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REPUBLIC OF CHINA

REPORT

of the

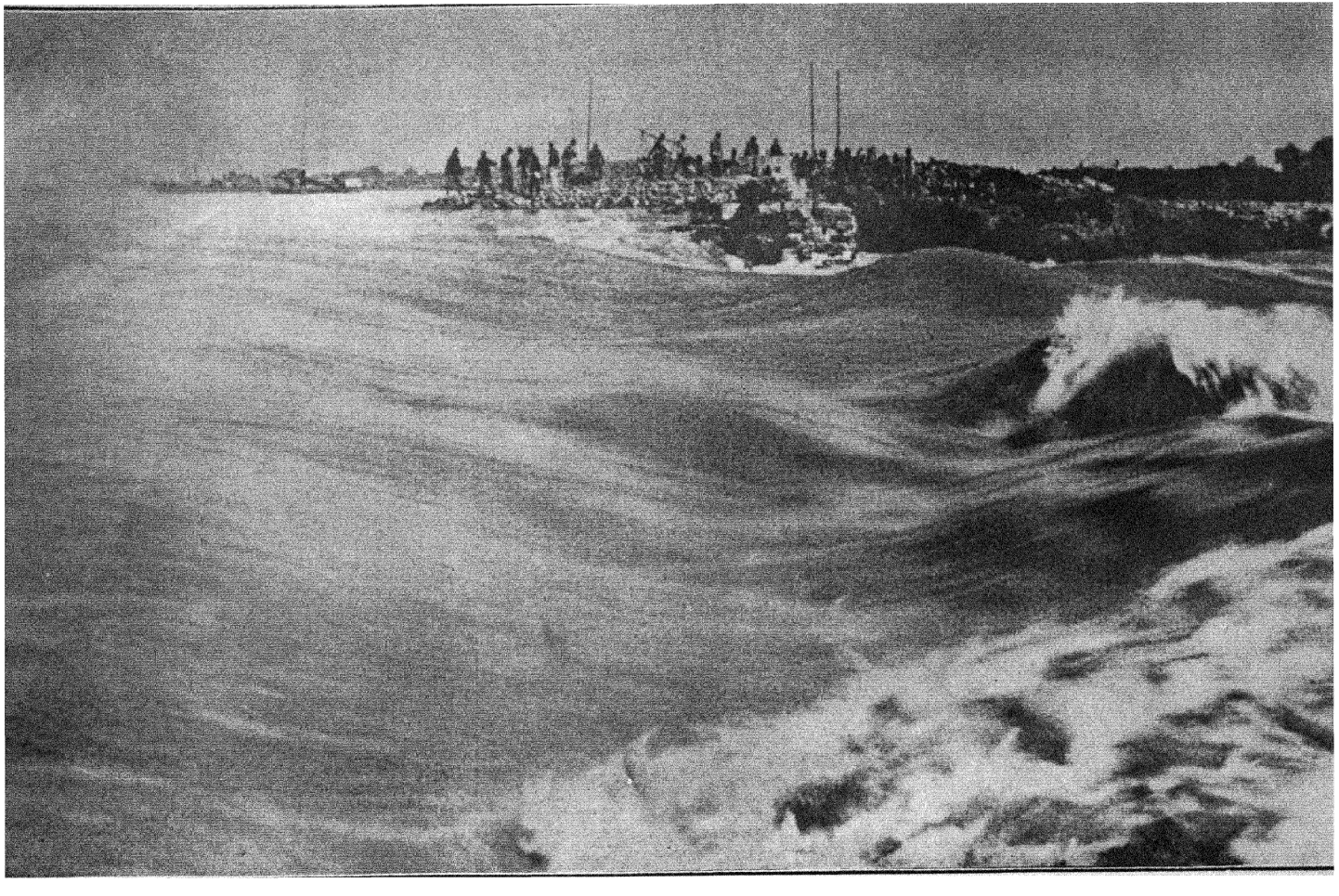
NATIONAL FLOOD RELIEF COMMISSION

1931-1932

SHANGHAI

1933

"With the amount of earth moved, a dyke two metres high and two metres thick could have been constructed round the earth at the equator."
Chap. VI, p.156



With a mighty rush the waters overwhelmed farm and village whenever a dyke was breached.

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FOREWORD

DURING the late summer months of 1931, 25,000,000 people, inhabiting an area of 70,000 square miles, were affected in various ways by the greatest flood in the history of China. Approximately 140,000 persons were drowned and a number which cannot be accurately ascertained, but which must be very large, lost their lives through other causes directly attributable to the flood. Forty percent of the people in the affected regions were compelled to migrate for the greater part of the winter. A crop worth $900,000,000 was lost, and a total loss of $2,000,000,000 was borne by a community whose average family earnings do not exceed $300 a year.

This is only the bare statistical record of the flood. It fails to reveal the appalling suffering and demoralisation endured by the huge armies of refugees, and it gives no indication of the complete dislocation of normal economic activities. These figures are sufficient, however, to show that the Central China Flood of 1931 must be ranked as one of the most disastrous natural calamities which the world has witnessed.

The unparalleled magnitude of the catastrophe raised problems of great difficulty. Immediate steps had to be taken to relieve millions of destitute families threatened with rapid starvation, and to restore within a few months an elaborate dyke system without which the devastated areas would be permanently uninhabitable. It was clear that so colossal a task could not be accomplished by any existing organization. Accordingly, on August 14, 1931, the National Government set up a National Flood Relief Commission. How that body performed its work is now set forth in detail in the following pages, which constitute the Commission's final report.

The Commission decided that its first task was to save the lives of the refugees by providing food, shelter, clothing, and protection against outbreaks of disease.

After this work of emergency relief, and when the waters had sufficiently receded, the Commission would attend to the restoration of dykes. In view of the comparatively limited resources at the Commission's disposal, vast schemes of river conservancy were out of the question; in any case, it is exceedingly doubtful whether anything can be done to prevent abnormally severe floods. The urgent need was to rebuild the dykes where possible to a height one metre above the flood level, lest the recurrence of normal flooding should subsequently aggravate a situation already sufficiently desperate. Next, after provision had been made for immediate relief and restoration work, enough resources would have to be kept in hand to assist in the spring sowing. Lastly, precautions would be taken against epidemic diseases. Having thus outlined its policy the Commission started out in its race against time.

A few figures selected at random will serve to illustrate the vast scale of the Commission's operations. Relief work extended to 269 *hsiens*. Free relief was granted to just under 5,000,000 persons, and 1,000,000 were relieved in camps. In addition, the Commission distributed more than 500,000 suits of winter clothing and more than 2,500,000 of the needy and sick refugees received medical attention. Advances for farm rehabilitation were granted to 360,000 farmers. Some 2,800,000 were employed on labour projects. Thus, including the families of these labourers, a total of 10,000,000 relieved by the Commission is certainly a conservative figure. The amount of earthwork done by this army of labourers would have built a dyke, two metres high and two metres thick, long enough to encircle the earth at the equator.

In carrying out this work, the Commission had to overcome all manner of difficulties. A huge organization, involving at the height of operations an administrative staff of 7,000, had to be created and set going immediately; labour had to be recruited and rapidly trained to unaccustomed tasks; care had to be taken to avoid wastage and duplication in the distribution of wheat; information had to be collected and operations conducted by an improvised staff; opposition from local property-

owners had to be overcome; workers had to be protected against communists and bandits. All these difficulties, however, were successfully met, and even the hostilities in Manchuria and Shanghai, which broke out during the most intensive part of the work, did not prevent the Commission from carrying on as usual.

How was this immense work of relief and restoration financed? Operating funds for the Commission's needs were obtained by the imposition of a surtax on Customs duties. A public subscription was then opened, and so gratifying was the response that a sum of $1,000,000 was raised in the first week, and eventually reached a total in excess of $7,500,000.

The funds derived from these various sources, however, would have been altogether insufficient for the Commission's requirements without the purchase on credit at a low rate of interest of nearly 450,000 tons of wheat and flour from the Government of the United States. As the Report shows, this loan was rendered all the more effective by the American Government's agreement to the sale of a portion of the wheat and flour for cash. In all, the Commission administered in cash and in kind nearly $70,000,000.

Many governments, organizations, both public and private, and individuals also associated themselves with the work of the Commission by making gifts in kind, particularly drugs and medical supplies. The Commission was also helped by a large number of voluntary workers, and received the full or part time assistance of the personnel of government departments, both national and local, missions, educational institutions and philanthropic organizations.

The Commission desires me to place on record its sense of deep obligation to all those who so generously contributed funds, supplies and services, and its appreciation of the devotion and loyalty of its staff. Their help and co-operation enabled the Commission to win its race against time and made possible the record harvests of 1932 and 1933.

T. V. SOONG, Chairman,

National Flood Relief Commission.

CHAPTER I

The Flood of 1931

Literature refers to the "Kiang-Hwai-Ho-Han" as the four main waterways in Central China. Three of the four were in flood in 1931, and even the fourth, "Ho," (Yellow) broke its banks in places.

Modern geographies, however, consider two of these ancient rivers, "Kiang—Han," as parts of the same system, the Yangtze, which is one of the largest rivers in the world. It rises in the table-land of Tibet at an altitude of 16,000 feet above sea level and flows in a direction generally easterly over 4,000 kilometres to the sea. It has many large tributaries and the vast area of the watershed of the main river and its tributaries reaches two million square kilometres.

Causes of the Flood

In the early months of 1931 abnormal rain fell in the lower Yangtze basin and threw a slowly increasing load on the tributaries of the river and, in turn, on the main river itself. This unusually heavy precipitation over a long period reached its climax in July and early August, when severe cloudbursts occurred over an extensive portion of the watershed. The amount of rainfall on the day of heaviest precipitation has been calculated at 850,000 cubic metres per second. On the day preceding and the day following that of maximum rainfall, the precipitation though less in extent was also enormous. At that time the ground and air were both already saturated; thus, comparatively little was absorbed and the bulk

of the water eventually found its way into the Yangtze River. Fortunately not all the rainfall found its way to that river on the day of precipitation; had that happened, all the great cities along the course of the river would have been wiped out of existence.

Discharge of the Yangtze during the 1931 Flood

The bund at Hankow is fifty feet above normal low water level, and the discharging capacity of the Yangtze River at that level at Hankow is 56,500 cubic metres per second. However on the 19th of August, following the great storm, the river rose to a height of 3.6 feet above bund level, and its waters were discharged at a rate of 67,000 cubic metres per second. All areas unprotected by dykes exceeding 53.6 feet above low water level were inundated, including the city of Hankow itself, which lay on an average, four to eight feet below this high water level. An enormous area in the Yangtze Valley also became flooded.

The mean high water level at Hankow for the sixty-three years from 1868 to 1931, during which records had been kept, is 44.13 feet. The high water level of 1931 was 53.6 feet, and is the highest on record. The next highest was 50.5 feet in 1870.[1]

Table of Maximum Gauge Heights

The bed of the Yangtze River is contracted into a bottle neck above Kiukiang. Below this contraction of the river valley the flood naturally rose less rapidly than it did above that point. In fact the flood reached its maximum at Hankow on August 19th whereas it did not reach its maximum at Nanking until September 16th.

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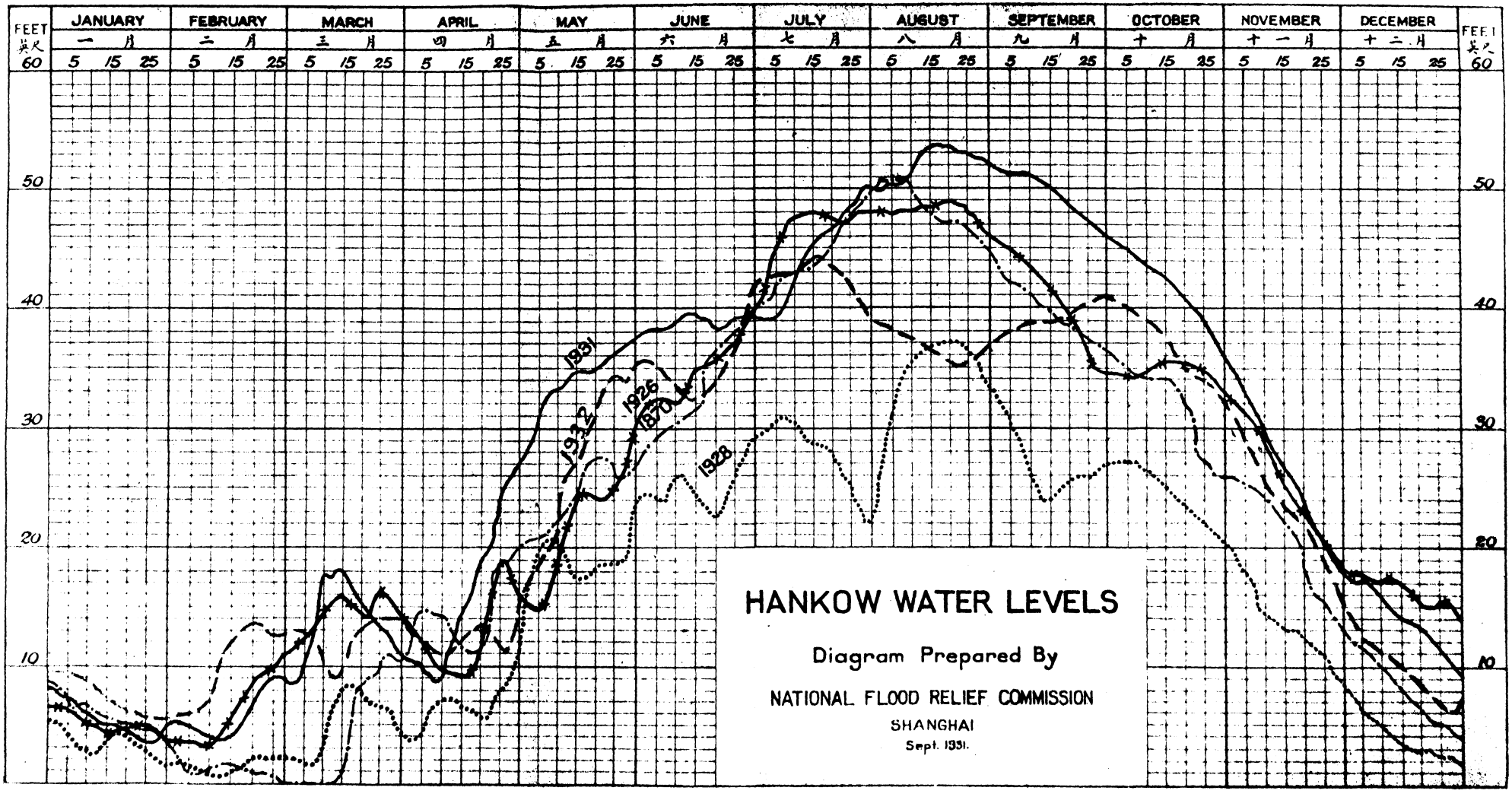
[1] See Appendix I—1

漢口揚子江水位漲落圖

國民政府救濟水災委員會製



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[1] See Appendix I—1

It is interesting to note the extreme slowness of the progress of the apex of the flood down the river from Chungking to Nanking. This may be studied in Appendix I - 2 which shows the maximum heights of the river level at various stations during the time of the flood of 1931.

Extent of Flood

Map I, printed with the Appendices, gives a graphic idea of the extent of the gigantic flood of 1931. It extended from the Yellow Sea in Kiangsu Province to Chinkiang on the Yangtze, and up the Yangtze River nearly to Shasi in Hupeh Province, a total distance of nine hundred miles. From the Grand Canal it stretched far up the Hwai River into Honan Province, a distance of four hundred and fifty miles. From Shasi it spread one hundred and twenty miles to the south including the Tungting Lake country in Hunan Province, and from Kiukiang it reached one hundred miles south in the region of the Poyang Lake. In addition, everywhere the rivers flooded back up their numerous tributaries and thus inundated vast additional areas.

The flooded areas were mapped in the first instance by aerial survey executed by engineers of the Yangtze River Commission and of the map office of the Chinese army, which placed their respective engineers at the service of the National Flood Relief Commission. Later, Colonel and Mrs. Charles A. Lindberg and the Air Force of the British Navy also assisted in the aerial survey. From these surveys it was calculated at that time that the total flooded area approximated 88,000 square kilometres, (34,000 square miles), with an addi-

tional 20,000 square kilometres (7,700 square miles), less seriously flooded. Since then, however, more detailed surveys have been made.

At the time of preparation of the first map no data were available showing the extent and seriousness of the flood in Honan and northwest Anhwei. The revised map includes information regarding these two regions. The final figures concerning the extent of the flood show that 169,000 square kilometres (65,000 square miles), exclusive of the lakes, were seriously flooded, in addition to at least 12,500 square kilometres (5,000 square miles) less seriously. This is an area approximately equal to the whole of England plus half of Scotland or to New York, New Jersey and Connecticut combined. It is, in fact, true to say that the Central China Flood of 1931 is the greatest flood on historical record.

Other Flooded Areas

A large area in northern Kiangsu, east of the Grand Canal, was also very seriously flooded. The important town of Hsingwha is at its centre. The whole of this area is low-lying and is subject, on its eastern seaboard, to inundation of salt water from the ocean at high tide. A sea dyke has been constructed along the eastern boundary, but where this dyke is pierced by rivers the sea came in and flooded a large area of the hinterland with salt water. This is notably the case on the Hotu, Chu, Wang Chia, and Tou Lung channels.

In the Hwai Valley, numerous small streams, varying in size and capacity, discharge directly into the Hwai River on its northern bank. In time of high water the

Hwai River backs up these tributaries and floods large areas of rich agricultural land. In order to protect this land it has been the custom to construct dams across these streams, but this custom results in the creation of lakes of considerable size through impounding the natural flow, and accounts for the large area flooded in 1931. Thus in the Hwai Valley and in northern Kiangsu an area practically equal in extent to that along the Yangtze and its tributaries was also flooded. In Honan the flood was an extension of that in the Hwai River Valley, and, in addition, the Yellow River breached its banks a short distance to the east of Loyang.

Comparison with the Mississippi Flood of 1927

According to the best authorities, the Mississippi Flood of 1927 affected an area of 20,000 to 26,000 square miles, and during that flood 600,000 people were rendered homeless and several hundred were drowned. Thus the Central China Flood of 1931 covered an area about treble in extent that inundated in the greatest Mississippi flood on record, while the numbers directly affected and the loss of life in the case of the China flood were incomparably greater. Scientific enquiry indicates that the death roll from drowning in the flooded area of China in 1931 approximated 140,000, and the total population affected was over 25,000,000.[1] The American National Red Cross has described the Mississippi River Flood of 1927 as the greatest disaster America ever suffered in the destruction of property and in damage to economic and social life. How much more forcibly would a similar statement apply to the flood which visited Central China in 1931.

---

[1] *Vide* Appendix I-3

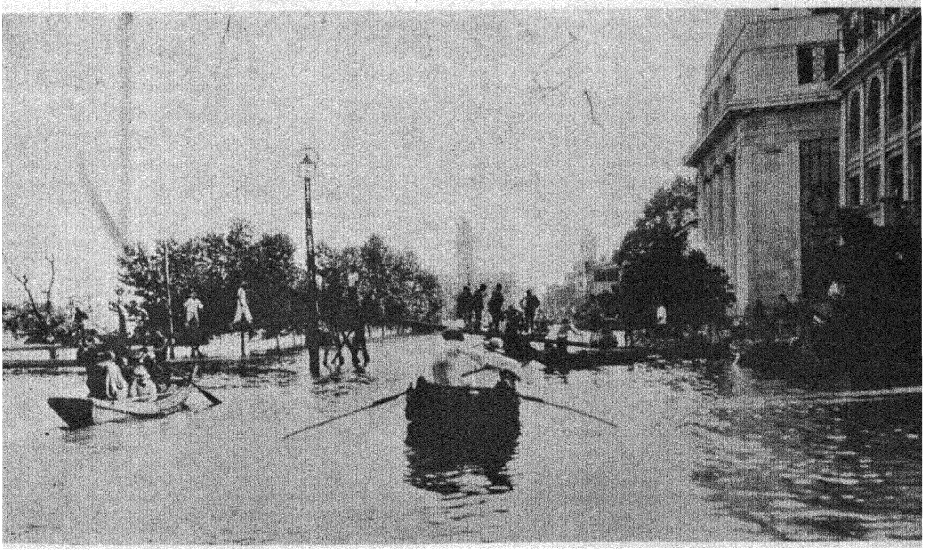
Seriousness of the Flood

At the request of the Chairman of the Commission, the Department of Economics of the College of Agriculture and Forestry in the University of Nanking carried out an economic survey of the effect of the 1931 flood.[1] As a result of this enquiry it was estimated that the total farm population affected by the flood was, as stated above, over twenty-five million, a number approximately equal to the entire agricultural population of the United States. In the flooded area, of all farm buildings, forty-five per cent were destroyed; of all persons, forty per cent were forced to migrate for the greater part of the winter, either to high land in the vicinity, or to other *hsiens;* and, on the average, flooded houses were uninhabitable for fifty-one days. The average maximum depth of inundation of the fields was nine feet. The total loss in the affected area was calculated at two thousand million dollars, and when it is borne in mind that the annual earnings of an average farm family are about three hundred dollars, the severity of the loss to the individual farmer is readily apparent.

The number of deaths from drowning was found to be very much smaller than was commonly reported at the time of the flood. The loss of life was smaller than might have been expected, owing to the fact that the country is intersected in all directions by canals and creeks, and that in every village there are boats and

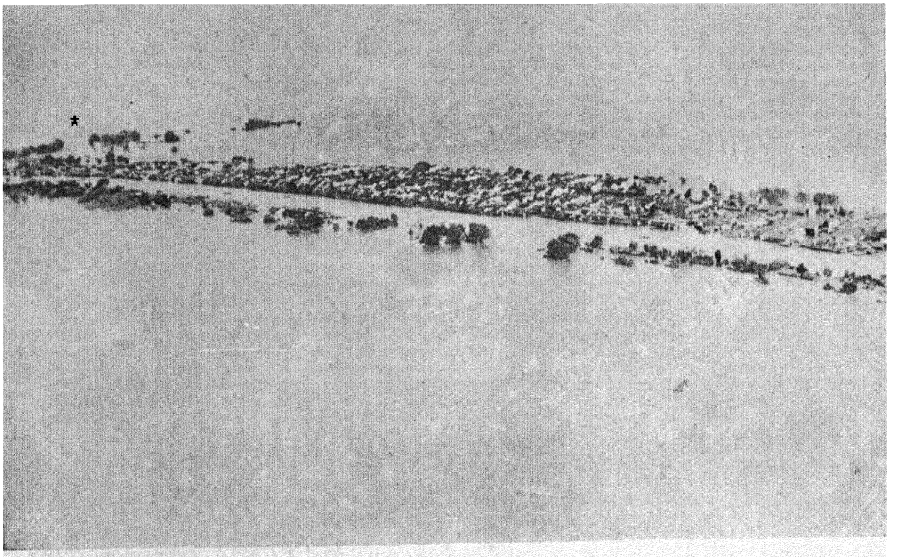
[1] The 1931 Flood in China: An Economic Survey by the Department of Agricultural Economics, University of Nanking. Published by University of Nanking, Nanking, China, 1932. Printed at the *Sign of the Willow Pattern,* Shanghai, 9 x 6 inches—74 pages and map. For sale in China at bookstores. Price $2.00 Chinese currency. For sale in U.S.A. at Universiy of Nanking, 150 Fifth Avenue, New York City at U.S. $1.00 postpaid.

1. The flood extended over an area of 70,000 square miles.

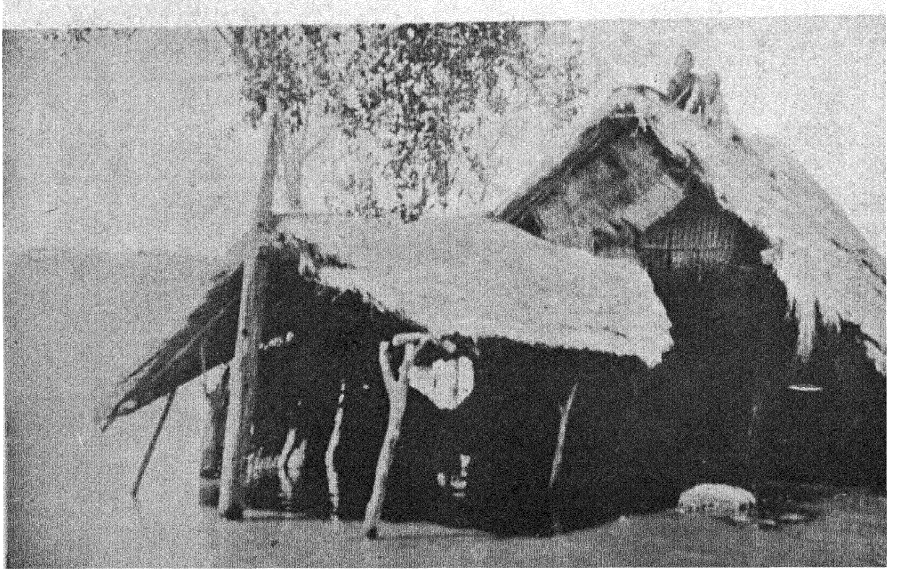


2. The water stood five feet deep at the Bund, Hankow.

*



3. A city beside a canal in north Kiangsu.



4. Nearly half of the farm buildings in the flooded area were destroyed.

sampans which were available when the population had to escape. Probably the most serious individual instance of loss of life occurred at Kaoyu, when both banks of the Grand Canal were breached in the middle of the night, and the water of the Kaoyu Lake poured through the town and swept some two thousand people to destruction in the course of a few minutes.

In the destruction of property, in the menace to public health, in the paralysis of economic and social life, and in the widespread misery which it caused, the Central China Flood of 1931 stands out as the greatest nautral disaster this country has ever suffered. It is one of the greatest catastrophes from natural causes in the history of the world.

Maximum Water Theoretical Level Had Dykes Not Broken

In the main the flood was due to the overtopping of dykes throughout long distances, to extensive breaches in dykes, or to complete erosion of dykes. As a result, water that normally would have been confined by the dyke barriers on the two sides of the river, and that thus would have been compelled to flow out to sea, instead spread over the country. Manifestly, if the dykes had been high enough and had not given way, and the water had thus been compelled to flow down between them to the sea, the river would have had to rise to a height above its actual 1931 flood level. The question then arises as to what this height would have been. The answer to this question is rendered exceedingly difficult owing to the absence of data necessary for computation, but a calculation made from the data available shows that, had the dykes not broken, and had they been high enough, the flood level at Hankow would

have been 57 feet instead of the actual 53.6 feet recorded at that city.

Much was said and written at the time suggesting, or indeed definitely alleging, that the flood had been caused by neglect of the dykes. Without entering upon any controversy concerning the upkeep of the dykes, it should be understood that the policy followed in China, as in other countries, has not been to dyke against the exceptional flood. Experience in many countries establishes the fact that great floods are not of frequent occurrence. On the Danube, for instance, the greatest flood of the last nine hundred years was in 1501; the second greatest in 1910. On the Tiber the greatest flood on record was in 1598. During the last four hundred years the greatest flood in Paris was in 1658, and on the Yangtze itself the previous greatest flood was in 1870, sixty-one years before the flood now under consideration.[1]

Methods of Protection

Many plans have been considered by engineers for protection against great floods of river areas. The Mississippi offers a close parallel to the Yangtze, and the question of protection has been considered in great detail in connection with the former river. A number of schemes have been proposed or examined,[2] as, for instance, annual dredging of the river, a method which in the case of the Yangtze is clearly impracticable; construction of side channels; widening the river bed; straightening the channel of the river; afforestation; construction of detention reservoirs;

1 *Vide* Appendix I-1

2 *Vide* Jadwin Report (U.S. Army), on the Mississippi Flood. Engineering Record December, 1927.

basin storage; additional dyke work. Finally, the course which was adopted, as the most practicable scheme, was a combination of dykes and the utilization of parallel rivers. There is, however, no river parallel to the Yangtze which could be used to carry excess water discharged into it, and thus, by nature, the Yangtze is itself forced to discharge its flood waters between dykes, with such assistance from basin storage as bordering lakes can yield. Reservoirs lose a large part of their effectiveness unless they are kept empty until required and the difficulty of obtaining large sites for reservoirs is obvious.

These considerations and this authoritative testimony are conclusive on the point that no governmental indifference or inefficiency is to be charged with the Yangtze flood of 1931.

Immediately after the flood occurred the Inspector General of Customs made an inspection of the Yangtze Valley and submitted a report, from which the following is extracted:—

> While we have thus seen that the abnormal rainfall in the Yangtze districts was the main cause of the flood, it should be remembered that there are extensive riparian areas, etc., bounded to the north by the Yangtze and to the south by the Siang River and the Tungting Lake, which normally flood annually and form the natural safety-valve when the river has risen to a certain level.
>
> Afforestation on a large scale might reduce the danger of serious floods, but cannot be developed for many years, and in the meantime it is essential that the Yangtze Valley should be controlled by one central flood prevention authority, that should be empowered to arrange for effective dyking of areas of refuge at frequent intervals on the river banks, allowing the rising waters to overflow the banks in certain other places, as much as may be necessary to regulate the height of the river, and thus

preserve from inundation large cities and densely populated districts. Normal floods, properly controlled, are not wholly destructive, and can be used to the advantage of the people, as the periodical flooding of different localities fertilises and gradually raises the soil. The whole of the plain from Ichang to the sea, for example, is alluvial, having in the past been raised to its present level in this manner by floods and silt deposit, and any attempt unduly to upset nature's action in this direction may occasion grave risks. In other words, if a too elaborate system of dykes is devised the high water level of the river, as in the case of the Yellow River and the Mississippi, will eventually be raised to abnormal heights above the level of the plain, with disastrous results."

"It is fitting to state, incidentally, that the general system of dykes on the river has been moderately well conceived from each locality's point of view and for normal conditions. Their construction was satisfactorily executed in the first instance, but notwithstanding their local importance, they have in some cases been permitted to fall into a state of disrepair, and the present official control over them, as already indicated, is inadequate."

Summary of Situation

The University of Nanking survey, mentioned above, estimated the value of the crop destroyed by the flood at $900,000,000. Long before this confirmation was received, those familiar with the subject were aware of the fact that the Yangtze Valley faced a serious food shortage at that juncture. Without a fairly complete restoration of the dyke system this shortage would become perennial. The Government was therefore faced with a threefold problem: — *(1)* the relief of several million families driven from their homes and close to destitution, *(2)* the remedy of a food shortage which threatened serious hardship to the otherwise self-sufficient remaining population and *(3)* the restoration of an elaborate dyke system, which had been almost completely swept away.

How this problem was solved is described in the following chapters.

CHAPTER II

Organization and Finance

Creation of the Commission

It rapidly became apparent that the flood was a disaster of the first magnitude, and on August 14th 1931 the National Government established the National Flood Relief Commission to deal with the emergency. The Commission was created by a mandate from the National Government to the Executive Yuan which reads as follows:

"Having received from various Provinces reports about the flood and serious losses to its victims, the Government ordered the Executive Yuan to despatch officials to make a thorough investigation and suggest plans for relief. The extent of the areas affected and the magnitude of the disaster have been without precedent for the last hundred years. Matters such as emergency relief, rehabilitation and constructive measures to prevent recurrence of such calamities in future should be given adequate consideration and put into effect by enlisting all available resources, and by the application of expert knowledge. The National Government hereby creates the National Flood Relief Commission and Mr. Soong Tze Vung, Hsu Shih Ying, Liu Shang Ching, Kung Hsiang Hsi and Chu Ching Lan are appointed members with Mr. Soong Tze Vung as Chairman.

The above named members are to devise immediate plans for relief and put them into operation in conformity with the Government's solicitude for the welfare of the sufferers."

Of the members, Mr. T. V. Soong was Vice-President of the Executive Yuan and Minister of Finance, Mr. Hsu Shih Ying, Chairman of the National Famine Relief Commission, Mr. Liu Shang Ching, Minister of the Interior, Mr. Kung Hsiang Hsi, Minister of Industry,

and General Chu Ching Lan, a well known philanthropist.

Organization of the Commission

Immediate steps were taken both to organize the Commission and to formulate plans for the execution of its task. On August 17th, two days after the mandate creating the National Flood Relief Commission was received, the Commissioners drafted rules to govern their internal organization and recommended them to the Government for approval. These rules provided that the Commission should be enlarged by the addition of specially qualified persons, both Chinese and foreign; that the accounts should be audited; and that, in addition to the Secretariat, a Standing Committee be appointed composed of the chiefs of the various departments and certain other specially appointed members. The departments created were seven in all, namely, Information, Finance, Audit and Accounts, Hygiene and Sanitation, Field Operations, Transportation, and Co-ordination of Private Charities. These regulations were approved by the National Government on August 22nd.[1]

Affairs moved so rapidly that at the first plenary meeting of the Commission, held on September 9th 1931, the Chairman was able to announce that the Commission's organization had been completed, and to request that these appointments be confirmed.[2]

Collection of Information as to the Flood

The first information with respect to the flood came from press reports and from telegrams sent in by officials. In the nature of things this information came only from the larger centres. The facts regarding the

1 *Vide* Appendix II-1
2 *Vide* Appendix II-3

agricultural districts with their teeming peasant population, in the aggregate infinitely more numerous than that of the towns, were left to the imagination. The Commission took steps to remedy this weakness, and arranged for immediate reports by wire and periodical reports by mail from Government departments, from *hsien* magistrates, and other local authorities, from local organizations of all kinds, from missionaries whose stations were scattered all over the flooded area, from branches of banks and commercial firms.

The amount of information received was very large and of great value, as it enabled the Commission to form a sufficiently adequate idea of the dimensions and seriousness of the catastrophe. Some of the reports were accompanied by maps of the various districts, on which the approximate limits of the flooded area were indicated. Those were of great assistance, and amplified the general description of conditions, which had been obtained by the aerial survey described in Chapter I.

Financial Arrangements

Simultaneously with the arrangements for internal organization, the Commission was engaged in devising measures of relief for the affected regions. Naturally, the adequacy of these measures must depend upon the resources which the National Government could concentrate for the work. Two million dollars of Salt Bonds had already been appropriated to emergency relief, and this fund was entrusted to the National Famine Relief Commission, which, being a permanent Government organization, was in a position to act before the Flood Relief Commission could commence operations in the field. On the security of these bonds the National

Famine Relief Commission had obtained from the banks a cash advance of one million dollars. This amount was apportioned as follows:—To Hupeh, Hunan and Anhwei $170,000 each; to Kiangsu, Honan and Kiangsi $130,000 each; to Chekiang $80,000; for medical work $20,000.

Public Subscriptions

The Finance Department of the National Flood Relief Commission immediately initiated a campaign for subscriptions. It passed the following resolutions:—

1. That the Government be petitioned to issue orders to the Departments and institutions that a certain percentage of all salaries should be contributed to the relief funds.

2. That an appeal for subscriptions be made to prominent Chinese and foreigners as well as to organizations.

3. That local Chinese and foreign banks be requested to serve as collection agents.

4. That branch Committees be established in all Provinces to appeal for funds.

5. That over-seas Chinese be requested to establish branch Committees with the object of raising subscriptions.

6. That subscriptions be solicited through advertisements in the Chinese and foreign press.

To this appeal there was a cordial response from people of all classes, individual subscriptions ranging from $300,000 to $1, the latter sum being subscribed by a prisoner under sentence of death in the Soochow prison. During the first week the Commission received over one million dollars in subscriptions. Altogether the Commission received $7,459,817.46 dollars in subscrip-

tions. In addition to these cash contributions, there were large contributions both from abroad and from domestic sources in the form of medicines, serums, vaccines and disinfectants, rice, prepared food supplies, clothing, stationery and printing, soap and blankets. Lists of contributions were published periodically in the press and a complete list will accompany this report.

When it is remembered that in addition to subscriptions received by the Commission, large, but unknown, amounts were expended by private charitable organizations on flood relief, and also that a sum of $454,000 was subscribed in America and in Great Britain between the months of March and June 1932, (applied specially to the famine areas of North Anhwei and of Honan) the widespread and generous interest aroused in the public mind by this catastrophic flood can be appreciated.

Wheat Purchase Negotiations

It was seen that subscriptions alone would be entirely inadequate to provide sufficient funds to meet the requirements of flood relief, and the Chairman of the Commission as Minister of Finance had to find means to supply the Commission with the funds necessary.

On August 15th, the day following the establishment of the Commission, he officially initiated negotiations which had already been discussed informally for the purchase of a very large amount of American wheat, to be devoted exclusively to relief work.

On September 25th 1931, these negotiations resulted in signing an Agreement.[1] By this Agreement the Grain Stabilization Corporation, with the approval of

[1] *Vide* Appendix II-4

the Federal Farm Board, agreed to sell and the Chinese Government agreed to buy 450,000 short tons of No. 2 western white wheat, to be loaded in bulk at United States Pacific Coast ports. It was agreed that the Grain Stabilization Corporation should have the option of shipping not more than half the quantity in the form of flour at a comparative price. It was also agreed that the price for each shipment should be the current market price F.O.B. at the port of loading on the day of issue of ocean Bills of Lading.

As to payment, it was agreed that obligations of the National Government bearing the same dates as the Bills of Lading should be delivered to the Grain Stabilization Corporation, that these obligations should bear interest at the rate of 4 per cent per annum, payable on June 30th and December 1st of each year, and that of the capital sum, one third be paid on December 31st, 1934, one third on December 31st 1935, and the balance on December 31st 1936.

The conditions of the Agreement provided that open tenders for ocean carrying freight should be invited, and that, other conditions being equal, American vessels should be used for the transportation of the wheat and flour. It was finally agreed that arrangements for shipping should be made by the buyer under conditions approved by the American Commercial Attaché at Shanghai, designated to act for the seller.

Mr. F. B. Lynch was appointed to take charge of ocean shipping. After considerable inquiry into methods and rates, the Standing Committee at its meeting on October 5th 1931, approved a contract for the shipment

of American wheat with Messrs. L. Everett Incorporated, who acted on behalf of Messrs. W. L. Comyn and Sons of Seattle. The agreement provided for transportation at the rate of gold $3 per ton for wheat and gold $3.50 per ton for flour, on the basis of shipments delivered at Shanghai, freight being prepaid. This agreement also stipulated that a first irrevocable credit in the sum of gold $400,000 was to be established in favor of the shipping contractor, immediately on acceptance of the offer, and that subsequent irrevocable letters of credit, each in the sum of gold $200,000 were to be opened from month to month for the balance of the freight carrying contract. At the request of the Commission the Central Bank of China made the necessary arrangements that these credits might be available in New York as required. Messrs. Balfour Guthrie & Co., Ltd., were appointed loading agents of the Commission, and were charged with inspection of steamers, as well as of the quality of the wheat and flour at port of loading. They also had to check prices and weights.

Italian Indemnity Remission

Negotiations were initiated on September 7th 1931, for a grant from the Italian portion of the 1901 Indemnity, which should be devoted toward purchase of tools and implements for use in the work of dyke repair. These negotiations were successful and led to the conclusion of a formal agreement signed on October 26th 1931, by the terms of which the Italian Government remitted U.S. $200,000 out of the Italian portion of the Boxer Indemnity for purchase of tools in Italy.

Flood Relief Bonds

To supply operating funds, a bond issue was planned. On September 11th 1931, sanction was accorded to the

issue of $80,000,000 of Loan Bonds, secured on the salt revenue. Article II of the regulations governing this loan issue provided that the proceeds were to be devoted towards emergency and labor relief, and the purchase of relief grain. It was planned to make a preliminary issue of $30,000,000 of bonds, and to use the proceeds to move the wheat and flour, and to meet operating expenditure for relief in the devastated regions.

On September 18th 1931, however, the Japanese made their attack at Mukden, and their operations extended rapidly to other parts of the Three Eastern Provinces. The immediate result was a state of psychological and political turmoil throughout the whole of China, and the consequences to economic life were far reaching. The bond market was at once seriously depressed, and it proved inadvisable, indeed impossible, to place the Flood Relief Bonds on the market. The finances of the Commission were thus thrown into a state of complete uncertainty.

Customs Surtax

Nevertheless, the demand for funds for relief projects was insistent, and the Relief Bonds were replaced by a surtax on the Customs Duties, effective from December 1st 1931, for a period of eight months. The proposal of the Minister of Finance that a surtax be imposed was approved in principle by the Central Political Council on October 28th 1931. The rate of surtax was fixed at 10 per cent with effect from December 1st 1931 to July 31st 1932 and thereafter at 5 per cent "until the date of the complete liquidation of the American wheat loan". It was further stipulated that the proceeds of the 5 per cent surtax should be applied

to the payment of interest and redemption of principal of that loan.[1] The total yield of this surtax up to July 31st 1932, was $15,374,315.54.

Credit Arrangements

Money was, however, immediately required, and the Hongkong and Shanghai Banking Corporation agreed, on December 1st 1931, to an advance up to £140,000 sterling, (equivalent to about $2,000,000), on the security of the surtax, the advance to carry interest at 7 per cent per annum on the amount actually drawn. In addition, a temporary advance of $1,500,000 was obtained from the National Sinking Fund Committee on the security of the unissued Relief Bonds.

The initiation of actual relief, however, did not wait upon the completion of the financial arrangements nor the final signature of the wheat purchase agreement. Complete reliance was placed upon the ability of the Government ultimately to make available the necessary means. Even before some of the newly appointed department heads had arrived to assume charge, steps were taken to prepare the foundations of their activities.

Appointment of Director General

In view of the unexampled magnitude of the task of relief, it was felt that steps should be taken to obtain the services of an expert, who could handle the administrative problems connected with questions of relief and rehabilitation. The League of Nations was consulted and on its advice, the National Government invited Sir John Hope Simpson, formerly of the Indian Civil Service, who had years of experience of relief work in India and subsequently in Greece, to come to China in

[1] *Vide* Appendix II-5

order to assist the Commission. He arrived in Shanghai on October 20th 1931, and the Commission's regulations were subsequently amended so as to make possible his appointment as vice-Chairman and Director General.[1]

Further Development in Organization

Thereafter the organization of the Commission was further developed. A committee known as the Inland Transportation Committee, consisting entirely of business men with shipping interests, was created to co-ordinate ocean shipping and inland transportation. In addition to the three Divisions, Emergency Relief, Engineering and Labour Relief and Farm Rehabilitation in the Field Operations Department, a Commissary Division and an Inspectorate were organized and included in the same Department. After arrangements had been made permitting the sale of wheat and flour, a Grain Exchange Committee was established to control sales and to have custody of the funds.

Originally, the work of Audit and Accounts had been centralized in one Department under an Audit Committee. Experience proved that this arrangement was unsatisfactory and inconvenient; consequently, accounts were separated from this Department and a special Accounts Division was created. The work of audit was entrusted by the Audit Department to the firm of Shu-Lun Pan and Company, Chartered Accountants.

The organization of headquarters was thus completed, and that in the field developed as work proceeded. The general policy of the Commission, however, had been formulated at a much earlier date. The Chairman did not wait for the completion of the negotiations for the

[1] *Vide* Appendix II-2

wheat purchase, nor for that of the financial arrangements, but, with confidence that these matters would be satisfactorily concluded, called the first plenary meeting of the Commission on September 9th 1931, only three weeks after it had been constituted by government mandate.

At that meeting, in the course of his speech, the Chairman made a preliminary estimate of the resources which would be at the disposal of the Commission in cash and in kind. The total amounted to $70,000,000, and it is interesting to note at the completion of the work how remarkably accurate this forecast proved to be.

