) to the school committee. The PDE agreed to recognize the school and give it a regular budget, beginning from fiscal year 1954. JCRR was asked to match with the funds raised by the governments for buildings and to continue provision of funds for operational expenses for the initial period from the time the first class is started until August 1953, when the PDE will be ready to give its full support. On February 4, 1952, the Joint Commission approved a project for the establishment of the Tainan Nursing School with a grant-in-aid of NT\$ 283,200 (US\$ 27,495). The construction of the building will be soon completed.

C. Training Centers for Refresher Courses

1. Provincial Taipei Public Health Training Center.

In November 1949, the Joint Commission approved a project for aid to the Provincial Public Health Training Center at Taipei and its Rural Health Station in Chungho Hsiang. A sum equivalent to US\$ 12,000 in local currency was granted chiefly for the strengthening of the Chungho

Rural Health Station by remodelling and repairing buildings and installing equipment; and for starting refresher courses at the Training Center. A two-month course for public health officers training class and a three-month course for nurses and midwives training class were conducted by the Center earlier in 1950. A total of 15 medical doctors, 10 nurses, and 15 midwives completed the training.

With its own funds, the Training Center held four more classes for 163 trainees in 1951 and two classes for 51 trainees in 1952, as shown in the following breakdowns :

Year	Courses	No. of Trainees
1951	2-month course for nurses & midwives	35
	2-week course for public health officers	31
	2-week course for special TB control workers including 18 doctors, 33 nurses, 7 midwives and 18 aides	76
	10-month course for aborigine midwifery-aides	21
1952	One-month course for sanitary inspectors	22
	One-year course for aborigine nurse-aides	29
	Total	214

The Provincial Public Health Training Center has an inherent weakness which is attributable to the aloofness from the present setup in the public health services. Despite its position as an organization at the Provincial level, there is little cooperation between its functions and those of the Taipei Municipal Health Center, although both are located in the same city not to mention any co-ordination with other health organizations in the Province. Similarly, unlike other health stations which come under the supervision of the local hsien health centers, the Rural Health Training Station which is located in Chungho Hsiang and maintained as a part of the Provincial Training Station, has neither any direct relationship with the Taipei Hsien Rural Health Center nor with the hsiang office in which it is located. Consequently, its scope of activity in giving technical training is rather limited at best. Certainly, it is not in the position to conduct a

province-wide training program for personnel of other health stations.

2. Tao-yuan and Hsinchu Training Centers.

To overcome this deep-rooted organizational weakness, new training centers were considered essential. The concensus was to select Tao-yuan Hsien Health Center and its subsidiary health stations for field training on rural health and Hsinchu Hsien Health Center for field training on urban health. Tao-yuan Hsien which has a total population of about 340,000 is a typical rural area. Its county seat where the Center is located, also called Tao-yuan, is only 28 kilometers south of Taipei with excellent transportation connections—one hour ride by train or by bus on concrete highway. The population of Hsinchu Hsien is about the same as that of Tao-yuan Hsien and it is also the county seat of the hsien of the same name. It is a sizable city of over 100,000 people and is about 50 kilometers south of Tao-yuan.

The magistrates of Tao-yuan and Hsinchu Hsien Governments were approached to raise funds to match JCRR contributions for the establishment of these proposed training centers. Tao-yuan Hsien agreed to contribute one fourth, while Hsinchu Hsien accepted the proposal of matching one half of the cost of construction. In consultation with the Nursing Team of the National Institute of Health, blue prints of buildings for the two training centers were prepared by the two hsien governments. A project entitled "Aid to Taoyuan and Hsinchu Training Centers" was approved by the Joint Commission on March 25, 1952. The estimated cost of the building for the Tao-yuan Training Center was NT\$ 428,000 of which JCRR appropriated NT\$ 328,000 and the Taoyuan Hsien Government NT\$ 100,000. In addition, a supplementary budget of NT\$ 300,600 was appropriated by the Taoyuan Hsien Government for the Health Center to improve its services. The cost of building for the Hsinchu Training Center amounted to NT\$ 288,000 which was equally shared by JCRR and the hsien Government. Besides, the Hsinchu Hsien Government has also given a supplementary budget of NT\$120,000 for the development of public health services of its Health Center. The buildings are still under construction.

XI. Local Care of International Teams of the World Health Organization

The Rural Health Division is fully aware of the fact that team work is the key-stone for the development of an active and balanced public health program in Taiwan. Cooperation and coordination of interested parties concerned are the essence of team work, while ambition for individual distinction spoils it. Ever since the organization of the Medical Coordination Committee by the Ministry of Interior early in 1951, in response to Mr. Griffin's telegraphic proposition to MSA/China Mission and of which JCRR is a member, the Rural Health Division has been one of its faithful supporters. The above maxim is best evidenced by JCRR's altruism in providing funds for the government to take care of international teams sent to Taiwan by the World Health Organization which could have no legal claim on an agency like JCRR.