The policy which was to guide the Commission, both in organization and in operation, was announced by the Chairman in the following words:

"I believe I am correct in saying that very few of us have any experience in famine relief, certainly none has ever handled a relief problem nearly as large as the present one. It staggers our imagination and goes beyond our ordinary conceptions. Old methods of dealing with flood relief will have to go by the board, and we have to strike out for ourselves and adopt a policy as best we may.

"What is the problem before us, and what is our programme? Just because the need is so great and the problem so difficult we must be careful not to get beyond certain practicable limits. There are suggestions of dredging the Yangtze River, there are suggestions for improving the Hwai River, but to handle these two problems or to handle either separately would call for the expenditure of hundreds of millions of dollars, which the Commission does not have. And even if we had the money, we have not the technical engineering resources avail-

able for the harnessing of such huge volumes of water. The experience of the United States, which has spent hundreds of millions of gold dollars on the Mississippi, shows that the richest country in the world has not been able to control the course of a river whose flood waters are far smaller than those of the Yangtze.

"What then is our objective? Your different sub-committees have exchanged opinions, and very roughly, our suggestion for an answer is this. In the first place, let us do our best to give immediate relief to the victims of the floods by giving them food, shelter and health protection. In the second place, as soon as the water recedes sufficiently let us try to repair the dykes to the *status quo ante*, that is to say, to take care of the normal drainage of the Yangtze River. We may not know very much about ultimate remedies for such disasters, but all scientific opinion concurs that for a flood of the magnitude of this year, much exceeding all past records, no expenditure of money however large, no dykes however strong, could prevent the catastrophe. We conclude then, that the limited resources of the Commission should be used to try to repair existing dykes and build new dykes such as will prevent flooding during normal rainfall. This does not mean that the Government will not as soon as practicable carry through vast comprehensive schemes of river conservancy, but we submit that it is beyond the resources of this Commission. In the third place, when the waters recede, let us retain sufficient resources to help the spring sowing of the farmers, and whenever possible, to assist them in the rehabilitation of their farms.

"Even the limited programme sketched above may be difficult with the modest resources at our disposal, but we must above all be prepared to cut our coats according to the cloth."

The commencement of major relief operations, however, did not wait until financial arrangements were completed. Tentative schemes of action for the various

Departments were prepared, in some cases even before the heads of those Departments had arrived to assume charge. Representatives of headquarters were sent to some of the most severely affected centres with substantial sums at their disposal, and with the particular object of co-ordinating local efforts to meet the emergency, until the larger national resources were available.

CHAPTER III

Wheat and its Distribution

Trans-Pacific Movement

The Agreement with the Grain Stabilization Corporation mentioned in Chapter II reserved to that body the option of delivering half of the 450,000 tons of wheat in the form of flour. Actually 225,000.006 short tons of wheat were delivered, and in addition 160,125.042 short tons of flour, which, at the rate of 72.6 tons of flour to 100 tons of wheat, would be the equivalent of 220,557.909 short tons of wheat. In this way, the total amount delivered, expressed in terms of short tons of wheat, was 445,557.915 tons.[1]

The wheat and flour were transported by sixty-six ocean steamships. As stated before, the terms of the purchase Agreement required the buyer to give American ships, if available, the preference at equal rates. Where regular liners offered competitive rates, it proved possible to use American shipping. Of the 32 regular liners which carried wheat, 24 were American, but no American charters were obtainable at rates which compared with those obtained from British and Scandinavian owners. Of the 34 chartered ships which carried full cargoes, 11 were British and 23 Scandinavian. The sum of U. S. $1,254,552 was the total paid by the Commission for freight on wheat and flour shipments.

Marine insurance was effected through the Yangtze Insurance Association Ltd. The total premium thereon paid was U.S. $45,343.22. Payments received against

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[1] *Vide* Appendix III-1

losses amounted to only a modest sum, no disaster having occurred to any of the Commission's' cargoes.

The Agreement provided for the delivery of 90,000 tons during September and October, 75,000 tons monthly from November to February inclusive, and 60,000 tons during March. However, the time required to settle details of the Agreement and of the shipping contract postponed the beginning of deliveries until late October. Storms further delayed the passage of the earliest ships, so that the date of the first arrival in Shanghai was November 15th. Thereafter deliveries were accelerated to such an extent that by January 31st 1932 practically half the total had reached Shanghai. The last shipment arrived May 16th 1932, only sixteen days behind the date fixed in the original schedule.

It was the intention to forward several of these ocean vessels to Hankow. Owing to the delay indicated above and to a rapid fall in the river, these ships were prevented from proceeding so far. Eleven sailed as far as Nanking and Pukow, one to Chinkiang, one to Nantungchow and one delivered cargo partly at Chinkiang, and partly at Nanking. The cargo of all the others was unloaded at Shanghai.

II

Bags and Bagging

By terms of the Agreement, wheat was loaded into vessels in bulk ex-spout from elevators. It was thus necessary to bag wheat on arrival at Chinese ports. Attempts were made to purchase bags through open tender, but bids were unsatisfactory and purchases were made by negotiation, a considerable saving being effected. Purchases were made at various prices according to quality,

but after an early experiment with used bags, it was found more economical to purchase bags of better quality at a higher price. A total of 1,950,000 bags was secured at an aggregate cost of $521,694.47. In a few cases, notably Pukow and Nanking, bags were returned to the port for use a second time.

An attempt was also made to secure the labor required for bagging the wheat on the basis of competitive bids, but it was ultimately found advantageous to make these arrangements by negotiation. Bagging included not only filling and closing the bags, but also the cost of the hemp for sewing, and in addition a guarantee to bag not less than 1,200 long tons per day of ten hours on ships discharging by five or more hatches. The greater portion of the bagging was done by the firm Ah Foo, but at Pukow local labor insisted upon its right to do the work, at considerably higher prices. The total tonnage of wheat discharged for the Commission's account (wheat sold ex-ship was discharged by the purchasers[1]) was 140,286 tons in 1,766,091 bags. The total cost of bagging labor was $52,061.92 or an average of $0.37 per ton. Expenses incidental to bagging raised this average to about $0.46 per ton.

Up-river Movement

The Commission appointed the Inland Transportation Committee, composed chiefly of men engaged in the shipping business, to ensure that the transportation of the wheat and flour up the Yangtze River should be under expert management. All the important companies having ships plying the river between Shanghai and Hankow belong to an informal organization known as

[1] Also one shipload by Kiangsu Provincial Authorities.

the Lower Yangtze Conference. The Inland Transportation Committee made arrangements with this Conference to carry the wheat and flour belonging to the Commission for the following rates:

From Shanghai to	Nov./Dec. (High Water)	Jan./Mar. (Low Water)
Nanking or Chinkiang	16 cands. per picul	16 cands. per picul
Pukow	18 „ „	18 „ „
Wuhu	21 „ „	26 „ „
Kiukiang	25 „ „	30 „ „
Hankow	25 „ „	30 „ „

In both cases, these rates included stevedorage in and out, and prompt overside delivery at destination. They were ten to twenty per cent lower than current commercial rates upon the same commodities. The Inland Transportation Committee at the same time, advertised in the Shanghai press calling for tenders from other shipping firms and lighter owners who might wish to participate in the business.

Transfer from Ocean to River Vessels

Harbor regulations do not permit river ships to tie up alongside ocean ships for the purpose of transferring cargo from one to the other. The usual practice is to transfer cargo to lighters, then from the lighters to on-carrying vessels. Some negotiations were commenced for the provision of this transfer service, but finally the Inland Transportation Committee advertised for tenders to cover this work, and that of arranging for space in steamers, chartering craft when necessary, arranging insurance, passing customs and "all secretarial duties of the Committee". The bid of L. Everett Inc., of Tls. 0.35 per ton of 2,240 lbs. of wheat, or Tls. 0.40 per ton of 2,240 lbs. of flour, was finally accepted, the bidder also

agreeing to perform the advertised secretarial duties free of charge in case his bid for lighterage were accepted.

Wharf and Storage Facilities, Shanghai

It early became evident that conditions would not permit of the organization of large labour forces on the dykes until after the New Year. In the meantime it was necessary to store considerable quantities of wheat and flour temporarily in Shanghai, as storage facilities at river ports were limited. Storage at Shanghai was also necessitated by the impossibility of clearing cargo as fast as unloaded, when the arrival of several ocean vessels synchronized. Arrangements were therefore made for the loan of the China Merchants Steam Navigation Company's Wharf and storage facilities at Pootung. Later, when these commodious godowns were taxed to their capacity, the loan of the adjoining Yangtze Wharf and godowns belonging to the Ministry of Communications was also obtained. In both cases, the Commission paid only maintenance expenses and salaries of the permanent staff. The berthing facilities of these properties assisted greatly in the discharge of cargo, its transhipment and despatch up river.

Programming up-river Shipments

It was necessary to keep in close touch with the requirements of the various relief forces based on the up-river ports, to be regularly advised as to the storage and discharge capacity at those ports, and to have up-to-date information as to river shipping. The handling of a ship's cargo cost approximately fifteen thousand dollars. Thus, every extra handling involved a loss of that amount. It was necessary therefore, for those in charge of harbour lighterage and of river transport to maintain the closest possible co-operation with

those in charge of up-river depots. In fact from the discharge from the ocean steamship to arrival at the river port, handling was a continuous process.

Demurrage

At times, the facilities at Shanghai were severely tried by the convergence of several ocean steamers at that port, but timely diversion of a ship to Chinkiang, Nanking or Pukow, generous offers of space by river lines, often at the loss of freight bearing higher rates, and charter of additional tonnage, combined to prevent any actual crisis. The co-operation of those in charge of ocean and river transport and of lighterage with the labour contractors was so complete and efficient, that only three days of demurrage accrued during the entire operation. This occurred at the time of the Japanese hostilities, during which period the owners of one ocean ship refused to permit their vessel to proceed to Pukow as ordered, while at the same time the action of hostile craft cut off the supply of lighters. The demurrage would have been greater had not exceptional arrangements been made by which the transfer of cargo overside directly from ocean vessel to river steamer was permitted for a short time.

Dispatch Money

Against the U.S. $600 demurrage paid on that one steamer, dispatch money to the extent of U.S. $7,314.10 was earned on eighteen steamers. One instance of extraordinarily rapid dispatch deserves mention. This was the motor-vessel *Lundby* which arrived on February 17th 1932, at the height of the war operations. Three days later, on February 20th, her discharge was completed. In actual time, 3.29 days were spent during which a total of 291,776 bags, equivalent to 7,148 short tons

of flour, was unloaded and carried into the godown—an average of 2,172 tons per day. In fact, warlike operations restricted only temporarily the activities of transfer and transport. February, the first month of hostilities, showed a reduction of 50 per cent in tonnage forwarded as compared with January. During the second month, March, the tonnage forwarded was fully 50 per cent greater than January, so that the average of the two months is actually greater than that of any other month, previous or subsequent. These results were accomplished despite the fact that during a large part of both of these months, harbour operations continued to the accompaniment of the roar of guns and the droning of hostile aeroplanes.

Cost of up-river Movement

There were in all 368 shipments by river steamer, and the amount of wheat and flour moved from Shanghai (including 4,598 tons from Nanking and 460 returned from Wuhu) by river steamers was 208,729 tons. The total cost for freight was $1,387,752.71 or an average of $6.65 per ton. This does not include inter-depot transfers principally by native junks (these were included under depot expenses), but it does include a few shipments from Shanghai to points beyond Hankow such as Yochow and Kienli. If insurance, lighterage and incidentals be included, the total cost of the up-river movement was $1,511,966.98 or about $7.25 per ton.

III

Field Organization

Responsibility for the wheat and flour, after delivery overside by a steamer at an up-river port, was assumed by the Field Operations Department. That Department created the Commissary Division to take delivery of

the wheat and flour at these ports and to issue it as needed to the Emergency Relief, Farm Rehabilitation and Engineering and Labour Relief Divisions. The Commissary Division was not organized until the end of October, the delay being due in part to the uncertainty as to what Department should be responsible for the handling of the wheat after it had been discharged at the river ports. The conclusion of the wheat loan and the signing of the shipping contract brought home the urgent need of special machinery to take charge of this part of the Commission's work. After careful consideration this Division was created and Mr. J. E. Baker was appointed its head with orders to organize a head office as well as field staff.

The three Divisions mentioned above did not work in identical areas. The Engineering Division directed its efforts principally to the main dykes along the Yangtze River and its larger tributaries, along the Hwai River and along the Grand Canal. The Emergency and Farm Rehabilitation Divisions operated in the regions which had been flooded, but which in many instances were situated at a considerable distance from the channels of the rivers. However, in practice, the conditions of transport determined the location of the district centres of the Commissary Division, as also the boundaries of the territory to be served by each of such centres.

District Depots

Nantungchow, the district depot nearest to Shanghai, is located on the Yangtze River at the mouth of a canalized stream, which provides the only means of communication with the most easterly portion of northern Kiangsu. This is the point where transfer of wheat

and flour for that area must be made from river steamer to canal junk. Three[1] engineering districts *(Nos. 15, 16 and 17)* were served from this depot. Emergency Relief centres also could be reached by canal from this port. But in District 17 where the engineering work consisted of the digging of drainage channels, canal hauls had to be supplemented overland by ox-cart to the site of the work.

Travelling up the Yangtze, the next district depot was Chinkiang, which is not only itself an important river port, but is directly opposite the junction of the Grand Canal with the river, and therefore a transhipment point like Nantungchow. Chinkiang depot served the Grand Canal region, including Engineering District No. 14.

The third depot, Nanking, was important because of its position in the centre of Engineering District No. 1, and also in the Ningshu Emergency Relief Area. It was additionally important because it could be reached by ocean steamship, and from it transfers could be made to the railway terminus, Pukow, immediately across the river. The depot at Pukow was established mainly as a transfer station. Ocean vessels could berth there alongside the railway which leads to the Hwai River Valley. Because the available godowns and sheds on the Pukow side of the Yangtze were of limited capacity, Nanking had to be used for the storage of reserves. Pukow also served the Emergency Relief Division in the nearer portions of North Kiangsu and Central Anhwei.

Pengpu, where the Tientsin-Pukow Railway crosses the Hwai River, was the natural headquarters for the

[1] Finally reduced to two, Nos. 16 and 17.

Hwai Valley, and for nearby *hsiens* served by the railway. Three Engineering Districts *(Nos. 11, 12 and 13)* and Emergency Relief were supplied from Pengpu.

Higher up the Yangtze, main depots were established at Wuhu, Anking and Kiukiang, each of which was made the headquarters of its respective District. These ports possess satisfactory landing and storage facilities and are the largest cities en route to Hankow. Later, Tatung, between Wuhu and Anking, was added, in order to avoid long junk hauls from Anking.

Hankow was more than a District Headquarters. It was a centre from which five Engineering Districts *(Nos. 5, 6, 7, 8 and 9)* and two Commissary District Headquarters were supplied. The amount of storage space available in Hankow was very large and met all needs of the Division.

Of the two Commissary District Headquarters supplied from Hankow, one was Chengchow and the other Yochow. Chengchow is in Honan at the junction of the Peiping-Hankow and the Lunghai Railways, and was thus the strategic centre for the work in that Province. Yochow is the transfer point between the Yangtze River and the river, lake and canal system of Hunan. In addition, from Yochow transhipments were made at times to the Sixth and Seventh Engineering Districts higher up the Yangtze River in Hupeh. Chenglingki, close to Yochow, supplemented the latter as a transhipment point for those Districts.

Sub-depots

The number of sub-depots and distribution points through which the Commissary Division functioned was

192, varying from three to as many as forty-one in each district. The determination of the number and location of these sub-depots and distribution points was left to the discretion of the District depot master, in consultation with the local heads of the Divisions which he was called upon to serve. Owing to lack of rapid communications between sub-depots and the District depot, it was impossible for headquarters in Shanghai to exercise effective supervision over the sub-depots. Thus, there was placed upon the District depot master not only a serious responsibility but a very large problem in organization. He was given full authority, under general orders, over all matters affecting his District, but was required to render reports, both regular and special, as to his plans and the work accomplished.

District Personnel

In a city such as Shanghai a considerable number of persons are always available for employment, but not all have had the experience, or possess the natural qualifications for work involving a high degree of responsibility. For purposes of communication it was particularly desirable that the persons selected should have a working knowledge of both Chinese and English. Unfortunately not all of those available were so qualified, and interpreters were necessary for those speaking only one language. The time available for the selection of the personnel was quite inadequate, and it was inevitable that considerable difference in organizing ability would be found among the men who were placed in charge of the various districts.

Most of the District depot masters were appointed while it was still expected that a finance

officer would be attached to each important centre. As fidelity companies furnish bonds guaranteeing against embezzlement only, it was not deemed practicable at first to put depot masters under bond, for they were intended only as custodians of property. However, the practice of requiring "shop" guarantee for such employees was used as a safeguard in a number of cases where the appointee was not personally known. Later, when it was decided to make depot masters fiscal agents as well, bonds for all district depot masters were obtained from a local fidelity and guarantee company. Depot masters were instructed to require "shop" guarantees from all their subordinates who held responsible positions. These guarantees are specially important in the case of those of lower rank, such as watchmen of godowns and of grain stacks.

At the peak of operations, the Commissary Division employed 1,831 men on a monthly basis in main and sub-depots, and in addition, the work required the services of at least 50,000 coolies and junkmen as casual labourers.[1]

District Storage

So far as possible, cargo arriving at a district headquarters was transferred immediately to junks or cars to proceed directly to sub-depots or distribution points. But it must be remembered that the floods had resulted in serious destruction of buildings, and that, even without such destruction, most villages in the interior do not include large buildings suitable for the storage of any considerable quantity of grain. Furthermore, in some places, they were exposed to raids by disorderly groups.

[1] See Appendix III-2

There, prudence indicated that the amount stored should be as small as possible. For these reasons a considerable proportion of the wheat and flour was placed in storage at the District Headquarters, and was thence transported to the smaller places gradually and as needed.

At the chief ports there was no difficulty in securing sufficient storage space in properly constructed godowns. At Hankow the serious depression in business experienced during the past few years rendered it easy to obtain a large number of mercantile warehouses either on, or not far distant from, the Bund; these were rented at favourable rates.

At Nanking the International Export Company had virtually closed down, and its excellent buildings were made available.

The Hankow godowns were substantial brick structures with corrugated iron roofs. Most of these godowns had ground floors composed of crushed rock to a considerable depth, making them practically rat-proof. The International Export warehouses at Nanking were of reinforced concrete throughout, the best type of construction of its kind to be found anywhere.

At other points as, for instance, Nantung, Chinkiang, Wuhu, Anking and Kiukiang the walls of the godowns were of brick or stone, but in many places the roofs were not sound and had to be repaired. In almost all cases, the earthen or brick floors were damp and had to be covered with straw, rushes or comparatively expensive planking. Except at Hankow, lack of time placed

the Division at a disadvantage in negotiations for economical space.

Sub-depot Storage

All sorts and conditions of buildings were pressed into service as sub-depots. Occasionally a Chamber of Commerce building of brick with tiled floor was available. Here and there a mission chapel could be found. Rooms in private houses were occasionally used. More frequently the tiled courtyard of some residence or place of business was occupied, and over this a roof was erected of the usual bamboo matting supported by poles. In all of these cases it was necessary to cover the floors with wood, rushes or straw. Frequently no charge was made for the use of the space, the owner giving it free as his contribution towards the relief work.

The greatest difficulty was experienced at distribution points along the banks of the river. On account of frequent destruction by floods, as well as for reasons of economy, the walls of practically all structures in the territory between the large market towns are constructed of pounded earth. Practically all the houses, therefore, had been swept away during the flood. It was thus necessary either to make use of damp, newly constructed, mud houses, or to store supplies in the open, under the cover of a double layer of mats. In some cases an attempt was made to dispense with storage altogether and to arrange for payment of workmen by a regular junk service from District depots or sub-depots. This service was, however, liable to irregularity owing to winds or to current, and was not always satisfactory. In such places the arrangements made were those dictated by circumstances and both limited storage and junk

delivery were used, the latter as regularly as conditions permitted.

Outdoor storage was used even at some of the district depots, notably in Nantungchow. This is a regular practice in North China, where rain and snow are infrequent during the winter season. Poles are laid on the ground and a second layer placed crosswise; these are covered with mats of split bamboo. On this foundation bags of wheat or flour are carefully piled, the top layers being gradually reduced in size, so as to form a pointed gable. Over this a double layer of mats is placed, sometimes with a layer of oiled paper between the mats. If the work is carefully done, wheat or flour can be stored for a few months in this manner with only slight damage.

Storage Costs

The total cost of storage was $93,547.58, an average of 30 cents per ton shipped up-river by ocean and river vessels. The total cost of storage varied between the districts because of amount, time in store and rates. The average cost per ton ranged from a negligible amount at Pukow, Pengpu and in Honan to almost 76 cents at Nanking. Rates at Nanking were comparatively high and large deliveries were made there early. Those at Nantungchow were in fact not low, but were included in a total with handling and lightering charges.

Handling

A great deal of handling was involved between the arrival of the wheat on board ship at the river depot and the delivery of that wheat to the consumer. The unloading of a ship was the duty of the ship operator. From the wharf or the lighter, on to which the bags were placed by the ship operator, handling became the responsibility of the Commissary Division.

A bag of wheat weighs from 150 to 170 lbs., and must be carried from the wharf to the storage place, distant sometimes as much as two hundred or three hundred yards. The men who do this work must be sturdy and habituated to it. At every port a coolie guild controls handling. At some ports there are several guilds poorly disciplined. At others, the labour may be handled by one single interest, which, in that way, has complete control of the handling activities of the port. But whether well or poorly organized, there is general agreement as to the rates which will be charged, and the services which will be rendered for the charge. As these services differ with the physical character of the port, it is difficult to compare the reasonableness of these charges at different ports. As stated earlier, at Nantungchow, storage and lightering were included with the handling charges.

The existence of a general understanding as to rates does not prevent the guilds from taking advantage of special circumstances, or from yielding favours under conditions which appeal to them. Thus, for example, at Pukow because the cargo was for flood relief and destined for District from which a considerable portion of the labourers originally came, a reduction of twenty per cent in coolie hire charges was made, when the work was about half through. At other places it is certain that prices were forced to abnormal heights. Because cargo was due to arrive within a few days after the depot master came on the scene, the labour leaders had him at their mercy. Afterwards either they felt that the price must be kept at its original level as a means of saving

"face", or they were indifferent to the purpose to which the cargo was devoted.

Handling Costs

The total cost of handling was $620,803.36. In addition to the effect of tonnage, this amount is influenced materially by the number of rehandlings required. The average cost per ton, $2.00, varied from nothing in District No. 8 to $3.30 in Kiukiang. The low averages in District No. 8 and at Pengpu were due largely to the fact that handling coolies were paid wholly or partly in grain, hence the total cash payment does not reveal the total expense.

Allocations and Deliveries

With a limited supply, it was necessary to budget the distribution of the wheat. This was done early in the Field Operations Department, and the Commissary Division was advised as to the allocations to Provinces for each purpose, Emergency Relief, Farm Rehabilitation and Labour Relief.[1] These allocations in gross were subdivided among *hsiens* for Emergency Relief and Farm Rehabilitation, and among Districts (and in some cases, Sections) for Engineering and Labour Relief. A study of the map and of local transportation routes rendered it possible to compute the total quantity for delivery at any one port. This would have been a simple matter had the Divisions concerned possessed, at the beginning, the information necessary for a final allocation of the entire supply. In the nature of things that was impossible, and from time to time each Division made additional allocations from the available reserve with the result that

[1] *Vide* Appendix III-3

frequent revision of the schedule of deliveries was necessary.[1]

At the beginning of operations the main problem was to deliver at the District depots sufficient tonnage; before the work was more than half complete, one of the problems was to avoid delivering too much. As the work progressed, it became apparent that certain Districts were not as needy as had been represented. In other cases local difficulties made it impossible to administer relief as rapidly as had been planned. Care was necessary to restrict supplies to such Districts to the amount that could be used promptly.

Furthermore, those who received relief in kind naturally sold a portion in order to obtain funds for other necessities of life, as, for example, salt, vegetables, oil and clothing, or cheaper foodstuffs such as *kaoliang*. These sales depressed market prices. If the distribution was in wheat, the market price of wheat went down while the price of flour remained high. This frequently led to demands for flour instead of wheat. On the other hand, when distributions were made in flour the price of flour went down, leading to a demand for wheat instead. Owing to the greater cash value of flour, the wage in flour was less in weight than the wage in wheat, hence, those demanding wheat had a persuasive argument when declaring that they wished the greater bulk of food rather than the finer grade. This change of demand occurred frequently, with the result that sometimes wheat was delivered where flour was wanted, and vice versa. There was, however, only one case in which wheat or flour

[1] *Vide* Appendix III-4

was actually shipped back to the original depot, because of change in demand. This was between the sub-depot at Sinti and Hankow. With this one exception the general principle was maintained that once a cargo was delivered, no change would be made. Even in the Sinti case mentioned, the allocation to the Section was reduced by the amount of the expenses involved in the transfer.

Transport

Between the District depots located along rivers and the sub-depots, the transportation of wheat and flour was principally by junk on river and canal.

Rail Transport

But Pengpu, the District depot serving the Hwai Valley could be reached only by rail, from Pukow. All the cargo for Honan, also, had to be transported by rail: some 4,800 tons of this was carried from Pukow by the Tientsin-Pukow and Lunghai Railways, and the equivalent of 15,000 tons from Hankow by the Peking-Hankow Railway. All three of these lines also handled considerable tonnage for short distances between local stations. In addition, 4,350 tons were shipped by rail from Kiukiang to Nanchang, in order to ensure more rapid delivery than would have been possible by water. The question of the use of the Lunghai Railway from the port of Haichow to North Kiangsu and Honan points was considered, but this route was not used on account of coastal freight rates, the conditions governing transfer at Haichow and the uncertain conditions along the Lunghai Railway. Similarly, the use of the railway from Wuchang to Changsha and to points intermediate was considered, but the cost of transfer from Hankow to Wuchang, the lack of suitable facilities for

storage at Wuchang, and the crippled condition of the railway, caused the abandonment of this project.

Up to July 1st, no freights were charged by the railway for the transportation of relief wheat and flour, and a considerable amount of expense was thus saved to the Commission.

As all the railways of China suffer from a lack of rolling stock, it was necessary for the Commission to request special consideration from the railways. This necessity was pronounced in the case of the Tientsin-Pukow Railway, which was called upon to transport about 40,000 tons to satisfy the allocations to the territory which it serves. Covered cars would have been preferable for the transport of wheat and flour, but under actual conditions the Commission was compelled to accept anything obtainable. In fact most of the shipments were made in open coal cars covered with matting in much the same manner as were the outdoor piles of grain.

Water Transport Costs

The cost of transportation by river or canal junk varied according to conditions and to season. Speaking generally, the Commission was able to secure at the outset rates slightly better than those charged to foreign commercial companies. Owing to the absence of the usual rice crop, the late winter and the early spring found the junkmen hungry for business. In some cases, this resulted in revised contracts at still lower rates. In other cases it undoubtedly resulted in offers of rebates, and other forms of temptation to the Commissary representatives in charge of shipping. It is difficult to ascertain

the truth of such matters; unsuccessful applicants will invariably bring charges, and, when confronted with the person accused, fail to stand by the charges. A great deal of bad feeling and disorganization was caused by this situation.

Rates were quoted per ton for specific hauls. These hauls varied in distance and the length of the haul naturally influenced the rate. But it would be impossible to state a standard ton-mile cost of transportation. If an average rate were calculated, it would be found to vary from one and one-half to sixteen and one-half cents per ton per mile. On the river and on the canals, junks very rarely were hired for as little as two cents a ton per mile. Where steam towing was necessary, the rate was practically double the sailing rate. The higher rate was economical in many cases, due to reduction of damage, and was absolutely essential in others, to make deliveries in time to keep pace with the relief labour schedule.

Above Hankow, not only was steam towing necessary, but the tugs and launches used had to be of a powerful type on account of the swiftness of the current. Certain transport companies which did business in this up-river territory came to grief by using unsuitable equipment. On occasion the Commission was petitioned to share the losses of such unfortunate transportation companies, but uniformly took the position that the company had voluntarily undertaken work for the Commission at rates in competition with those charged by other companies, and therefore must pay the penalty for its own incapacity.

On the middle Yangtze River powerful tugs were necessary also for the reason that craft of all sorts were subject to frequent attacks by bandit gangs. Narrow escapes were reported several times, and a large proportion of the shipments was escorted by armed guards. On the Han River, also, rates were unduly high owing to the "Red" menace. Indeed, in the Ninth District, the furthermost portion of the Han River, except in the case of one consignment of 200 tons of flour, attempts at delivery were abandoned because the transport costs aggregated as much as twelve dollars per ton, inclusive of the cost of the armed guard.

The Grand Canal and Hung Tze Lake route to northern Kiangsu proved unexpectedly expensive. The shallowness of the canal and of the lake was caused by breaches in the Grand Canal, which drained off the water into eastern Kiangsu, resulting in much difficulty to navigation. Towards spring this route became practically impassable, and the Commission was fortunate in having made early delivery of the alloted grain not only to main depots, but also to the interior sub-depots.

The territory north of Nantungchow is served by the Chwang Chang Hu Canal, but in order to improve local navigation many of the branch canals are cut off from the main canal by temporary dams. Local opposition to the engineering projects of the Commission prevented much of the work being started until the water began to fall; and when the grain came to be moved from sub-depots to local distribution points, these dams had to be

be replaced. In this region also a considerable part of the work was devoted to digging drainage canals leading to the sea. This work required large concentrations of labour at points eight or ten miles distant from the nearest canal; thus heavy and expensive ox-cart transport was required.

Total Cost

The total amount paid for transportation by the Commissary Division was $614,628.25—approximately $1.97 per ton delivered to river depots by river and by ocean vessels. This is not the total amount paid for the transportation of grain from depots and sub-depots to distribution points, for the reason that in numerous cases, the Emergency Relief Division took possession of the cargo at the district depot, supervising the movement to destination and paid the charges on same. This was the case, also, with most of the deliveries to the Hunan Flood Rehabilitation Committee at Yochow. Also, in the Hwai Valley and in the Fifth and Seventh Districts on the Yangtze, considerable of the transportation cost was paid for in flour.

Grain Exchange

Owing to difficulties of transportation, especially in the Hwai River area, and to inevitable delays in the arrival of relief wheat at distant points, as for instance in the upper reaches of the Han River, also to the fact that in Kiangsi and Hunan Provinces cash was found more useful than grain, and that everywhere cash was required for Farm Rehabilitation, the American Government was approached with a request for permission to exchange a certain quantity of wheat at Shanghai for other grains in other places. Permission was accorded in a letter dated December 17th, 1931, from the

American Minister to the Director General. Subsequently, owing to warlike operations in Shanghai, and consequent difficulties of transportation, the American Government was again approached with a further request to permit the sale of grain for cash and the employment of the proceeds for overhead expenses and for payment of labour. To this request the consent of the American Government was conveyed by the American Legation in its letter dated February 17th, 1932.

In both of these cases permission was granted on condition that the whole of the grain, or money received in exchange, should be applied to the work of relief and to no other purpose. In order to ensure that there should be no doubt as to the observance of this condition, sales of grain were placed in the hands of a Grain Exchange Committee of which General Chu Ching-lan was Chairman and to which the American Commercial Attaché nominated a representative as member. It was also arranged that checks on the Grain Exchange Account, to which the proceeds of all sales of wheat and flour were credited, should be drawn over the joint signature of the Chairman of this Committee and of the representative of the American Commercial Attaché. At a later stage the duty of sanctioning sales of wheat and flour was deputed to the Chairman of the Committee and the Director General, the previous arrangement being maintained for the signature of checks.

The quantity sold either at Shanghai or at main depots reduced by nearly one fourth the total bulk which otherwise must have been transported in small amounts

to distribution points. As remittances in cash were made by the Grain Exchange Committee to Divisions to finance their operations, the former notified the Commissary Division, and the tonnage, represented by such remittances, was recorded as so much delivered against the allocations. Considerable care was necessary lest a cash grant be made to some remote, inaccessible *hsien* after full delivery had been made to the District base depot.

Final Distribution

The transport of cargo from river depots and sub-depots to distribution points was generally under the jurisdiction of the Commissary Division, but again, practical considerations intervened. It was the original conception of the Commissary Division that its representatives should actually distribute to labourers and to the holders of grain tickets, the amounts of wheat and flour covered by those grain tickets. But in case of distribution of Emergency Relief, it was found that the Commissary Division could not expand its forces rapidly enough to supply distributors at each and every point at the right moment. Accordingly the quotas for the various emergency centres frequently were turned over to the representatives of the Emergency Relief Division at transportation head, or at the river depot, leaving the actual distribution of the grain to be made by that Division.

This practice was not ideal, but it must be remembered that the situation was urgent. Furthermore, the representatives of the Emergency Relief Division were local people, and familiar with routes of transportation,

while the representatives of the Commissary Division, being strangers, required time to learn these routes and their relative costs.

The same situation arose in connection with distribution to workers on Labour Relief. Theoretically, the Commissary Division agents should have delivered to the labourers direct, the wheat and flour covered by certificates issued by representatives of the Engineering Division. There were one hundred and eighty-nine Engineering Sections, most of which were subdivided several times. In some instances, the engineering organization was ready to occupy the field somewhat in advance of the Commissary Division. In other cases, lack of storage and transport facilities made it impracticable to maintain sub-depots in certain sections. So, in some sections, arrangements were made whereby wheat and flour were issued in bulk to engineering officers, and distributed to labourers by their subordinates, rather than by those of the Commissary Division. A great deal of latitude was allowed by both Divisions to their representatives in the field. The personal equation, naturally, entered largely into these arrangements.

Wheat Certificates

Before arrangements had been made with the American Government permitting the unrestricted sale of wheat and flour, it was found that labourers were selling a portion of their wheat or flour wages at prices considerably below that at which the commodity was valued when payment was made. This practice wasted the Commission's payment for the haul from the District depot to the distribution points as well as much of the labourers' capital. To avoid this loss to both parties,

provision was made for payment in Wheat Certificates, each Certificate calling for 500 catties of wheat. This the bearer might present for payment at specified sub-depots. The Certificates became, in effect, a currency by which the labourer could purchase other kinds of foodstuffs, clothing, tools, tobacco or whatever suited his fancy. Those from a distance could send the Certificates to their families, who could present them at the depot most conveniently located. However, when the sale arrangements referred to above had been effected, and a portion of labour wages could be paid in cash, this Certificate was not necessary. In the Hwai Valley, however, it was used extensively and all of the wheat and flour issued to labourers was in redemption of Certificates, the weight of flour issued being reduced in accordance with an established ratio to wheat.

IV

Finance

As mentioned earlier, the original plan of organization called for the location of agents of the Finance Department in the important relief centres, these agents to act as treasurers and pay out against local demands supported by vouchers. But the actual movement of wheat found the Finance and the Accounting Departments unprepared to assume these duties, and, as a result, it became necessary to supply the District depot masters with cash directly from the Commissary Headquarters. The depot masters were furnished lump sums as advances, these funds being obtained by requisition upon the Director General's Imprest Fund. Out of these advances the District depot masters not only paid the expenses of their own operations, but also furnished advances to sub-depot masters to be used in the same

way. The total sum used by each District is shown in Appendix III-5.

Necessarily a high degree of confidence was reposed in the district depot masters in regard to their requisitions for funds. It was impossible to know the balances which they held, other than as advised by themselves. The vouchers showing expenditure were necessarily weeks in transmission, and further weeks under audit, and, at one time, the total balances outstanding rose to the substantial figure of $939,839.00. It is a matter of great satisfaction that the confidence reposed in the depot masters in this respect was in almost all cases fully deserved.

On certain occasions, depot masters were able to finance a considerable portion of their handling and transport charges by payments in wheat and flour. Later, the wheat and flour so used could be restored to the allocation for the District, if required. This was found expedient for the reason that at the time the payments were being made in kind, handling coolies and boatmen were as poverty stricken as labourers who were employed on dykes.

For the most part, funds were transmitted to the depot masters by telegraphic transfer or by draft. Facilities of the Central Bank of China and the Bank of China were placed at the disposal of the Commission without cost in cities where they had branches. But occasionally it became necessary to make other arrangements and these were accomplished by exchange of checks with business concerns or mission stations.

Similar methods were very largely used by District depot masters in remitting funds to their sub-depots, the District depot being located as a rule in the financial centre of the territory served by the group of sub-depots.

Accounts

As stated above, it became necessary for the Commissary at the outset to assume responsibility for the accounts pertaining to the Division. The system followed was quite simple. As funds were forwarded to the various depots, the Director General's Imprest Account was credited, and the receiving depot debited under the heading "Depot Advances". When vouchers showing expenses were received, they were audited, and the correct amounts credited to Depot Advances, at the same time that Depot Expenses were debited.

District depot masters were forbidden to report advances of any kind as expenses. Advances were considered as funds in hand until a final expense voucher was submitted. In this way the responsibility of securing an account for all local advances was kept in the local District where it could not be overlooked.

The accounting rules and those governing the submission of vouchers imposed upon the depots at the beginning, were those which had been tried and found satisfactory by the Chief of the Division in former emergency famine relief operations. Later, when the Audit Department issued its rules based upon the Government requirements, it was found that the latter were considerably more detailed and meticulous than the former. The Government regulations being planned to meet the needs of a permanent organization, naturally they are

much more rigid than those usual in emergency operations.

Accounting for Grain

The total sum handled by the Commissary Division aggregated $1,929,867.41.[1]

The difficulty of securing a satisfactory unit by which to account for grain is considerable. A simple unit would be the individual package, but there is large variation in the weight of the individual bag. Furthermore, considerable quantities can be abstracted from any bag without attracting much attention.

Theoretically, all of the cargo should have been weighed and the accounts kept according to weight, but in the emergency it was impossible to weigh all the cargo. For example, at such depots as Tatung and Anking, unloading had to be done rapidly in order not to delay the steamer in its up-river schedule. In the limited storage space, there was no room to do other than pile up the bags as fast as men could move. At Nanking and Hankow, where entire shiploads were handled at the rate of a thousand or more tons a day, it was quite impracticable to delay the work by weighing every bag.

Unit of Weight

But even when weighing could be done, the results were not entirely satisfactory. There are no standard weights in commercial use throughout China. A catty at Shanghai has a weight very different from a catty in Wuhu. At Wuhu at least two different catty weights are in current use. The unit finally selected was the American short ton of 2,000 pounds avoirdupois, the unit by which the wheat was purchased. Confusion arose in

[1] *Vide* Appendix III-5

connection with the use of this ton for the reason that all the shipping out of Shanghai and similar ports, affected by foreign influence is in terms of the English long ton.

Scales

The lack of standard units of weight is matched by the lack of standard scales. At the beginning of operations an effort was made to find a suitable Chinese steelyard scale to serve as standard, but those in stock at that time in Shanghai were utterly unsuitable and there was no time in which to have a suitable set constructed before the cargoes began to arrive at river ports. Furthermore, a scale of this sort, varying from local scales, would be sure to arouse considerable opposition if it weighed heavier than the local scales, or if an adjustment were attempted when it weighed lighter. Furthermore, the same scale, no matter what the design, can be manipulated to show a difference of as much as two or three per cent in different weighments of the same article. Accordingly, the decision was reached to direct each depot master to purchase the necessary scales locally, but to see to it that these were standard throughout the sub-depots served by his district.

Looking back, it seems now as if it might have been wise to have purchased foreign platform scales sufficient to have served the entire area, but two hundred such scales required an initial outlay of such size as to discourage the purchase. Also, commercial firms recognize that with every handling of either wheat or flour, there is a certain loss due to percolation of the grain or flour through the meshes of the bag, even if neither rips nor breakage add to that loss, and that this loss usually amounts to one per cent.

The method finally adopted was to assume the weight of wheat deliveries at each river port to equal the number of bags multiplied by 160 pounds in the case of wheat. This weight was assumed because the out-turn reports of perhaps a dozen of the first ships arriving showed the average weight per bag to be approximately 160 pounds. However, individual bags in these same shipments varied from 140 pounds to 170 pounds, and individual ships tallied out at an average varying from 157 pounds to 163 pounds per bag. Thus the 160 pounds was not completely satisfactory, but in view of the impossibility of actually weighing the cargo delivered to the up-river steamer, this average appeared to be the most practical method of arriving at the number of tons of wheat, with which the depot should be debited.

But the scales at certain depots were found to weigh heavy; that is, a sack of wheat weighing 160 pounds at Shanghai might weigh 165 pounds at the river depot. Since this wheat would be weighed out to the labourers with these scales, to debit the depot with only 160 pounds when the wheat was received, and to credit it with 165 pounds when the wheat was distributed, would obviously leave a balance of five pounds in the hands of the depot after the books showed a complete distribution. Certain sub-depot masters were quick to perceive this, but slow to realize that they would be held responsible for the surplus. A number of irregularities resulted and prosecutions have followed in due course.

The difficulties as to weight were not so serious in the case of flour. Bags, when filled at the American mills, were standardized by automatic weighing machines

at 49 pounds. So long as the bags remained unbroken, the bag was a convenient and fairly reliable unit for the measurement of flour. But ultimately, a serious percentage of bags of flour broke, and in the course of a large number of handlings there was some wastage due to percolation through the mesh, as in the case of wheat.

Grain Accounting Procedure

As depot masters forwarded supplies from the District base to sub-depots, they were required to issue a Shipping Notice which was receipted in duplicate by the receiving sub-depot. One of these receipts was retained as a record, and the other sent to the Commissary Headquarters for its information. Every ten days, a summary of such Shipping Notices was required, so as to make sure that no Shipping Notice had been lost in the mails. At the conclusion of operations the District depot was required to submit a final statement supported by the receipted Shipping Notices which it had retained.

Similarly, the District depot held the sub-depots responsible for accounting. Sub-depot masters were required to support their records of distribution by receipted requisitions from gang-leaders, and when making a final account, the list (Delivery Audit Sheet) of these receipted requisitions was signed by the local head of the receiving Division in token of the genuineness of the signatures thereon, and to serve as a virtual audit of the amounts distributed.

In this way the system of accounts provided for the regular transfer of responsibility for the grain to the receiving Divisions. When the District depot receipted the steamer's Bill of Lading, it took over responsibility from the Inland Transport Committee for the quantity

shown on the Bill of Lading. When the sub-depot receipted the Shipping Notice it took over responsibility from the District depot for the quantity shown thereon. Using Divisions thereafter gave receipts to the sub-depot master either in the form of receipted Shipping Notices or receipted Requisitions, the latter being used by the Engineering and Labour Relief Division.

Thereafter, the accounting concerned itself with the amount of labour performed in exchange for this quantity of wheat, or of wheat and flour, and dealt with the Engineering and Labour Relief Division.

But all this work required innumerable computations; for, every transfer of grain was calculated in terms of catties and the weight in local catties had to be converted into English pounds and American tons. At the same time, every computation contained a potential hazard of error in calculation, in pointing off decimals, and in transcription.

Wastage

Mention was made above of the fact that every handling of wheat results in a certain loss due to percolation of the grain or flour through the meshes of the bag, through rips or breakages in the bag, as well as from occasional irregularities on the part of those who have the grain in custody. Similarly in the case of flour, the pressure upon the lower bags when they are piled high, either causes bags to burst or so strains the sewing or the mesh that rough handling results in breakage. Especially when bags are thrown from the tops of piles or into the holds of steamers or lighters, considerable breakage occurs. In the course of the hundreds of miles

which these commodities must travel, the exposure to tampering is considerable, and in China, as in every country, there is always a certain proportion of the population which is disposed to make use of such opportunties. Added to this, all of the cargo at some time was exposed to the weather and to other dangers of damage while stored in improvised godowns.

In view of these dangers, considerable apprehension existed throughout the operations that the losses from wastage, damage and theft would amount to an unduly large proportion of the total wheat and flour received. The damage to flour from rain, leaking boats and dampness in storage was especially feared. In view of the exposed position of many of the sub-depots, the liability to seizure was a constant anxiety.

Most of the amounts seized or damaged have been definitely located and computed. The accounts have been so kept, also, that for the most part, the points between which wastage occurred can be located. These detailed statistics are available in the archives of the Commission. Out of the 445,000 tons received, no more than 2 per cent has been lost from all these causes. For the other 98 per cent, receipts are on file.

This unexpectedly favourable result would not have been possible had not practically one fourth of the total receipts from America been sold direct ex-ship to purchasers. Furthermore, it was discovered when accounts were submitted, that the average loss and wastage on flour was only about a half of that experienced on wheat, and as half of the total

was received in the form of flour, the wastage was materially reduced. On the wheat actually handled, the loss from beginning to end was in the neighborhood of 5 per cent. While fines and insurance have been collected against some of the losses which could be directly located and accounted for, the greater proportion is irrecoverable. However, it should be remembered that a very considerable proportion of the wastage was swept up and recovered at transfer points, by the most indigent portion of the population.

There were, of course, several detected cases of peculation, a few of which have resulted in punitive action and the remainder of which resulted in the flight of the guilty persons. The total of such instances, however, was not serious.

Conclusion

At the beginning of operations some weeks were required for the organization to find itself, so to speak, and to work out the routine by which its activities could be co-ordinated with those of the other Divisions. There was a disposition evidenced by some engineers not to begin work, or not to expand work which had begun, until large stocks of wheat or flour were on the spot for payment of labour. Anxiety of these officers to avoid obligations which they could not meet was natural. On the other hand, the Commissary representatives were careful to avoid the delivery of large stocks of grain, for which there was no need, or far in advance of need, in view of the possibility that a part would have to be returned. Even when this was not the case, the supplies were more subject to deterioration and more exposed to pilferage or raiding at sub-depots than they were at

District Headquarters. Furthermore, the presence of large stocks of grain and flour in certain Districts tended to have a bad psychological effect. In some cases, the price of foodstuffs fell so rapidly in view of certainty of supply, that the decreased money value of the daily wage was apt to discourage labourers from coming on the job. In other cases, it gave the labourers the feeling that the Commission was at their mercy, and so would be compelled to accede to extravagant demands. This, of course, occurred only in those Districts in which there was an ample commercial market for labour, and the lack of foodstuffs was not acute. But, in a surprisingly short time, all Divisions dealing with the wheat were co-operating effectively.

Accuracy of Allocations

The allocations as revised proved to be quite accurate. At the conclusion of operations, not more than 1,500 tons of flour remained unused at Hankow, also about 350 tons at Anking, and a like amount of wheat in the Nantungchow District. About 300 tons of flour which had been consigned to Hwayang but unloaded at Wuhu were returned to Shanghai, and 350 tons of wheat and 430 tons of flour which remained in the Hwai River Valley were kept for the completion of operations in progress. In not more than half a dozen cases had wheat or flour in excess of 50 tons to be moved back from a sub-depot to which it had been advanced.

Costs

The total cost of handling the wheat and flour from America to the consumer in the flooded districts was approximately $10,000,000 or about $22.50 per ton. Of this nearly 60 per cent was consumed by ocean freight and related expenses, 6 per cent by bags and bagging

expense, 15 per cent by up-river transport and 19 per cent by the depots, sub-depots and local transport. The expenses in China, aggregating over $4,000,000 and 40 per cent of the total, would have been substantially larger had not practically a quarter of the total receipts from America been sold on, or soon after, arrival.

Liquidation

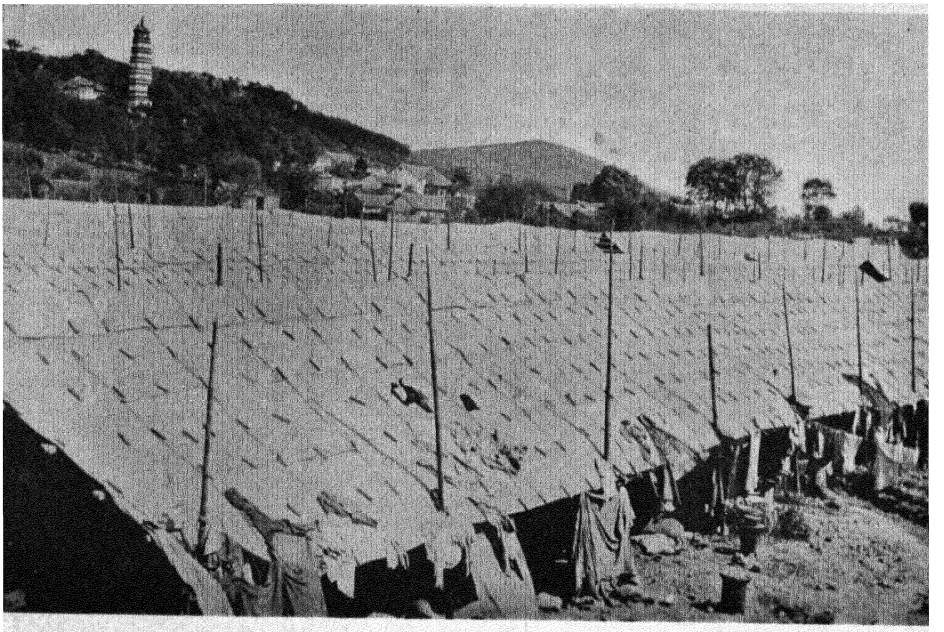
When it was decided to close down operations in the field, the Liquidation Committee gave instructions that the small remaining stocks and miscellaneous equipment should be disposed of to the best advantage. In some cases, a representative of the Liquidation Committee was sent to the District depot to oversee such sales. In other cases, the depot master negotiated the sale under instructions from the Chief of the Division. Flour returned to Shanghai was sold locally, for the most part as the result of bids in writing. As rapidly as possible, the staff was withdrawn from the field and both grain and cash accounts were prepared for audit.

The final test of success is to be found in the fact that there were no instances in which work had to be abandoned, after it had been begun, owing to failure to deliver supplies in time to keep the work going, and that deliveries were made early enough to enable the work on the dykes to be completed before the spring flood waters rose sufficiently to top them. A still further evidence of success is the fact that in a large part of the area served, people were so well supplied with food, that they could afford to argue with the delivering officers as to whether wheat or flour was to be accepted and to demand special consideration because wheat or flour was being offered instead of their customary rice. No instances were reported along any of the principal water-

ways, except in inaccessible districts, of the population being reduced to using chaff, bark or any other of the food substitutes which are usual in the case of actual famine conditions.

5. Unloading a trainload of wheat at a district depot.

6. Junk loads of flour to be despatched to sub-depots.



7. Mat-shed shelters employed at Wuchang and several other refugee centers.

8. The single-family type of shelter.

CHAPTER IV

Emergency Relief and Inspectorate

The regulations drafted by the Commission for its internal organization and approved by the Government, provided for a Department of Field Operations. (See Chapter II). General Chu Ching Lan, one of the five members of the Commission designated by the Government, was immediately appointed Director. At the beginning, plans for this Department envisaged its activities as falling under two categories; one, relief of an emergency nature to be given as needed to save life, and the other, relief during the winter and spring through employment upon the rebuilding of the destroyed dykes. At a later date, assistance to farmers to re-establish the productivity of the land was added to the program. It was therefore in the following order that three Divisions of the Department of Field Operations were conceived: Emergency Relief, Engineering and Labour Relief, and Farm Rehabilitation. Subsequently, during the period of internal reorganization, as referred to later in Chapter II, it became apparent that for practical purposes, inspection and the handling of the wheat should be in charge of special Divisions rather than the duty of the original Divisions, each for itself. As a result, the Commissary Division and the Inspection Division were added.

The handling of the wheat has already been described. In later chapters will be found accounts of the work of Farm Rehabilitation and of Engineering and Labour Relief. This chapter will deal with the Inspectorate and with Emergency Relief.

I

Inspection

For inspection purposes the whole area of operations was divided into eleven Districts, each with a Superintendent and an Assistant Superintendent. Besides these 22 officials there were 84 Inspectors.

The duties of inspection were twofold. The Inspectors were charged with the investigation of complaints. They were also charged with the discovery of mismanagement, malpractice, irregularity or inefficiency in all branches of the work. They were not authorized to lay charges in the Courts, or to prosecute offenders. The duty of the Inspector was to enquire, and to report to the Division concerned. The Division then took such action as seemed desirable. Copies of all reports were sent to the Director General and to the Director of Field Operations who, if necessary, took steps to ensure that appropriate action was actually taken.

During the period when inspection was in force, over 4,500 communications were received from the field, of which 2,500 were formal inspection reports. In addition, numerous matters were dealt with by telegram.

The cost of the Division was very moderate, the maintenance and travelling expenses of an Inspector being, on an average, less than $60 a month. They were all volunteers and were allowed only maintenance and actual travelling expenses while on duty. The total cost of the Division amounted to $70,000.

The work was valued at Headquarters. It had two aspects—preventive and remedial—the former at least

as important as the latter, and it is difficult to exaggerate the effect of an independent inspectorate in discouraging irregularities of every kind.

II

Early Relief Work

Before the Commission was in a position to do effective work, innumerable local relief efforts had been organized. These were both public and private. The Provincial Governments had undertaken relief work on a considerable scale. Of the private efforts, those of the guilds and of the Red Swastika Society were earliest in the field.

It has been noted that the National Government made a grant to the National Famine Relief Commission, which was apportioned in the manner described on page 13 and administered by that organization. There were thus agencies already in the field whose work could be, and eventually in many cases was, either co-ordinated or amalgamated with that of the Emergency Relief Division of the Commission.

Many of these organizations, however, continued their separate activities, but everywhere in the closest co-operation with those of this Commission, which provided large numbers of efficient charitable institutions with subsidies to help them in their work. This was an accepted policy and throughout the whole period of relief operations this Commission was enabled to use for purposes of relief, not only its own staff, but also the agents of the numerous charitable associations at work in the various provinces.

Organization by Districts

The Commission organized the following Emergency Relief Districts under its direct control:

Ning-shu	Wuhu
Kiangpei	North Anhwei
Changsha	Tsinan
Wu-Han	Changan (Shensi)
Kiukiang	Chengchow (Honan)

The Commission placed a superintendent in charge of the relief work in each District, leaving to him the responsibility for local organization. The latter generally took the form of local relief committees under the direction of *hsien* superintendents, (*Cha Fang Chang*) with whom *hsien* magistrates co-operated as associate superintendents (*Hui Pan*). The local committees were formed of representatives of the local gentry.

Hunan Organization

There were, however, notable exceptions to this common rule. In Hunan, the Commission established a District Office which operated up to March 1932. Thereafter, the Provincial Government undertook the whole of the relief of the Province, Emergency Relief, Farm Rehabilitation and Labour Relief, through the Hunan Flood Rehabilitation Committee with funds provided by the National Flood Relief Commission. Its relief work was subject to inspection by the Commission's inspectors, and its accounts to audit by the Commission's auditors. In other respects, the whole responsibility rested upon the shoulders of the Hunan Flood Rehabilitation Committee.

Hupeh Organization

In Hupeh a Flood Emergency Relief Committee was organized at an early date. It was already in existence when this Commission sent a representative who assisted

in the organization of a Hupeh branch of the Commission. These two organizations involved some duplication of effort, and on November 7, 1931, they were amalgamated into the Hupeh Flood Rehabilitation Committtee, which became responsible for the control of the whole of relief operations in that Province. The District Superintendent appointed by the Commission continued to function till the summer of 1932, but work in the field was in the hands of the Hupeh Flood Rehabilitation Committee.

Relief Periods

The programme of the Emergency Relief Division was divided into three periods. During the first period, which ended on September 15th 1931, the work consisted in helping refugees to places of safety, in the burial of the dead, and in the provision of temporary shelter and relief. The second period which extended to February 15th 1932 was the period of refugee camps, gruel kitchens, distribution of winter clothing, and village emergency relief. Small labour works were instituted for rehabilitation of the flooded areas.

After February 15th the program contemplated the cessation of free relief, and the repatriation of inmates of camps. The only type of relief which it was intended to continue was small labour relief.

Allocation of Resources

Allocations were made to the various Districts by the Headquarters organization after local investigation, according to an estimate of their respective requirements. On the whole, these allocations were reasonably correct, though in two cases, namely North Anhwei and Honan,

they proved to be inadequate. Famine became severe in these two areas in the early spring of 1932, and not only were additional resources granted by the Commission, but considerable charitable funds raised in Great Britain and the United States, specially for the purpose, to be used at the discretion of the Director General were devoted to relief in these Provinces. In addition certain contributions were sent from the "Save the Children Fund" in Geneva and in London, which were used entirely for the relief of children in Hupeh, Honan, and North Anhwei. The timely receipt of these additional funds, at a period when the resources of the Commission were completely employed, was particularly useful in meeting special demand from areas where famine had become acute. For a complete list of allocations made by the Commission, *vide* Appendix III - 3.

The Commission in addition, made emergency relief grants to the Provinces of Szechuen, Yunnan, Kweichow, Fukien and Kwangtung and subsidized also the following organizations: Nanking Flood Relief Association, Central and South Anhwei Joint Relief Committee, Shanghai Refugee Camp, All-China Emergency Relief Association, Kiangning Flood Relief Association, Wu-hsiang Emergency Relief, Chekiang.

Allocation within Districts

Within the District, as a rule, *hsiens* were classified according to the intensity of flood damage, and allocations were made on a similar consideration of respective need. Usually they were divided into three classes. A good example of the method is Kiangsi Province to which the total allocation was $160,000* and 9,200 tons of American wheat. This was allocated to twelve stricken

*Later, considerably augmented.

hsiens. They were divided into three classes and the allocation distributed as follows:

Class I.	Four *hsiens* each	$20,000 and	1,000 tons wheat.
Class II.	Four *hsiens* each	$12,000 and	800 tons wheat.
Class III.	Four *hsiens* each	$ 8,000 and	500 tons wheat.

Refugee Problem

The enquiry conducted by the University of Nanking resulted in an estimate that forty per cent of the population of the flooded area were compelled to evacuate their homes and find refuge elsewhere. At the commencement of operations, therefore, the Commission was at once faced by an appalling problem of refugees. They were to be found by thousands in every town and in every large village, and by hundreds moving along every road in the country.

III

Refugee Camps

Camps had already been organized in many places by local authorities and local relief organizations, and these were almost invariably taken over by the Commission. Where they were not so taken over, they were assisted with subsidies.

Shelter

The great majority of the camps were housed in temples, churches, schools and public buildings. Where camps were constructed in the open, as a general rule the shelters were mat shed huts. In some camps, as for instance, in the enormous Black Hill Camp at Hanyang, each family constructed its own hut from mats supplied by the camp authorities. In others, as at Nanking, mat sheds to house ten to fifteen persons were constructed by

the authorities. In Wuchang, several thousands were covered by a single mat shed roof in each of several camps. In some camps, attempts to secure some privacy were made, as in North Kiangsu, where it is reported that twenty-one camps provided separate quarters to men and women, and six for absolute separation of the sexes. On the other hand in many camps, including one at Nanking and one at Shanghai, and in almost all refugee camps in temples, accommodation was provided in very large wards in which men, women and children were housed promiscuously.

The economy exercised in the creation of these camps was marked, and their cost remarkably low. As an instance the Tsaitien camp may be quoted. In that camp one hundred and twenty thousand refugees were actually counted when a census was taken. This was a minimum number as it cannot be doubted that many escaped enumeration. The total expenditure on mat shed shelters for this huge population was in the neighborhood of twelve thousand dollars, representing a charge of about ten cents per head for housing.

As has been noted, however, not all refugees were housed in mat shed shelters. In many cases camps were housed in temples or in public buildings. One notable instance of the former method was the Buddhist temple at Hungshan (Wuchang) in which a camp was managed by the Y.W.C.A. of Wuchang, with the willing assistance and hearty co-operation of the Abbot and monks.

Food was provided in different camps in different ways. In some, kitchens provided cooked food for every-

one, in others uncooked grain was distributed. In a few both methods were employed. In Kiangsi, in one of the three camps, cooked food was given to those who were clearly entirely destitute, and uncooked food to all others. In the Nanking camp a ration of four loaves of steamed bread was given to everyone, adult or child.

In the camps, using the individual family hut for shelter, families could be left to find their own fuel and use individual taste in the preparation of their food. The saving in the cost of fuel was an attractive feature to the management; the variety in the food and the occupation it permitted were attractive to the refugees. In the large shelters, however, individual cooking was not practicable and central kitchens were thus necessary.

Efficiency in camp administration varied greatly as between different periods in the same camp. The Black Hill Camp at Hanyang is an excellent illustration. During August and early September, refugees in sampans landed at will and pitched their shelters as they pleased. There was no order, there were no sanitary arrangements, they befouled the water they drank, and an alarming death rate was an early result. When the refugees numbered about sixteen thousand, a beginning was made toward organization. A month or so later, this camp sheltered over one hundred thousand people, and was a model of organization. Sanitation was as perfect as was possible in a camp. Piped water was provided and measures taken to prevent pollution. Ample hospital accommodation and medical assistance were provided. Schools were established for the children. There was

even a large mat shed Mission Church, which also served the purpose of an Assembly Hall.

The Shanghai refugee camp was also a good example. It benefited from the attention of charitable people and from the frequent visits of medical men and women of Shanghai, who reinforced the permanent medical service of the camp. It had schools for the children and organized games. Unfortunately it was the object of peculiarly malignant attention on the part of Japanese airmen during the hostilities of February-March, 1932. It was bombed and machine-gunned on several occasions, many of the innocent and unfortunate inmates being killed and wounded.

Numbers Relieved in Camp

The District reports do not give complete particulars of the numbers of camps or of their inmates. That the camps were very numerous is undoubted. In North Kiangsu alone there were twenty-seven, in Hupeh twenty-two. The numbers they contained probably ran into seven figures. In Hupeh in all camps there were over two hundred and fifty thousand refugees. Complete statistics of cost are not available for all camps. The amount varied, however, considerably from camp to camp and from Province to Province. Statistics from North Kiangsu establish a cost of $6.50 per head for a period of four and a half months. The per capita figure for Kiukiang was $6.10 for five months, for Wuhu it was $3.10 for four months. These represent $1.44, $1.22 and $0.77 per head per month respectively. It is evident that treatment in North Kiangsu was more liberal than it was in the Wuhu area.

One of the difficulties in the case of refugee camps lay in the accepted opinion of all inmates that no discrimination should be made in treatment. In the Black Hill camp, it was found impracticable to provide nourishment for those actually starving, unless the whole of the occupants were fed. The argument used was that the Commission was a National institution and that, in consequence, every citizen was equally entitled with every other citizen to receive an equal amount of relief from the Commission. In any case, the difficulty of discriminating between the destitute and the near-destitute was insuperable, and it was therefore necessary to make allocations of wheat or flour to all residents of the camp, in order to save the lives of a small portion.

Dispersal

The dispersal of these camp populations involved great difficulties. This took place in general when village relief had been organized, when the waters had receded, and when it was possible for the people to return to their villages and to be maintained there. It was clearly most desirable that they should return at a date as early as possible, to cultivate and sow their fields for the next crop. It was, however, difficult to convince the refugees that on arrival at their destinations they would find arrangements made for further relief. Constant pressure was maintained and gradually the camps were emptied and closed wherever possible.

The problem of dispersal was aggravated in the case of Wuhan camps, at that time, by the existence of a so-called Soviet Government in a considerable part of Hupeh. The refugees in the Commission camps were in

fact only in part refugees from flooded areas. A large portion of them were refugees from the Red menace. Their villages were occupied by Red armies, their fields had been transferred to Red adherents and their lives depended upon absence from their homes. When the time came to close the refugee camps these people were desperate. In fact it proved impossible to disperse them, even when travelling expenses were provided.

The Wuhan military authorities had strong objections to the concentration of an enormous body of refugees in the immediate neighborhood of Hankow, Hanyang and Wuchang, and finally in the month of April 1932 the camps in that vicinity were closed and their inmates removed to camps which had been prepared and for which supplies had been collected at Tsaitien, Chingshan and Shihtsui. These camps continued in existence until the military operations in Hupeh were successful and the retreat of the Red forces allowed the refugees to return to their homes.

Among many charitable gifts to refugees in the camps one particularly useful donation took the form of 1,111 pairs of shoes contributed by a private organization in Honan when the camps were in process of dispersal and the refugees were about to start for home.

Mortality in Camp

No record of mortality was kept except in a few camps, but there is no doubt that the death rate was very high. In the camps in Kiangsi province, for example, which contained a maximum number of 20,249 refugees, 2,476 had died before the end of December 1931 when the camps had been in existence less than

three months. This is a rate of 48.9% per annum. It is natural that the death rate should be high as the refugees were physically in a low state before they arrived at the camps, it was the season when the morbidity rate is normally high, and concentrations of large numbers favoured the spread of infection. In addition, the provision they received was necessarily coarse and, though sufficient for the maintenance of life, was not adapted to the needs of invalids.

Orphanages

In the very nature of the case any orphanage, asylum or old-age refuge work undertaken by the Commission could only be temporary, and one of the most pressing problems in connection with dispersal was that of the disposal of those who had no homes to which they could return, nor any visible means of support. Orphans, who were an aftermath of the flood, aged and infirm, with no dependents to whom they could look for support, saddest of all, deaf, dumb and blind children for whom the very dictates of common humanity demanded that provision should be made—constituted a problem of magnitude. Eventually provision was made for all. Buddhist orphanages and refuges, Mission schools and institutions, together with many private undertakings, shared the burden of this responsibility. Some of these institutions received a subsidy in cash or kind from the Commission, whilst others received nothing. The manner in which private and organized charity rose to this occasion should be a matter of pride to the entire nation.

IV

Kitchens

The gruel kitchen is a regular feature of emergency relief and many were operated during the period of flood

relief. It is impossible to report the actual number of these institutions but it was very large. The Wuhu District ran two kitchens. There are no statistics as to the number relieved, but as the Regulations limited the number to 5,000 for each kitchen, the number was clearly very large. In North Anhwei in one *hsien* alone, that of Fuyang, there were one hundred and ten kitchens, of small size, the maximum number fed being seven thousand one hundred on one day. The *hsien* was divided into eleven "kitchen districts", each operating 10 small kitchens, which provided meals for 20 to 30 only in each case. It would be more correct to count each district as one kitchen. In one *hsien,* Meng Cheng in North Anhwei, the gruel kitchen provided a combination of village relief and kitchen relief. The village relief was effected by the distribution of gruel from a kitchen moving systematically from place to place.

One kitchen operated by the Ningshu District Office was the result of co-operative effort. The District office supplied 38 tons of wheat, while the local authorities were responsible for all funds required for operating expenses of the kitchen. In North Kiangsu private gruel kitchens were found in most of the distressed regions and of them twenty-four were taken over by the Emergency Relief Division. In Hunan kitchens were operated by *hsien* authorities and local philanthropists, and those which functioned satisfactorily were granted subsidies by the Changsha District Office and subsequently by the Hunan Flood Rehabilitation Committee. In Honan sixteen kitchens were organized in December 1931 and January 1932 to which all destitute were given tickets

of admission. In them a total of four and a quarter million meals were given to a daily average of thirty-four thousand seven hundred and fifty people.

The rations at these kitchens varied in amount and in kind from place to place. Usually it was from six to eight ounces of rice or millet but in Kiangsu in some kitchens it is reported that refugees were allowed to help themselves to as much as would satisfy them at each meal.

According to reports received, the number of people fed daily was between 204,000 and 220,000 in those Provinces where kitchens were operated. The per capita cost of kitchen relief is difficult to establish. A calculation, made as carefully as the circumstances permit, gives an average daily cost of approximately three cents for each person fed.

V

Village Relief Organization

Preparations for the distribution of Village Relief by the Emergency Division of the Commission took considerable time, during which the destitute were chiefly dependent on local charity and private organizations. Very early, however, these organizations received assistance from the fund to which reference was made on Page 13 and which was administered by the National Famine Relief Commission.

As a general rule the organization for Village Relief was based on the *hsien,* a local relief office with its *hsien* superintendent being located at hsien headquarters. In some Provinces *hsien* committees were organized, in

others the *hsien* government and various educational and charitable institutions were called upon for assistance.

Lists of Recipients

Lists of names of the destitute were obtained through these local authorities and organizations. These lists were checked on the spot by representatives of the Commission's Superintendent of Relief, and amended by the removal or addition of names as might seem necessary. When the lists were finally prepared, they were published and affixed in the village so that everyone might be aware of those who were entitled to free relief and of the amount of relief to which each was entitled.

Distribution

The date of distribution was also published in every village and town where relief was distributed. Tickets were given to each of the sufferers adjudged worthy of relief, these tickets containing particulars of the amount to which the particular recipient was entitled. When the time came for distribution, this was done in the presence of two or three of the chief men of the village, so that there could be no question as to the identity of the persons appearing or of their being given a smaller amount than that to which they were entitled.

Personal attendance at time of distribution was demanded from all holders of relief tickets, with the exception of prospective mothers, of women immediately after childbirth, of infants, of cripples or of persons of extreme old age.

The number of centres of distribution was very large. It has been calculated that relief was distributed in at least two thousand places. As a rule there were only

two distributions, one in the Winter, a second in the Spring. In some of the most distressed areas, however, distributions were made more frequently as, for instance, in the northwest portion of Anhwei where they took place in certain areas, as at Pochow, every week or ten days.

Local unpaid assistance was enlisted for the work of Village Relief. The paid staff was small. The organization of Honan might be cited as typical. There, each *hsien* had a Superintendent with four field workers and four assistants, the latter chosen from the local gentry. The members of the staff (with the exception of the *hsien* Superintendent) were paid $2 each per day for thirty days. If the work was not then completed, sixty cents per day was allowed as subsistence for the additional time necessary to finish it.

Amount of Distribution

Much variation is noticeable in the amounts distributed as relief, both in cash and in kind. For instance, in the case of Central and South Anhwei the Joint Relief Committee distributed cash in twenty-six *hsiens*. The average amount per capita was twenty-seven cents only. Adults received double the amount granted to children. It is probable, however, that in addition to this cash relief, the majority of the sufferers received relief in kind, varying in amount from one to twenty catties of flour or one to thirty-five catties of wheat for each adult, from the Wuhu Office. In Hunan the ordinary amounts were $1 for an adult, fifty cents for a child, while in Shantung cash relief was given at a rate of not less than $1 per person, and in cases where there had been a

death in the family, or property had been destroyed in the flood, (and such cases must in the nature of things have been the great majority) additional relief was granted up to a maximum of ten dollars. In Honan there was a uniform rate of two dollars for adults and half that amount for children.

Similar variations occurred in the case of relief in kind. For example, the Nanking Flood Relief Association, which was the agent for the Commission in that city, granted a daily ration of two loaves, equal to about half a catty, to adults and to children alike. In North Anhwei the total amount varied from eight to seventy catties per head. In Honan the rate was twenty catties for an adult and ten for a child.

Because the work of local distribution was principally in the hands of local people serving on a volunteer basis, the ideas of these local bodies determined the basis of distribution. When the local committee was composed of timid personalities, there was a great tendency to divide a *hsien* quota equally among all villages, and village quotas equally among all households regardless of need, and sometimes even regardless of numbers. In other cases, more selective measures were followed with the result that the local distribution was confined to a smaller number of persons, and resulted in a larger per capita receipt by those benefited. This lack of uniformity in the principle upon which distribution was based is one of the inevitable drawbacks to the extensive use of volunteers in the administration of relief.

Numbers Relieved

Operations extended to 224 *hsiens* and the numbers who received relief in this form were enormous. Reports

from the Emergency Relief District show that some 4,900,000 persons were assisted in this way.

In addition to relief in cash and in kind, the Commission spent over $950,000 in making 500,000 suits of winter clothing. Besides these suits of new wadded garments, the Commission received from contributors large amounts of new and second-hand clothing which were distributed to the flood sufferers.

End of Village Relief

As a rule Village Relief ceased after the Spring distribution in cash. From Nanking, however, it is reported that the relief programme was affected by the existence of martial law, which was declared as a result of the Japanese invasion of Manchuria. In consequence the different branches were obliged to close up in October and of the three centres, the first closed on October 16th 1931, and the last on the 24th of the same month.

Village Relief is the least satisfactory form of relief. It is the most difficult to supervise, and the most liable to abuse. In the nature of things the task of discrimination between applicants is an invidious duty, and its unpleasantness is liable to lead to inclusion on the lists of many names which in fact should not be there. It is impossible entirely to abolish this form of relief, but in future operations it would be well that it should be restricted to a minimum and subjected to rigorous inspection by independent inspectors; only in this manner can serious waste be eliminated.

VI

Small Work Relief

The major portion of the allocation of wheat for Emergency Relief was applied to subsidizing Small Work

Relief. By Small Work Relief is meant relief through employment on works of various kinds not under the supervision of the Engineering and Labour Relief Division. The general instructions of the Field Operations Department to the District Superintendents laid down that not more than 50 per cent of the Emergency Relief allocation should be devoted to Small Work Relief. This general rule was not strictly followed. In Kiangsi, for instance, 70 per cent of the relief wheat was allocated to Small Works. In Central and North Anhwei, the percentage so applied was 79, in Ningshu 87, in Wuhu 50. In other districts, smaller percentages were allotted to this form of relief. The works as a general rule took the form of private and subsidiary dykes, but also included house repair, river conservancy, repair of roads and bridges.

Organization

As a general rule, the administration of this form of relief remained in the hands of the Superintendent of Emergency Relief of the Province. He acted through *hsien* committees, composed of representatives of local bodies and of local gentry, with the *hsien* magistrate as chairman. In some cases, however, the local authorities acted on behalf of the Superintendent. In special instances, Small Work Relief offices were established to take direct responsibility for the administration of this form of relief. Thus in Kiukiang District there were two special work relief offices; in Honan, one. In North Anhwei, another special case, the work in five *hsiens* was directly under the Joint Committee and the engineers whom it employed.

Relief was extended by means of a subsidy to a specific piece of work—usually not more than a small fraction of the total estimated cost of the entire work.

Subsidy

The common rule was thus to grant a subsidy of a certain portion of the total cost of the work. This subsidy was payable in proportion to the amount of work done, and only on receipt of evidence of the completion of that portion. This rule was, however, not univerally observed, and cases are recorded in which the subsidy actually amounted to the total cost of the work. On the other hand there are recorded cases where the subsidy was but 4 or 5 per cent of the total of the work done.

Not only was there wide variation in the percentage granted for individual works, but also, in the various Provinces, in the percentage of the total cost of such works granted as subsidy. For all Provinces the percentage was calculated as twenty per cent of the total cost of subsidized works. In the case of the area under the jurisdiction of the Central and South Anhwei Joint Committee, the percentage actually reached sixty-seven.

The method followed to determine the amount of the subsidy demanded the preparation of detailed estimates and of a map of the work to be done. These were prepared by the farmer himself or by one of the local gentry and were then examined and checked by the field staff of the Commission. When all estimates had been received, the percentage of subsidy was fixed on a consideration of the total cost of all the works, and the resources at the disposal of the District Office of the Commission in that District. No subsidy, however, was granted, unless the farmer was able to complete the

project with the help of the subsidy, and a bond was demanded from three reputable parties to guarantee faithful execution of the work.

Number of Works

The number of works constructed with the assistance of these subsidies was very large. They extended to 269 *hsiens.* All Provinces have not reported the number, but in Kiangsi there were over 700, in Hunan 188, in North Anhwei 188, in Central and South Anhwei, 170. The Wuhu District granted subsidies to 2,739 dykes on which more than 25 million *fong*[1] of earthwork was done. The subsidies amounted to 5 per cent of the total cost.

Many of the works constructed were of great importance. Prominent among them may be cited the Chang Kung dyke, the road leading from Chiaokou to Takousiang, and the concrete dyke along the river front, all at, or in the neighbourhood of, Hankow. These are works of which it is difficult to exaggerate the importance. Though they were all constructed with the help of Small Work Relief grants, they are in fact major engineering operations. This form of relief was not only of the greatest assistance to the distressed classes in affording work in the vicinity of their homes, but in addition to the construction of certain important work resulted in the rehabilitation of agricultural holdings by the reconstruction of private protective dykes.

Amount of Work Done

The prodigious amount of work done is evident when it is realized that the wheat allocated for this purpose was sixty thousand tons. This would mean that

[1] One *fong* contains 100 cubic feet, Chinese, and is equivalent to 3.7 cubic meters or 4.84 cubic yards.

the total amount of work done cost the value of three hundred thousand tons, if the subsidy averaged twenty per cent of the total. In other words and on this assumption, the work done as Small Work Relief was equal in amount to the work done on the main dykes as Engineering and Labour Relief.

Numbers Employed

In the nature of things it is not to be expected that any statistics are available of the number of persons employed on these Small Works. No such statistics were maintained. All that is possible is to assume with confidence that not less labour was employed on these works than on the main dykes. On these latter, at the maximum, over one million were employed. On the Small Works it is certain that the number employed was no less.

Results

The results of this form of relief were very great. Of this the chief evidence is to be found in the rich harvest of 1932. Although in 1931 the dykes were destroyed all over the flooded area, the main rice harvest of 1932 was so large as to lead to complaint that the price of rice was too low. To this result the repair of the private dykes contributed, and is evidence that they have been repaired generally.

Criticism

One criticism of this form of relief can be made. There is no evidence, and naturally there can be no evidence, of payment of wages to the actual workers. The subsidy was paid in cash to the dyke owners in those cases (and they are the great majority) in which the Small Work was dyke repair. It was essential in the interests of the country generally that, in addition to the main dykes, the private and subsidiary dykes should be

repaired. Payment of the subsidy to the dyke owners in proportion to the work done was justified on that consideration, and was the only alternative to the repair of those dykes by the Commission in the same way as repair of the main dykes. The Commission had neither the funds nor the staff for such an undertaking.

Also, it is quite certain that wages must have been paid to the workers. It is incredible that they would have remained on these works had wages not been paid, in view of the fact that main dyke repairs were in progress, and that those dykes admitted any worker who cared to come for work. To those they would certainly have migrated, had the terms of their employment on the small labor works been unsatisfactory.

Hunan Work Loans

In the Province of Hunan, the Hunan Flood Rehabilitation Committee, to which the Commission made over the allocation for that Province, effected a large amount of relief through Work Loans. Their object was reconstruction of the dykes along the Tungting Lake front, and a guarantee of permanent lake conservancy in the future, by the application to this object of the monies repaid from time to time. These loans were made to landowners with three hundred mow or less for a term of two years. Half was repayable two months after the autumn harvest of the first year, the remainder being repayable twelve months after the first instalment.

The scale of this type of relief work was very large. The total area of the farms affected by it was 3,346,000 *mow*.[1] The cost of the works done was over $6,000,000,

[1] Equivalent to 550,000 English acres.

of which just over $2,000,000 was granted in loans, being 34 per cent of the total.

It is reported that in this way 585 dykes were repaired and strengthened, 1,661 breaches were closed 9,500,000 *fong* of earthwork done, and 213,177 labourers employed.

This form of relief had a particular value, as it not only ensured the repair of privately owned dykes and consequently a crop in 1932, but the money advanced will form the capital of a fund which will be available in future for permanent improvements.

VII

Difficulties

Emergency relief was hampered by every sort of difficulty. Japanese action in Manchuria in the latter months of 1931 prevented transport from those Provinces of grain, millet and corn, which had been purchased for dispatch to famine areas in Honan. Of a total of 4,082 piculs bought, only 680 arrived in Honan, and there was a loss of $40,000 to the Commission from this cause.

In many parts the presence of bandits and of Communist forces resulted in the loss of large quantities of supplies. Even where actual loss from this cause did not occur, the movement of supplies was seriously obstructed. The most serious loss experienced by the Commission was at Chengyangkwan in the month of May when a large sum of money and, more serious by far, the operative staff of the headquarters of a large relief District were carried off, including Mr. H. S. Ferguson of the China Inland Mission, temporarily working for this Com-

mission, and Mr. Kao Cheng En. No news of them or of six other members of the staff has been received since September 1932, and there is grave fear that they have paid the extreme penalty by their devotion to their duties.

Occasionally relief funds and supplies were diverted to other purposes, as for instance in Lu-An and in Hochiu *hsiens,* Anhwei Province, and in certain *hsiens* in Hupeh. But these were exceptions.

Considering the enormous area over which operations extended, and their magnitude, and in view of the size of the staff and the rapidity with which it was recruited, the number of cases of corruption and of peculation was remarkably small. In certain cases resort was had to successful prosecution, but these were few. A striking feature of the emergency relief work was the great amount of unstinted and self-sacrificing voluntary service on the part of those drawn from all walks of life who assisted the Commission in its administration.

Co-operation with Other Agencies

Reference has been made in this report at various places to the work of other agencies. The distribution of emergency relief simultaneously by both official and private bodies necessitated close co-operation between them, so as to prevent unequal distribution. Co-operation was three fold, including that with Provincial and local governments, with the local gentry and with private relief organizations. Even before co-operation for the administration of relief began, there was an arrangement to exchange appropriation lists so as to avoid duplications in the relief extended. In some parts the

field was divided between private agencies and the Commission. In others the personnel of the various organizations and of the Commission was identical. In others again all important questions of policy were decided at joint conferences. From practically every Province the reports mention that subsidies were given by the Commission to local charitable efforts. It is regretted that from two Provinces reports have been received that this last method was not a great success. There were a few cases in which subsidies were used for "Pingtiao", a system which permitted flood victims to purchase relief grain at reduced prices. Money applied in this way of course went much further than the money or supplies given outright in the form of doles.

Number of Personnel

Emergency relief work on such a large scale required a large staff of field workers. The headquarters in Shanghai when the work was at its height, had a staff of about 40. The District offices, including 175 local relief offices, the refugee camps and the gruel kitchens had a staff no less in number than 2,100. This figure does not include the Emergency Relief workers employed by the Hunan and Hupeh Flood Rehabilitation Committees, nor those operating under the auspices of other relief organizations with which this Commission co-operated.

Volunteer Personnel

Of this staff a large number were volunteers. They received their travelling expenses and nothing more. This unpaid staff was drawn from many quarters; students from Peiping worked in North Anhwei, students from Nanking in Kiangsu. Missionaries, Y.M.C.A. and Y.W.C.A. workers, members of the Tangpu, a member of the Shanghai Fire Brigade, "all sorts and

conditions of men"—and women—were to be found working side by side in the mitigation of suffering. And this was no arm-chair job. They worked in perils of many kinds, of which not the least were the perils of robbers, the perils of disease, and the perils of the malevolent.

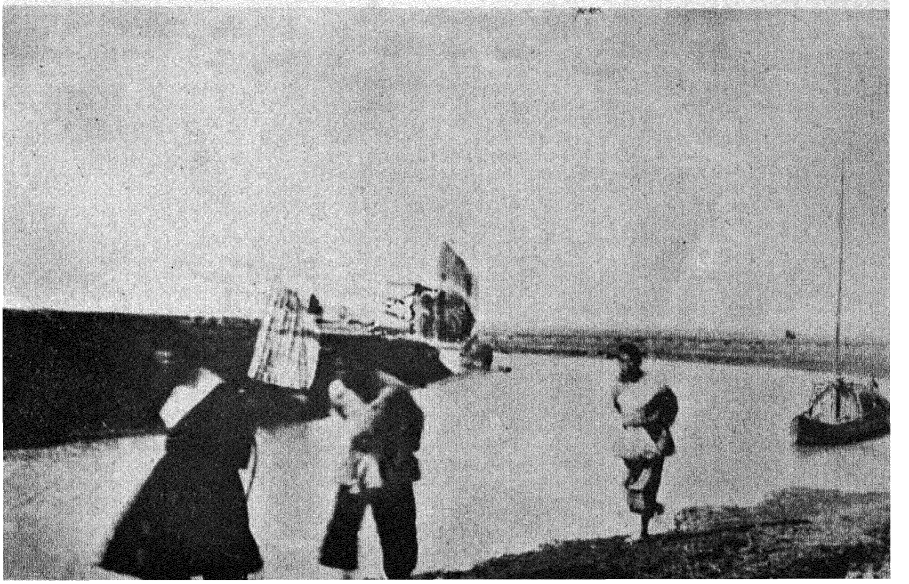
Limit of Administrative Expenses

It was laid down as a rule that administrative expenses on Emergency Relief should not exceed two per cent of the total of the fund administered. This rule was incapable of complete observance, and administrative expenses varied very widely. Where the work demanded close supervision, the two per cent allowance proved entirely inadequate, as for instance, in the case of the Ningshu District, where a special additional grant proved to be necessary. The two per cent rule had, however, one great merit. It drew forcible attention to the necessity for economy in administration, and economy in fact resulted. In some Provinces the cost of administration exceeded the two per cent limit very materially, though, as a rule, care was unquestionably exercised to restrict administrative expense as much as possible.