From 1949 to 1951, which was the critical period for Free China, foreign friends and agencies were leaving or planning to leave. We felt that whatever help from JCRR to induce other foreign aid agencies to come to Taiwan and to stay would be a patriotic and far-sighted act. We also seriously believed that to let other foreign aid agencies select or take over whatever public health projects, in part or entirely, which have been developed with JCRR's assistance would hasten the improvement of welfare of the people which must be the common interest and aim of all of us. It makes no difference to the people benefited whether JCRR is considered by the other contributing parties as a part of the Chinese Government or an organization deserving distinction. When the Coordination Committee expressed its approval of inviting international teams and advised the Government to take proper action, the Rural Health Division took prompt action in response to the request from the Government for JCRR's contribution of funds for the local care of such teams. Upon the recommendation of this Division during the period from June to November 1951, JCRR approved four projects for the local care of four international teams of WHO: 1) NT\$ 140,000 (US\$ 13,592) on June 28, for Maternity and Child Health

Team; 2) NT\$ 116,767 (US\$ 11,336) on November 28, for the Hospital Nursing Team (mentioned previously under the Nursing School of the National Taiwan University Hospital); 3) NT\$ 90,000 (US\$ 8,738) included in the Malaria Project approved on November 19 for the Malaria Team, and NT\$ 81,000 (US\$ 7,864) included in the Tuberculosis Control Project approved on November 8 for the Tuberculosis Team.

In order to extend its support to the Coordination Committee and Government, JCRR had gone out of its usual way by withholding the earmarked budget for the Maternity and Child Team for a rather long period. The fund was approved in fiscal year 1950 (June 28, 1951) but actual payment did not begin until September of fiscal year 1952 due to the delayed arrival of the team. The Hospital Nursing Team began to arrive in June, Malaria Team in May and TB Team in April 1952. Besides the financial assistance offered to the Government, we believe JCRR has been friendly and helpful to members of these teams. Relationship between the team members and JCRR has been most cordial and pleasant.

XII Medical Supplies Distribution and Sales Program

With the experience gained from the distribution of the defunct China Relief Mission (CRM) medical supplies which were turned over to JCRR by ECA/(MSA) Mission to China for free allocations to health organizations, the Rural Health Division of JCRR has been designated to handle the distribution and sales project in Taiwan. Direct contacts with the peripheral health organizations enabled JCRR to handle the distribution of US-aid drugs with an effective control over the market fluctuations in prices of medical supplies as previously mentioned in General Report II.

The price of medicine in Taiwan had been quite stable until January 1951, when owing to the proclamation of US embargo on shipment of drugs to Hongkong market upon which Taiwan greatly depended then for its import, the market prices of almost all items of drugs here tripled overnight. We realized that the sudden scarcity of drugs in the market was artificial and a result of psychological reaction. For instance, Sulfadiazine which had been sold at NT\$ 360 a bottle of 1,000 tablets had its price raised

to NT\$ 1,350. JCRR immediately released from its limited stock in the Medical Depot a total of 140 bottles of Sulfadiazine to 30 drug stores and 350 private practitioners in Taipei city. The market price of this drug soon dropped to NT\$ 500-600 a bottle and prices of other drugs followed suit. The price was brought under control for four months until the Government proclaimed a ban on the use of gold bars and US bank notes in May 1951. Immediately thereafter drugs disappeared from the market and prices soared wildly. This condition was undoubtedly the result of diversion of floating capital to hoarding of drugs, especially anti-biotics and sulfa-drugs. This tendency was aggravated by the mass psychology of blind hoarding for emergency use.

The ECA/(MSA) China Mission for the first time had ordered about US\$ 400,000 worth of medical supplies for Taiwan. Soon after their arrival in August 1951, questions were raised as to how they should be handled and who should handle the distribution when they were readied for sale. The Rural Health Division of JCRR which already had its hands full in the public health program was invited by both the CUSA and ECA/(MSA) to participate in the program on account of its past experience and available facilities. We accepted this extra heavy job on the following conditions: 1) The US-Aid medical supplies should not be dumped on the market at once especially through a few powerful drug merchants just for the sake of raising counter part funds, 2) Sales should be made directly to the end-users of non-profit making medico-health organizations. No consideration shall be given to applications from individuals or organization without medical facilities, 3) Prices of drugs sold to rural organizations should be cheaper than those to organizations in urban areas, 4) The Rural Health Division would not handle payments of sales nor have a hand in management of the Medical Depot.