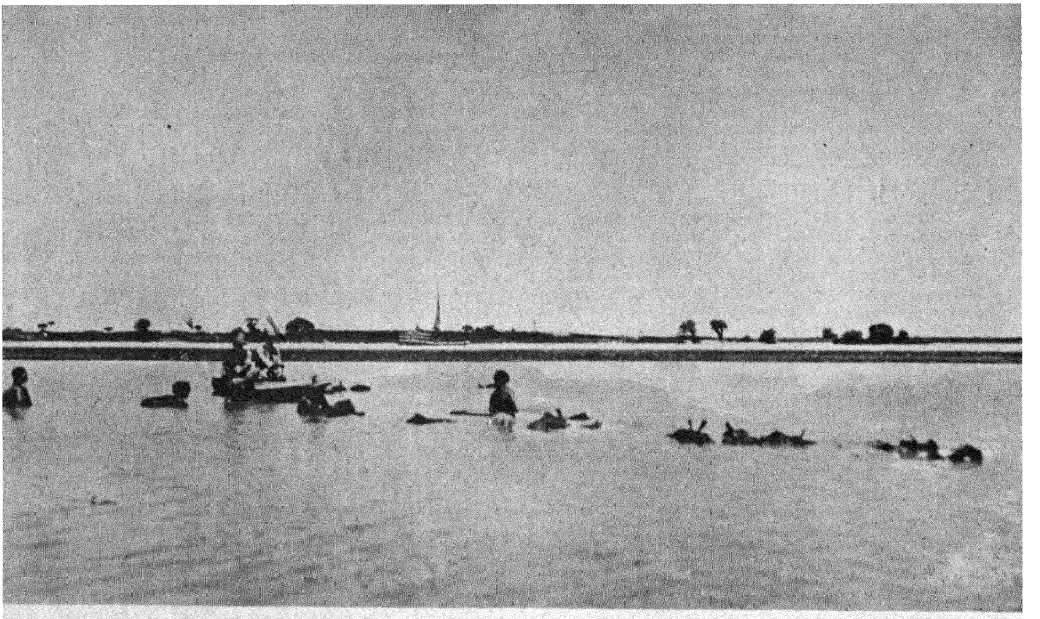
General Conclusion

Delay in the arrival of the first consignment of wheat and flour from America was responsible for a time of anxiety and suffering, specially in Central and Northern Anhwei. But as a rule, local supplies held out until stocks of wheat and flour reached the stricken areas. Here and there, and not unnaturally, the seriousness of the position was misjudged, in some places being underestimated, in others exaggerated. In certain parts of Hunan distress developed more seriously than had been anticipated. In North Anhwei and in Honan it became

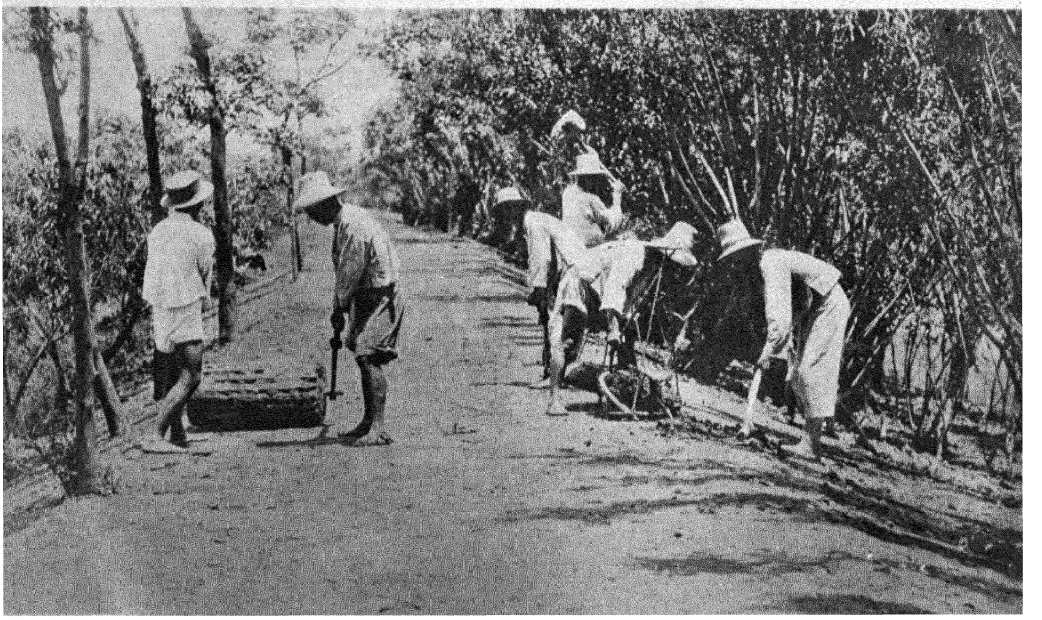
9. The morning line-up before a gruel kitchen.



10. Wheat and flour towed to a distribution center for village relief.



11. Farmers swimming their animals to places of safety. Nearly two million were rowned or killed for lack of food.



12. A tremendous *fongage* of private dykes was restored as the result of subsidies from the Emergency or Farm Rehabilitation quotas.

acute in the early months of 1932. In all these areas special and effective measures were taken, in the last two with the additional help of funds from America and from England. In general, it is accurate to say that emergency relief in its various forms was adequate to meet the situation, once the organization was complete and in working order.

CHAPTER V

Farm Rehabilitation

I

Rehabilitation of farms, destroyed or damaged by the flood, was considered by the Commission as one of the most important phases of its work, to which only the repair of the dykes and emergency relief to flood refugees took precedence. It was the original plan of the Department of Field Operations to establish in each of the Provinces affected by the flood, a Farm Rehabilitation Bureau, each Bureau to establish a branch office in every *hsien* or in selected *hsiens* in accordance with the severity of the distress. Mutual Aid Societies were to be organized for the promotion of rural co-operation, and in time these societies were to be transformed into Co-operative Societies, to continue the work of rural improvement. Emergency relief was to be given in the form of grants. Farm rehabilitation, on the other hand, was to be effected by loans. These loans were to be repaid, and thus to constitute a revolving fund, enabling this branch of the work of the Commission to continue, after its other activities had ceased.

Allocation of Resources

Due to difficulties of organization needed to put such a programme into execution and, in part, also to the scarcity of men capable of administering rural relief work on such a large scale, the Commission did not itself undertake farm rehabilitation but entrusted this work to other agencies, notably the China International Famine Relief Commission. The scope of the work was further

reduced to the five most seriously flooded Provinces, to which wheat for farm rehabilitation was allocated in proportion to the extent of flood damage to farms as follows:—

1. Hunan		10,000	short tons
2. Hupeh		10,000	„ „
3. Kiangsu			
a. Loan to Provincial Government	10,000		„ „
b. Loan to Department of Agriculture and Mining	1,400		„ „
c. Allocation to Yin Hsiang Chen, Ningshu District	70	11,470	„ „
4. Anhwei		11,800	„ „
5. Kiangsi		5,000	„ „
Grand Total		48,270	short tons

II

Hunan

At the end of 1931 General Chao Shou Yi was appointed by the Field Operations Department as Manager of the Farm Rehabilitation Bureau of Hunan. In practice, however, no farm rehabilitation was undertaken, and all the wheat and cash remitted to Hunan were devoted to dyke repairs by the Hunan Provincial Rehabilitation Committee, all the Commission's work in Hunan having been delegated to that body. Early in 1932 the Commission pressed the Hunan Provincial

Committee to commence farm rehabilitation operations, and, after consideration, this phase of the work was turned over by that Committee to the Hunan Committee of the China International Famine Relief Commission. This transfer was effected in June 1932. Of the original allocation of 10,000 tons for this work, 7,500 tons were converted into cash, and the resulting $550,000 handed over to the Hunan Committee of the China International Famine Relief Commission. The policy of that Commission in the Provinces of Anhwei and Kiangsi was followed in the main by the Hunan Committee in the *hsiens* to 1,932 Mutual Aid Societies, with 166,476 farm members. At the beginning of 1933 the balance, 2,500 tons, was turned over by the Hunan Provincial Rehabilitation Committee to the Hunan Committee of the China International Famine Relief Commission to complete the original allocation of 10,000 tons. The value of the balance amounted in cash to $191,932.75.

III

Hupeh

It was the plan of the Field Operations Department to establish a Hupeh Farm Rehabilitation Bureau with Mr. Ho Heng Fu as General Manager. But when the Hupeh Emergency Relief Committee and the Wuhan Office of this Commmission were amalgamated into the Hupeh Flood Rehabilitation Committee, farm rehabilitation in that Province was taken over by the latter body.

Repair of Private Dykes

Farm rehabilitation in Hupeh was undertaken in 31 *hsiens* and municipal areas. These regions were separately grouped into eight grades according to the degree of distress caused by the flood. These

grades were decided upon by the Hupeh Provincial Government, the Bureau of Civil Affairs of Hupeh, the Hupeh River Conservancy Board, the Hupeh Flood Rehabilitation Committee and the Wuhan Office of the National Flood Relief Commission, in consultation, and were approved by the Hupeh Flood Rehabilitation Committee. A total of 7,000 short tons of relief wheat was allocated for repairing private dykes. This was actually distributed, 15,086 piculs in kind, and the equivalent of the balance in cash, namely $455,482. Loans were extended to the owners of the private dykes by the *hsien* governments in accordance with prevailing conditions in the localities under their jurisdiction. These loans are to be completely repaid by the *hsien* governments between the autumn harvest in September 1932, and the wheat harvest in June 1933.

Seed Loans

At first it was intended to distribute 3,000 short tons of the relief wheat for seed loans among the thirty-one *hsiens* and municipal areas mentioned above, in proportion to the extent of the flooded areas within their boundaries. Owing to various local difficulties, however, loans were made to 27 *hsiens* only. These totalled 30,314 piculs of native wheat, which at the ratio of ten native wheat to nine of American wheat, is equivalent to 1,819 short tons of American wheat. These loans were administered by the *hsien* and the municipal governments, and it was decided that the recipients of the loans should repay on arrival of the new harvest on the market. The balance, 1,181 tons, of the allocation of 3,000 tons, was converted into cash. Of the amount so received, $50,000 was applied to farmers' loans, as is

described in the next paragraph. The rest was paid to the Hupeh Committee of the China International Famine Relief Commission.

Other Undertakings

$100,000 cash, of which $50,000 was the balance on hand from the allocation for farm rehabilitation mentioned above, and $50,000 from the Emergency Relief Fund, were allocated to the Hupeh Provincial Government, to be used as a fund to be devoted solely to loans to the farmers. Plans were also made for the purchase of live stock for distribution to needy farmers.

With the winding up of the activities of the Commission, it has been decided to turn over to the Hupeh Committee of the China International Famine Relief Commission the continuation work of farm rehabilitation in that Province. A dispatch dated March 6th, 1933, from the Standing Comitteee of the Hupeh Flood Rehabilitation Committtee, and Mr. Ho Heng Fu, General Manager of the Farm Rehabilitation Bureau, reports that on February 24th 1933 they completed the transfer of residual funds, files, vouchers, and accounts to the Hupeh Committee of the China International Famine Relief Commission.

IV

Kiangsu

Of the allocation for Farm Rehabilitation in Kiangsu 1400 tons were entrusted to the Department of Agriculture and Mining of that Province for administration. This wheat was distributed in loans for the purchase of seed in ten *hsiens* of that Province. Loans were made by nominees of the Department together with the representatives of local authorities.

This allocation was made in the nature of a loan to the Department and was reckoned as the equivalent of $110,040. The rate of interest was 3 per cent per annum. The amount was repayable in two instalments, December 31st 1932 and June 30th 1933. No repayment has been made at the time of this Report.

A total of 70* short tons of American wheat was allocated to the Ningshu District for farm rehabilitation. Loans were made to individual farmers in the vicinity of Yin Hsiang Chen of Kiangning (Nanking) Hsien. This wheat was entirely used for seed loans, repayable in kind.

The Commission intended to apply in addition 10,000 tons of wheat for farm rehabilitation in this Province. But, as organization for administration of this work was not ready, while the repair of dykes in this Province on the Grand Canal was considered urgent, the Field Operations Department agreed to permit this amount to be devoted to dyke repair. It was stipulated that this loan would be repaid in two equal instalments, with interest at 6 per cent per annum, on July 31st and December 31st 1932. Owing to financial stringency, however, the Provincial Government was unable to meet this obligation, and by agreement with the Commission, gave to the Commission Provincial Treasury Notes secured on the land tax of that Province for $1,280,000. The major portion of farm relief work in this Province therefore had not yet been undertaken at the time of the closure of the Commission's activities.

*Does not include 225 tons transferred from Emergency Relief.

V

Administration by C.I.F.R.C.

Administration of the amounts allocated to Kiangsi and Anhwei was undertaken by the China International Famine Relief Commission at the request of the National Flood Relief Commission. To these two Provinces, the ultimate allocation was a total of 16,800 tons of wheat, of which 11,800 tons was for Anhwei, and 5,000 tons for Kiangsi. Of this about 2,000 tons were distributed in kind, the balance being paid out of the Grain Exchange account in cash at the rate of $74 per ton. This cash was applied to the rehabilitation of the farms of these Provinces. To carry out this work, the China International Famine Relief Commission appointed a sub-committee in Shanghai where a new office was opened on December 16th 1931.

A field staff of some 120 persons was employed in this work. This staff was largely recruited from Hopei and Shantung, and consisted of farmers who were themselves members of co-operative societies in those Provinces. The average salary paid to the field staff was under $30 a month.

The ultimate goal, to which the efforts of the China International Famine Relief Commission were directed, was to assist farmers, affected by the flood, to raise their next crop within the shortest possible period. It was, however, laid down from the start that aid would be granted to those farmers only who were organized in Mutual Aid Societies. Grants were not made to individuals. Regulations governing these Societies were drawn up, and put into effect.

Policy as to Loans

As to the object to which grants were directed, the same policy was followed as that adopted by the National Flood Relief Commission, namely, that the most important use to which resources could be applied was repair of dykes, and in this case, private dykes. It was accepted that unless these dykes were repaired, other efforts would be of doubtful value.

The China International Famine Relief Commission was able to start field work early in February 1932, in spite of the Japanese attack on Shanghai, which was in full vigour at that time. Work was confined to those districts where the need was greatest, though difficulties were encountered in the selection of areas. It was ultimately decided to confine operations to twenty *hsiens* of Anhwei and twelve of Kiangsi.[1] At a later date, work was extended to further five *hsiens* of Anhwei.[2]

Administrative Expenses

Overhead expenses in connection with this work amounted to $66,605.69, representing 5.47 per cent of the total value of the amount administered in cash and in kind. Of the overhead expenses, $2,664 were charged to the allocation made by the National Flood Relief Commission. The balance, $63,941.69, was met out of the amount of $150,000 provided by China Famine Relief U.S.A. Inc. through their Advisory Committee in Shanghai. In addition to this grant, China International Famine Relief Commission received the sum of $30,000

[1] In Anhwei: Hwaining, Tungcheng, Kweichi, Tungliu, Wankiang, Wuhu, Hsiencheng, Hohsien, Tuentu, Wuwei, Tungling, Fengyang, Hwaiyuan, Wuho, Linpi, Showhsien, Fengtai, Hochiu, Fuyang, Susung.

In Kiangsi: Nanchang, Hsinchien, Tsinhsien, Yungsien, Poyang, Tehan, Hsingtse, Juicheng, Tuchang, Hukow, Pengtzeh, Kiukiang.

[2] In Anhwei: Fanchang, Nanking, Chuantsiao, Suhsien, Szehsien.

from the National Committee of Young Men's Christian Associations, earmarked for special work in the rehabilitation of farms in villages near Wuhu.

Distribution of Relief

The work in Anhwei met with several difficulties. Traffic on the railway from Pukow to North Anhwei was congested, and grain came up slowly. The north of that Province was infested by bandits early in 1932, and their presence interfered with regular work. Finally conversion of wheat into cash was a matter of time. These difficulties notwithstanding, the bulk of the preparatory work in the two Provinces was completed by the end of April 1932. By the middle of May $351,000 in cash, 1,237 tons of wheat and 748 tons of flour had been distributed to 1,737 Mutual Aid Societies. By the end of 1932 the work planned was entirely completed, with the exception of that in Hochiu *hsien*, Anhwei. The beneficiaries numbered 202,302, organized in 3,668 Mutual Aid Societies.

Repayments

The work of 1932 was most satisfactory, and enabled a quarter of a million dollars to be repaid by the end of November 1932. By the close of the year seventy per cent of the total due had been paid. For part of the balance, remittances were in transit; for the rest, extensions were being arranged.

Object of Loans

Of the total advanced in Anhwei and Kiangsi, the bulk is recoverable by the end of 1933. Individual loans were small in amount, averaging $6 only. This is an indication of the type of farmer for whom provision was made. It indicates also that the principle of dyke repair, which was adopted as basic, did not prevail in fact.

Instead of dyke repair, the common object for which the Societies sought loans, was the purchase of seed grain, to which 60 per cent of the loans granted were actually applied. In addition, 25 per cent was used in the purchase of animals of husbandry. When the loans employed in the purchase of implements and fertilizers are added, a very small percentage is left for dyke repair. The China International Famine Relief Commission is of the opinion that wise use was made by the Societies of the funds placed at their disposal, an opinion in which this Commission concurs.

Terms of Loans

No security was demanded for loans to Mutual-Aid Societies. The joint and several responsibility of its members, and the credit of the group, formed the only security for the loans. The rate of interest was four per cent, which cannot be deemed a commercial rate, and which will inevitably be raised when the Mutual Aid Societies develop, as they are intended to develop, into co-operatives. The reason for fixation of interest at the low rate of four per cent was the consideration that, whereas other forms of relief were given outright with no obligation of repayment, in this one form, repayment was demanded.

Continuation Programme

The work of farm rehabilitation has already had important results and is likely to have far reaching consequences. In the first place, it contributed to the production of the record crop of rice in 1932 in the areas devastated by flood in 1931. But, in addition, this opportunity was used to launch the co-operative movement in the areas in which work

was in progress. Rudimentary lessons in the value of co-operative effort were given to the farmers by members of the China International Famine Relief Commission field staff during their visits to the villages throughout the entire season from April till October. In addition, simple co-operative literature was introduced into the village farm houses, including a monthly specially issued for the purpose from February onward.

In November a series of three-day training courses was conducted in twenty-eight different centres, to which representative members of the Mutual Aid Societies were invited, and at which the objects and methods of co-operation were inculcated, and the routine for the conduct of rural societies was explained. Of these twenty-eight centres, work has actually taken place in twenty, attendance at the courses varying from fifty to one hundred and twenty. At least 2,000 individuals have received this elementary instruction, of whom a large percentage consists of officers of the Mutual Aid Societies founded by the China International Famine Relief Commission.

Prospects in Anhwei and Kiangsi

The work of farm rehabilitation carried out by the China International Famine Relief Commission provided abundant evidence that the farmers of these two provinces possess the essential qualities necessary for successful development of the co-operative movement. The prompt repayment of loans has established their trustworthiness. Rudimentary training has disclosed remarkably efficient organizing ability. The leaders have taken their responsibilities seriously. Judgment has been displayed in the use of the money advanced, and finally, the

whole countryside has become interested in a movement which they believe will promote their common welfare. The work has awakened among the people a new sense of self reliance and of responsibility. It has opened for them a way of ultimate escape from the oppression of the usurer. It has indeed inspired the peasant population with renewed hope and courage, and has, to a great extent, counteracted the tendency to communism which was powerful all through the Yangtze Valley.

CHAPTER VI

Engineering and Labour Relief

I

It has long been recognized by students of social science that one of the worst effects of any serious national calamity is to be found in the inevitable lowered morale of the victims. A considerable portion of those affected secure help from other persons more fortunate than they by means of personal solicitation and, in time, they get into the habit of regarding charity as a means of livelihood. The existence of a large body of habitual beggars eventually becomes a serious burden on the community and, indeed, constitutes a menace to society when their number becomes unmanageable.

The flood of 1931 deprived millions of self-supporting and self-respecting farmers in Central China, at least temporarily, of their means of livelihood. One of the chief problems of the Commission was to plan and execute relief work so that the sufferers might be able to earn their own living, thus saving their self-respect, and at the same time restoring the productivity of their land. The extent and gravity of this disaster has already been described and it is scarcely necessary to mention it here. From the time of the creation of the Commission, there was general agreement that restoration of the dykes by refugee labour was to be the most important phase of the Commission's programme. These dykes are a pre-

requisite to agricultural prosperity, indeed of agricultural existence, in parts of the Yangtze Valley. In fact the welfare of Central China, upon which the stability and development of the entire country in large measure depends, is contingent on the maintenance of protective works against the seasonal inundations of the river. The Engineering and Labour Relief Division became therefore one of the most important branches of the Commission.

Creation of the Engineering and Labour Relief Division

In the latter part of September 1931, Mr. T. C. Hsi was appointed to take charge of the work of engineering and labour relief, and proceeded to organize the Division. A number of technical men were drafted from various government organizations, among them being Colonel G. G. Stroebe of the Yangtze River Commission, and Mr. Li Hsieh, Chief of the Construction Bureau, Shensi Province. Both were men of wide experience in river control and conservancy work, and were consulted constantly on the technical aspects of the work of the Commission.

The organization of the Engineering and Labour Relief Division fell into two broad categories, namely Headquarters and Field.[1]

The Headquarters organization consisted of two Sections, General and Technical. The names of these two Sections sufficiently describe their duties. The former carried out the administrative duties of the Division. The latter was responsible for the whole of the technical work—plans, estimates, costs, checking of calculations,

[1] See Organization Chart, Appendix VI-1.

maps and collection of technical data. The work of this Section followed on decisions taken by the Technical Board, the functions of which included consideration and approval of matters of policy and of the larger engineering projects.

Technical Board

This Board was a large and important body. It was composed of the Chief of the Engineering and Labour Relief Division and the Chief Engineer, of technical experts appointed by the Commission, of representatives of each of the Reconstruction Bureaux of Honan, Hupeh, Kiangsi, Kiangsu, Anhwei, Chekiang, Shantung and Hopei and of each of the following Boards:—National Reconstruction Board, Hwai River Commission, Yangtze River Commission, Tai Hu Waterways Commission, Chili Conservancy Board and Whangpoo Conservancy Board. An Executive Committee of five members acted for the Technical Board when not in session. The decisions of this Board were as a rule accepted by the Provincial Authorities without demur, as it not only contained representatives of all the Provinces concerned, but was recognized as a technical authority of the highest competence.

II

Aerial Survey

In Chapter I of this Report a short account of the aerial survey of the flooded areas has already been given. The method followed in this survey was to use as a basis an existing Chinese military map covering the district under consideration. The speed of the aeroplane in miles per hour being known and the direction of flight of the

plane also being known from the compass, the traverse accomplished by the plane could be drawn on the map to the map's scale, beginning at a prominent landmark (city, pagoda, river confluence, etc.,) shown on the military map, and continuing towards a second definite landmark. By observing the edge of the flood waters the flooded area was mapped with rapidity and with sufficient accuracy. As much as eight thousand square miles was covered in one day. Only nine days were spent by the Commission's surveyors for the survey of the Yangtze River area and that of the Tungting and Poyang Lakes, a work which by old methods would have required several months and much greater expense. From these reconnaissance surveys a flood map was prepared. (Vide Map 1). The areas mapped are detailed in Appendix I-3.

Dyke Survey

When the aerial survey was made, the flood was still at its height. By the end of October, the water had receded somewhat, and plans were made to survey the extent of the damage. As the dykes were scattered over all the Provinces concerned, and as time was short, speed was essential. It was felt that the best procedure would be to co-operate with the different Provincial Bureaux and River Commissions by dividing among them the districts to be surveyed in the following way:—

a. Along the Yangtze River from Chinkiang to Wusueh, the work was entrusted to the Yangtze River Commission. Three surveying parties were sent out by this organization. From Wusueh to Shasi on the Yangtze River and along the Han and Kin Rivers

the work was undertaken by the Hupeh Conservancy Bureau.

b. On the Siang and Yuen Rivers and around the Tungting Lake, the Hunan Reconstruction Bureau cooperated, but on account of lack of funds in the Provincial Treasury, the work was suspended after a brief period.

c. On the Hwai River, the work was undertaken by the Hwai River Commission with three surveying parties.

d. On the Kan River in Kiangsi the work was undertaken by the Kiangsi Conservancy Bureau.

Surveys were made wherever possible, but in certain places where the ground was still under water, and in others which were infested by bandits, surveying was not feasible.

Where surveys were made, they followed the Commission's rules and standards, and the surveyors made out cross sections of the damaged dykes. From these the amount of earthwork required for reconstruction or repair was calculated. When surveys proved impossible, dyke maps prepared by Provincial and other government organizations were used. These were naturally not so accurate, and the results were less satisfactory.

The survey results began to come in to headquarters in November, and were completed in December, and from these reports, the Technical Section made its esti-

mates and prepared plans which were put into excecution after approval by the Technical Board.

III

General Plans

Conservancy work as a rule requires long and careful planning. But in this particular instance time was of the essence of the problem. It could not be spared for the preparation of elaborate schemes. The damaged dykes totaled thousands of miles. It was clear that if the resources of the Commission were dissipated in an attempt to repair them all, none would be actually completed. Concentration on a few large systems must be the rule. It was decided that with the resources at its command, the Commission could afford to repair or reconstruct only the main dykes on the principal waterways affected by the flood. Dykes on the branch waterways must be left to the local governments, and those privately owned to the owners themselves.

For the same reason, it was further decided to confine the work to the following schedule:—

a. Repair of the dykes on the south side of the Yangtze from Chinkiang to Ow Chih Kow and of the dykes on the north side of the river from Kwa Chow to the Ching Kiang dyke in the vicinity of Tu Mao Poo, and also the repair of dykes in the lower regions of the Kan River in Kiangsi.

b. Repair of the dykes on both sides of the Han River from Hankow to Chien Kiang.

c. Repair of the dykes on both sides of the rivers Hsiang and Yuan and around the Tungting Lake.

d. Repair of dykes on the Hwai River and its chief tributaries in North Anhwei.

e. Repair of dykes on the Grand Canal from Shaopo to Pao Ying, and also closure of all breaches from Pao Ying to Tsing Kiang Poo.

f. The improvement of the five outlets to the sea in the region east of the Grand Canal known as Li Hsia Ho.

g. Restoration and flood prevention measures in the region of rivers Yi, Lo, and Sha in the Province of Honan.

General Principles

For the guidance of the men in the field and of the general public, the following principles were adopted as general standards to be observed in carrying out the various engineering plans and projects, and were published for information.

1. Labour relief work shall be confined to earthwork only. The work shall consist primarily of the construction of main dykes and the dredging of river beds.

2. In the construction of dykes, special attention shall be given to the regions traversed by important rivers, and especially to those places where dykes have been broken by the flood.

3. The dykes shall be so repaired as either (a) to restore them to their original conditions, or (b) to withstand a flood of the magnitude of 1931.

國民政府救濟水災委員會
賑災區工作組工振築
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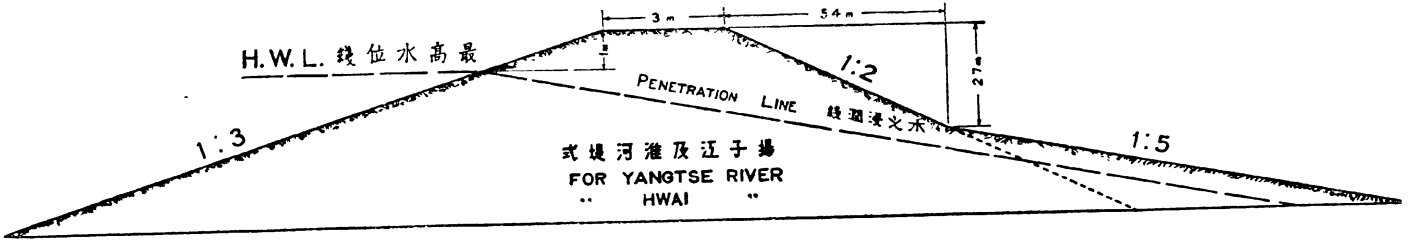
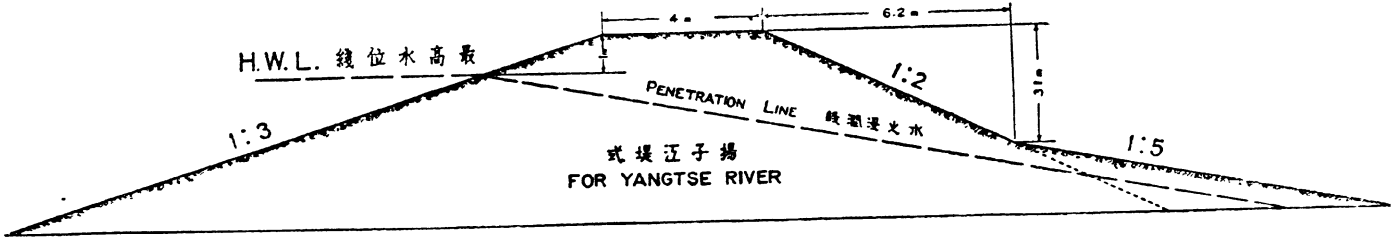
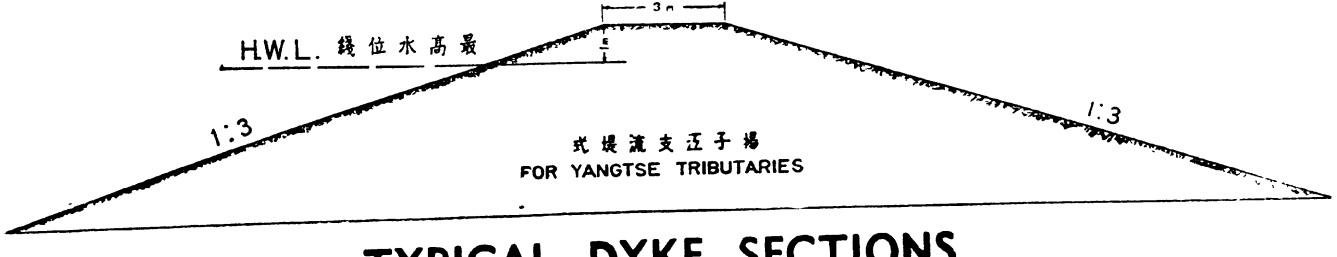






TYPICAL DYKE SECTIONS

NATIONAL FLOOD RELIEF COMMISSION ENGINEERING & LABOR RELIEF DIVISION

4. Old dilapidated dykes and those which interfere with the normal drainage shall be repaired, in the first case to an additional height and width, and in the second by elimination of curves, etc.

5. New dykes may be built in place of old, provided the cost of the new earthwork does not exceed that of repairing the old dyke.

6. Original channels of the river shall be widened or deepened, if necessary, for drainage of flood water.

General Specifications: A. Dyke Construction

As a result of the survey, it was determined that the normal height of the dykes should be one metre above the 1931 flood level, the top of the dyke varying in width from three to eight metres. As a general rule, the outside (waterside) slope was 1:3, the inside slope 1:2, with a toe of 1:5. These directions determined the cross sections of the dykes. Other details were: alignment of the dyke should be as straight as possible, and run in the direction of the current; the soil forming the dyke should be coherent and firm; the grass and brushwood at the foot should be cleared; holes should be filled up; to avoid weakening the toe of the dyke, no excavation should be made close to it, and all excavations should be so dug as to avoid formation of continuous ditches; earth should be piled by layers one foot deep and each layer should be consolidated to eight inches by tamping; all joints should be staggered.[1]

B. River Channelling

After preliminary survey, the ground to be excavated was staked according to sub-sections (500 men each).

[1] See diagram of typical section.

Excavation was done from the bank towards the centre of the channel. To deepen the channel of the river, portions of the bed were dammed off and any impounded water pumped out. Subsoil water in new channels was treated in the same manner. During excavation a ditch over two feet deep was maintained at the centre of the channel for drainage purposes. The slope of the bank was 1:2 or 1:3, depending on the nature of the soil. The earth excavated from the channels was used for building dykes, additional discharge areas for abnormal run off being secured, if necessary, by pushing back the dykes.

Co-operation with Local Authorities

Ordinarily, the administration of relief measures in cases of natural calamity would be in the hands of the Provincial authorities or the local public bodies. The area of the flood of 1931 transcended the boundaries of seven Provinces. Relief was necessarily on a national scale, and the National Government provided the resources for its operations. It was thus obvious that the policy of centralized control must be adopted as the general rule, and the suffering population of the Provinces obtain relief direct from the Commission. However, due to difficulties of various kinds, in certain cases the rigour of central control was in a measure relaxed. Continued efforts were made, however, to effect the closest co-operation with the Provincial authorities, and the articles of procedure to govern labour relief throughout the whole area were drafted in conjunction with them. Relations with the Provincial authorities were generally cordial, and even in those

cases in which some difficulty was met at the outset, steady improvement resulted from mutual experience, and satisfactory conditions prevailed long before operations closed.

The articles of procedure stipulated, inter alia, that at least one Assistant Engineer serving in the District office should be a nominee of the Provincial Government; that works of an urgent nature might be initiated after agreement between the Provincial authorities and the local representative of the Commission, that where private lands were appropriated for dyke work, they should be measured and the measurements recorded in duplicate, one copy being sent to the Provincial Government for action; that the Provincial Government should instruct local authorities to assist in the recruiting of labour; that with the consent of the Provincial Conservancy Bureau, employees of that Bureau might be drafted where necessary; that the Provincial Government would be responsible for police and military protection of the staff of the Commission, and for the maintenance of order on the works and along the routes used for transport of the Commission's supplies.

Preparation of Rules and Regulations

For the information of other Departments of the Commission and the guidance of our own staff in the Headquarters and field, Rules and Regulations were prepared governing the following subjects:—the organization of the Division; the Technical Board; the functioning of the District Engineering offices; advertisements for foremen; training classes for foremen; the recruiting and organization of labour; the reward and

punishment of labourers; grain allowance for bad weather; and Dyke Inspection.

Labour relief during famine and flood is not unknown in China. There is, however, such a conspicuous lack of information on the subject that very little was found available for present day guidance. The normal organization employed in constructional operations is not adapted to those of labour relief. The problem is complicated by the fact that only food is used to pay labourers. Though it may appear that payment in kind and payment in cash are similar, there is in fact a very great difference between the two systems when actually carried out in the field. Not only is the process of handling different, but the psychological reactions on the part of the recipients are also different. The Commission was fortunate in having on its staff past or present officers of the China International Famine Relief Commission, who possessed wide experience in labour relief work in north China. They gave valuable suggestions and the above described field organization, as well as methods of control of the labourers, were in large measure the result of personal conference with these gentlemen.

Estimate of Operating Expenses

It was estimated that six months would be required to complete the work. A budget showing the minimum requirements for general expenses of the Division was prepared and submitted to the Commission for consideration. This budget was divided into *operating* expenditure and *non-recurring* expenditure. The estimate included the following items:

Operating expenditure:—	Per month	
Salaries and Wages	$260,000	
Office Expenses	50,000	
Fuel, Oil, Salt	150,000	
Contingencies	90,000	
Total	$550,000	
Six Months Operating Expenditure		$3,300,000
Non-recurring expenditure:—		
Instruments and Tools	$660,000	
Mat-sheds and Utensils	470,000	
Expenses for Establishing District & Section Offices	130,000	1,260,000
Total General Expenses		$4,560,000

The above estimate was made at the beginning of the Division's activities. As time went on, funds were slow in coming, and, to be on the safe side, the budget was pruned down. For instance, instruments and tools were borrowed from different organizations wherever possible, and were not purchased by the Division. In many cases the labourers were required to bring their own tools. The privilege of free fuel and salt was cancelled. The contingent fund was not to be drawn upon unless with special authorization. In this way, by the exercise of rigid economy, it was planned to reduce the total expenditure to $2,000,000. The final report shows a total expenditure of $1,830,000. Approximately 260,000 tons of wheat were expended on engineering and labour relief. This is equivalent to about $20,000,000 (at $74 per ton). The overhead charges thus amounted to slightly over 8.5 per cent of the total, a moderate percentage for work of this nature.

Allocation of Wheat

After the Department of Field Operations decided to allot 300,000 tons, about two-thirds, of the American wheat to engineering and labour relief, this Division proceeded to allocate the wheat to the eighteen different Districts on the basis of the relative requirements of each District.[1] A total of 258,450 tons was allocated and 41,550 tons kept as reserve for contingencies. These allocations were closely followed until April, when relief operations indicated the necessity for revision to meet changed conditions at that time.

Italian Tools

When negotiations for remission of a portion of the Italian Indemnity promised to be successful, a list of tools and instruments needed for this work was despatched to Italy. This list included surveying instruments, such as levels, tapes etc.; tools, such as picks, shovels and spades; light rails and tip-wagons for earthwork.

The order was promptly executed. The first consignment of 15,000 shovels was shipped from Venice on November 14th 1931, and thereafter in rapid succession further shipments were made until February 24th 1932, when the last of the railroad material and tip wagons was sent.

Field Work Division into Districts

For purposes of administrative control, the flooded area was divided into eighteen Districts. This was essential in view not only of the size of the work, but also because of diverse conditions in different areas. Conditions varied according to the severity of the flood and to the size of the different river systems along which work was planned. It was decided to establish seven

[1] Vide Appendix III-3

Districts on the Yangtze River; three on the Hwai River; two on the Han River; three for drainage work in North Kiangsu east of the Grand Canal; and one district each for Hunan, Honan and the Grand Canal in Kiangsu Province. In the case of North Kiangsu, a change of plan necessitated the suspension of work in District No. 15, the work being subsequently taken up by Districts No. 16 and No. 17. District No. 10 was handed over to the Hunan Flood Rehabilitation Committee. The remaining sixteen Districts continued to function directly under the Commission till the work was completed.

A table showing particulars of the various Districts, their boundaries, the length of work expressed in kilometres, the location of the District centres etc., is included in Appendix VI.[1]

District Organization

Each District engineering office had at its head a District Engineer, who served concurrently as a general superintendent of the affairs of the Division in that District. He had under his orders one or two Assistant Engineers, two technical assistants, and a clerical force of four to six men handling general affairs. The District Engineer received orders direct from the Chief of the Division, or as the case might be, from the Engineer-in-Chief, in connection with the engineering and general affairs of the District. He was also empowered to assign special duties to any man in his office, such as labour recruiting, accounting, engineering construction, dealing with documents and correspondence, and the custody of supplies.

The duties of the assistant engineer and the technical assistants were to assist the District Engineer

[1] Appendix VI-2

in engineering work and its administration. The distribution of the staff and the labourers; the supervision and direction of the work in the Sections; the safety of the staff and the labourers; the distribution of grain, cash and tools; and the preparation of reports on the progress of work in the District were some of their main duties.

Section Organization

Each District was subdivided into eight or ten Sections, the number varying according to the magnitude and nature of the work in the District. A Section Engineer, who generally held the rank of Assistant Engineer, was placed in charge of the Section and received orders from the District Engineer. He also had a small staff of technical assistants and clerks. In engineering matters his duties were to make cross sections of dykes and local surveys; to make field notes and to recommend local changes in the original project; to make estimates of earth work required; to direct the progress of the work according to schedule; to control the labourers; to sanction payment for work done; to look after and report on the health and safety of labourers; to co-operate as fully as possible with the local gentry and gendarmerie; and to make weekly reports of the progress of the work.

In each Section there were officials to look after the recruiting and handling of labourers; another to look after supplies, and one or two who attended to the correspondence of the Section and its general affairs.

Sub-section Organization

Each Section was subdivided into ten Sub-Sections, or *tuans,* with one foreman in charge, and, where cir-

cumstances required, an additional man serving as assistant foreman. Each *tuan* had five hundred men working in it, and was divided into twenty gangs, or *pai,* of twenty-five men each. A gang leader was picked from each gang and acted as its representative. He was responsible for the behaviour and work of every man in the gang.

Enlisting Field Staff

The enlistment of the field staff on the scale required by the work was not a simple matter, especially in view of the rapidity with which the Districts began to function in succession. The work was partly engineering, partly relief, the one no more important than the other. Besides knowledge of engineering, experience in dealing with men, so necessary in matters of relief, was also required.

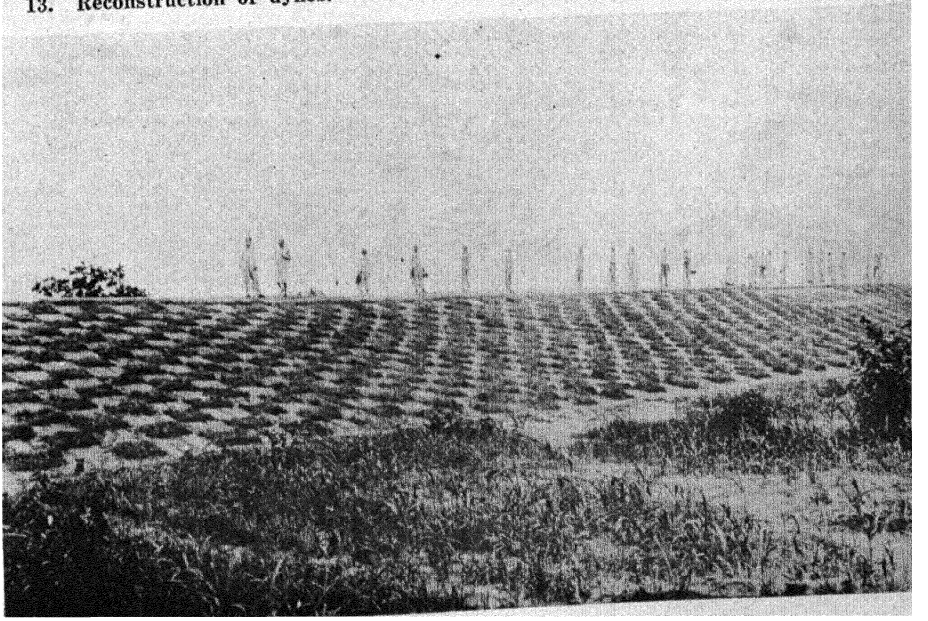
It was difficult to find men possessing a combination of both qualities, and the choice was in fact determined principally by the engineering knowledge and training of the candidate.

The number of experienced engineers required was so large that considerable difficulty was found in obtaining adequate personnel. The Commission was fortunate in being able to borrow a considerable number from existing conservancy authorities, river commissions, provincial bureaus of reconstruction, etc., but the balance had to be found elsewhere. After the Japanese attack on Shanghai the political situation was such that numbers of men in the service of the government were laid off and the Commission was able to absorb many of them.

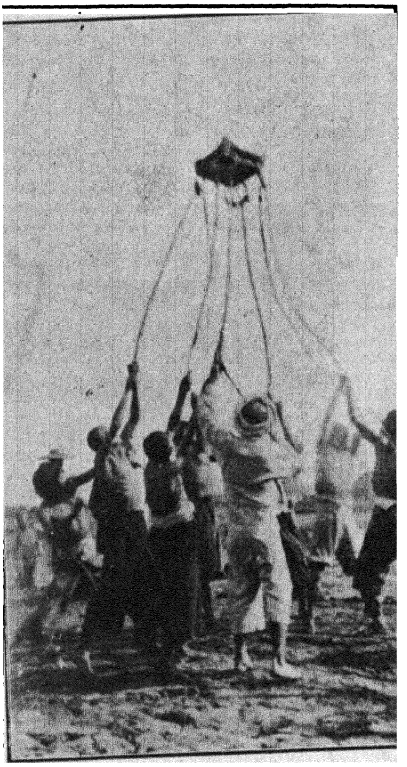
But by far the most difficult problem was the selection of men for the post of foreman, who is unquestionably the most important man in the field. He has daily contact with the labourers. He takes note of their attendance, and their behaviour, and in a general way disciplines them and holds them to their tasks. At the direction of the Section Engineer, he set the stakes of the dyke and located its general position, and that of the pits from which earth was to be taken. As a daily routine he measured the amount of work done and reported the result to the Section office. Of these men some knowledge of calculation was required, together with ample common sense. They must themselves be capable of taking orders from superiors, but at the same time they should themselves be good "bosses", or leaders of men. The work was so extensive as to require the enlistment of four thousand men as foremen, and the difficulty of mobilizing sufficient numbers, properly qualified, was realized from the first.

When the field offices began to function, a number of advertisements and posters for foremen in field work were displayed in the various cities, specifying their qualifications including, if possible, a training in a middle school, or experience in construction work. Salaries were fixed at $30 to $40 per month. As the possiblity of securing sufficient foremen was doubtful, special training camps were instituted for this purpose. But the call for foremen was so urgent when work was begun at so many places at the same time, that no opportunity was given to train the candidates fully.

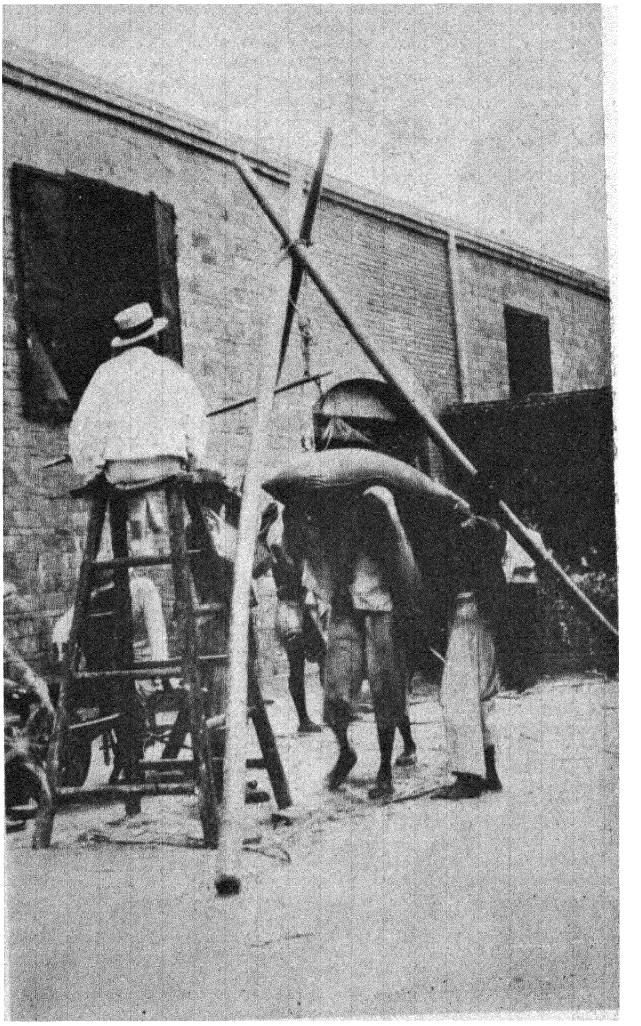
13. Reconstruction of dykes.



14. Dyke sodded to resist erosion.



15. Left: A "flapper" tamper at top of swing.



16. Right: Weighing out wheat with which to pay laborers.

Recruiting Refugee Labour

The recruitment of labour was one of the outstanding problems of the labour relief operation. People in the flooded districts usually expect relief as a gift and do not expect to work for it. It was natural therefore that difficulties arose when labour relief measures were enforced.

Owing to divergent economic and social conditions in different flooded areas, it was found that on the same terms and nearly at the same time, there might be such an abundance of refugee labourers offering for employment in a certain District that it was difficult to use them all, while in another place only very few labourers came to the work. Indeed, sometimes there was such a scarcity of men that they had to be transported from other places.

The element of time also enters into the question of recruiting. There are seasons in which any number of men may be obtained, and there are seasons also when there is a surprising disappearance of workers from the field of operations, as for instance when spring sowing commences. On the other hand, after the harvest, labourers will again be plentiful.

An element of doubt also exists in the minds of people towards all government attempts to enlist their services. In former years, labour for such work was usually impressed. Although it was not necessary actually to resort to pressure in the present case, it was desirable to apply local governmental authority. Consequently all the *hsien* magistrates in the flooded districts were invited to serve as commissioners for recruiting

labour in co-operation with men appointed by the District Engineers.

Perhaps the most important and difficult of all duties in the district at the beginning of operations was that of the recruiting officer. He was responsible for negotiating with Provincial and local authorities on matters concerned with recruiting refugee labour. He had to make visits to the various villages where famine labourers resided, and to make estimates of the number of men willing to work and acceptable as labourers.

Recruiting Procedure

The recruiting officers usually obtained a list of the famine sufferers from public bodies in the various provinces and from relief societies and used it when going to the villages. The recruited labourers were given a badge number. When twenty-five labourers had been recruited they were organized into a gang. The most intelligent of the group was made the boss of the gang and given the No. 1 badge. As soon as a full gang was recruited, they were sent to a designated place for work. Families were prevented from following the gang unless absolutely necessary. The names of the gang bosses were clearly shown in the rolls. All matters of concern to the labourers were explained to them clearly. The recruiting officers told them that the construction of these dykes was an endeavour on the part of the National Government to obtain permanent security for the people; that their labour would be paid for from relief supplies; that everybody should work hard in support of the good purpose of the Government. When a sufficient number of labourers had thus been recruited in one

village, the recruiting officer moved to another village for the same purpose. When the recruited labourers arrived at the sections, the Section Engineers reorganized them and gave them new gang numbers.

Considerable difficulty was experienced by recruiting officers in procuring sufficient refugee labourers along the Yangtze River. The population appeared to have a reserve of food in spite of the flood and, being rice eaters, were not keen to accept an offer of wheat as a wage. In order that the work might be done in time it was necessary, in some instances, to throw open recruiting to men who were not really flood refugees. In other cases, emergency relief refugee camps were transported en masse to localities where labourers were scarce. In still others it was necessary actually to import outside labourers. This measure was generally opposed by natives and local authorities who claimed that the importation of large numbers of outside refugees might create a menace to the peace of the neighborhood.

Entirely different conditions existed in the Districts on the Hwai River. There, for long years, flood and famine have been the rule rather than the exception, and consequently it was quite difficult at one time to absorb them all. Had the ordinary procedure been adopted by the Division in enlisting refugee labourers, many would have been left out. The rules were, however, varied to allow of more general relief. Even women were recruited in special cases where it was difficult to keep them away.

Number recruited

To accomplish the work planned, it was estimated that one million men would be needed during the course of the four or five months preceding the next high water season. That number was roughly distributed as follows:—

Along the Yangtze River Basin	500,000 men
„ „ Han River Basin	100,000 „
„ „ Hwai River Basin	200,000 „
„ „ Grand Canal and North Kiangsu	200,000 „
Total	1,000,000 men

It was also planned that before the end of April, the peak number of recruits would be reached, and that after the month of May, steps would be taken to send them back to their farms. From reports coming from various Districts, it was found that the numbers in the original estimate roughly coincided with the actual numbers recruited. During April and May 1932 the total number of labourers employed by the seven Districts on the Yangtze River was approximately 547,000; on the Han River about 97,000; on the Hwai River 170,000, on the Grand Canal and the region to the east 47,000; in Honan (18th District) 23,000; in Hunan 210,000; thus making a total of 1,100,000 men.

Methods of Paying for Earthwork

After the arrival of the refugee labourers on the spot, they were assigned to one borrow pit clearly marked. They began to dig the earth and to pile it on to the dyke. At the end of each week, the technical assistants together with foremen measured these pits in the following way:

—first, the length and breadth of the pits were measured, which would give the horizontal area; next, the depth at many points was measured, (the number of points depending upon the regularity or the irregularity of the bottom of the pit) and the average depth calculated. The two results were multiplied to obtain the volume of the pit, which represented the quantity of earth excavated within that week.

Attempts, usually unsuccessful, were sometimes made to deceive the foremen or technical assistants.

When the volume of earth work was checked and found correct, a standard unit price was applied by the foremen to determine the amount of wheat due to each gang, and a Wheat Requisition in quadruplicate was signed by the Section Engineer, who retained the fourth copy, (white) forwarding the other three copies to the District Engineer for approval and signature. The District Engineer retained the third copy, (red) forwarded the second copy, (yellow) to the Division for record and file, and handed the first white sheet to the gang boss. The gang boss presented it to the nearest Commissary depot and obtained the wheat. This was analogous to encashment of a check at a bank.

The Wheat Requisition Form constituted the basic evidence of expenditure of wheat for earthwork done, and was forwarded by the wheat depot to the Commissary Division for custody and final accounting. The gang bosses were required to affix their finger-prints, but this was usually difficult to enforce. On the whole, there were very few cases of irregularity or of wrong delivery on account of insufficient identification.

To avoid the possibility of any dispute between the gang boss and the labourers the amount due to each labour gang was clearly posted up.

In the Districts of North Anhwei practice varied somewhat from that prescribed in the regulations in this respect. The foremen after calculating the amount of earthwork, signed and handed to the gang boss a Wheat Requisition, who exchanged it for Wheat Certificates at the Section Office in denominations of five hundred and one hundred catties. These Certificates were cashable for wheat at the depots. They were negotiable like bank notes, and were much appreciated by the labourers.

Wage Rates

The following were the rates of payment: Earth taken from borrow pits within 50 metres of the dyke was paid from 25 cents to 40 cents per *fong*. When borrow pits were outside the 50 metre zone, 5 cents extra were paid per *fong* for every 20 metres outside the zone. When earth was carried to special heights an extra payment was made per *fong*. The District Engineers were permitted to use their discretion in modifying these rates to suit peculiar local conditions. Tamping was paid at ten cents a *fong*. Although the price for earthwork was stated in terms of money, payment was made in wheat and flour. Wheat was paid out at the uniform rate of 7½ cents and flour at the rate of 10 cents per catty. Where the local market price was considerably lower than these figures, the necessary adjustment was made by increasing the money wage per *fong* rather than by reducing the price of the wheat or flour.

[1] One *fong* contains 100 cubic feet, Chinese, and is equivalent to 3.7 cubic meters or 4.84 cubic yard.

The wheat gave the labourers a means of subsistence. They needed other absolute necessities which could only be obtained by cash. Accordingly, provision was made to pay labourers in the five Districts in Hupeh twenty per cent in cash. District No. 9 on the Han River was heavily infested with "Red" bandits, and transportation was extremely hazardous and expensive for this reason. Cash was the only possible means of payment. Labourers in District No. 4 on the Kan River, could not eat wheat and, in addition, transportation was exceedingly difficult. Therefore, towards the end of operations in that District they were paid in cash. Again, in places where transportation was difficult or impracticable on account of the lowness of the water in the canals it was easier to supply cash than wheat.

Over so wide a territory absolutely uniform treatment as regards methods of payment, forms of requisition, unit prices and so forth, was impossible. Refugee labourers generally could not wait for payment until after earthwork had been officially accepted. In a number of cases, wheat or flour for food had to be advanced to them before they could begin work. Similarly, loans were necessary to carry them over periods of inclement weather. And occasionally payments had to be made on account, pending official approval of measurements. As a result, an absolute correspondence between the individual earthwork sheet and the individual wheat requisition sheet was impossible. Relief phases of the work properly entered into consideration and, to that extent, introduced certain statistical irregularities.

Tools

As the plans accepted by the Commission would require over a million labourers at the height of the work, the matter of tools was clearly important. Their type had to be decided and their purchase arranged.

At the beginning it was planned to purchase 200,000 spades, 80,000 picks, 4,000,000 feet of hemp ropes, 300,000 bamboo carrying poles, 600,000 bamboo carrying pans, 6,000 tamping stones. But time was too short to secure delivery of this huge quantity of supplies, nor was money for this purpose available in sufficient amount at the time.

Tools ordered in Italy were slow in arriving. Meanwhile the labourers could not work without tools. The District Offices were therefore instructed to purchase a sufficient quantity for the initial stages of the work. In January 1932 the first consignment of Italian tools arrived in Shanghai. Unfortunately Chinese labourers were not accustomed to their use, and in many cases the tools were actually refused. The result was that the Division was compelled to require the labourers to provide their own tools. The following is a list of tools commonly used on the work.

1. Spades.
2. Picks for loosening hard earth.
3. Shovels for squaring borrow pits and smoothing dyke sides.
4. Shallow earth baskets made of strip bamboo. (One man carried two baskets, one at each end of a bamboo pole.)

5. Deep baskets made of strip bamboo. (The deep basket is much larger than the shallow basket, and is carried by two men, one at each end of a carrying pole.)
6. Rake for levelling heaped earth.
7. Wide picks for crushing hard lumpy earth.
8. Tamping stones or "flappers", stone rollers, tamping logs—all for consolidating earth.
9. Foot-power and mechanical power pumps for draining away water in pits.
10. Wooden baskets and cloth bags for draining away water in pits.
11. Walking planks for men to walk over swampy places.

Shelter

A serious problem was that of shelter for the labourers. The flood had destroyed most of the buildings near the river. In many cases the refugee labourers were found collected in places far from their homes.

Sheds were designed to accommodate 25 men and measured 30 feet long, 14 feet wide. The roof and side walls were supported by 11 semi-circular bamboo trusses and 7 rafters. The spacing of the trusses was three feet. One shelter required 30 pieces of bamboo, and 50 pieces of mat, which were purchased locally.

The total number of labourers to be accommodated was so large that it was not feasible to make full provision for all of them. It was necessary to differentiate

between those who came from a distance and had to be quartered in the mat-sheds, and those who belonged to nearby villages, to which they could return when the day's work was over.

V

Co-operation with Other Organizations

Within the eighteen Districts, whose work was directed from the Head Office, it was found in some cases to be of mutual benefit to entrust a portion of the work to charitable institutions of good standing, or to government organizations. In certain other cases, in which the work was considered essential, but where active participation by the Commission was not warranted, a subsidy of a definite amount was granted to a responsible organization for the execution of the work.

The following are outstanding instances of this nature:—

1. The China International Famine Relief Commission was entrusted with Sections 1 and 2 of District No. 4 and Section 11 of District No. 5 on both banks of the Yangtze River in the vicinity of Kiukiang and Wusueh. This involved the repair or reconstruction of some 134 kilometres of main dykes. The work was paid for in wheat, or its equivalent in cash, supplied by this Commission, but the China International Famine Relief Commission provided the personnel and overhead expenses.

2. The Grand Canal Commission of Kiangsu Province co-operated closely with this Commission in restoring the greater part of the damaged dykes along the lower

part of the Grand Canal. To that Commission the National Flood Relief Commission loaned 10,000 tons of wheat, originally allocated to Farm Rehabilitation, in addition to a subsidy of $200,000 in cash.

3. The Chinese Foreign Famine Relief Committee of Shanghai offered to repair the six principal breaches in the vicinity of Kaoyu on the Grand Canal. The Commission in answer to their offer, subsidized that Committee to the extent of 2,000 tons of wheat. The balance necessary to complete the work was provided by the Committee, and it has been reported that the total expenditure incurred from its funds amounted to $481,000. The work was not in a strict sense of the word a restoration, as the original construction which was washed away had been of stone masonry, while the newly built dykes are of earth. However, these dykes are well and solidly constructed and there is no doubt that they are adequate to meet ordinary emergencies.

4. The Shantung Grand Canal Commission approached the National Flood Relief Commission for help in the work on the Grand Canal and its tributaries in that Province. After some negotiation it was decided to allow them a subsidy of 3,000 tons of wheat on certain conditions, one of which was that the Provincial treasury should provide $500,000 to complete the whole work projected.

Labour Relief in Hupeh

Of all the Provinces in which engineering and labour relief work was undertaken, Hupeh had the largest share. In the five Districts established in that

Province great difficulties were experienced from Communist bandits, from delay in wheat deliveries, from obstruction by people with varied interests, and, in some cases, from incompetence, or indeed from delinquency on the part of the Commission's own employees. The long distance separating Hupeh from Shanghai rendered close control impossible, and so permitted a latitude to the local officials of the Commission, which was misused on occasion. With a view to remedying this situation, a committee was appointed at Hankow on April 20th 1932, known as the Supervisory Committee of Labour Relief in Hupeh. Power was given to this Committee to deal with any situation that might arise locally. Mr. Li Hsieh, Chief Engineer of the Commission, was appointed Chairman of the Committee, its members being in part officials of the Commission, in part representatives of the Provincial authorities. Control of the five Districts in the Province was concentrated in this Committee, and efficiency was greatly enhanced. The Committee functioned to the end of December 1932.

Labour Relief in Honan

During the flood of 1931 a large area of the Honan plain was under water, and relief was urgently needed there as elsewhere, but no sufficient representation from that Province was received. Indeed only the briefest mention was made by its representatives, details being entirely omitted.

However, the Commission sent its own engineers to conduct a reconnaissance and as a result, established District No. 18 with office at Chengchow at the end of January. In view of the difficulty of communication,

and of special conditions, the organization of the office differed somewhat from that usual in other Districts. The Commission's Superintendent of Emergency Relief was appointed to serve concurrently as Superintendent of the District Office, assisted by two of the local gentry, who were public spirited and enjoyed the confidence of the people. One of these was appointed chief of the Sa Ho Office in charge of eight Sections; and the other, chief of Yi Ho, Lo Ho Office in charge of five Sections.

Towards the end of May, the Commission was approached with requests from the Province for further extension of relief work. As a result of the report made by the Commission's investigator, considerable work was undertaken on the Ying Ho, and Bishop W. C. White's Committee was invited to take charge of the work on the Tong, Tan, and Hwai Rivers, assisted in technical matters by the Chief Engineer of Yellow River Bureau of Honan.

Labour Relief in Hunan

The flooded regions in Hunan Province were very extensive. They were mainly in the vicinity of the Tungting Lake, along the rivers Siang, Tze, Yuen, Lee and at the connecting channels with the Yangtze River, namely Ngo Chi Kow, Sung Tze Kow, Hu Tow Kow, Tiao Yen Kow. After a preliminary survey it was decided to undertake labour relief in the five *hsiens* round the lake most severely affected by the flood, viz., Han Hsien, Yuen Kiang, Siang Yin, Han Shou, Chang Teh. An allocation of 18,000 tons of wheat was made for the Province.

Subsequently it appeared that the remaining six *hsiens* around the lake were almost as badly affected as the original five. An additional allocation of 12,000 tons was made, bringing up the total to 30,000 tons for the eleven *hsiens* around the lake.

An Engineering and Labour Relief Office for Hunan, District No. 10, was organized at Changsha, the Commissioner of Reconstruction of the Province being invited to act as co-superintendent of the Office. An extensive system of Section offices was also planned. But, before the work could proceed, representations were received from the Hunan Flood Rehabilitation Committee that the dykes on the Tungting Lake were privately owned, thus differing fundamentally from those on the Yangtze River. It was urged that it would be more advantageous to grant loans to the dyke owners than to do the work direct, and that by combining the allocation for Emergency Relief and Farm Rehabilitation, totalling 20,000 tons, with that for Labour Relief, totalling 30,000 tons, 50,000 tons would be available for loans. It was further suggested that the loans could be secured by title deeds, or by negotiable securities supplied by the land owner directly benefited by the loan; also, that the loans should be repayable in two years in two instalments and that the original amount should thus be kept intact for the purpose of further conservancy work on Tungting Lake.

The Commission accepted the request which was strongly backed by the Provincial gentry and important officials, District Office No. 10 was withdrawn, and the

work handed over to the Hunan Flood Rehabilitation Committee. Later, with the concurrence of the Provincial authorities, the allocation was reduced from 50,000 to 42,500 tons of wheat. No final report has as yet been received as to the quantity of wheat or its equivalent in cash actually loaned out, or as to the exact length of dykes repaired, except a brief telegram announcing a total *fongage* and mileage.

VI

Difficulties: (1) Opposition from Property Owners

While all local engineering work was planned for the general benefit of the inhabitants concerned, yet the individual property owner might be adversely affected. For instance, in the execution of the plans, land was required for borrow pits, for the sites of new dykes, for new channels, or for drainage purposes. These lands were requisitioned with or without compensation as governed by local usage, and the owners naturally opposed the measure, hoping to escape at the expense of others. In all cases of this kind, of which the files would fill a cabinet, the decision was guided by the desire to benefit the majority. When pressure was found necessary it was applied unhesitatingly in one form or another. Work could not be delayed on account of the opposition of a few recalcitrants. Time was more important than exact justice.

(2) Limited Resources

There was a general rush for the resources of the Division, which in the main consisted of 300,000 tons of wheat. Although these were limited to certain lines of work, the public did not know this, and besieged the Division with requests for more. Pressure of various

kinds was applied, but was steadily resisted, only those proposals being accepted which were clearly within the scope of the Commission's programme.

(3) Variations in Wage Levels

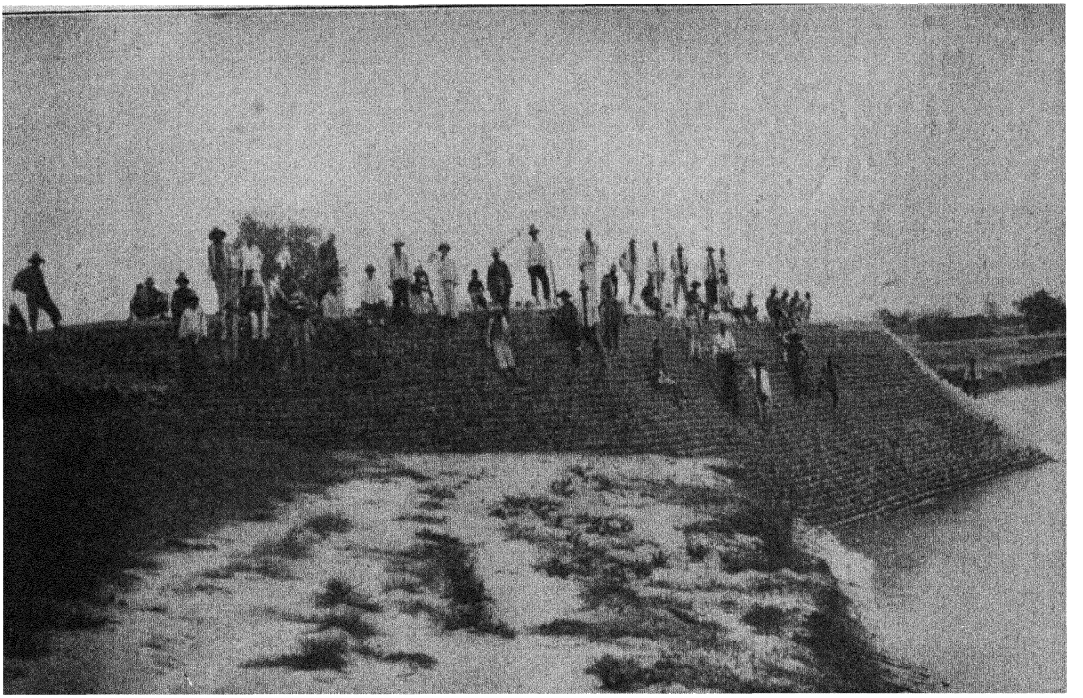
Engineering and Labour Relief differs from free relief, in that while the latter is a gift, which is always accepted without question, the former is by way of payment for labour performed, which usually, though not always, has a market value. It was not simply a case of feeding the hungry; it was a case also of paying for services rendered. As the market value of labour varies in each locality, uniform distribution of wheat was found difficult of application. As all Districts were interconnected, a ruling, tending to raise a unit price in one Section, invariably induced the neighboring Sections to make a similar demand.

(4) Unsuitability of Tools

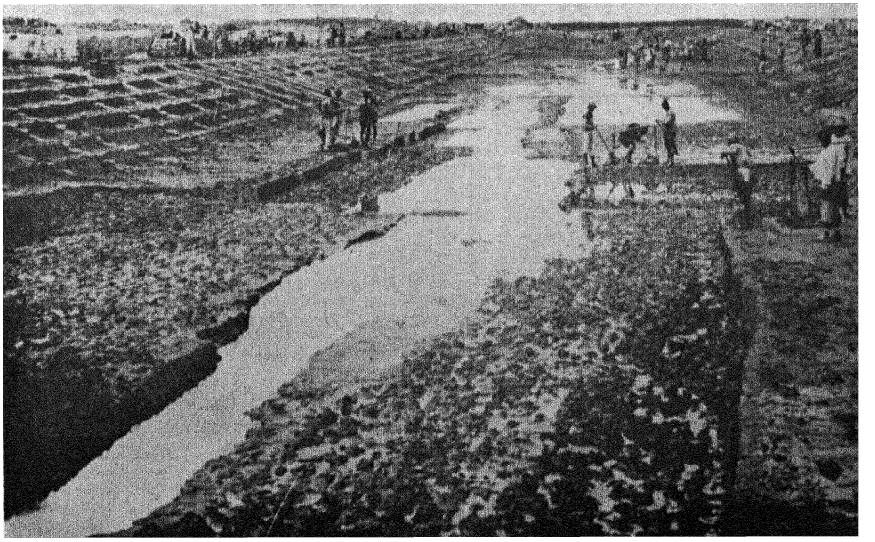
The nature of the soil varied at different localities, and the kind of tool required varied accordingly. The tools available were in many cases unsuitable; in others they were of a type to which the labourers were unaccustomed.

(5) Communists and Bandits

Banditry had a very serious effect on the work. In Hupeh, where bandits were rampant, offices were plundered, men taken into captivity. Appeals were made to the military for protection. Some were effective, others were not. Even when they were effective, the bandits returned directly after the army moved on. Not only did the regular bandits harass the work, but the common people, rendered homeless by the bandits, frequently emulated bandit practice to keep themselves going. In the areas held by the Reds and by bandits, no

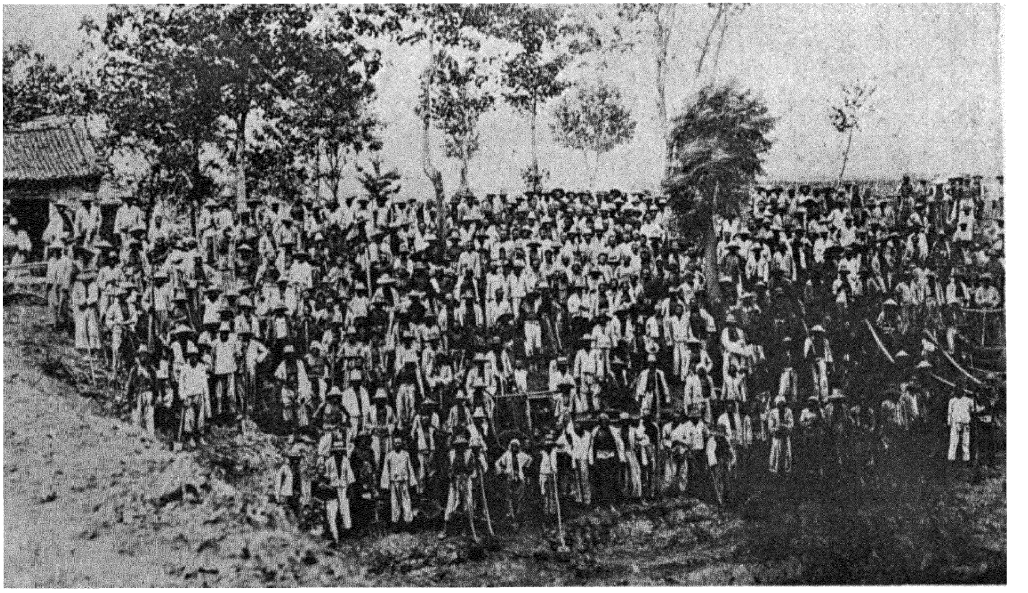


17. Ruined groin repaired.



18. In certain districts new drainage channels were required rather than dykes.

19. Where the soil alongside was not suitable, proper earth was transported from a distance in *sampans*.



20. Approximately 1,400,000 labourers were required to restore the dykes.

less than 50 field workers were taken prisoner. Of these, 47 were released after protracted negotiations. Three are still missing.

The experience in District No. 7 was typical. It was situated on the middle Yangtze above Chenglingki. If there was difficulty in transporting wheat up to Chenglingki, the base depot, the difficulty was multiplied many times when the wheat was further trans-shipped to the various distribution centres of the District. This formed the chief cause of delay of work in this District. The Communists were so near the Commission's staff, that the latter were actually in daily contact with them. One survey party at Cho Pao Kow was captured by them, and thereafter every action, such as time of work, method of wheat distribution, etc., must first receive the approval of the Communist leader. When the wheat delivery was slightly delayed, the Commission's men were held as hostages pending a more prompt delivery. Men were kidnapped, killed by stray bullets and murdered in cold blood. Added to all this, the obstructive tactics of the local civil authorities and notorious members of the gentry were responsible for many interruptions to the progress made in this District. Under the circumstances some of the plans had to be abandoned, others were only partly finished.

Handling Finances

The Division had to perform one task for which it was not prepared; viz., the handling of operating expenses in the field offices. It was the general opinion of the Commission, when the Division was organized, that this important matter should be handled

by the Department of Finance, for all branches of field operations. It was confidently expected that the Headquarters of the Commission would send special men to the offices of the Engineering and Labour Relief Division to administer the funds. Thus there would be uniformity of procedure in remittance and in accounting, and the Division could concentrate its entire attention on the management of its own affairs. Consequently neither in the organization or budget for the head office nor in those for the field staff was provision made to enlist men for the handling of funds. So, as it turned out, when funds were needed at the field offices, there was no machinery for their custody and distribution, or to account for their expenditure. Under these circumstances, the Engineering and Labour Relief Division was compelled to undertake this additional duty, and to assume the immense responsibility of handling and accounting for very large sums of money.

VII

Summary of Work Done

The engineering work of the Commission has been accurately described as colossal. The amount of earth, work done by the 16 Districts under the direct control of the Engineering and Labour Division was 115,314,963 cubic metres, (31,135,040 *fongs*). Hunan Rehabilitation Committee reported 34,911,300 cubic metres (9,426,050 *fongs*) and the Shantung Grand Canal Commission 2,837,500 cubic metres (766,892 *fongs*). Thus the grand total of the earthwork done was 153,063,763 cubic metres (41,327,982 *fongs*). This, completed practically in six months, amounts to two-thirds of the total earthwork

of the Panama Canal. Another graphic illustration may be given. With the amount of earth moved, as above stated, a dyke two metres high and two metres broad could have been constructed round the earth at the equator.

The work was distributed as follows:—

Dyke Work	*Length (Kms.)*	
Yangtze River	1,812	
Kan River	634	
Hwai River	946	
Han River	337	
Grand Canal, Kiangsu	209	
Yi, Lo, Sha Ying Rivers, Honan	370	
Grand Canal, Shantung	122	
Hunan Flood Rehabilitation Committee	3000[1]	7,430

Channelling Work	*Length (Kms.)*	
North Kiangsu	94	
North Anhwei	26	
Honan	168	288

Culverts and Masonry Work

Honan—masonry protection to river bank .....55 kilometres
Anhwei .....24 culverts

See Appendix VI-4 for tables showing detailed information regarding work in each Engineering District.

Unit Cost of Work

As stated above, for purposes of standardized payment, the price at which wheat was paid out was assumed to be 7½ cents per catty. However, the price at which

[1] As reported

the Grain Exchange Committee was able to sell wheat upon the market was approximately $75.00 per ton, or only 5 cents per catty. Using the latter rate, the average cost of earthwork per cubic metre was calculated to be 15 cents, or 56 cents per fong. This average applies to sixteen Districts which reported a total of 115,314,963 cubic metres of earthwork done.

Payment was made to the gang in accordance with the amount of work done. Each man's portion averaged ordinarily from five to eight catties (or 6.65 to 10.64 pounds of wheat) per diem. This was more than the individual could eat and there is no doubt that relief was afforded to many members of the families of laborers as well as to the laborers themselves. Thus, from the point of view of relief, as well as from the technical point of view of dyke repairing, the work of this Division was of the highest importance.

VIII

Inspection of Engineering Works—Progress Inspection

The size of the work and the multitude of workers demanded that a system of progress inspection be put into operation, to ensure the diligence of the staff, the conformity of work with the standards, the careful distribution of wheat in accordance with the rules. The Commission had an Inspectorate, but its staff could not be expected to judge of technical matters in the field. Engineers of recognized standing were appointed to do this regular technical inspection, and on many occasions, engineers from the head office were also sent out for special inspection duties in the field. The five Districts

in Hupeh Province were under constant supervision by the Hupeh Supervisory Committee.

Besides the above, the Chief of the Division and the Chief Engineer made frequent inspection trips to the field and thus kept in personal touch with the actual work.

Summer Inspection

As the dykes were being finished in the summer of 1932, the level of the rivers began to rise, and the possibility of high water endangering the freshly built dykes was apparent. A system of dyke inspection was consequently initiated and precautionary measures undertaken in the event of a breach or wash-away of any part of a dyke.

A dyke being a continuous structure stretching for many miles, it is clear that one weak spot may render the whole dyke useless for purposes of protection. The establishment of a system of inspection of the dykes during high water season was thus a necessary part of the whole programme of dyke building. No new dyke built with earth can be regarded as an entirely dependable barrier against the erosion caused by a swift current in a season when heavy rain and sudden storms are frequent.

The system of inspection adopted made use of the existing organization of the Districts, by combining several adjacent Districts along the river to form one inspection District, to which a chief inspector responsible for the District was appointed. In addition there was close co-operation with local authorities. These measures were sufficient to detect any sign of weakness on the

dyke structure at an early stage and thus enabled the application of remedial measures before a serious danger developed.

The following inspectorates were established:—

(a) For Yangtze River and Grand Canal. Headquarters at Chinkiang (Districts 1 and 14.)

(b) For Yangtze and Kan Rivers. Headquarters at Anking (Districts, 2, 3, and 4.)

(c) For Yangtze and Han Rivers. Headquarters at Hankow (Districts 5, 6, 7, 8 and 9.)

(d) For Hwai River. Headquarters at Pengpu (Districts 11, 12, and 13.)

The Engineering Inspectorate and the inspecting stations were established in July, 1932, and closed at the end of September 1932, when the water receded.

IX

Closure of Work and Transfer to National Economic Council

Field operations were started during January and February 1932. By July 1st not only had the dykes been restored to their original condition, but in most cases, their height was raised to one metre above the 1931 flood level. They were thus in a condition to withstand the pressure of a rise distinctly above the normal.

The work of organization started in October-November 1931; field operations two months later. In four months most of the breaches had been closed and thus the annual spring rise was held in check. In eight months, the work of dyke reconstruction (with the

exception of some isolated cases) was completed according to schedule.

The original plan was to close the field offices at the end of June 1932, but owing to special circumstances the time was extended one or two months according to the locality. In all cases, the field offices were closed at the end of September 1932. District and Section Offices were required to hand in balances of current funds to Shanghai Head Office for transmission to the Finance Department of the Commission. Office equipment, instruments, tools, sundry articles, books, maps and charts in connection with final reports were handed over to an officer designated for the purpose.

All work, including that not yet finished, was transferred to the Hydraulic Engineering Bureau of the National Economic Council by the first of October. The unfinished work was to be carried on according to the original plans of the Commission.

The District Superintendents were required to send in the records of the staff of and above the grade of Assistant Engineer before July 15th 1932, to be transmitted to the Commission with recommendation for recognition and reward. In the case of grades of and below those of technical assistant or general clerk, those with a good record were given letters of commendation signed by the Superintendent. Those with excellent records were specially treated.

The Districts were required to send in their full report on working conditions, operating expenses, and

other results, together with statistical data for consideration and report by the Division.

X

Final Inspection

In order that the Commission might approve and accept the work of this Division officially, the Chairman appointed an Inspection Committee whose duty it was to inspect the work and to report the result of that inspection to himself. Along with this official committee a large number of prominent personages were invited to inspect and to make observations on the work done by the Commission. Notable among them may be mentioned ex-Premier Hsu Shih-Ying, who is also Chairman of the National Famine Relief Commission; Mr. Chu Ming Yi, Secretary of the Central Executive Yuan; Mr. Ling Kong Hao, Secretary of Shanghai Bankers Association; Chang Shou Yung, ex-Vice Minister of Finance; Dr. Wu Lien Teh of the National Quarantine Service; Mr. Woo San, representing the National Highway Association; Mr. Loo Pan Wei, representing the Mayor of Greater Shanghai; Dr. David Brown, Chairman of China Famine Relief U.S.A. Inc.; Mr. Wen Lai Ting, Chairman Shanghai Branch, Chinese National Red Cross; Mr. George Fitch, Secretary Foreign Y.M.C.A.; Mr. A. P. Finch of the North China Daily News; Mr. A. H. Ford, of the Pan-Pacific Association; Mr. Gerald Yorke, of Reuters; Baroness Ungern Sternberg; Dr. Henny; Colonel J. L. Huang of the Officer's Moral Endeavour Society; Messrs. Chien Wah, Loh Yee,Chu Yung Kwong, Li Mon Ping, representing the Chinese press; Sun Fah Hsu, ex-Governor of Shantung; Mr. Wen Cheng Foo, ex-Commissioner of Tibet;

Dr. Chen Ching Tao, ex-Minister of Finance; Mr. Chen Sze Chang; Mr. K. C. Hu, Mr. P. Y. Hu, representing the Ministry of Industry and Commerce; and others.

In the management of this tour assistance was given by the Officer's Moral Endeavour Society, which organization was requested to arrange the first part of the programme for the party.

The tour started at Shanghai on November 26th 1932. On the 28th, at Nanking, the completed dyke work was formally dedicated. The party then proceeded and inspected the important works on the Yangtze and Han Rivers. On December 14th it left Hankow for Honan by railway to inspect the earth work and masonry construction at Yien Cheng, Loyang, Men Tsin, etc. It returned via Pengpu on December 19th, whence members inspected work in Northern Anhwei; from there it proceeded to Yang Chow and Kao Yu on December 22nd, to inspect the works on the Grand Canal. Finally a deputation went to Tungtai to inspect the drainage works on the Lee Sha Ho, returning to Shanghai on January 9th, 1933, thus completing the tour of inspection.

The official Inspection Committee rendered their written report to the Chairman of the Commission, in which it expressed satisfaction and stressed the importance of efficient maintenance of these works.[1]

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[1] Vide Appendix VI-5

CHAPTER VII

Hygiene and Sanitation

It is an accepted belief and fact that all flood disasters are accompanied and followed by epidemics and disease, and that more lives are lost from disease than directly from drowning or from starvation. The reasons for this state of affairs are obvious. In the first place, although in some regions a sudden break of a dyke may cause the drowning of a large number of people, in most regions there is sufficient warning to prevent the number of deaths from reaching a high figure. Secondly, the terribly insanitary conditions with which the refugees necessarily have to contend in flood times together with such unusual conditions as lack of shelter and food, exposure to the elements, crowded living conditions in refugee camps, predispose to all kinds of disease. It is true that the Chinese coolie and farmer are not used to modern sanitary conditions even in the best of times, but the above-mentioned extreme conditions brought about by the flood certainly break down any immunity barriers and encourage the spread of sickness.

As will be seen from the following pages of the report, the diseases encountered may be classified as follows:

I. Diseases due to insufficient and improper food:

1. Gastro-intestinal disorders

2. Mal-nutrition

II. Specific infectious diseases of the gastro-intestinal system:

1. Dysentery
2. Typhoid and para-typhoid fever
3. Cholera.

III. Other specific infectious diseases:

1. Small-pox
2. Malaria
3. Measles
4. Typhus fever
5. Meningitis, influenza, etc.

IV. Diseases of the skin, particularly scabies, ulcers, impetigo and fungus infections of the skin and scalp.

V. Diseases of the eye, particularly trachoma.

Creation of Department

The Department of Hygiene and Sanitation of the Commission was established immediately following the creation of the Commission. After a preliminary survey, a scheme of organization and program of work was adopted, and squads of workers were immediately sent to the field. It was emphasized from the very beginning that preventive work should go hand in hand with measures of medical relief. The reader will note in the following pages the amount of work done in the prevention of epidemics. Such measures as extensive vaccination and inoculation campaigns, isolation of contagious cases, provision of safe

water, building of proper latrines, health propaganda, anti-fly work etcetera were undoubtedly responsible for the saving of innumerable lives.

The work of this Department was particularly stupendous because of the extensive area of the flooded region, which included large cities as well as villages and rural areas. Most of the cities have nothing of the nature of a modern health department and the Provincial authorities were doing practically nothing in anti-epidemic work. It therefore fell to this department to organize its forces from the very beginning in such a way as to function in preventive and anti-epidemic work as well as in medical relief, and in the rural areas as well as in large crowded cities.

Modern hospital facilities were lacking everywhere except in a few of the cities. All mission hospitals in the flood area helped a great deal in giving accommodation to the more serious cases, but, at the height of the flood, the number of beds available was very much below the requirements, particularly since a number of the hospitals were flooded and were therefore not functioning. The Department was obliged to provide emergency hospital accommodation in a great many places so that proper care might be given to the sick flood-sufferers. Temporary clinics were also organized to look after the less serious cases, and travelling clinics took care of those in more distant and rural areas. When the dyke construction work was commenced the travelling clinics were re-arranged so that the workers were provided with medical relief and protective measures.

It was considered quite remarkable that cholera did not break out in epidemic proportions in 1931, and typhus did not appear at all except in a few isolated instances. Due precautions were taken from the very beginning in regard to those two diseases, and proper preparations were made to prevent their appearance. It was always a relief that when the reports from the different hospitals, clinics or medical units were read it was found that they did not mention these diseases.

Cholera did appear in the summer of 1932 in a serious form and on a widespread scale, but by this time there was no more flood and the people had returned to their homes. It would be difficult to imagine what might have happened if the epidemic of cholera had broken out in 1931, when hundreds of thousands of people were crowded together in refugee camps. A full description of the epidemic and of the work done by the Department in connection with it will be found in these pages.

The mortality among infants and children was of course especially high. Exposure and lack of proper food predisposed to diseases such as gastro-intestinal disorders, dysentery, small-pox, measles and pneumonia.

Malaria was undoubtedly responsible for a great many deaths and much suffering. It was impossible for the Department, with the short time and the limited means at its disposal, to undertake a proper campaign against it. A great deal of quinine was distributed and considerable work in propaganda was done. In addition, a general survey was made in regard to the disease

(vide infra) which has now been transferred to the Central Field Health Station so that the studies may be continued.

With reference to morbidity and mortality rates for the flooded regions there are no accurate statistics available. The College of Agriculture and Forestry of the University of Nanking co-operated with the Commission in making an economic survey of the flood areas along the Yangtze and Hwai Rivers. At the request of the Department of Hygiene and Sanitation certain information in regard to health conditions was included in the survey. According to statistics published by the College[1] the survey showed that during the first one hundred days after the flood appeared there was reported as high a death rate as twenty-two per mille among the farm families. Fifty-five per cent of these deaths were of males. Approximately one-fourth of all deaths were caused by drowning and seventy per cent by disease. About thirty per cent of all persons who died were under the age of five years. This latter probably does not include a number of other deaths of children which were not reported.

The morbidity rate was also very high. There is an average of seventeen per cent sick population, six per cent with fever, five per cent with diarrhea, and six per cent with some other illness.[2]

In regard to the extent of the work of this Department the reader is particularly referred to Appendix VII-3

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1 Vide supra P. 6
2 Vide Appendices VII—12, 13

which shows that 344,823 people were given medical relief and 2,157,872 people were immunized against infectious diseases. For all this work which is enumerated in the following pages, the cost to the Commission amounted to less than Mex. $600,000.[1] That this figure was not much higher was due to three reasons, (1) the free gifts of drugs and supplies from friendly governments and private organizations and firms, (2) the gratuitous services of the large majority of workers and (3) the strictest economy exercised throughout by every branch of the Department.

A considerable quantity of supplies, equipment and drugs was left over after the work of the Department was finished. All was given to the Central Field Health Station which is even now continuing some of the work undertaken by the Department.

Organization

Pursuant to the decision to set up a Department of Hygiene and Sanitation in the Commission, Dr. J. Heng Liu, Director of the National Health Administration and of the Central Field Health Station, was appointed as the Department's Director and Dr. P. Z. King, Senior Technical Expert of the National Health Administration, as Assistant Director.

Realizing the gigantic task facing the Department, on the recommendation of the Director, the Commission appointed an Advisory Committee[2] to work out a

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[1] Vide Appendix VII—1

[2] The Advisory Committee consists of Doctors B. Borcic, Brian R. Dyer, John B. Grant, S. Kanai, P. Z. King, J. Heng Liu, J. L. Maxwell, W. S. New, H. J. Shu, L. W. Skinner, Wu Lien-teh, and F. C. Yen

plan of organization. Three sub-committees on Personnel, Supplies and Training were organized. The Department, as finally organized, consisted of four Divisions: (1) General Affairs, (2) Sanitation, (3) Epidemic Prevention, and (4) Medical Relief.

Field health work was carried out by field units and travelling clinics which were organized and set in operation in the following sections:

1. Wuhan Section (under the direction of the Wuhan Branch Office, and the travelling clinics for Labor Relief Districts Nos. 5, 6, 7, 8, and 10):

   Covering Hankow, Hanyang, Wuchang, Heishan, Nikow, Fankow, Chinsan, Yuinmeng, Chinkow, Hsinti, Huangpu, Huangkang, Chingsan, Tuanfeng, Shihtsu, Huangchow, Tsaitien, Yanghsin, Kienli, Wusueh, Ichang in Hupeh and Changsha, Yochow, Yiyang, Changteh in Hunan Province.