Consequently, a special committee on the distribution of US-aid medical supplies was organized in which the representatives of CUSA, ECA(MSA) and JCRR took part and of which Mr. Martin Wong of CUSA served as chairman. The responsibilities agreed upon of the parties concerned are outlined as follows:

1. Council for US Aid (CUSA) :
 - a. To approve sales prepared and recommended by JCRR Rural Health Division
 - b. To collect sales proceeds directly from the end-users, payments to be made prior to the delivery of orders.
 - c. To provide funds for the maintenance and operation of the Medical Depot which would be known as CUSA/MSA/JCRR Medical Depot of which Mr. L. L. Doane, MSA Medical Supply Officer, served as the Depot Officer in Charge.
2. Economic Cooperation Administration (ECA) now Mutual Security Agency (MSA) :

To check the consumption of drugs by end-users.
3. Joint Commission on Rural Reconstruction (JCRR) :
 - a. To make inquiry of all the medico-health organizations in Taiwan regarding their monthly requirements of such drugs which are available in the CUSA/MSA/JCRR Medical Depot.
 - b. To recommend the sales prices of medical supplies on which allocations are to be made.
 - c. To prepare sales recommendations for individual organizations.
 - d. To handle all official correspondence with medico-health organizations concerning medical supplies.
4. CUSA/MSA/JCRR Medical Depot :
 - a. To finalize invoices prepared by JCRR/RHD for the signatures of authorities designated.
 - b. To notify consignees to make payments in advance to the Controller's Office of either CUSA or JCRR.
 - c. To arrange the packing and delivery of supplies directly to the

consignees through parcel posts or other facilities.

- d. To handle the medical supplies in the Depot and to keep an up-to-date inventory on each item.

In order to prevent any possible black marketeering or smuggling of the US-Aid drugs out of Taiwan, sales were made in small lots on a monthly basis. The distribution of medical supplies is to kill blackmarket in drugs which should be always available at a realistic price and to discourage speculation and hoarding. The distribution of medical supplies is not to compete with legitimate drug merchants but to function as a safety valve guarding against manipulation by the unscrupulous. Actually the sale prices of US-Aid drugs for organizations in cities were fixed at 70-80% of the "negotiated price" as recommended by the Guiding Committee, composed of representatives of importers and drug stores. The "negotiated prices" were nominal as people could never buy drugs at those prices from the open market.

Organizations which applied to JCRR for procurement of medical supplies were carefully screened as non-profit making, totalling 57 hospitals (civilian, military and missionary), 382 health centers and health stations, 265 clinics and hospitals of factories and government organizations, and 221 middle schools and colleges. Sales to 3,400 odd private practitioners were limited to special occasions when conditions warranted such sales to control market prices or to warn merchants and hoarders against speculation. Sales were made through the request of the health centers which then dealt directly with private practitioners.

Up to June 1952, twelve rounds of monthly sales were made. The net effect was surprising. For example, penicillin in oil was sold at NT\$ 75 per bottle of 10 cc of 3 million units in the black market, NT\$ 62 at the negotiated price and NT\$ 24 at the Depot in September 1951, when this sale program began. The black market price of this drug dropped to NT\$ 50 in November. Since January 1952 it has dropped below the negotiated price; and in June it began to drop even lower than our fixed prices. The prices for other drugs followed a similar downward trend. Drug speculators and hoarders are completely out of existence in Taiwan. Now instead of

supporting the ceiling price, we have to establish a floor price to protect legitimate merchants. Below the floor price no US-Aid drugs will be sold. As a result, drugs, particularly anti-biotics and sulfa-groups, which were rare in rural areas have been now adequately stocked all over the province.

In February 1952, the Central Government and the Taiwan Bank announced the change of exchange rate from official rate of NT\$ 10.30 to US\$ 1 to certificate rate at NT\$ 15.65 to US\$ 1. To support the Government's action, a slight reduction in price of certain drugs was made through sales in limited amount to all private practitioners.

Although the negotiated price jumped immediately as expected, but the black market prices remained stable for a few days, and then declined rapidly.

Meanwhile, more US-Aid medical supplies were ordered and arrived in time. In December 1951, half a million US dollars worth of drugs ordered by the Government were also turned over to CUSA for disposal at cost. From September 1951 to December 1952, the quantity of US-Aid medical supplies and equipment sold was rather small, totalling US\$ 845,527 in C&F value, from which CUSA collected NT\$ 17,870,697 as sales proceeds while the Taiwan Bank collected extra NT\$ 38,876,508 as a result of the readjustment of the exchange rate from the US\$ 6,341,402 originally granted to drug importers by the Bank during the period from February to December 1952.

The responsibility of the job was extremely heavy but the secret for success was simple, that is: 1) to maintain spotless personal integrity by first resisting temptation and then becoming free of temptation, and 2) to exploit one's natural gifts which often become dormant because of selfishness and yet capable of coming into play all of a sudden while one gives up any selfish consideration for the cause of the task at hand. Thus far we may say with some satisfaction that we have won for the Government of Free China a war in the field of medical supplies.