2. North Kiangsu Section (under the direction of the North Kiangsu Field Unit and of the travelling clinics for Labor Relief Districts Nos. 14, 15, 16, and 17):

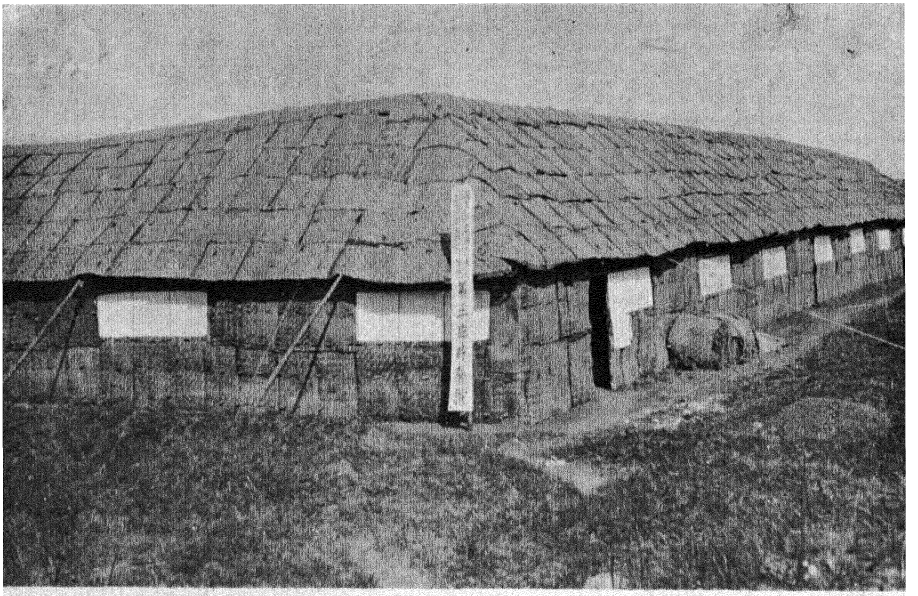
   Covering Taichow, Tungtai, Hsinhua, Yencheng, Kaoyu, Paoying, Funing, Jukao, Kiangtu.

3. Nanking Section (under the direction of the Nanking Field Unit and of the Travelling Clinic for Labor Relief District No. 1):

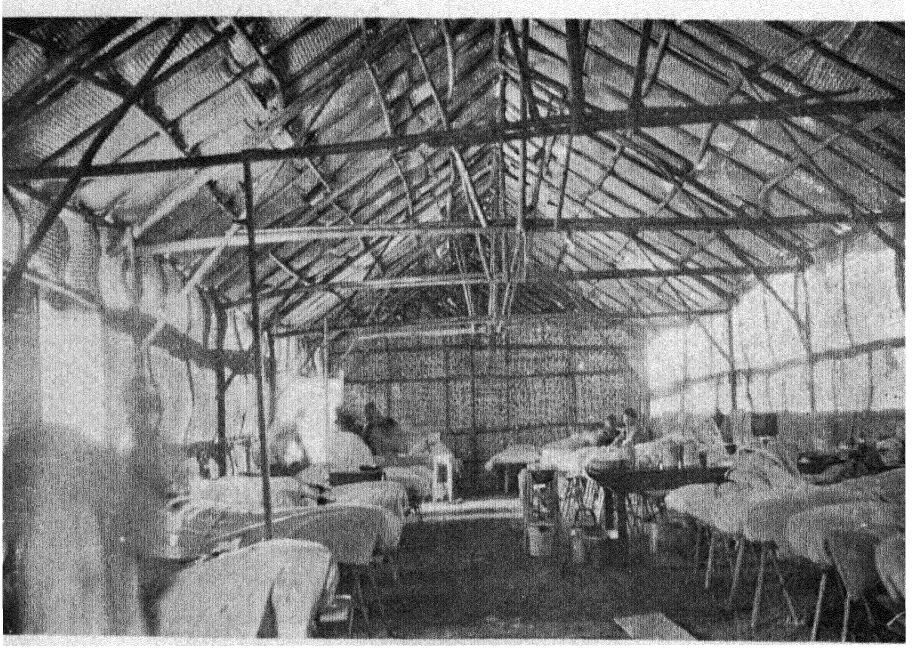
   Covering Nanking, Pukow, Chinkiang, Kaotsu, Lungtan, Hsiatsu, Kiangin, Hungchiao.

21. Disinfecting drinking water at Hangyang, Kwei Yuen Temple camp.

22. Vaccination against smallpox at Heishan.



23. Third Emergency Hospital, Wuchang.



24. Third Emergency Hospital, Wuchang; inside view.

4. Wuhu Section (under the direction of the Wuhu Field Unit, and of the Travelling Clinics for Labor Relief District No. 2):

   Covering Wuhu, Chaohsien, Fanchang, Tungling, Wuwei, Tangtu, Wuhsien.

5. Kiukiang Section (under the direction of the Kiukiang Field Unit and of the Travelling Clinics for Labor Relief District No. 4):

   Covering Kiukiang, Teh-an, Yunghsiu, Hsinchien, Tuanyao, Nanchang.

6. Shanghai Section (under the direction of the Shanghai Field Unit):

   Covering Shanghai, where a large number of refugees from the Yangtze Valley and Northern Kiangsu were concentrated.

7. Anking Section (under the direction of the Travelling Clinic for Labor Relief District No. 3):

   Covering Anking, Chungyang, Weiyang, Fuhsing.

8. North Anhwei Section (under the direction of the Travelling Clinics for Labor Relief Districts Nos. 11, 12, and 13):

   Covering Pengpu, Hwaiyuan, Wuhu, Chengyang, Shouhsien.

These field units, which were in operation until the end of March 1932, had at their disposal two quarantine services, eight sub-field units, nineteen hospitals,

twenty-one clinics, twenty-one travelling clinics, seventeen inoculation teams, and ten sanitation teams. With the closing of the refugee camps and the organization of labour relief units at the beginning of 1932 the different field units were accordingly re-organized, and their work carried on by travelling clinics which were set up for the Labour Relief Districts according to the size of the Districts and the number of dyke workers to be served.[1]

Personnel

With the exception of a few employees in the Central Office, the personnel of the Department was largely technical and worked in the field. All available persons from the National Health Administration of the Ministry of Interior, of the Central Field Health Station under the National Economic Council, of the Surgeon-General's Office, and of the Central Hospital were mobilized. Additional personnel was obtained through advertising in the newspapers and through appeals to medical organizations and hospitals. As the number was still insufficient, after all these efforts, a petition was sent to the Executive Yuan, and at the end of September 1931 the latter ordered the mobilization of all available personnel attached to medical schools, and if necessary of all students, who had completed their second year course. By these means the members made available amounted within a very short time to the following figures:

Doctors	130
Medical students	16

[1] Vide Appendix VII—2 for outline of organization

Pharmacists and dispensers	15
Sanitary engineers	4
Sanitary inspectors	86
Nurses	210
Midwives	2
Laboratory technicians	3
Office personnel	30

From the very beginning the Department had the sympathy and co-operation of various medical schools, mission hospitals, foreign governments and international organizations, and as far as personnel was concerned wishes to record here particularly valuable assistance given by the following:

The League of Nations Health Organization—for the services of its Director Dr. L. Rajchman and of its experts, Drs. B. Borcic, C. L. Park, M. Ciuca and T. F. Huang;

The Rockefeller Foundation International Health Division—for the services of its representative in China, Dr. John B. Grant; and expert, Mr. Brian R. Dyer;

The Spanish Government — for the services of Dr. Alberto Anguera, fumigation expert;

The Egyptian Government—for the services of Dr. H. M. Ibrahim, bacteriologist, and two assistants;

The Netherlands Indian Government—for the services of Drs. Sie Boen Lian, Tan Kim Hong and Njo Tiong Tjiat;

The International Flood Relief Committee of Shanghai, which assisted in the medical work in Hankow by means of a hospital ship equipped with staff and a laboratory contributed by the Lester Institute;

Medical schools, especially the Central University College of Medicine and the Peiping Union Medical College;

Members of missions and mission hospitals in the flood areas.

1. *Purchases.*

Drugs, Medical Supplies and Equipment

When work of the Department was first started, a list was made of those drugs, medical supplies and equipment which were immediately required, and orders were placed with firms within the country as well as abroad. Arrangements were also made with hospitals and other organizations for the temporary loan of some of the supplies and equipment. With the exception of certain donations, all sera and vaccines were ordered from the National Epidemic Prevention Bureau of the National Health Administration and from the Hygienic Laboratory of the Public Health Department of the Municipality of Shanghai.

2. *The Central Pharmacy Stores.*

For the sake of economy and expediency, a Central Pharmacy Store was established at the Central Office. Drugs, medical supplies and equipment purchased were kept in stock here and distributed to various field units

and travelling clinics. A staff of pharmacists prepared drugs for the first-aid boxes and different kinds of tablets, tinctures, ampoules and ointmtnts which were most commonly needed.

3. *Donations.*

The following drugs and medical supplies received from various sources were placed at the disposal of the Department:

1. By the Belgian Red Cross Society—1,000 g. emetin chlorhydrate, and 19 rolls of blankets;
2. By the Czecho-Slovakian Government—45,300 cc. tetanus anti-toxin;
3. By the Danish State Serum Institute—253,000 cc. anti-cholera-typhoid vaccine;
4. By the Dutch Government—1,004.4 kilos. quinine tablets, and 6,720 cc. anti-plague vaccine;
5. By the Egyptian Government—a mobile bacteriological laboratory, 500,000 doses of smallpox vaccine, and 100,000 doses of anti-cholera vaccine;
6. By the Government of French Indo-China—100,000 cc. anti-dysentery serum, and 40,000 cc. anti-plague serum;
7. By the German Government—various drugs and chemicals contributed by certain German firms;
8. By the Italian Government—aspirin, camphor oil and other medical supplies;

9. By the Government of the Netherlands East Indies —100,000 cc. anti-cholera-typhoid-dysentery vaccine, 10,000 doses of smallpox vaccination, and instruments for smallpox vaccination;

10. By the Norwegian Government—1 ton cod-liver oil;

11. By the Polish Government and its State Institute of Hygiene—40,000 doses of anti-dysentery vaccine, and 2,000 bottles of anti-meningococcus serum;

12. By the Roumanian Government—1,000 ampoules anti-meningococcus serum;

13. By the Spanish Government—two fumigation machines;

14. By the Swiss Government—12 kg. Yatren, milk, and other medical supplies;

15. By private contributions through the League of Nations—£255 for the purchase of medical supplies.

Assistance was also received from the American Red Cross Society, Overseas Chinese and Mr. Ling Sheng Ti in the Netherlands East Indies, Women's Foreign Missionary Society, Peiping, the National Epidemic Prevention Bureau, and private firms such as the Colgate-Palmolive-Peet Company, the Cadbury Bros., Ltd., Allen & Hanburys Company, Ltd., Schmidt & Co., International Dispensary, American Drug Company, China Export Import & Bank Co., Carlowitz & Co., Tienyuan Chemical Works, Standard Drug Co., etc.—all of whom made

valuable contributions in the form of bleaching powder, quinine, soap, milk and other medical supplies.

A. Wuhan Section.

Under the direction of the Wuhan Branch Office and Travelling Clinics for Engineering and Labour Relief Districts Nos. 5, 6, 7, 8, and 10. Field Work

At the beginning of the flood the terrible insanitary conditions in the crowded refugee camps were strikingly obvious. It was apparent that unless the sanitation was quickly improved and adequate measures were taken in regard to epidemic prevention the refugees would have nothing to look forward to except sickness and death, no matter how well they might be fed. In the three cities of Hankow, Wuchang and Hanyang there were at that time more than one hundred thousand refugees living in sixty camps.

A Branch Office of the Department was immediately established (August 1931) and it was here that the most difficult and concentrated work in sanitation, epidemic control and medical relief was carried out.

1. *Medical Relief.*

Eight emergency hospitals with a total of 750 beds were established in Hankow, Wuchang, Hanyang and Heishan; namely one hospital of 150 beds at Hankow, four hospitals with a total of 350 beds at Wuchang, one hospital of 50 beds at Hanyang, and two hospitals of 200 beds at Heishan (Black Hill). For this purpose the Wuhan Branch Office had at its disposal 52 doctors and 113 nurses.

The lack of adequate buildings for emergency hospitals rendered it necessary for the Department to build mat-sheds in the neighborhood of refugee camps for this purpose. These could be put up in a very short time at small expense and proved to be quite adequate to meet the emergency.

In addition to these hospitals seven clinics were established—one at Hankow, four at Wuchang and two at Heishan.

A well equipped bacteriological laboratory was established at Wuchang, while several mission hospitals in the area also placed their laboratories at the disposal of the Wuhan Branch Office.

Other cities under the direct charge of this Office (Huangchow, Hsinti, Yuinmeng, Nikow, Huangpei, Huangkang and Ichang) and the cities of Changteh, Hanshou, Wanhsiang, Nanhsien, and Anhsiang in Hunan Province were served by travelling clinics, each of which was composed of a doctor and several nurses or assistants. The number of these clinics varied according to the needs, and at one time reached thirteen.

2. *Epidemic Prevention.*

The work of this division was almost entirely limited to vaccination against smallpox and immunization against cholera and typhoid fever. Other preventive measures were in the hands of the other divisions, viz., isolation under Medical Relief, disinfection and fumigation under Sanitation, etc.

Extensive vaccination and inoculation campaigns against smallpox, typhoid fever and cholera were carried out. Teams of workers visited the refugee camps and protective measures were applied universally. Very little resistance was encountered, but occasionally a certain amount of pressure was necessary. In some camps arrangements were made so that the refugees were not fed until they had submitted to immunization. In all hospitals and clinics, facilities and materials were supplied for large scale immunization work. Teams also worked on the streets to immunize the pedestrians, and others made systematic house-to-house visits. Later on the travelling clinics gave inoculations to the dyke-workers when the construction work began.

It was through all these methods that the number of those vaccinated and inoculated reached such a high figure.

3. *Sanitation.*

This division had a variety of duties, which included general sanitation of all refugee camps, disposal of feces, refuse, garbage and dead bodies, general disinfection, anti-fly work, and provision of safe drinking water.

At the beginning of the work, sixty students of the Provincial Police School in Wuchang were given a course of training as sanitary inspectors. Gangs of sanitary coolies taken from among the refugees were then organized. These men were directed to look after the general cleanliness of the camps and to prevent the accumulation of refuse and garbage. For the ultimate

disposal of garbage and refuse 1,657 garbage trenches were dug and 34 incinerators built.[1]

The burial of the dead presented a serious problem when most of the land was still flooded. Nearly 14,000 bodies in various stages of decomposition had to be disinfected, transported and buried by specially organized crews. For a time it was seriously considered to sink the bodies in the Yangtze River, so great were the difficulties in finding sufficient dry ground and means of transportation, but on account of objections from various sources this method was never adopted.

It was necessary from the very beginning to provide properly constructed latrines and facilities to prevent the breeding of flies. The number of latrines constructed in the three Wuhan cities was 1,075. For disinfection of the latrines and the prevention of flybreeding bleaching powder used liberally was found to be the most effective agent.

The problem of supplying safe drinking water to the refugees was acute in view of the prevalence of gastro-intestinal diseases. Refugee labour was used to carry water from wells and rivers, which was stored in waterkangs and treated with alum and chloride of lime. The water was then tested with orthotolidine so that the amount of residual chlorine did not exceed two-tenths part per million. In this way the refugees were provided with water which was safe to drink without boiling.

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[1] *Vide* Appendix VII—7

In some camps, particularly those at Hungshan, there was no water to be had in the neighborhood. A number of tube-wells were driven and simple pumps attached to them.

For the prevention of typhus fever considerable work in the delousing of clothing was done, particularly during the winter months.

A quarantine service was established in Hankow to prevent sickness on the steamers which were always overloaded with refugees leaving the city. Quarantine officers boarded all steamers and in addition to their duties of inspection inoculated over 12,000 passengers against cholera and typhoid.

4. *Travelling Clinics.*

As the flood receded and the number of camp-refugees gradually decreased, the work in the cities was cut down and in January and February 1932 the unit was re-organized into travelling clinics for Labor Relief districts Nos. 5, 6, 7, and 8. These travelling clinics were responsible for the medical care of dyke workers and their families, epidemic prevention and sanitation in the Labour Relief Districts. Four travelling clinics were sent to District No. 5 (extending from Wusueh to Hanyang)—one to Chingsan, one to Tuanfeng, one to Shihtsu and Wuchang, and the fourth to Huangchow; one travelling clinic to District No. 6 (extending from Chinkow to Chenglingchi; one travelling clinic to District No. 7 (Kienli); one travelling clinic to District No. 8 (Tsaitien). Each of these travelling clinics was staffed

with one or two doctors, 2 or 3 nurses, and 1 to 4 sanitary inspectors. Two other travelling clinics were sent to Changsha and the adjoining districts (Labour Relief District No. 10).

The number of patients treated by the travelling clinics in the Wuhan Section were as follows:

District No. 5	48,428
District No. 6	6,394
District No. 7	4,166
District No. 8	30,353
District No. 10	38,339

From the middle of May, an anti-cholera campaign was started with the three cities of Hankow, Hanyang and Wuchang as centers. Preventive inoculations were given by all the travelling clinics and the co-operation of other hospitals was obtained in giving inoculations with vaccines supplied by the Wuhan Branch Office. Assistance was given to districts in the two provinces of Hunan and Hupeh in the organization of their own anti-cholera committees. Two special cholera hospitals were established in Wuchang and Hankow, and one isolation quarters at Hanyang. A large number, chiefly from the labouring class, responded to the offer of free inoculation. Food control, investigations into cases and deaths, and disinfection of patients' quarters were simultaneously undertaken. (See Page 176 below).

B. North Kiangsu Section.

Under the direction of the North Kiangsu Field Unit and Travelling Clinics for Engineering and Labour Relief Districts Nos. 14, 15, 16 and 17.

This unit was established on September 25, 1931. Owing to the large number of small groups of refugees scattered over a vast area, the work here was most difficult. To facilitate the task, eight sub-stations each headed by one or two doctors, one nurse and one clerk were established in the cities of Kaoyu, Paoying, Hsinhua, Tungtai, Funing, Yencheng, Yangchow and Jukao. The work, which was in general of the same nature as that done by the Wuhan Field Unit, may be briefly summarized as follows.

1. *Medical Relief*

Five emergency hospitals were established — the first of 50 beds at Taichow, No. 2 of 35 beds at Tungtai, No. 3 of 25 beds at Yencheng, No. 4 of 20 beds at Jukao, and No. 5 of 20 beds at Yangchow. In addition, travelling clinics were sent to seventeen outlying districts, namely, Chinkiang, Hai-an, Chutang, Chiangyen, Liuchuang, Fanshui, Nantung, Paichu, Taiyao, Anyi, Hsuyangchuang, Hsuchiachuang, Chupuhsiang, Tachowchuang, Chungpaochuang, Hsipaochuang and Hsintung. Up to the end of December 1931 the number of patients treated at the clinics reached a total of 29,766, while the number of in-patients treated at the emergency hospitals was 368.[1]

2. *Epidemic Prevention*

With the exception of dysentery, no serious epidemics appeared in this section, but for the purpose of preventing possible outbreaks, extensive inoculation

[1] *Vide* Appendix VII-4

campaigns were undertaken. Due to the ignorance of the general population, much propaganda work was necessary. Altogether 44,881 inoculations against typhoid and cholera were given. An effort was made to correct the mistaken impression that vaccination against smallpox was necessary only in the spring. During the period ending March 31, 1932, 29,238 vaccinations were performed.

3. *Sanitation*

In addition to the sanitary inspectors under the employ of the unit, members of the police force were given special training to help in the work of sanitation. Refugee labour was also utilized. 7,660 wells, 8,231 latrines and 484 corpses were disinfected. Garbage was removed to the amount of 39,032 cwts.

To supplement the nutrition of the poorly nourished refugees and children, cocoa and soybean milk were freely distributed for a long period. Vitamin B was given in those cases where it was specially indicated.

4. *Travelling Clinics for Labour Relief Districts Nos. 14, 15, 16, and 17*

When the dyke work began in February 1932, the unit was reorganized into six travelling clinics, each under the charge of one doctor, one nurse and one sanitary inspector. The districts covered were Taichow, Tungtai, Kaoyu, Paoying, Yangchow, Hwaiying, and Yencheng.

Much difficulty was experienced in inducing all the dyke-labourers to take preventive inoculations against cholera and typhoid, on account of the reaction which

in some cases prevented the men from working for a day or two.

In May over sixty cases of typhus occurred in Taichow. Isolation of the patients and delousing measures were quickly instituted, and the disease was under control before it assumed more serious proportions.

A total of 11,854 patients received treatment at the travelling clinics.[1]

The work was considerably augmented in May when an anti-cholera campaign was undertaken. The doctors in the local districts co-operated heartily in this campaign. In addition to patients treated at the two specially organized cholera hospitals at Taichow and Yencheng and the ten isolation quarters, the work extended to 212 adjoining villages. (See Page 176.)

Realizing the fact that the wide prevalence of smallpox was due to the scarcity of local personnel able to vaccinate, training courses for vaccinators were given with the co-operation of local organizations and a total of 221 graduated from these courses. For the promotion of maternity and infant welfare, a training course for midwives was also given in Taichow and Hsinhua with the co-operation of the local authorities. Three classes totalling 31 graduated at Taichow and three totalling 55 at Hsinhua.

C. Nanking Section.

Under the direction of the Nanking Field Unit and the Travelling Clinic for Engineering and Labour Relief District No. 1.

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[1] *Vide* Appendix VII—5

The Nanking Field Unit was established on September 29, 1931 under the Commissioner of Public Health of the Municipality of Nanking. It was estimated that over 36,000 refugees were concentrated in Hsiakwan, Pukow, Hanhsimen and Shuihsimen, mostly of the labouring class. A temporary hospital, three travelling clinics and five travelling isolation teams were organized.

1. *Medical Relief*

An emergency hospital of 40 beds was established at Mukwafushan and three branch clinics set up at Hungtaikong, Pukow and Shuihsimen. In addition there were three travelling clinics. The patients treated suffered mostly from malaria and gastro-intestinal diseases. The number of patients treated was 17,188.

Five travelling inoculation teams, each of which was assigned to a section of the city, made their daily visits to the refugee camps. In order to prevent the outbreak of cholera and typhoid, house-to-house inoculations were given with mixed cholera and typhoid vaccines. The number of these inoculations, including those given by the Quarantine Service, reached a total of 42,641.

2. *Epidemic Prevention*

A temporary Quarantine Service was established to inspect all steamers at the wharf and to give preventive inoculations to passengers.

Cholera broke out in late October 1931 among the new arrivals at the Hungtaikong camp at Hsiakwan. Through control measures immediately applied, it was

possible to check the disease before it spread to any considerable extent. Only 36 cases occurred. In May, 1932 however the disease re-appeared in the city. An extensive anti-cholera campaign was immediately organized. Of the population in the city 22 per cent received free preventive inoculations, and hospitalization was extended to all cholera patients. (See Page 176.)

Smallpox vaccinations to the number of 18,628 were given.

In December, measles broke out in the Hungtaikong camp and spread quickly among the refugee children. Due to the ignorance of the refugees much difficulty was encountered in isolating the cases through hospitalization. This epidemic resulted in 1,491 cases and 682 deaths. Most of the deaths were due to broncho-pneumonia, which was a frequent complication.

3. *Sanitation*

The proper disposal of night soil, garbage, sewage and the provision of chlorinated drinking water for the refugees were faithfully carried out under the supervision of a sanitary engineer and a group of sanitary inspectors. Three water containers were provided for each camp, requiring some 1,440 cwts. of water every day.

4. *Travelling Clinic*

The travelling clinic for Labour Relief District No. 1 was organized in February 1932. This took care of

the medical and health work in the districts of Chinkiang, Kaotze, Lungtan, Hsiashu, Kiangpu, Kiangnin and Hungchiao. The work was started with smallpox vaccination and provision of medical care. In March, upon notification of the appearance of cerebro-spinal meningitis, preventive inoculations of meningococcus vaccine were given. Sanitation and health education work were carried on at the same time. Until the end of April 1932, 1,850 patients received medical care and 816 persons were given preventive inoculations.

D. Kiukiang Section.

Under the direction of the Kiukiang Field Unit and the Travelling Clinic for Engineering and Labour Relief District No. 4.

The Kiukiang Field Unit, with one emergency hospital of forty-five beds was established in October 1931.

1. *Medical Relief and Epidemic Prevention*

With the exception of severe cases which must receive hospital care, minor ailments were treated by travelling clinics, which made daily visits to the refugee camps and quarters. A branch clinic was established in Shohkianglou. Until the end of March 1932, 8,772 cases were treated by the travelling clinics and the emergency hospital. The number of people who received anti-cholera inoculations was 4,279 and smallpox vaccinations, 5,919.

2. *Sanitation*

With regard to sanitation, 34 latrines, 56 cesspools, 2 incinerators, and 37 garbage trenches were constructed.

3. *Travelling Clinics*

In April the emergency hospital was closed and two travelling clinics were established to take care of the health and medical work in this District. Travelling Clinic No. 1 was responsible for Chuchiachuen, Hsuchiawan, Kwanhukiang, Hsichihkow, Teh-an, Yunghsiu, Chinghsien, Nanchang, Hsinchien, and Travelling Clinic No. 2 for Chenchiajung, Tuanyao, Laochowtou. 20 522 patients were treated by the two travelling clinics.

E. Wuhu Section.

Under the direction of the Wuhu Field Unit and the Travelling Clinic for Engineering and Labour Relief District No. 2.

There was in Wuhu Section a concentration of more than 10,000 refugees.

1. *Medical Relief*

Besides the provision of facilities at the Wuhu General Hospital, two emergency hospitals and five clinics were established. To the end of March 1932 when the work of the unit was terminated, 6,250 patients had been treated. Gastro-intestinal diseases were the most prevalent.

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[1] *Vide* Appendix VII—5

2. *Epidemic Prevention*

Ten inoculation teams were organized for giving preventive inoculations against cholera and typhoid. No serious epidemics occurred in this section.

3. *Sanitation*

Policemen were trained as sanitary inspectors. These with the assistance of a team of fifty workers, took charge of the sanitary work in the camps. Cholera appeared in the Ichisan Camp, but due to the application of control measures and the provision of boiled drinking water, the disease was immediately checked.

4. *Travelling Clinic*

In February 1932, the travelling clinic was organized with Wuhu as the center. This clinic was staffed with two doctors and one nurse. It undertook medical care, smallpox vaccination and preventive inoculations, and health education in the districts of Wuhu, Fanchang, Tungling, Wuwei, Tangtu and Wuhsien. Medical care was given to sick labourers at the time of the visits, and first-aid boxes were left with the chiefs of labour relief units, for ready use during the intervals. Simultaneously, medical care was given to the refugee camps which were still in operation. Patients to the number of 11,386 were treated by the travelling clinics and 24,678 persons received smallpox vaccinations and inoculations against cholera. A total of 4,420 persons attended 71 lectures.

The travelling clinic was closed in the middle of July 1932, and was succeeded by the Anti-Cholera Campaign.

F. Shanghai Section.

Under the direction of the Shanghai Field Unit.

Shanghai was not within the flooded area, but as refugees from the provinces of Hupeh, Kiangsi, Anhwei, and North Kiangsu fled there in large numbers, the municipal government and public organizations sponsored the establishment of camps in the city for the relief of the refugees. Accordingly camps were made ready for the admission of refugees in September 1931. The medical and health work was put under the charge of the Bureau of Public Health.

G. Anking Section.

Under the direction of the Travelling Clinic for Engineering and Labour Relief District No. 3.

The Travelling Clinic of this Section commenced operations in the middle of February, and had its headquarters at Anking, under one doctor and two nurses. A number of visits were made from February 1932 to the end of July 1932 to the districts of Haiko, Sanmuchow, Wulipao, Tatu, Machiawu, Chungyang, Yuchialou, Shaochoukou, Makeng, Kweichiatien, Huayang, Fuhsin, Tungliu, Chiyang, Changhokou, Lichiaying, Hsiaolochou, and Wangchiaoying. The work was, as in other Sections, divided into medical relief, epidemic prevention, environmental sanitation and health education. A total of 5,304 patients were treated, 19,136 received preventive inoculations, and sanitary improvements were undertaken 78 times.

In May 1932 when the anti-cholera campaign was started, the staff was reinforced by fifteen additional doctors and nurses. In Anking, the city was divided into five districts of east, west, south, north and wharves. Control measures were regularly applied. Vaccines were sent for inoculation purposes to such hsiens as Changteh and Huaiyuen. Until the end of August 157 cholera patients in this section received treatment. There were 34 deaths.

H. North Anhwei Section.

Under the direction of the Travelling Clinics for Engineering and Labour Relief Districts Nos. 11, 12 and 13.

The travelling clinics for North Anhwei Section were organized during the first part of February 1932 with Pengpu as the center and covering the districts of No. 11 (in Wuhohsien), No. 12 (in Pengpu and Hwaiyuen) and No. 13 (in Chengyang and Shouhsien). There were three doctors and three nurses. Work in District No. 12 was first started following the opening of dyke work in that district. In the middle of May 1932 the work was a little affected owing to Communist disturbances. Visits were made by turn along the Hwai River, and first-aid boxes were provided for the labour relief units during the intervals. For the period from February to June, 9,056 persons were given treatment by the travelling clinics and 31,916 persons were inoculated.

Beginning from May 1932, anti-cholera work was started under the travelling clinics. The doctors of the

travelling clinics visited Chenyang, Hochiu, Sanhochien, Mengcheng, Suhsien, Shouhsien, Linghwai, Kucheng, Tungshan, Tangshan, Fengyang, Fengtai and Chuanchiao to give instructions on cholera preventive and control measures. Demonstrations on the disinfection of wells were given in Tungshan, Pengpu et cetera while free supplies of vaccines and health propaganda materials were sent to the districts of Lingpaohsien, Tingyuan, Fuyang.

Anti-Cholera Campaign

A severe epidemic of cholera broke out in May, 1932, in a number of important cities, including Shanghai, Nanking, Taichow, Anking, Wuhu, Hankow and Ichang, which made it imperative to cancel the original plan of closing the work of the Department of Hygiene and Sanitation at the end of June 1932. The Department was immediately reorganized so as to be able to carry on the anti-epidemic work throughout the summer. The epidemic eventually proved to be one of the worst cholera outbreaks in China, spreading over three hundred cities in twenty provinces, and resulting in over thirty thousand deaths. There were altogether over one hundred thousand reported cases throughout the country.[1]

Realizing the seriousness of the situation, the travelling clinics were at once instructed to undertake sanitary work and preventive measures against cholera on a vigorous scale, and official visits to the epidemic areas were made to investigate the situation and to give advice

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[1] *Vide* Appendix VII—8

on control measures. The work may be summarized as follows:—

A. *Education and Propaganda*

In early summer, instructions on the prevention of cholera, and samples of pamphlets, posters and handbills were sent to the Commissioners of Civil Affairs of all provinces through the Ministry of Interior with the order to reprint and distribute such materials in all cities and *hsiens*.

Large numbers of posters and pamphlets on cholera were also sent to the travelling clinics for free distribution, as well as to all hospitals and health organizations which requested them. The following numbers were distributed:—

Posters:

Do Not Drink Unboiled Water	22,000
The Fly	11,000
Come to Take Preventive Inoculations	22,000

Handbills:

Come to Take Preventive Inoculations	40,000
Cholera, Typhoid and Dysentery	40,000

Pamphlet:

The Prevention of Summer Communicable Diseases	10,000

One hundred thousand additional copies of these publications were reprinted for distribution by the Wuhan, North Kiangsu and other field units.

In Nanking, an aeroplane assisted in the distribution of anti-cholera handbills, which numbered 130,000. Popular lectures on cholera were given by the inoculation teams.

In Wuhu, a propaganda parade was undertaken in which students and policemen participated.

In Taichow, besides the utilization of posters, handbills, and pamphlets, a motion picture show on the prevention of cholera was given for propaganda purposes.

B. *Mass Inoculations*

Free anti-cholera inoculations were given on an unprecedented scale. Besides work undertaken by the travelling clinics, anti-cholera campaigns were encouraged by telegrams to hospitals in the epidemic areas offering free supplies of vaccines and propaganda material to all organizations which volunteered assistance in the work. Twenty-eight hospitals and organizations in different places were supplied with 847,940 c.c. of the vaccine free of charge.

The inoculations were undertaken as a rule by special teams organized for the purpose in schools, organizations and on the main streets. In labour relief districts mass inoculations were undertaken by the travelling clinics.

The greatest number of inoculations was given in the Municipality of Greater Shanghai, which for some years had been remarkably successful in such campaigns against cholera. Over 660,000 were given by the Bureau of Public Health.

In Nanking, four special teams were organized to give inoculations in schools and organizations, and to make house-to-house inoculations each in its assigned district. Special attention was given to the population living in huts. More than twenty-two per cent of the population of the city, namely 136,421 persons were thus inoculated.

In the Wuhan area, thirteen teams were organized which gave 287,907 inoculations, representing twenty-four per cent of the population. In addition, inoculation teams were sent to the cities of Changsha, Changteh, Yiyang, Paoching, Hengshan and Hengyang to assist the local anti-cholera committees in their campaigns. Assistance in the form of vaccine was given to inoculation teams in Ichang, Wusueh, Shashih, Hsinti, Yenning, Chinkow, and Shaoshih.

In North Kiangsu, mass inoculations were likewise undertaken. Besides the main team in Taichow, eight special teams were organized to undertake free inoculations in the adjoining districts of Kaoyu, Paoying, Tungtai, Kiangtu, Yencheng, Funing, Hsinhua, and Sutsien, and 139,487 were inoculated.

The number of anti-cholera inoculations reported to the Department of Hygiene and Sanitation reached a total of 1,900,715 as shown in Appendix XII—6.

In all inoculations one cc. of vaccine containing two thousand million cholera vibrio was injected. The reaction was slight, but only a small number received more than one injection.

C. *Reporting and Isolation of Cases*

Arrangements were made whereby the police authorities and members of the labour relief districts were to report immediately all suspected cases of cholera to the responsible office, or to the travelling clinics and inoculation teams.

In places where the epidemic was serious, special cholera hospitals were established for the isolation of cases.

In Nanking, under the auspices of the Anti-Cholera Bureau, all cholera cases were sent for free treatment at the Central Hospital. Later on two emergency cholera hospitals were specially organized. In order to prevent the spread of the disease, no patients were allowed to leave until their stools proved to be free from cholera vibrio. Out of 1,255 cases, of which the Central Hospital admitted 1,011, there were 162 deaths, representing a case mortality rate of 12.9 per cent. In 333 cases which did not receive hospital treatment 211 died, representing a case mortality rate of 63.4 per cent.

Cholera hospitals were established in Hankow and Wuchang, and isolation quarters in Hanyang, to which 952 patients were admitted, with 113 deaths.

Other cities where special hospitals were organized were Taichow, Yencheng, Wuhu and Nanchang.

Hospitalization of cases was also arranged in co-operation with either the local authorities or other local agencies in Changsha, Loyang, Chuanchiao, Ankiang, Hsuchow, Shanghai, Soochow and Changchow.

The numbers of patients admitted and of deaths which occurred in special cholera hospitals are shown in Appendix VII—9.

D. *Sanitation*

As all places where cholera appeared, with the exception of Shanghai and Hankow, had to rely upon either river or well water, disinfection of water was of utmost importance in the prevention of the spread of the epidemic. Sanitation teams were specially organized in Nanking, Hsuchow, Pengpu, Loyang, Shanghai, Kiukiang and Nanchang for the purpose of applying systematic disinfection of wells and water containers, and 3,440 wells were systematically disinfected for 86,379 times.

The method used for the disinfection of wells was as follows:—

1 per cent chlorine solution was made from H.T.H. or Perchlorion, both high grade hypochlorites. A coolie would carry six gallons of the solution, and assist the inspector on the disinfection routine. The inspector would measure the volume of water in the well, and add 100 cc. of the chlorine solution to each 100 gallons of water in the well, and mix thoroughly with a stick for several minutes. After fifteen minutes a sample of the chlorinated water would be taken and tested on the spot with ortho-tolidine. If a residual chlorine content of not less than 15 parts per million was present the inspector proceeded to the next well, and continued the work. In the case of large camps where water was put into *kangs,* each *kang* was disinfected in the same manner. Residual

chlorine test was found necessary, as, after the first few days of disinfection, the men were inclined to be careless, and either put too little or too much chlorine in the water.

Demonstrations and instructions on the procedure of disinfection as well as the amount of disinfectant necessary in proportion to the capacity of wells, etc. were given in other cities, particularly in Lingpao, Shenchow, Mienchih, Chuanchiao, Ankiang, and by all the travelling clinics in North Kiangsu.

The police helped particularly in the control of the sale of fruits and cold drinks, and in enforcing the use of screens.

Survey Malaria

Malaria, which is always an endemic disease, was a very serious problem during the flood. The Department of Hygiene and Sanitation therefore considered it necessary to make a special effort to investigate its endemicity in the various districts, and to take steps towards its control.

The work was entrusted to a special mission headed by Prof. M. Ciuca, malariologist, Health Section of the League of Nations.

Beginning from November 1931, visits were made to various districts in the provinces of Kiangsu, Chekiang, Anhwei, Hupeh and Kiangsi to study the local conditions.

The investigation to determine the index of infection consisted of blood examinations, and the search for enlarged spleens.

Out of a total of 14,015 persons examined, 436 were found to have enlarged spleens.[1]

Blood smears from 711 persons were taken for microscopic examination. Malaria parasites were found to be present in 166 cases. It was found that the highest proportion of malarial cases occurred in the refugee children, 21 per cent of whom had enlarged spleen. Wukong in Chekiang was found to be the area of highest endemicity, the percentage of enlarged spleen in this district being twenty-three.

To all cases suffering from enlarged spleen or anemia, and those with malaria history, quinine was administered. A four-week standard treatment table with varying dosage at different intervals was worked out through experimentation. Detailed instructions were given to the patients for taking the quinine. A large quantity of quinine was also supplied to local medical organizations for treatment of malarial patients according to the standard table.

For health education purposes posters and pamphlets on the disease were prepared and printed for distribution in all districts where malaria was found to be endemic.

From April to September 1932, a survey was made of the most heavily infected parts of Nanking, namely, the districts round Ginling College, Chung San Gate, Chung San Mausoleum and Tangshan.

Examination of 7,664 persons for splenic enlargement and malaria parasites was carried out.[2] The splenic

[1] *Vide* Appendix VII—10
[2] *Vide* Appendix VII—11

rate was found to be fourteen per cent, and the parasitic rate was ten per cent. The splenic rate for children was 27 per cent. The district round the Mausoleum was most highly infected, 55 per cent of the population having had malaria history. P. Falciparum was the predominant species, making 56 per cent of the total number. The months of August and September had the highest incidence.

Beginning in May 1932, a survey was also made of the anopheles mosquito in the city and adjoining districts. Only one species, i.e. Anopheles hyrcanus var. sinensis, was found. This species was very prevalent during the month of July. Ponds, ditches, and slow streams with grasses and algae served as their breeding places. The natural infective rate was 0.4 per cent.

This work is being continued by the Department of Malariology and Entomology of the Central Field Health Station. It is hoped that, based upon results obtained through these preliminary surveys, a practical and systematic program for the control of the disease may soon be worked out.

CHAPTER VIII

Conclusion

Race Against Time Won

From the beginning, in August 1931, to the middle of June 1932 the Commission was engaged in a strenuous race against time; to become organized in time for its actual work, to introduce sanitation and medical care before the death rate constituted a serious menace, to move wheat and flour into position for distribution before people actually began to starve, to replace the dykes before the spring rise in the river repeated the preceding year's disaster, to strengthen the dykes before the summer torrents should breach them. About the middle of June 1932 it was evident that this race had been won in all divisions. The Commission could then pause and take stock of its position.

Review of Situation

As has been observed in the foregoing pages, it was the policy of the Commission to close emergency relief by the end of March 1932. However, owing to the intensity of famine conditions, especially in Honan, North Anhwei, and North Kiangsu, operations were continued until the spring harvest was reaped. By that time the field workers were returning to their homes. Funds for farm rehabilitation had already been allocated in accordance with the Commission's programme. In labour relief the bulk of the dyke work was drawing towards its close, except in the 9th District on the Han River, where schemes had been in suspense because of the Reds. While it is true that work was still in progress in the Hwai River Valley and North Kiangsu, it was nevertheless deemed practicable to adopt a policy of winding up in stages, in accordance with local conditions. It was

the opinion of those in charge of operations that after June 30th the main responsibility of the Commission in the field would be the inspection and maintenance of the main dykes during the rainy season, and the compilation of accounts and their audit. These latter, in view of the wide extent of the Commission's activities, would take a great deal of time, and early commencement was essential.

Standing Committee Meeting, June 18th, 1932

Such being the case a meeting of the Standing Committee was called, which was held on June 18th. The Committee unanimously decided to call a plenary meeting of the Commission for the consideration of the following draft resolutions:—

(1) That as from July 1st, 1932, the operations of the Commission would be up except in the cases of those Departments in which work has been commenced but has not yet been completed.

(2) That in the case of unfinished work, as soon as that work is completed, the Department be wound up.

(3) That the Chairman be empowered to appoint a small executive committee from among the members of the Commission's staff to supervise the liquidation of the affairs of the Commission.

Meeting of the Commission, June 27th.

The second plenary meeting of the Commission was held on June 27th. At this meeting a preliminary report covering the various aspects of the Commission's work was submitted. In introducing the resolution recommended by the Standing Committee, the Chairman remarked that as ninety-five per cent of the task had been

accomplished, it was unnecessary to maintain the present large organization. He added that provision had been made and funds were available for carrying to completion the unfinished work, and he felt justified therefore in recommending the commencement of regular liquidation of the work, so that the Commission could hand over to the Government the result of its labours. The resolutions were subsequently adopted and the Chairman appointed Mr. T. K. Tseng, Dr. W. P. Wei, Mr. T. C. Hsi, Mr. J. E. Baker, Mr. L. C. Cha and Mr. G. Findlay Andrew as members of an Executive Committee charged with the liquidation of the affairs of the Commission.

Liquidation

At the commencement of liquidation, the activities of the Commission covered the entire area of operations. Funds had been alloted for undertakings which were still in progress. Moreover, petitions for funds for new enterprises were still streaming in, most of which, though not related to flood relief, were nevertheless of a constructive nature. To bring the activities of the Commission to a conclusion at an early date it was obviously essential that the Commission should make no further commitments, and that in the case of undertakings then in progress, a time limit should be set for their completion. Liquidation could be thus carried out in stages, fixed with reference to the position of each undertaking. Decisions were taken in accordance with this view.

(1) Liquidation: Emergency and Small Work Relief

At the commencement of liquidation, the Field Operations Department had committed itself to a number of Small Work Relief measures, notably in Honan and Anhwei, which had been commenced late because of local conditions. This had been foreseen. When re-

sources were finally made available on the spot, however, a good harvest was being reaped and the local committees considered it preferable to postpone the work until after the rainy season, as for instance in North Anhwei. But by the end of the year 1932, except in some unimportant and isolated cases the responsibilities of the Commission were brought to a close, and those small labour projects were not carried out.

(2) Liquidation: Farm Rehabilitation

Farm rehabilitation work was undertaken, as shown in Chapter V, mainly through the agency of the China International Famine Relief Commission. The liquidation of this branch of the Commission's work presented peculiar difficulty, in that farm relief was granted in the form of loans whose repayment was spread over years. Moreover it was intended that this phase of the work should continue even after the closure of the Commission. After careful consideration it was decided to transfer to the National Economic Council the responsibility for the supervision of this work. This was done on the winding up of the Field Operations Department.

(3) Liquidation: Engineering and Labour Relief

The engineering activities of the Commission were of two categories, dykes and other engineering works.

Though the bulk of the dyke work could have been wound up by the end of July, unfinished work on a much reduced scale would still be in progress in some Districts in August. As the Commission had decided not to start any new work, it was necessary to fix a date on which to close this phase of the Commission's relief. After a careful survey of the work in the field, and allowing ample time or completion of the programe, it was

decided to bring this phase of the work to a close by August 31st. This was carried out.

The Engineering and Labour Relief Division however had undertaken certain engineering projects requiring considerable time to finish. To this category belonged the construction of tidal gates in Kiang Pei in the Li Sha Ho area, and the building of sluices and culverts on the Hwai River. In view of the time required for completion, it was decided to transfer responsibility for construction to some permanent Government department, and thus to enable the Commission to close its field work by August 31st. It was therefore decided to hand over these projects, together with the responsibility for the maintenance of the dykes restored by the Commission, to the National Economic Council. This was done and the transfer was effected as of September 1st. The tools and implements in the hands of the Engineering and Labour Relief Division were also transferred to the National Economic Council, as well as funds sufficient to complete the work.

(4) Liquidation: Department of Hygiene and Sanitation

The Department of Hygiene and Sanitation brought its work to a close by August 31st 1932, and transferred the medical stores to the Central Field Health Station of the National Economic Council.

Principles of Relief

Because the destruction was so appalling in amount and the numbers in distress were so far beyond the resources of private organizations, the National Government undertook this responsibility and, so far as might be, also the rehabilitation of the affected areas. The National Flood Relief Commission was constituted, and at a very early date decided that the most important form

of relief was repair and reconstruction by refugee labour of the dykes along the Yangtze and the Hwai Rivers, and along the Grand Canal. It was felt that unless these dykes were repaired, any attempt at relief from starvation, or farm rehabilitation, would be futile, since a repetition of flood conditions would be inevitable in each succeeding year.

Dyking System

The system of dykes along the river banks was not originally constructed according to a modern scientific plan. The dykes were constructed piecemeal, and it is quite certain that no question of uniform maximum discharge entered into the calculations of the original constructors of these dykes. It is obvious, however, that the Commission had no option but to reconstruct existing dykes, except in those places where their location was demonstrably improper. In such places the Commission has built its dykes on a realignment, otherwise it has been content to accept the old location and to rebuild the dykes there.

Scope of Relief

The report indicates the enormous scope of the remedial measures undertaken by the Commission. Its work extended in all to 269 *hsiens*. Free relief administered by the Emergency Relief Division was granted to a number just short of five millions. Though detailed figures are lnot available, it is certain that at least one million were relieved in the camps. Kitchens again reached hundreds of thousands. The Commission also made advances through the China International Famine Relief Commission alone for farm rehabilitation to over 360,000 farmers—each of whom was doubtless head of a family. Finally the work under the Engineering and

Labour Relief Division afforded relief to a maximum of 1,400,000 on one day and Small Work Relief certainly not to any smaller number. Taking into consideration the families supported by labourers on the engineering works, large and small, on a conservative estimate, the numbers affected by the relief of the Commission must have been well in excess of ten millions.

Relief in Kind

Relief of distress by means of distribution of wheat and flour in kind had both advantages and disadvantages.

(1) Advantages

An obvious advantage was the immediate increase in the supply of foodstuffs in the distressed area, but perhaps the greatest of the advantages lay in the influence which the importation of grain and flour into distressed areas had upon the price level of grains of all kinds in the local markets. One of the immediate results of the flood of 1931 was to stimulate speculation on a very large scale in grain in all the markets of the Yangtze Valley and throughout the flooded area. The price of rice for instance, rose with very great rapidity. In Hankow it was $15 a picul on July 1st, $16.50 on September 1st. In Nanking the prices of first quality rice were $11.53 and $15 on the same dates. But it was found that directly the import of grain and flour commenced the price fell. On November 1st at Hankow it was back at $15 and on December 1st at Nanking, $12.70. The effect of this fall in prices was, of course, very great for it caused automatic relief to the very large class next above the poorest. In fact it largely reduced the numbers to whom relief had to be given.

(2) Disadvantages

On the other hand, the disadvantages are many and are serious. Even in the best cases, with expert management and a trained staff, whenever grain is transported from a ship to the shore, or vice versa, or from one ship to another ship, loss is inevitable. This has been stated by experienced grain importers never to amount to less than one per cent at each transfer. In operations such as those undertaken by the Commission, in almost every case there were three or four transfers, and in many cases as many as ten. Thus, in the ordinary course of events there was very serious and unavoidable loss. Loses of this kind would, of course, not have occurred had the relief been distributed in cash, when transfers would probably have been effected by cheque.

A further difficulty in relief on a large scale in kind is to be found in the organization required for the distribution of the grain and flour. This point does not need to be laboured; its truth will be obvious to any reader of the report on wheat and its distribution in Chapter III.

There was one grave disadvantage of an entirely different kind. Over the major portion of the flooded area the population was not wheat eating, but rice eating, and it took some time before the people to whom wheat and flour were distributed could learn how to use them. This difficulty continues until the distressed population approaches the starvation point.

At the commencement of operations, and in many cases until their close, those who received wheat and flour sold it to the local grain dealer and from him purchased other grain. A perfectly natural result followed

from these transactions. The person who wished to get rid of the wheat and flour was placed at a disadvantage in comparison with the purchaser. It may be accepted that, as a general rule, the sale of wheat and flour was made, on the average, at least 20 per cent below the price at which it was valued for payment of wages, so that the amount of relief was in effect reduced by that percentage. Later, large numbers took to eating wheat and flour, but, as has been mentioned in this Report, it was always found necessary to afford a certain portion of the relief in cash in order that resources might be available for the purchase of salt, vegetables, oil, fuel and other necessaries of life.

General Conclusion as to Relief in Kind

Notwithstanding the difficulties and disadvantages cited above, there can be little doubt that the importation of 445,555 tons of food stuffs into China in the winter of 1931-1932 was, on balance, of enormous advantage. The consent of the American Government to the sale of a portion made things much easier, both for the Commission and for the sufferers, than would have been the case had the whole of the operations been confined to relief in kind. The great mass of the wheat and flour found its way to the places and people where, and by whom, it was most required.

The effect of the Commission's work has been noticeable in three directions.

Effects of Work: (1) Remedial

In the first place its remedial action was highly successful. Over this great area of 70,000 square miles the Commission was successful in saving innumerable lives and in mitigating untold cases of suffering. The

provision for Farm Rehabilitation was inadequate to the need but nevertheless had an important bearing on the rapidity of recovery of the agricultural population, in those areas in which it was carried out. Of course by far the most important remedial measure was the repair and reconstruction of the dykes. This was eminently successful, as may be judged from the fact that during the rainy season of 1932 not a single instance occurred of a breach of a dyke constructed or repaired by the Commission.

(2) Economic

Secondly, the colossal effort made by the Commission which resulted in the reconstruction of the whole of the damaged main dykes was responsible for what might described a record harvest of rice for the 1932 season. It is indeed remarkable that, whereas in the month of October 1931 the mass of the population of the effected area was in desperate straits for food, in the month of October 1932 so much rice was available, that the common complaint of both former and merchant was directed to the indequancy of the price of that cereal.

(3) Political

The remedial and the economic effects of the Commission's work are thus patent. There is, however, a less obvious but no less important result of a political nature. The evidence of many independent observers establishes the fact that the agricultural population of the National Government of China is regarded in an entirely different manner in consequence of the operations of the Commission. There has brought forcibly to the notice of the affected population the fact that this National Government has been inspired by an interest

in the well being of the common people, which has been translated into vigorous timely and extensive action. Further there is evidence that the peasant population now regards the Central Government with more interest and more respect. This tendency is being fortified by the operations of the National Economic Council in construction of inter-provincial highways with the surplus funds placed at its disposal by this Commission. The construction of these roads is again identified in the minds of the peasant population with the Central Government. Thus a political result of the first magnitude following the operations of this Commission is by no means the least of the results of its labours.

Accounts

For the accounting and auditing of expenditures in cash and in kind, the Commission established the Department of Audit and Accounts. Subsequently a separate Accounts Division was created. Theoretically, the complete organization of these branches should have preceded rather than followed the organization of the operating forces. However, the demands for relief in the field were so insistent that consideration of auditing and accounting routine was thrust into the background somewhat. As a result, delays in complete rendition of accounts have occurred and time is required to dispose of all of the details. At the time of this report, compilations of the final accounts are still in progress, but for the information of the public, interim statements are included in this report and will be found in Appendices III and VIII.

Recommendations

It is natural to consider how this historic and monumental effort can secure the most permament benefit for the people and Provinces affected.

(1) Maintenance of Dykes

It is obviously desirable to maintain the dykes at the standard of efficiency to which they have been brought by the Commission. Before the flood of 1931 the duty of maintaining the dykes on the Yangtze River fell to Provincial and local authorities. This method has not been efficient, and a new authority should be constituted to which Provincial representatives might be appointed, and whose duty should be in the future to administer the funds received from the dyke tax, and to secure the maintance of the dykes. The funds available will unquestionably be sufficient not only to maintain the dykes in their present state of efficiency, but also from time to time to improve the alignment and to build new dykes where this may prove necessary. It would render possible treatment of the whole of the dykes as one system, in place of the piecemeal treatment of the past.

(2) Preparation of Preventive Programme

A second direction in which action is desirable is in the preparation of a definite survey of those Provinces of China which are liable to flood and consequent famine, and the preparation of plans to meet without delay such an emergency as it arises. These could be put into operation as opportunity offers and funds are available, so that in the future, relief may be more easily possible than it has been in the past.

An example of the effectiveness of the procedure here recommended is afforded by a neighboring country. In India, fifty years ago, famines were still of frequent occurrence, but as the result of preventive measures initiated by the British Government, famine has now practically disappeared. During "fat" years,

the Government prepared plans and estimates for works of a famine preventive nature for every precarious province. These plans and estimates were kept on file until a famine occurred. When the emergency arose, they were taken out of the pigeon hole, and work commenced at once without confusion or delay.

Every decade in China large sums of money, charitable and governmental, are disbursed for relief purposes. If such funds in the future were concentrated upon well devised and well selected public works, district by district, Province by Province, the famine map of China would be reduced and within a measurable period might vanish altogether.

(3) Improvement of Hwai River

A special importance attaches to the programme for the Hwai River Valley. The question of the Hwai River and its outlet has been agitated for many years, and has been the subject of inquiry by more than one expert commission of engineers. Plans for improvement have been prepared and their execution has been entrusted to a Government commission. It must be remembered that the work which has been done by this Commission during the past year in this region, though resulting in some increased protection from floods, is only palliative and in no way guarantees the region embraced by the Hwai Valley, to which must be added the lower portion of the Grand Canal and the remainder of Northern Kiangsu. It is urged, therefore, that the scheme already planned be carried early to a successful conclusion to the end that further disastrous flooding of that fertile area may be prevented.

APPENDICES

APPENDIX I

1. Maximum and Minimum Height of Yangtze River at Hankow, 1868 to 1932.
2. Date of Maximum Heights, Yangtze River, Selected Points, Flood of 1931.
3. Population and Area of Flooded Districts.

APPENDIX I—1

Maximum and Minimum Height of Yangtze River at Hankow, 1868 to 1932

Year	Maximum Height Ft.	In.	Minimum Height Ft.	In.	Year	Maximum Height Ft.	In.	Minimum Height Ft.	In.	Year	Maximum Height Ft.	In.	Minimum Height Ft.	In.
1868	44	4	0	0	1890	46	6	5	0	1912	46	8	5	10
1869	49	0	10	6	1891	43	0	1	6	1913	41	0	2	4
1870	50	6	0	2½	1892	43	2	1	0	1914	39	5	1	7
1871	43	4	1	2	1893	44	6	2	8	1915	41	7	—0	3
1872	46	3	4	7	1894	43	0	1	6	1916	38	7	4	1
1873	43	0	—0	8	1895	41	0	—0	3	1917	46	1	0	6
1874	38	2	3	5	1896	46	7	—1	3	1918	45	3	0	0
1875	45	0	4	3	1897	45	6	5	9	1919	46	0	4	10
1876	43	9	1	5	1898	40	3	4	6	1920	45	6	0	1
1877	34	4	0	2	1899	42	6	—0	8	1921	47	0	5	8
1878	48	10	1	6	1900	31	8	3	6	1922	47	2	5	10
1879	41	4½	2	9	1901	46	2	—2	3	1923	45	5	0	7
1880	39	7	0	7	1902	37	6	—0	9		Ft.	10ths.	Ft.	10ths
1881	37	9	0	0	1903	42	6	—0	8	1924	48	2	4	1
1882	46	2	7	10	1904	37	0	0	0	1925	36	1	3	5
1883	45	6	3	3	1905	43	0	5	6	1926	48	9	2	9
1884	37	0	7	1	1906	44	6	11	0	1927	43	9	5	0
1885	45	6	0	10	1907	44	3	1	1	1928	37	3	0	7
1886	41	8	1	7	1908	39	9	5	0	1929	41	1	0	0
1887	48	3	3	9	1909	46	5	3	9	1930	43	8	3	3
1888	40	8	—0	4	1910	39	7	4	11	***1931***	***53***	***6****	***3***	***4***
1889	49	6	0	9	1911	47	8	5	0	1932	44	2	6	7

* *Flood Year*

APPENDIX I—2

Date of Maximum Heights, Yangtze River, Selected Points, Flood of 1931

Place	Maximum Height	Date 1931
Chungking	86.8 ft.	Aug. 6
Wanhsien	128.0 „	„ 9
Ichang	50.3 „	„ 10
Shasi	34.9 „	„ 9
Yochow	51.0 „	„ 16
Hankow	53.6 „	„ 19
Kiukiang	45.4 „	„ 30
Anking	43.3 „	Sept. 2
Wuhu	31.3 „	„ 16
Nanking	[1] 25.0 „	„ 16

[1] *Slightly tidal*

APPENDIX I—3

Population and Area of Flooded Districts

Province	Number of Flooded *hsien* Studied	Affected Population		Square Miles Flooded
		Total Farm Families	Persons @ Six per Family	
Hunan	15	424,200	2,545,200	5,525
Hupeh	30	1,022,700	6,136,200	12,797
Kiangsi	14	243,300	1,459,800	4,705
S. Anhwei	24	613,200	3,679,200	5,431
S. Kiangsu	11	224,300	1,345,800	2,945
Honan	1	63,600	381,600	12,391
N. Anhwei	19	767,000	4,602,000	13,210
N. Kiangsu	17	874,100	5,244,600	11,236
Total	131	4,232,400	25,394,400	68,240

Authorities: The 1931 Flood in China
Aerial Surveys (last column).

APPENDIX II

1. Regulations of the National Flood Relief Commission, approved by the National Government of China, August 22nd, 1931.

2. Revised Regulations of the National Flood Relief Commission, approved by the National Government of China, November 14th, 1931.

3. List of Members, National Flood Relief Commission and Committees.

4. Text of Wheat Purchase Agreement.

5. Regulations Governing the Flood Relief Customs Surtax.

APPENDIX II — 1.

REGULATIONS OF THE NATIONAL FLOOD RELIEF COMMISSION

Approved by the National Government of China

August 22nd, 1931

I. The National Government hereby creates the National Flood Relief Commission, which shall be charged with the relief of those suffering from flood conditions and with the rehabilitation of the flooded areas.

II. The Commission shall be composed of five members who shall be appointed by the National Government, one of whom shall be designated as Chairman, together with specially qualified persons who shall be invited by the said five members to serve as additional members.

III. The Commission shall organize seven Departments to deal with the following functions: information, finance, audit and accounts, hygiene and sanitation, field operations, transportation, and co-ordination of private relief. Each Department shall be headed by a Director. The regulations for the organization of each Department shall be drafted separately.

IV. There shall be a Secretary General and a number of secretaries and clerks. The regulations for the organization of the Secretariat shall be drafted separately.

V. There shall be a Standing Committee, which shall be composed of the Government members, the Directors of the seven Departments, and the Secretary General as ex-offiicio members, and such others of the specially invited members as are elected to the Committee by the Government members.

VI. Complete and detailed accounts shall be rendered to the Government by the Commission from time to time with respect to all its operations and with respect to the work accom-

plished, and at the termination of the Commission's work a final report shall be rendered to the National Government. These accounts and the final report shall be published.

VII. In addition to the distribution of free relief, emphasis shall be laid on work and agricultural relief with a view to the early rehabilitation of the suffering districts and the prevention of recurrence of similar disasters in the future.

VIII. These regulations shall come into force on the day of approval by the Government.

APPENDIX II—2.

REVISED REGULATIONS OF THE NATIONAL FLOOD RELIEF COMMISSION

Approved by the National Government of China.
November 14th 1931

I. The National Government hereby creates the National Flood Relief Commission, which shall be charged with the relief of those suffering from flood conditions and with the rehabilitation of the flooded areas.

II. The Commission shall be composed of five members who shall be appointed by the National Government, one of whom shall be designated as Chairman, together with specially qualified persons who shall be invited by the said five members to serve as additional members, *one of whom shall be designated by the Commission as Vice-Chairman.*

III. The Commission shall organize seven Departments to deal with the following functions: information, finance, audit and accounts, hygiene and sanitation, field operations, transportation, and co-ordination of private relief. Each Department shall be headed by a Director. The regulations for the organization of each Department shall be drafted separately.

IV. There shall be a Secretary General and a number of secretaries and clerks. The regulations for the organization of the Secretariat shall be drafted separately.

V. *The Vice-Chairman shall concurrently be Director-General, who shall, in the execution of the policies of the Commission and the Standing Committee, direct all the administrative affairs of the Commission.*

VI. There shall be a Standing Committee, which shall be composed of the Government members, the Vice-Chairman, the

Directors of the seven Department members, and the Secretary General as ex-officio members, and such others of the specially invited members as are elected to the Committee by the Government members.

VII. Complete and detailed accounts shall be rendered to the Government by the Commission from time to time with respect to all its operations and with respect to the work accomplished, and at the termination of the Commission's work a final report shall be rendered to the National Government. These accounts and final report shall be published.

VIII. In addition to the distribution of free relief, emphasis shall bè laid on work and agricultural relief with a view to the early rehabilitation of the suffering districts and the prevention of recurrence of similar disasters in the future.

IX. These regulations shall come into force on the day of approval by the Government.

APPENDIX II—3.

LIST OF MEMBERS

NATIONAL FLOOD RELIEF COMMISSION AND COMMITTEES

i. National Flood Relief Commission
ii. Standing Committee
iii. Finance Committee
iv. Audit Committee
v. Inland Transportation Committee
vi. Technical Advisory Board of the Engineering and Labor Relief Division
vii. Medical Advisory Committee to the Hygiene and Sanitation Department.
viii. Liquidation Committee

INSERT

ix. Co-ordination Committee.

NATIONAL FLOOD RELIEF COMMISSION

Appointed by the National Government

T. V. SOONG, *Chairman*

HSU SHIH-YING
LIU SHUNG-CHING
H. H. KUNG
CHU CHING-LAN

Invited by the Government Commissioners

BAHNSON, CAPTAIN. J. J.
BAKER, J. E.
BASSETT, MAJOR ARTHUR
BENNETT, C. R.
BRANDL, E. L.
BROWN, N. S.
CALDER-MARSHALL, R.
CARNEY, J. W.
CHA, L. C.
CHANG CHUN
CHANG HSU-WU
CHANG, MADAME HSUEH-LIANG
CHANG HSUEH-MING
CHANG KIA-NGAU
CHANG KUNG-HAN
CHANG, LOY
CHANG SHAO-LING
CHANG, MADAME SHAO-LING
CHANG SHAO-YUNG
CHANG SHI
CHANG, T. B .
CHATLEY, HERBERT
CHENG CHAN-PO
CHEN, JIAN
CHEN, K. P.
CHIEN YUNG-MING
CHIEN TAN
CHOW TSO-MING
CHOW YU-CHING
CHOW TA-WON
CHOW PAH-PANG
CHOW, Z. Y.
CHOW, SIR SHAO-SON, Kt.
CHU, PERCY
CHU YING-KIANG
CHU KWONG-PAO
CLEVELAND, F. A.
DEE, C. CHUAN
DJANG, Y. S.
DONNE, JEAN
DOO YUET-SENG
DOO, MADAME YUET-SENG
FITCH, GEORGE
FRENCH, C. H.
FUNATSU, T.
GEE GEOH-MEE
HARDOON, MADAME KA-LING
HOWARD, E.
HO YAO-CHU
HOPKINS, P. S.
HOU, Y.
HOW, BANG
HSI, T. C.
HSU, MADAME YUH-YING
HSIUNG HSI-LING
HSUANG SUE-HOW
HU YEOH-YU
HUBBARD, G. E.
HUANG, H. L.
HUNG CHOW-HWANG
HUNG SHAO-CHUNG
HWANG, PARKCANE C.
IKEDA, Y.
JACQUINOT, R.
KESWICK, JOHN
KOO CHI-SUN
KUNG, MADAME H. H.
KWAN YU-NUNG
LAMBERT, HENRI
LAURENZ, R.
LEE, C. H.
LI HSIEH
LI KWON-YIN
LI MING
LIEN SING-HAI
LIEU, O. S.
LIN YU-CHU
LING, K. H.
LING, ADMIRAL K. K.
LING SHENG, MADAME KWANG-YE
LIU CHING-HWA
LIU, DR. J. HENG
LO PAH HUNG, J.
LOBENSTINE, E. C.
LOO CHIEN-CHUAN.
LOO MING-GEE.
LOVE, H. H.
LOW HSIEN-CHING
LUM, BUM KING, Dr.
MA LING-YI

MARSOULIES, DU PAC DE, (late)
MAXWELL, JAMES L.
MAZE, SIR FREDERICK W.
MAZOT, HENRY
NATHAN, Major W. S.
NEW, Dr. WAYSUNG
NG SAY-KIM
NIEH LU-SAN
OEI EK-SIOE
OEI TJOE
OHMOORA, T.
OWYANG CHU-TENG
POWELL, J. B.
PRATT, F. L.
PRICE, D. W. M.
ROSE, ARCHIBALD
SIMPSON, SIR JOHN HOPE
STROEBE, COL. G. G.
SPEELMAN, M.
STARR, C. V.
SHENG, MADAME I-YE
SHENG, MADAME SING-YE
SHU, C. M.
SIU NGOU
SOONG, T. L.
SOONG HSI-SHANG
SUN, RUSSELL
SUNG HAN-CHANG
SAH, ADMIRAL CHING-BING
SZE LIANG-ZAI
TAVELLA, U.
THACKREY, T. C.
TAN, L. S.
TCHENG, MLLE. S. N.
TCHENG, MLLE. SOUMI
TSUR, Y. T.
TONG, HOLLINGTON K.
TONG CHUNG-KWOH
TSAI, ADMIRAL T. K.
TSENG, T. K.
TU CHUN-YUEN
WANG, MADAME C. H.
WANG, C. T.
WANG HSIAO-LAI
WANG, I. D.
WANG PAH-CHUN
WANG, P. F.
WANG, P. J.
WANG SIU-CHEN
WEI, W. P.
WONG CHI.
WONG DIEN-CHANG
WONG KING-YOUNG
WONG YOU-NOON
WOO, C. C.
WOO, D. T.
WU DUH-CHUAN
WU LIEN-TEH, DR.
WU TEH-CHEN
WU TSE-HOW
YANG, MADAME CHUNG-FOO
YANG CHUANG
YEH KAI-KING
YEH CHI-PING
YEH TIEN-SUNG
YEH YE-KAI
YEN CHWANG
YEN, W. W.
YENESATO, M.
YIH, F. S.
YING, MADAME PU-CHUAN
YOUNG, ARTHUR N.
YOUNG, COL. P. C.
YUNG, T. K.
YU YA-CHING
ZING, Z. C.

INSERT

"Subsequent to the original organization of the Commission, Sir John Hope Simpson was appointed vice-Chairman and Director General. See Page 19."

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STANDING COMMITTEE

Chairman: T. V. SOONG.

BAHNSON, CAPT. J. J.
BAKER, J. E.
BENNETT, C. R.
CALDER-MARSHALL, R.
CARNEY, J. W.
CHANG, LOY
CHANG KIA-NGAU
CHANG SHAO-LING
CHANG SHAO-YUNG
CHU CHING-LAN
CHUN, CHANG
FUNATSU, T.
HSU SHIH-YING
KANAI, C.
KUNG, H. H.
LIU, DR. J. HENG
LIU SHIANG CHING
LOBENSTINE, E. C.
MAZOT, H.
TCHENG, MLLE. SOUMI
TSENG, T. K.
YU YA-CHING

iii

FINANCE COMMITTEE

Chairman: T. V. SOONG.

CALDER-MARSHALL, R.
CARNEY, J. W.
FUNATSU, T.
CHANG SHAO-YUNG
HOU, Y.
LIEU, O. S.
MAZOT, H.
ROSE, ARCHIBALD
SHU, C. M.
SPEELMAN, M.
YUNG, T. K.
ZING, Z. C.

Secretary: PERCY CHU.

iv

AUDIT COMMITTEE

Chairman: CHANG KIA-NGAU.

BENNETT, C. R.
CHEN, K. P.
HUBBARD, G. E.
LAURENZ, R.
LI MING
LING, K. H.
LO PAH HUNG, J.
ROEHERKE, G.
OHMOORA, T.
SUNG HAN-CHANG.
WATSON, WILLIAM

v

INLAND TRANSPORTATION COMMITTEE

Chairman: YU YA-CHING

Vice-Chairman: JOHN KESWICK

Deputy Vice-Chairman: C. T. TOD

DEAN, A. V. T.
DRAKE, F. D.
GRANT, A. J.
HOYT, LANSING
KING, T. K.
LAMB, F. R.
SCHINAZI, L. R.

Secretaries: L. EVERETT, INC.

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TECHNICAL ADVISORY BOARD OF THE ENGINEERING AND LABOUR RELIEF DIVISION

BAKER, J. E.
CHANG, F. T.
CHANG, H. L.
CHATLEY, H.
CHEN, C. E.
CHEN, K. M.
CHEN, L. S.
CHEN, M. C.
CHOW, H. K.
CHOW, Z. Y.
FONG, T. C.
HSI, T. C.
HSUEH, T. P.
KAO, T. K.
KUNG, S. C.
LEE, S. T.
LI, H.
LI, K. Y.
LIN, C. S.
SHEN, P. S.
SHIH, Y.
STROEBE, COL. G. G.
SHU, K.
SUN, F. S.
SUNG, H. S.
TAN, C. K.

Secretary: CHU, Y.

vii

MEDICAL ADVISORY COMMITTEE OF THE HYGIENE AND SANITATION DEPARTMENT

Director: DR. J. HENG LIU

BORCIC, DR. B.
DR. WU LIEN-TEH.
DR. NEW WAY-SANG.
DYER, DR. BRIAN, R.
GRANT, DR. J. B.
KANAI, DR. S.
MAXWELL, DR J. L.
SHU, DR. H. J.
SKINNER, DR. L. W.
YEN, DR. F. C.

Secretary: DR. P. Z. KING

viii

LIQUIDATION COMMITTEE

Chairman: T. K. TSENG.

ANDREW, G. FINDLAY.
BAKER, J. E.
CHA, L. C.
HSI, T. C.
WEI, W. P.

APPENDIX II — 4.

AMERICAN WHEAT LOAN AGREEMENT

September 25th, 1931.

I. The Grain Stabilization Corporation with the approval of the Federal Farm Board agrees to sell and the National Government agrees to buy 450,000 short tons of No. 2 Western White Wheat, to be loaded in bulk, F.O.B. United States Pacific Coast ports.

II. The seller reserves the right of furnishing not more than one half of the above quantity in the form of flour at a comparable price.

III. Deliveries to the buyer will be made by the seller tendering wheat to the United States Pacific Coast ports to be determined by the seller and in accordance with the following schedule: 90,000 tons during the remainder of September and during October; 75,000 tons monthly during November to February inclusive; and 60,000 tons during March.

The date of delivery during the respective months will be at the option of the buyer. The buyer will give the seller five days' notice before tendering each vessel.

IV. The price for each shipment will be the current market price on the day of issue of ocean bill of lading F.O.B. at the port of loading.

V. The buyer will pay for the wheat and/or flour tendered by delivering to the designated agent of the seller obligations of the Chinese National Government bearing the same date as that of the ocean bills of lading covering each shipment. Such obligations shall be payable both as to principal and interest at New York in United States gold dollars. The obligations will bear interest at the rate of four per cent per annum, payable on June 30 and December 31 of each year, and one-third thereof

shall mature December 31, 1934, one-third thereof shall mature December 31, 1935 and one-third thereof shall mature December 31, 1936.

VI. The buyer will appoint an agent to deliver to the seller temporary signed obligations in respect of shipments made on each date. These temporary obligations will be consolidated as soon as practicable into three definitive obligations as set forth in item V.

VII. The wheat and the flour, if any, will be used by the buyer exclusively for charitable purposes in the flooded areas of China.

VIII. American flag vessels shall be used for the transportation of the wheat and/or flour unless vessels of other flags are available at port of loading at the time of proposed shipments in accordance with the schedule set forth in Item III on terms more favorable to buyer than the terms offered by American flag vessels.

Arrangements for shipping shall be made by the buyer through a representative designated by it under open bids or other arrangements conducted and completed in a manner approved by the American Commercial Attaché at Shanghai designated to act for the seller.

APPENDIX II — 5.

REGULATIONS GOVERNING THE FLOOD RELIEF CUSTOMS SURTAX

Promulgated by the National Government of China, November 28th 1931.

I. All import and export duties provided for by the Customs import and export tariffs, with the exception of those specified in Article III, shall be subject to a Flood Relief Surtax.

II. The rate of the Flood Relief Surtax shall be 10% of the Customs duty during the period from December 1st 1931 to July 31st 1932 inclusive, the entire proceeds from which shall be devoted to flood relief purposes; the rate shall be 5% of the Customs duty from August 1st 1932 until the date of the complete liquidation of the American Wheat Loan, the proceeds from which shall be applied to the payment of interest and repayment of capital of the said loan.

III. Articles listed under the following numbers in the Customs import tariff promulgated by the National Government on December 29th 1930, shall be exempt from the Surtax:

1-9; 12; 14-16; 21-23; 25-31; 37; 39; 41; 43; 44; 46; 51; 59-61; 64; 249 (a) and (b); 250; 252; 255; 256; 262; 265-267; and 305 (a).

IV. The entire proceeds from the Flood Relief Surtax shall be appropriated by the National Flood Relief Commission.

V. The present Regulations shall become operative upon the date of promulgation.

APPENDIX III

1. Purchases of Wheat and Flour.
2. Commissary District Headquarters and Employees.
3. Original Allocation of Wheat, in Tons, to Provinces and Purposes.
4. Tons of Wheat Allocated for Delivery at Each River Port; also, Total Tons Delivered.
5. Commissary Expense, by Districts.
6. General Statement of Grain Account.

APPENDIX III-1

PURCHASES OF WHEAT AND FLOUR

No.	Date B/L	Name of Steamer	Wheat (Bushels)	Flour (Barrels)	Price f.o.b Wheat Per Bu.	Price f.o.b Flour Per Bbl.	Value	Gold Dollars Total
	1931				$	$		
1	Oct. 9	Nuolja	274400.00	.....	.50	.....	.....	$ 137,200.00
2	17	Danwood	261333.33	.....	.53	.....	.....	138,506.67
3	19	Melmay	290833.33	.....	.54½	.....	$158,504.17	
		do		1755	.....	2.72½	4,782.38	163,286.55
4	26	City of Vancouver	224000.00		.60½	.....	135,520.00	
		do		13250	....	3.02½	40,081.25	175,601.25
5	29	Granville		27869½	....	3.22½	....	89,879.14
6	Nov. 4	Tacoma	59858.50	.....	.72	.....	....	43,098.12
7	6	City of Victoria	221666.66	.....	.73¼	.....	162,370.83	
		do	.....	15369	.....	3.66¼	56,688.96	218,659.79
8	6	Lundby	.....	73302	.....	3.66¼	....	268,468.58
9	11	Nordfarer	274460.00	.....	.70½	.....	193,494.30	
	12	do	.....	800	.....	3.52½	2,820.00	196,314.30
10	17	Childar	259548.86	.....	.65	.....	....	168,706.76
11	17	Wisconsin	.....	30000	.....	3.25	....	97,500.00
12	18	Tyndareus	.....	30926	.....	3.20	....	98,963.20
13	20	Pres. Cleveland	.....	6891¼	.....	3.10	....	21,362.88
14	21	Sta. Clara Valley	110833.33	....	.62½	.....	....	69,270.83
15	24	Bellingham	.....	20000	.....	3.10	....	62,000.00
16	25	Brand	291013⅓	....	.60½	.....	....	176,063.07
17	25	Larchbank	.. ..	79837¼	.....	3.02½	....	
		do	.....	9107	.....	2.82⅓	....	267,219.78
18	25	Cressington Court	302213.55	....	.60½	.....	182.839.07	
		do	.....	1655	.....	2.82⅓	4,672.62	187,511.69

APPENDIX III-1
PURCHASES OF WHEAT AND FLOUR—*Cont'd*

No.	Date B/L	Name of Steamer	Wheat (Bushels)	Flour (Barrels)	Price f.o.b.		Value	Total Gold Dollars
					Wheat Per Bu.	Flour Per Bbl.		
					$	$	$	$
19	28	Somerville	263573 1/8	....	.58¾	.....	154,849.33	
		do	.....	1551	.....	2.74 1/6	4,252.33	159,101.66
20	30	Golden Wall	.....	45000	.....	2.83½	....	127,575.00
21	Dec. 1	Nansenville	.....	42687	.....	2.89 1/3	123,507.72	
		do	.....	14630	.. ..	2.79	40,817.70	164,325.42
22	2	Nordkap	285600	....	.60½	.....	....	172,788.00
23	4	Melville Dollar	.....	12000	.. ..	2.72¼	....	32,670.00
24	5	Nordbo	270330 2/3	....	.61¾	.....	166,929.19	
		do	.....	2500	.....	2.77 7/8	6,946.88	173,876.07
25	8	President Taft	.....	5000	.....	2.70	....	13,500.00
26	8	St. Jerneborg	289333.33	....	.60	.....	....	173,600.00
27	12	Sinnington Court	330773.33	....	.59½	.....	196,810.13	
		do	.....	9552½	.....	2.67¾	25,576.82	222,386.95
28	12	Asia	249304.00	....	.59½	.....	148,335.88	
		do	.....	34178¼	.. ..	2.67¾	91,512.26	239,848.14
29	14	Oregon	.....	35005¾	.....	2.72¼	....	95,303.15
30	21	Protesilaus	.....	30612	.....	2.70	....	82,652.40
31	22	Golden River	.....	48437¼	.....	2.70	....	130,780.58
32	24	Shelton	.....	8084¼	.....	2.71 1/8	21,918.42	
		do	.....	27629¾	.....	2.66 1/10	73,522.76	95,441.18
33	24	Tilsington Court	333166.66	....	.60¼	.....	200,732.92	
		do	.....	10954	.....	2.66 1/10	29,148.59	229,881.51
34	29	Corneville	.....	45750	.....	2.70½	....	123,753.75
35	29	Stuart Dollar	.....	40000	.....	2.70½	....	108,200.00
36	29	Danwood	272720.00	....	.61¼	....	167,041.00	
		do	.....	13682¾	.. ..	2.70½	37,011.84	204,052.84
		Total, 1931	4864962.25	738016½				$5,129,349.26

APPENDIX III-1

PURCHASES OF WHEAT AND FLOUR—*Cont'd*

No.	Date B/L.	Name of Steamer	Wheat (Bushels)	Flour (Barrels)	Price f.o.b.		Value	Total Gold Dollars
					Wheat Per Bu.	Flour Per Bbl.		
	1932				$			
37	Jan. 8	Wellington Court	296666.66	....	.62	.... ..	$183,933.33	
		do	.....	2750	....	2.73 8/10	7,529.50	$ 191,462.83
38	11	Golden Horn	.. ..	8250	....	2.73 8/10	....	22,588.50
39	13	Rossington Court	329100.00	....	.62	.. ..	204,042.00	
		do	.. ..	11014¼	....	2.73 8/10	30,157.02	234,199.02
40	15	City of Vancouver	112000.00	....	.62	.....	69,440.00	
		do	.....	39969¼	....	2.73 8/10	109,435.81	
		do	.....	4842¾	....	2.79	13,511.27	192,387.08
41	16	Lundby	.....	72944	....	2.86 7/8	....	209,258.10
42	20	Ixion	.. ..	30306	....	2.88	....	87,281.28
43	22	Nordfarer	181500.00	....	.64	.. ..	116,160.00	
		do	.....	30723½	....	2.88	88,483.68	204,643.68
44	26	Olympia	.....	20408	....	2.79	....	56,938.32
45	27	Childar	100000.00	....	.62	....	62,000.00	
		do	.....	47298¼	....	2.79	131,962.12	193,962.12
46	28	Golden Peak	.....	30671½	....	2.79	....	85,573.49
47	Feb. 2	Nordkap	284166.66	....	.61¾	.....	....	175,472.92
48	6	St. Jerneborg	.....	87036¾	....	2.73 3/8	....	237,936.72
49	6	Castlemoor	359650.65	....	.60¾	.....	....	218,487.77
50	10	Nordbo	31173.33	....	.60	.....	18,704.00	
		do	.....	75824	....	2.70	204,724.80	223,428.80
	15	Golden Star	.....	33341¼	....	2.74½	....	91,521.73
51	18	Asia	343161.75	....	.62	.....	212,760.29	
52		do	.....	5323¼	....	2.79	14,851.87	227,612.16

APPENDIX III—3

ORIGINAL ALLOCATION OF WHEAT, IN TONS, TO PROVINCES, AND PURPOSES

(As revised March 29, 1932)

Province	Emergency			Farm Rehabilitation		Engineering		Total
	Original Allocation	Reserve				Dist. No.	Tons	
		Allocated to Date	Free to Date	Allocated	Free			
Kiangsu	15,000	3,200	1,300	8,470		1 14 17 16 15	9,460 11,600 5,805 3,870 23,220	81,925
Anhwei	15,000	5,000		10.000		2 3 11 12 13	15,480 15,480 13,500 22,500 22,500	119,460
Kiangsi	10,000			5,000		4 (1)	7,740 7,260	30,000
Hupeh	15,000	5,000		10,000		5 6 7 8 9	17,415 19,350 23,220 11,610 15,480	117,075
Honan	10,000	5,000				18	5,805	20,805
Hunan	10,000			10,000		10	30,000	50,000
Shantung							3,000	3,000
Total Reserve:	75.000	18,200	1,300 5,500	43,470	6,530		284,295 15,705	422,265 27,735
Grand Total:	75.000	18,200	6,800	43,470	6,530		300,000	450,000

(1) Added from Reserve, second allocation.

APPENDIX III—6

GENERAL STATEMENT OF GRAIN ACCOUNT
COMMISSARY DIVISION
(Short Tons, i.e. 2,000 pounds)

Particulars	Wheat	Flour		Total
		Actual	Wheat Equivalent	
A. Receipts:				
66 Ocean Vessels	225,000.006	160,125.042	220,557.909	445,557.915
Less Wheat milled to Flour(1)	5,740.000			
Plus Flour milled from Wheat		4,517.180	5,740.000	
Total Received	219,260.006	164,642.222	226,297.909	445,557.915
B. Issues:				
Emergency Relief	67,599.402	19,100.484	26,309.205	93,908.607
Engineering Relief	39,671.025	108,046.280	148,824.075	188,495.100
Farm Rehabilitation	21,113.810	1,093.210	1,505.800	22,619.610
Sales	88,398.555	31,788.941	43,786.420	132,184.975 (2)
Transportation	799.990	1,517.022	2,089.562	2,889.552
Transferred to N.E.C.		458.770	631.914	631.914
Samples		.613	.844	.844
Shortage	1,677.224(3)	2,636.902(4)	3,150.089	4,827.313 (5)
Total Issued	219,260.006	164,642.222	226,297.909	445,557.915

(1) At Nantung and Nanking Depots.
(2) Includes Local Sales.
(3) Excludes 3502.777 tons shortage if allowance be made for differences due to use *chao-fah* scale extensively in the interior.
(4) Excludes 662.505 tons shortage if allowance be made for differences due to use of *chao-fah* scale extensively in the interior.
(5) See Notes [redacted] (3) and (4).

Audited and found correct.

AUDITORS,
SHU-LUN PAN & CO.
Chartered Accountants,
Signed, S. L. Pan.

APPENDIX IV

Allocations for Emergency Relief

APPENDIX IV—1

I. Allocations for Emergency Relief Through District Offices.

District Office	Cash	Wheat Equivalent(1)
Kiangpei District Office	$ 783,400.31	14,605.60
Ningshu District Office	35,000.00	2,476.41
Kiukiang District Office	467,179.92	9,204.19
Chengchow District Office including transfer to Bishop White's Committee	881,277.10	14,131.42
Wuhu District Office	410,014.03	12,059.72
North Anhwei District Office	339,434.52	8,324.33
Wu-Han District Office and Hupeh Rehabilitation Committee	1,247,690.00	20,000.00
Changsha District Office and Hunan Rehabilitation Committee	309,710.17	34,499.39
Tsinan District Office	207,516.60	——
Chang-An District Office	46,800.00	——
Total	$4,728,022.65	115,301.06

II. Allocations Through Other Organizations.

Organization	Cash	Wheat Equivalent
Central and South Anhwei Joint Relief Committee	$ 126,942.16	1,000.00
Nanking Flood Relief Association	129,026.00	——
Hunan Flood Emergency Relief Committee	12,180.00	——
Szechuen Province Relief Committee	40,000.00	——
Yunnan Province Relief Committee	40,000.00	——
Kweichow Province Relief Committee	50,000.00	——
Fukien Province Relief Committee	55,000.00	——
Kwangtung Province Relief Committee	38,832.70	——
Total	$ 491,980.86	1,000.00

(1) Will not agree exactly with figures in Appendix III—6 and Appendix VIII due to local transfers between Division representatives and to local variations in conversion rates between wheat and flour, and because deliveries did not exactly follow allocations.

III. Subsidies to Cooperating Relief Organizations

Organization	Cash	Wheat Equivalent[1]
Shanghai Refugee Camp	$ 20,000.00	——
All-China Emergency Relief Association	10,000.00	——
Association for Relief of Refugees in War Area	10,000.00	——
Hsian Shan Orphanage	15,727.45	——
Ningyuan Gruel Kitchen, Nanking	15,000.00	——
World Swastika Society, Nanking	2,000.00	——
Nanking Kwang Lee Benevolent Society, Nanking	3,000.00	——
Conservancy of Tan Kiang, Chinkiang	30,000.00	——
Wu-hsing emergency relief, Chekiang	800.00	——
Yencheng Gruel Kitchen, Kiangpei	——	5.64
Mr. T. L. Harnsberger (Missionary) Nantung	——	15.71
Kwanchen-Wei Dyke	——	102.32
Citizen's Emergency Relief Committee Shanghai	——	136.37
Capital Relief Committee	——	1,105.13
Total	$ 106,527.45	1,365.17

IV. Recapitulation.

	Cash	Wheat Equivalent
1. Through District Offices	$4,728,022.65	115,301.06
2. Through other organizations	491,980.86	1,000.00
3. Subsidies to co-operating relief organizations	106,527.45	1,365.17
4. Cost of purchases for Emergency Relief of winter clothing, flour, and other supplies, including transport costs	1,635,977.67	——
Total	$6,962,508.63	117,666.23[1]

[1] Will not agree exactly with figures in Appendix III—6 and Appendix VIII due to local transfers between Division representatives and to local variations in conversion rates between wheat and flour, and because deliveries did not exactly follow allocations.

APPENDIX V

1. Deliveries and Payments for Farm Rehabilitation.
2. Agreement with Kiangsu Provincial Authorities.

APPENDIX V—1

DELIVERIES AND PAYMENTS FOR FARM REHABILITATION

Province	Total Wheat Equivalent delivered, (Tons)	Wheat in Kind (Tons)	Wheat Equiv. of		Receivers.	Relief funds appropriated	Remarks
			Flour (Tons)	Cash			
Kiangsu	11,394.46	1,400.00	(1) ———	———	Agriculture & Mining Adm., K'su Prov.		Loan, See P. 97 of text for terms.
		8,181.60	379.75 (517.86)	$99,326.09 (1,295.00)	Kiangsu Prov. Gov't. — ditto —		Loan, See text P. 97.
	295.00	295.00	———	———	Superintendent's Office, Ninghsu Dist.	$18,452.08	Wheat taken from allocation for Emergency Relief.
Anwhei	11,800.02	1237.21	713.458 (972.94)	———	Anwhei & Kiangsi Office, C.I.F.R.C. — ditto —		See text P. 98
				$450,650.38 (6,089.87)	Shanghai Office, Office, C.I.F.R.C.		
				$259,000.00 (3,500.00)	Pengpu Office, C.I.F.R.C.		
Kiangsi	5,000.00			$370,000.00 (5,000.00)	Shanghai Office, C.I.F.R.C.		See text P. 98
Hupeh	10,000.00	10,000.00			Hupeh Flood Relief Rehabilitation Com. Mr. Ho Heng Fu Chairman		In March, 1933, management was turned over to the Hupeh Committee of the China International Famine Relief Commission.
Hunan	10,000.00			$768,710.875 (10,000.00)	Hunan Office, C.I.F.R.C.	$40,000.00	Funds remitted in Taels. The $40,000 came from Emergency Relief Funds and were used for the purchase of cotton seed loaned to farmers.
Total	(2) 48,489.48	21,113.81	1,490.80	25,884.84		$58,452.08	

(1) Figures in parentheses represent the equivalent in wheat of the actual payments stated in the figures immediately above them.

(2) Will not agree with figures in Appendix III-6 due to local transfers between Division representatives, local variations in conversion rates between wheat and flour and local sales.

APPENDIX V—2

AGREEMENT WITH KIANGSU PROVINCIAL AUTHORITIES

The Kiangsu Provincial Government (herein called the Provincial Government), in order to supply the pressing need of the Grand Canal Dyke Works of Kiangpei, arranges with the National Flood Relief Commission (herein called the Flood Commission) to borrow from the latter American wheat allocated to Farm Rehabilitation upon the following terms:

(1) The amount borrowed is ten thousand (10,000) tons, which, at the market value, is equivalent to dollars seven hundred sixty seven thousand only ($767,000) which will be the principal of the loan.

(2) The duration of this loan is six months. The principal and the interest are to be fully paid in July, 1933.

(3) It is designated that land tax due from the various *hsiens* to the Kiangsu Provincial Government for the first six months of the twenty-first year of the Republic of China be set aside as the first security of the loan, and that coupons of the Reconstruction Bond of the Kiangsu Provincial Government for dollars one million only ($1,000,000) at forty per cent (40) discount, payment beginning from the fifth instalment, be set as the second security. The shortage will be secured by Provincial Treasury Notes secured by the land tax of Kiangsu Province for dollars two hundred eighty thousand only ($280,000.)

(4) The rate of interest of this loan is fixed at five per mille per month.

(5) In case the land tax collected by the Provincial Government is not sufficient to pay fully the loan upon the expiration of six months, the time limit for the complete repayment may be extended for six months, half of the principal and the interest to be paid in the first six months, and the balance, in the second six months. No further extension of the time limit will be considered after the first extension.

(6) The Department of Finance of the Provincial Government will give orders to the various *hsiens* of the province that the first security of this loan should be paid to the Bank of Kiangsu, designated for the repayment of the principal and the interest of the loan, and not diverted to any other use. In case the land tax is not paid to the Bank of Kiangsu, the bank will take the responsibility to arrange with the Department of Finance for replenishment from other sources of the Provincial treasury.

(7) In case the principal and the interest of the loan are not repaid at the expiration of the time limit, the Flood Commission is entitled to sell the second security, which will be supplemented by the Provincial Government, if it is insufficient to repay fully the loan.

(8) The principal and the interest repaid will be completely appropriated as the foundation for farm rehabilitation.

(9) Upon delivery of the American wheat, the Provincial Government should issue a receipt for the value of this wheat as stated in item (1) to the Flood Commission, which should return the same receipt to the Provincial Government upon the full repayment of the principal and the interest of the loan.

KOO TSO TUNG (Seal)
Chairman, Kiangsu Provincial Government.
SU SHIH FU (Seal)
Committee Member, and Chief, Department
of Finance, Kiangsu Provincial Government.

II

RECEIPT FROM THE KIANGSU PROVINCIAL GOVERNMENT

Received from the National Flood Relief Commission 10,000 tons of American wheat as a loan for the Grand Canal Dyke Work of Kiangpei, this being equivalent to dollars seven hundred sixty seven thousand ($767,000.)

KOO TSO TUNG (Seal)
Chairman, Kiangsu Provincial Government.
SU SHIH FU (Seal)
Committee Member, and Chief, Department
of Finance, Kiangsu Provincial Government.

NOTE

As the Reconstruction Bonds of the Kiangsu Provincial Government were appropriated to the Chinkiang Chamber of Commerce to be used as a revolving fund, the Provincial Government asked permission to

substitute Provincial Treasury Notes secured by land tax of that province for $1,280,000 as the security for the loan. This was accepted by the National Flood Relief Commission, and on October 29th, 1932 the Commission received the above Treasury Notes for $1,280,000 which were entrusted to the Central Bank of China, Chinkiang, for custody. The rate of interest on these Treasury Notes is 8 per cent per annum, and the notes are to be paid in three instalments on December, 1933; December, 1934; and December, 1935.

APPENDIX VI

1. Organization Chart—Engineering and Labour Relief Division.

2. Location and Length of Districts.

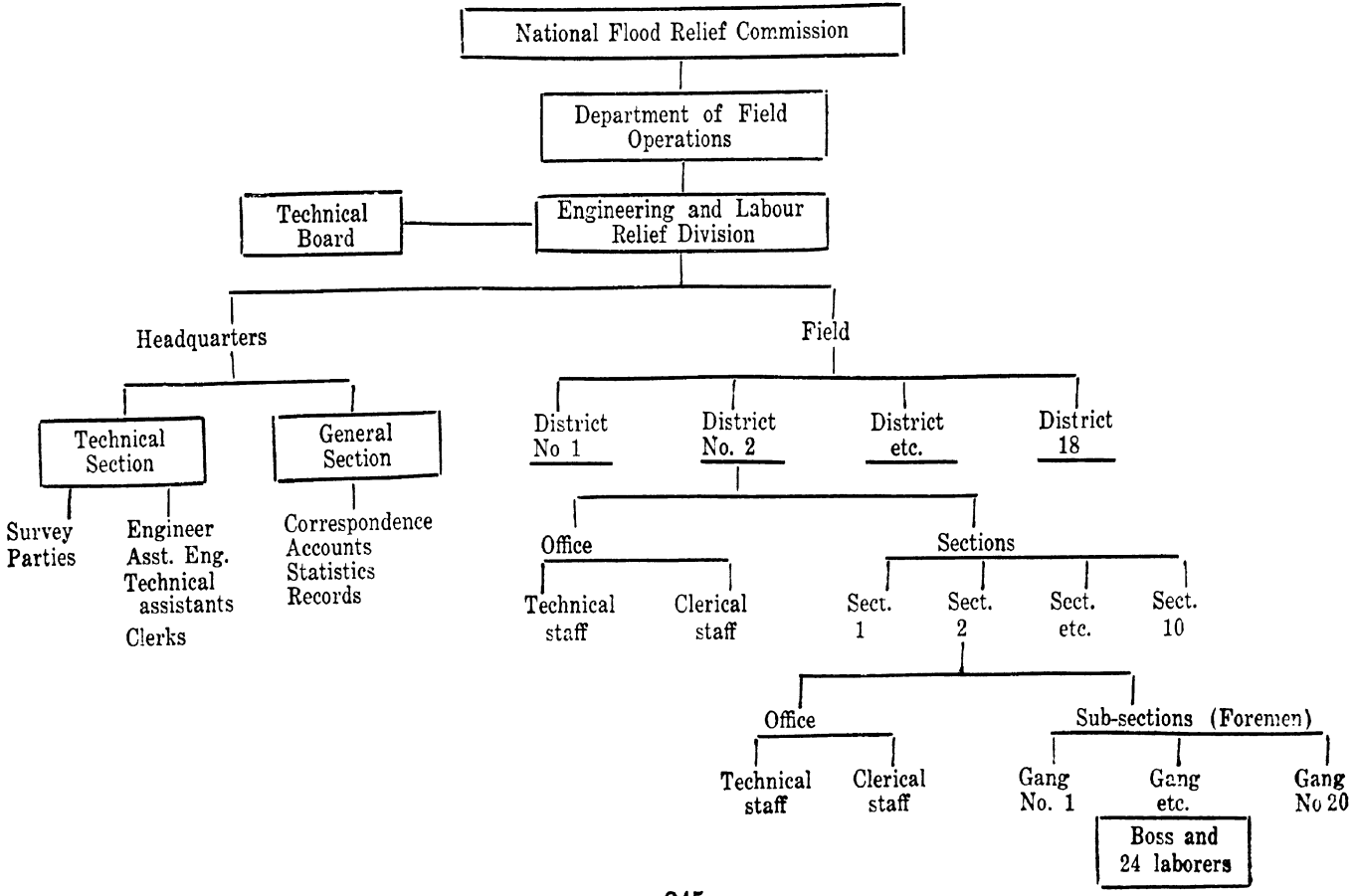
3. Summary of Work Done.

4. Tables Showing by Districts, Work Done in Each Section.

5. Report of Dyke Inspection Party.

APPENDIX VI—1

ORANIZATION CHART—ENGINEERING AND LABOUR RELIEF DIVISION



APPENDIX VI—2

LOCATION AND LENGTH OF DISTRICTS

District No.	Dist. Engineer or Superintendent	River System	Province	Boundaries of Districts	Distance (Kms.)	Location of Office
1	H. S. Sung	Yangtse	Kiangsu	South Bank: Chinkiang to Tzuhui River	230 (2)	Nanking
	C. S. Hsueh (1)			North „ Kuachow to Wukiangchen		
2	Y. L. Lin	„	Anhwei	South „ Tsai Shih Chi to Hsinkow	275 „	Wuhu
				North „ Wukiangchen to opposite Tatung		
3	I. H. Pei	„	„	South „ Hsinkow to Fangchiakow	346 „	Anking
				North „ Opposite Tatung to 15 Kms. below Hukow		
4	F. T. Yen	„	Kiangsi	South „ Yangliuwu to opposite Kiukiang	210 „	Kiukiang
				North „ 10 Kms. above Fuhsingchen to Ertaokow		
5	Y. L. Ho		Hupeh	South „ Opposite Wusueh to Chinkow	421 „	Hankow
	S. L. Yang (1)	„		North „ Ertaokow to Tachunshan		
6	C. W. Cheng	„	„	Chinkow to Chenglingki	331	Sinti
7	C. C. Yu	„	„	Chenglingki to Tomaopu	371 „	Chenglingki
8	M. C. Chiang	Han	„	Hankow to Sientaochen	255 „	Sientaochen
9	H. C. Liu	„	„	Sientaochen to Chienkiang	287 „	Chienkiang
10	(3)	Hsiang & Yuan	Hunan	Lulintan to Hsiang Yin: Changteh to Lifanhu: Yiyang to Wantzuhu	123 253	Changsha
11	T. Y. Ma	Hwai	Anhwei	Ying River and West Fei River	379	Chengyangkwan
12	Woodson Wang	„	„	Kuei River and North Fei River	157) 245)	Pengpu
13	C. C. Chang	„	„	Tuo Ho, Hwen Ho and Hwai River	303	Wuho
14	P. Y. Hu	Grand Canal	Kiangsu	Shaopo to Pao Ying	160	Yencheng
15	(4)	Li Hsia Ho	„	She Yang Kong	11.7	Funing
16	C. L. Tang	„	„	Hsin Yang Kong	5.7	Yencheng
17	K. Shu	„	„	Towlungkong, Wangkong and Chu Kong	27.1	Tungtai
18	M. S. Yang	Sha, Lo,	Honan	Regions of Rivers Yi, Lo and Sha	380.0	Yiencheng

1. In succession.
2. Lengths of Districts 1 to 9 inclusive estimated from existing survey maps.
3. Managed by Hunan Flood Rehabilitation Committee.
4. Divided between Districts 16 and 17.

APPENDIX VI—4

Tables Showing, by Districts,

Work Done, etc. in each Section.

DYKE WORK DONE, DISTRICT NO. 1

Section No.	Section Engineer	Section Terminals	Name of Dyke or Place	Length (Kms.)	Top Width (Meters)	Slope Back	Slope Front	Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
1	C. Li (Former) L. Ko (Later)	Chin Shan Ho, Chinkiang Hsien to Tai Ping Chiao	Huang Ni Hsiang, Tung Fang Hsiang, Ma Chiao Hsiang, Tu Shih Wei	26.3	(1) 2-3	1:1½ 1:3	1:2 1:3	185,826	1,056.626	
2	D. T. Ko	Tai Ping Chiao, Chinkiang Hsien to Wu Lung Shan, Kiangnin Hsien	Ching An Ch'ang, Tai Tsu Chow, Ch'i Hsia Wei	37.9	3-5.5	1:1½ 1:2	1:2½ 1.3	155,301	786,675	
3	T. Koo (Former) D. T. Ko (Later)	Yen Tzu Chi, Kiangnin Hsien to Lo Sing Sze	Yen Tzu Chi, Lung Wang Miao, Mien Hua Ti, Shang Cha, Ta Sheng Kwan	16.4	3-6	1:1½ 1:2	1:2½ 1:3	202.699	1,407.294	
4	H. Y. Chu (Former) K. Y. Sun (Later)	Lo Hsin Sze, Kiangnin Hsien to Hu Shang Kang.	Lo Hsin Sze, Shih Erh Wei, San Shan Ying Chi Wei, Chung Tung Wei, Hsien Jen Ki, Hsu Chia Wei, Li Shan Wei, Hu Shang Kang	25.0	3-10	1:1½ 1:2	1:2 1:3	269,562	1,450.375	
5	D. T. Chu	Chiung Chia Pa, Kiangsu Hsien to Kuachow	Fu Kan Chow, Kuachow	7.7	3-4	1:2 1:2½	1:2½ 1:3	111,793	646.742	
6	G. Y. Chow	Pu Hsin Chow, Icheng Hsien to Ta Ho Kou, Loho Hsien	Pu Hsin Chow, Hsiao Ho Kou, Shih Erh Wei, Yu Feng Chuang, Ta Mao Chuang, Ta Ho Kou	19.0	2.5-4	1:1½ 1:2	1:2 1:3	80,970	460.682	
7	Z. Liu	Ta Ho Kou, Loho Hsien to Hou Chia Shan	Kiu Li Keng, Hsing Lung Hsiang, Shang Hu Hsiang, Hua Tzu Kou, Li Tou Hsiang, Lung Pao Hsiang	35.6	2.8-4.5	1:1½ 1:2	1:2 1:3	222,802	1,211.204	
8	C. Li	Kiu Fu Chow, Kiangpu Hsien to Si Kiang Kou	Kiu Fu Chow, Ping Kiang Hsiang, Si Kiang Kou	19.7	4	1:1½ 1:2	1:2 1:3	239,204	1,211.769	
9	C. Loh	Si Kiang Kou, Kiangpu Hsien to Wu Kiang Kou	Chu Chia Wei, Chi Hsin Wei, Pu Wei, Chuan Chia Wai Wei	12.4	4	1:1½ 1:2	1:2 1:3	147,023	835.274	
Total				200.0				1,615,180	8,706.641	
	Advances to miscellaneous gangs not completely earned.								13.118	
									8,719.759	

(1) 2-3 indicates variations between 2 and 3 meters.

DYKE WORK DONE, DISTRICT NO. 2

Section No.	Engineer	Terminals	Names of Dykes or Places	Length (Kms.)	Top Width (Meters)	Slope Back	Slope Front	Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
1	S. T. Yang	Szu Ho Shan, Wuhu Hsien to An Kao Chiao. Fanchang Hsien	Si Kiang Wei, Ma Pu Wei, Pao Ting Wei, Yung Nin Wei, Pao Ta Wei, Yung Pao Wei	47.0	(1) 3-4	1:2 1:5	1:3	395,807	2,148.916	
2	D. Y. Wang	Tsai Chia Tien, Wu-wei Hsien to Ni Ch'a Chen	Szu Jen Tuan Wei, Szu Lien Wei, Shang Kiu Lien Wei, Hsia Kiu Lien Wei	37.0	8	1:3	1:2	608,579	3,825.894	
3	F. Y. Liu	Ti Kang, Fanchang Hsien to Hsin Kow, Tung Ling Hsien	Kuan Chuang Wei, Fuching Wei, Ching Feng Wei, Ta Cheng Wei	25.0	2-6	1:2 1:1 1:5	1:2 1:3	365,407	2,362.310	
4	S. C. Ho	Ta Wang Chiao, Hu Hsien to Yu Chi Chen	Pao Ta Wei, Chiang Chia Wei, Shih Hou Ch'ang, Ying Shan Wei, Wu Liang Wei, Cheng Chun Wei, Ta Feng Wei	34.0	3-6	1:2	1:3	342,725	1,830.881	
5	Y. D. Yi	Hu Shang Kang, Tangtu Hsien to Szu Ho Shan	Pin Kiang Hsiang Wei, Chen Chia Wei, Chiao Chia Wei, Hsin Cheng Kan Ti, San Mah Ch'ang Wei, Ning Kuo Kan Ti, Chou Lung Kan, Li Wang Wei, Huang Ni Tai	38.0	2-6	1:2 1:5	1:2 1:3	345,690	1,851.535	
6	P. Z. Feng.	Wu Kiang Kou, Hu Hsien to Ta Wang Chiao	Wang Tang Wei, Wang Chia Wei, Hua Wei, Chao Liang Wei, Chen Tsu Wei, Ma Wei, Tung Sheng Wei, Su Yang Wei, Yung Feng Wei	30.3	3-8	1:2	1:3	301,834	1,649.455	
7	C. H. Chao	Yu Chi Chen, Hu Hsien to Tsia Chia Tien, Wuwei Hsien	Huang Ssu Tai, Sa Liu Wei, Huo Shao Wei, Su Kuan Wei.	42.2	4	1:2	1:3	682,119	3,711.746	
8	C. C. Wang	Ni Ch'a, Wuwei Hsien to Tu Chiao	Wan Chia Tai, Shang Hsin Wei, Kuan Pa Liu Shih Li, Ching Shan Wei	41.9	5½-8	1:2	1:3	185,348	983.013	
Special		Chiu Hsien Chen, Fanchang Hsien to Ti Kang Chen		10.0				39,835	212.186	Work done per Mr. S. V. Kou, Van Choung Hsien
Lo Po Chang	S. C. Ho	Tu Chiao, Wuwei Hsien to Chang Chia Pa, Tung Cheng Hsien		25.0				62,013	296.129	Earth work done & wheat consumed up to 30th of Sept. 1932
Total				330.4				3,329,357	18,872.065	

(1) 3-4 indicates that width varied from three to four meters.

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 3

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	C. H. Loo	Anking to Chung Yang	Kwang Chi Wei	42.4	6	1:2	1:3	339,529	1,675.685	
2	P. H. Bao (Former) Z. L. Chow (Later)	Anking to Lao Hu Tu T'a.	Kwang Chen Wei, Hsu Chia Wei	12.2	9	1:2	1:3	133,230	801.150	
3	C. Wu (Former) V. Wang (Later)	Niu Tou Shan to Yang Chia Tao	Kwang Feng Wei, Yu Feng Wei, Chu Chia Wei, Chung Hsing Wei, Kung I Wei	32.5	9	1:2	1:3	248,353	1,720.595	
4	F. C. Chao	Lao Hu T'a to Hua Yang Ho Kou	Cheng King Wei, Tung Ho Hsing Wei, Hsing Wei, Ta Cheng Wei, Pao Ming Wei, Pu Chi Wei	41.8	4	1:2	1:3	372,574	1,870.570	
5	H. S. Tung	Hsiao Lao Chou to Chou Tou Chen	Chin Kiang Ti, Ma Hua Ti	33.9	9	1:2	1:3	372,146	2,364.255	
6	P. H. Bao	Hua Yang Ho Kou to Hsiao Lao Chou	Ma Hua Ti	22.2	9	1:2	1:3	151,378	1,639.433	
7	T. C. Chang (Former) C. C. Liao (Later)	Chung Yang to Ma Chuan Kou	Yung Wei, Yung Hsing Wei, Kua Tang Wei, Kao Wang Wei	23.2	9	1:2	1:3	252,532	1,397.173	
8	T. C. Chang	Liu Peh Chang to Ma Chuan Kou	Yung Feng Wei, Tung Lo Wei, Sung Chia Tao, Kwei Chia Pa, Tien Ting Wei	28.6	4	1:2	1:3	390,346	2,178.380	
9	C. C. Shu	Ta Tung Chen to Wu Sa Chia	Wu Peh Chang, Ho Hsing Wei, Chang Lo Wei, Pu Tu Wei, Tien Chen Wei	30.5	9	1:2	1:3	303.070	1,671.679	
10	F. C. Chao	Tungliu to Fang Chia Chou	Kwang Wei Wei, Fu Kang Wei, Pu Tong Wei, Yu Ching Wei, Cheng Feng Wei	15.6	9	1:2	1:3	140,859	727.075	
Total				282.9				2,704,017	16,045.995	

DYKE WORK DONE, DISTRICT NO. 4

Section No.	Engineer	Terminals	Names of Dykes or Places	Length (Kms.)	Top Width (Meters)	Conditions of Dyke: Back	Conditions of Dyke: Front	Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
(1) 3	Z. T. Peng	Yung Feng Wei to Hsin Tseng Wei, left side of Western tributary of Kan Ho	Lung Ching Wei, Peh Tang Wei, Hsi Hu Wei, Lu Chih Wei, Yung Feng Wei, Tai Ping Wei, Mu Lien Wei, Hsin Tseng Wei, San Kioh Wei	105.3	4	1:3	1:3	308,031	1,051.495	
4	Y. Chao	Ma Ku Wei and Hsi Cheng Tse Wei, right side of Western tributary of Kan Ho.	Feng Yin Wei, Wu Hsin Wei, Feng Hsiang Wei, Shang Feng Lo Wei, Tung Kuan Wei, Chiao Chao Wei, Hsia Feng Lo Wei, Lin Kiang Wei, Shang Cheng Tse Wei, Tung Chou Wei	103.4	4	1:3	1:3	317,616	1,133.443	
5	L. C. Yang	Pao Ta Kiang Kou to Li Yung Wei, both sides of Kan Ho	Tai Ping Wei, An Feng Wei, Lo Hsien Wei, Hui Lan Wei, Ho Feng Wei, Li Yung Wei, Shih Ch'i Wei, Fu Lo Wei, Shang Lu Pu Wei, Fu Yu Wei, Liu Fang Wei, Chin Chia Wei	76.6	4	1:3	1:3	222,120	827.316	
6	C. L. Lu	Fu Yu Wei to Poyang Lake, right side of Eastern tributary of Kan Ho	Fu Yu Wei, Ta Yu Wei, Hsi Cheng Wei, Li Feng Wei, An Lo Wei, Chih Chi Wei	26.3	4	1:3	1:3	70,013	310.515	
7	Y. Y. Fu	Dykes along Poyang Lake, Hsin Chien Hsien	I Cheng Wei, Hsi Cheng Wei, San Tung Wei, Hsi I Wei	200.9	4	1:3	1:3	180,934	674.185	Dah Chen Hui, Yih Chen Hui and Dah Poa Hui per C.I.F.R.C.
8	C. C. Wang		Kuo Chi Wei, Tung Nan Wei, Peh Hu Wei, Nan Hu Wei, Kung Mao Wei, Lin Yung Wei, Tai Feng Wei, Ta Wu Feng Wei.	116.5	4	1:3	1:3	224,385	729.900	
Emergency Work			Feng Hsiang Wei, Lin Yung Wei, Ta Wu Feng Wei, Lung Ching Wei, An Lo Wei, I Cheng Wei, Tung Kuan Wei	5.0				41,378	266.157	
Total				634.0				1,364,567	4,993.011	
Material For Emergency Work									317.188	
Subsidy									173.333	For repairing
Loan									316.822	
Grand Total									5,800.354	

(1) Sections 1 and 2 supervised by China International Famine Relief Co mmission. See page 130.

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 5

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	C. Chu	Ta Chun Shan to Kuen Yuan Sze, Han Yang Hsien	Chun Shan Ti, Kiang Yung Ti	18.32	3-4	1:2½ 1:3	1:2 1:3	90,623	729.72	(1)
2	S. Y. Chang	Hankow to Kan Chia Chi	Chang Kung Ti	20.82				266,993	4,288.51	
3	G. T. Tien	Lung Kou to Tu Cheng, Huang Kang Hsien	Tu Lung Ti	45.60	4	1:2½	1:2½	640,761	4,529.78	
4	Y. Y. Chu (Former) T. D. Chui (Later)	Tu Cheng, Huang Kan Hsien to Hsin Kang, Chi Shui Hsien.	Wan Fu Ti, Chang Chi Liao Ti, Peh Yung Ti	39.00	3-8	1:2	1:3	447,248	2,701.65	
5	Y. T. Tsai	Hsin Kang to Lung Wan, Chi Chun Hsien	Yung Pao Ti, Yung Kuo Ti, upper part of Mao Shan Ti	21.47	3-4	1:3	1:3	256,972	2,196.49	
6	V. T. Chu	Lung Wan, Chi Chun Hsien to Wusueh Chen, Kwang Chi Hsien	Lower part of Mao Shan Ti, Hsiao Lai Ni Tai, Shang Hsia Lai Ni Tai, Chuan Ching Ti, Yung Cheng Ti, Wu Li Hu Ti, Yang Pan Hu Ti, Yung Chuan Ti, Chin Niu Hu Ti, Pao Hsin Ti, upper part of Wusueh Ti	43.20	2.5-10	1:2½ 1:3	1:2½ 1:3	202,215	1,455.40	
7	H. C. Chang	Chin Kou Chen, Wuchang Hsien to Wu Tai Cha	Wu Chin Ti	26.55	8	1:2½ 1:3	1:3	373,254	3,544.52	
8	C. H. Yi (Former) K. D. Loh (Later)	Hsia Hsin Ho, Wuchang Hsien to Chao Chi, Ngoh Cheng	Wu Feng Ti, Lu Kou Ti, Mu Niu Ho Ti, Cheng Tang Hu Ti, Hsin Kang Ho Ti, Shui Yueh Hu Ti	21.52	3.8	1:2 1:3	1:2 1.3	154,978	1,562.03	
9	C. T. Kou	Chao Chia Chi, Ngoh Cheng, to Liu Chia Tu	Pang Peh Hu Ti, Chang Peh Hu Ti, Lo Hu Ti, Chi Chi Hu Ti, Fu Tou Ho Ti, Fan Kou Ti, Yang Lan Hu Ti, Mao Ts'ao Ti, Pi Pa Hu Ti, Yang Hu Ti, Huang Hu Ti, Yen Chi Ti, Cha Hu Ti, upper part of Chang Ta Ti	45.20	3-8	1:2 1:3	1:3	303,835	2,926.48	

(1) Dykes of this section per Hupeh Flood Relief Commission.

DYKE WORK DONE, DISTRICT NO. 5 (*Cont.*)

Section		Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No. Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
10 P. N. Koo	Liu Chia Tu, Ngoh Cheng Hsien, to Chien Feng Shan	Lower part of Chang Ta Ti and its branch, Kang Hsiang Ti and its branch, Hsi Shih Ti, Pao Seng Ti, Ting Feng Ti, Sze Ku Ti, Cheng Tseng Ti, Hai Kou Ti, Ko Hu Ti	59.71	3-6	1:2	1:3	453,314	3,865.01	
L. H. Chang	Ching Shan Shih, Wuchang Hsien to Tung Kou; Lan Chi to Lo Tai, Chi Shui Hsien	Wu Wei Ti, Yung Pao Ti	22.34				301,244	2,164.51	Wu Hui and Yung Poo Dykes
Total			363.73				3,491,437	29,964.10	
								40.00	Subsidy for repairing dykes
								493.33	Protection work at Wuchang
Grand Total								30,497.43	

*Subject to minor revision on final audit.

DYKE WORK, BY C.I.F.R.C.

District No.	Section No.	Engineer	Terminals	Names of Dykes or Places	Length (Kms.)	Top Width (Meters)	Slope Back	Slope Front	Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
4	1	J. S. Liu	Kiukiang to Shih Tzu Shan		33.50	4	1:2	1:3	556,655	2,968.454	
	2	T. Y. Ko	Lao Chou Tou to Chen Chia Ying		26.40	4	1:2	1:3	Included	above	
5	11	Mr. E. Sperling	Chen Chia Ying to Hsiao Chih Kou		42.00	4	1:2	1:3	239,867	2,424.468	
		J. S. Liu	Hsia Chih Kow to Wusueh		42.00	4	1:2	1:3	Included	above	
	Total				133.90				796,522	5,392.922	

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 6

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	C. P. Fu	South side: Chih Chi Shan to Lao Kuan Chui, North side: Tu Pu T'ou to Lao Miao T'ou	Chin Kou Chang Ti, Sze Hsien Kung Ti, Sze Ho Huan Ti	35.2	4	1:2-1:3	1:2	485,111	3,954.410	
2	K. C. Li	South side: Lao Kuan Chui to Hsiao Chia Chou, North side: Yang Kou to Yeh Wang Chia Pien	Sze Hsien Kung Ti, Yao Chia Hu Kiang Ti, Feng Lo Huan Ti, Hung En Ti	52.3	4-5	1:2	1:2	350,672	2,947.474	
3	P. R. Yang	South side: Hsiao Chia Chou to Chia Yu Cheng, North side: Yeh Wang Chia Pien to Peng Chia Ma Tou	Sze Hsien Kung Ti, Hung En Ti	28.4	4.5	1:2	1:2	339,521	2,908.360	
4	P. R. Wang	South side: Chia Yu Hsi Men to Chiu to Chiu Wan, North side: Peng Chia Ma Tou to Liang Chow	Chia Yu Kiang Ti, Kao Chiao Huan Ti, Wu Ho Huan Ti, Ho Feng Huan Ti	43.2	5	1:2	1:2	301,657	2,355.129	
5	H. K. Pan	Chiu Chia Wan to Mi Chow	Chia Yu Kiang Ti, Wan Cheng Huan Ti	30.1	4	1:2	1:2	261,073	1,748.389	
6	H. K. Shoh	Mi Chow to Hsia Hu Yeh Chow	Wan Cheng Huan Ti	14.6	4	1:2	1:2	192,780	1,178.623	
7	S. C. Ma	Liang Chow to Sinti	Liu Ho Huan Ti, Hung En Ti	31.5	4.5	1:2	1:2	306,403	2,271.800	
8	C. S. Yu	Sinti to Lu Shan	Liu Chia Ma Tou Kiang Ti, Hsia Wang Huan Ti, Hu Ho Huan Ti	26.0	6-8	1:3	1:4	234,545	2,050.570	
9	W. Chao	Lu Shan to Pai Lu	Niu Cha Huan Ti, Yang Lin Huan Ti, Yen Hu Huan Ti	5.0				174,335	1,549.111	

DYKE WORK DONE, DISTRICT NO. 6 (*Continued*)

Section		Names of	Length	Top Width	Slope		Work Done in	Wheat Consumed	Remarks
No. Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
10 T. C. Wang	Hsia Hu Yeh Chow to Pai Wu Chui, Hsiang Ku Kang	Wan Cheng Huan Ti, Lin Hsiang Kiang Ti	26.1	4	1:2	1:2	271,486	1,860.703	
Pai Chow Dyke			35.6				17,469.32	112.000	
Closing dyke for Kin Shui			.33				27,402.67	224.000	
Total			328.33				2,962.454	23,160.569 (1)	

(1) Payment for 246,608 man days of miscellaneous work and for 285,061.5 man days due to bad weather not included.

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 7

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	Q. H. Jen	Kuan Yin Chow to Chih Pa Kow, Kienli Hsien	Chao Chia Yueh Ti, Hsueh Chia Tan, San Chih Kioh, Ho Chia Pu, Hung Miao, Tsai Chia Yueh Ti	21.7	10-18	1:4	1:2	296,661	2,428.20	
2	Y. S. Yang	Chih Pa Kou to Shang Cha Wan, Kienli Hsien	An Lang Yueh Ti, Ta Ting Yueh Ti, Ning Heng Yueh Ti, Fang Nieh Yueh Ti	13.8	6-13.3	1:3 1:5	1:3	171,132	1,558.47	
3	H. C. Wu	Shang Cha Wan to Feng Wang Ti, Kienli Hsien	Cha Wan Hsin Yueh Ti, Cha Wan Ta Yueh Ti, Hsin Chi Yao Lao Ti, Pan Lu Ti, Huang Kung Ti, Feng Wang Ti	14.5	6-12	1:5	1:3	286,711	2,698.34	
4	H. C. Wu (Former) P. L. Chow (Later)	Feng Wang Ti to Tan Chia Yuan, Kienli Hsien	Hsin Hsing Huan Ti, Yao Chi Ti, Yang Chia Wan, Cha Chin Kung	13.0	6-8	1:5	1:3	214,376	1,897.84	
5	Y. C. Tsai	Tan Chia Yuan to San Chia Tang, Kienli Hsien	Tan Chia Yuan, Wu Lo Yuan, Ma Lo Yuan, Yao Wan Liu Shui Kow, Pa Chih Kung, San Chia Tang	13.6	6-10	1:5	1:3	191,267	1,882.14	
6	P. T. Wang	San Chia Tang to Chu San Kung, Kienli Hsien	Men Lan Yuan Shih, Tung Chia Tang, Ti Tou Shih	17.5	6-10	1:5	1:3	223,446	2,007.65	
7	Y. Z. Ting	Chu San Kung to Tu Mao Pu, Kienli Hsien	Chu San Kung, Wang Erh Kung, I Kung Ti	5.9	6	1:3 1:5	1:3	241,014	2,675.62	
8	S. V. Yu	Ma Chia Huan to Huang Chia Wan, Shih Shou Hsien	Heng Ti, Huan Ti, Lo Cheng Huan Ti	36.0	4-7.5	1:3 1:5	1:3	189,505	1,390.96	
9	K. T. Chow	Huang Chia Wan to Kuan Yin An, Shih Shou Hsien	Lo Cheng Huan Ti, Chen Kung Tung Huan, Chen Kung Hsi Huan	26.0	4-7	1:3 1:5	1:3	163,384	1,422.58	
10	T. D. Liu	Kuan Yin An, to Chang Hua Kang, Shih Shou Hsien	Chen Kung Tung Huan Ti	10.4	5	1:3	1:2½	137,836	1,201.90	
Sub-Total				172.4				2,115,332	19,163.70 (1)	

(1) Includes 1393.22 tons of wheat paid to men as rations during bad weather.

DYKE WORK DONE, DISTRICT NO. 7 (*Cont.*)

Section			Dykes or Places Names of	Length (Kms.)	Top Width (Meters)	Slope		Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
No.	Engineer	Terminals				Front	Back			
			Kuan Yin Chou Min Ti						500.00	Subsidy
			Hsiao Hu Kou Sluice, Shih Shou Hsien						20.00	Subsidy
Grand Total									19,683.70	

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 8

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	C. C. Shah	South side: Ching Tuan Kou to Cheng Chia Tai North side: Tu Lo Kou to Liu Ho Huan Hsia Ti.	Yeh Hsing Huan, San Cheng Tung Huan, San Cheng Chung Huan, Lu Chia Chien, Kou Hsiang, Yung Ku Ti, Yang Liu Ti, Tsai Tien Ho Ti, Yung Chen Ti, Pao Feng Ti, San Pao Huan, Tsu Hsin Huan, Chang Lo Huan, Chang An Huan	51.2	3	1:3	1:3	316,469	1,984.660	
2	Y. Yang	South side: San Ho Huan Ti, Hsia Heng Ti to Chou Chia Tai North side: Liu Ho Huan, Hsia Heng Ti to I Ho Huan.	Mo Ni Huan, San Ho Huan, Liu Ho Huan, Ta Hsing Huan, Tung Hsin Muan, Ti Su Huan, I Ho Huan	38.1	3	1:3	1:3	268,325	1,826.220	
3	F. S. Tao	South side: Chow Chia Tai to Chih Chia Shan North side: Li Chia Tai to Fuchingchen Shang Ti.	San Ho Huan, Hsia Chia Huan, Hsia Chia Hsiao Huan, Yao Huan, Huang Chia Huan, K'ang Chia Huan, Hung Hu Nan Huan, Hung Hu Peh Huan	29.5	3-3.5	1:3	1:3	210,708	1,269.190	
4	K. C. Yu	South side: Chih Chia Shan to I Ma Kow North side: An Lo Pao to Hsi Kiang Huan Heng Ti.	Ho Chia Huan, Tung Mo Huan, Mei Hu Huan, Su Tzu Huan, Kiang Hsi Huan, Ma Pu Huan, Liu Chia Huan, Hung Hu Nan Huan	29.3	3-4	1:3	1:3	259,243	1,578.350	
5	T. C. Yung	South side: I Ma Kou to Teh Feng Huan Shang Ti. North side: Hsi Kiang Huan to Cheng Huang Kang	Yung Shu Huan, Jen Ho Huan, Tien Cheng Huan, Teh Tsu Huan, Hsiang Hsing Huan, Ta Hsing Huan, Tai Hu Huan, Teh Feng Huan, Kiang Hsi Huan Ma Pu Huan, Yin Chia Huan, Yao Erh Huan	35.1	3-7	1:3	1:3	234,053	1,390.412	

DYKE WORK DONE, DISTRICT NO. 8.—*Cont'd.*

Section			Names of Dykes or Places	Length (Kms.)	Top Width (Meters)	Slope		Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
No.	Engineer	Terminals				Back	Front			
6	S. S. Li	South side: Lung Shun Huan to Yang Lin Kou. North side: Hsiang Hua Huan to Huang Chin Huan.	Lung Shun Huan, Yung Fu Huan, Wu Teh Huan, Tai An Huan, Pien Tan Huan, Hsiang Hua Huan, Ch'un Tan Huan, Liu Hu Huan, Huang Chin Huan	29.6	4-8	1:3	1:2½ 1:3	128,082	949.720	
7	K. W. Chao	South side: Yang Lin Kou to Chi Min Chang North side: Huang Chin Huan to Tao Tsui	Peh Yu Huan, Wang Chou Huan, Kao Nien Sze Huan, En Lung Huan, Miao Hou Chih Hao, Chang Hu Chih Hao, Chen Tao Chih Hao, Ching Chih Hao, Ch'i Shih Erh Huan	37.0	3-4	1:2 1:3	1:1½ 1:2½	128,877	866.198	
8	H. K. Wang	South side: Chi Min Chang to Hsien Tao Chen North side: Tao Tsui to the opposite side of Hsien Tao Chen.	Chin Su Huan, Shang Yang Huan, Hsia Yang Huan, Yang Chih Hao, Tou Chih Hao, Yang Peh San Chih Hao, Shang Nan Chih Hao, Chung Nan Chih Hao, Hsia Yang Chih Hao, Kan Chih Hao	30.5	2-4	1:1½ 1:2	1:2 1:3	160,919	1,021.473	
Total				280.3				1,706,676	10,886.223	

*Subject to minor revision on final audit.

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DYKE WORK DONE DISTRICT NO. 9

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	S. C. Den	South side: Ho Pa to Ma Hsien Erh Chai North side: Hsien Tao Chen to Ma Yang Tan	Lu Ssu Huan, Yao Wan, Ou Chia Wan, Ko Chia Tai, Sung Chia Wan, Ngoh Kiang, Fang Chia Wan, Ma Yang Tan, Ho Pa, Hsiao Shih Huan, Tong Chia Chang, Hsiung Chia Wan, Chiung Chia Tai, Huang Hsin Chang Tung Tai Huan, Tsai Chia Tai	18.2	3-5	1:3	1:3	104,856	830.789	
2	S. B. Fan	South side: Ma Hsien Erh Chai to Lei Chia Hsin Fang North side: Ma Yang Tan to Hsia Cha Chow Huan	Liu Chia Huan, Kuang Fo Huan, An Ma Huan, Ching Fan Huan, Shang Hsia Cha Chou Huan, Pien Yu Tsui, Chang Chia Huan, Shang Hu Huan, Huang Sha Huan, Kuang Fa Tang Tu Chi Kan, Hsia Chia Yueh	14.5	2-5	1:2½ 1:3	1:2½ 1:3	110,111	970.082	
3	M. Wang	South side: Lei Chia Hsin Fang to Hung Shen Miao North side: Hsia Cha Chou Huan to Tai Ping Sze.	Hsieh Chia Ta Huan, Yang Chia Yueh, Wu Chia Wan, Huang Chi Sze, To Chia Wan, Chou Chia Yueh, Tai Ping Sze, Yang Chia Wan	8.8	3.3-6	1:3 1:3½	1:2½ 1:3	168,537	1,928.988	
4	C. A. Tung	South side: Hung Shan Miao to Yang Lin Chou North side: Tai Ping Sze to Kuan Chi Kou	Hung Shan Miao, Kiang Wan, Kiang Chia Wan, Shih Nien Ko, Hsi Huan Ti, Kan Chia Wan	8.9	5	1:3	1:3	56,981	432.017	
5	T. Y. Wu	Kuan Chi Kou to Fang Chia Wan	Kao Chia Wan, Peh Sha Tai, Fu Ching Chen	3.0	4	1:3	1:3	33,081	393.322	
(1) 7	C. Tseng	Tung Chin Ho Kou	Tien Kuan, Kuan Chia Cha, To Chia Chou	2.0	—	—	—	62,445	530.990	Work suspended due to bandits: dykes not completed
8	Y. T. Sun	Fang Chia Wan	Fang Chia Wan	1.1	10	1:2½	1:2½	83,388	948.477	
Total				56.5	—	—	—	619,399	6,034.665	550,594 catties of wheat for miscellaneous work

(1) Section No. 6 not organized due to local difficulties.

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 10

NOTE: Work in District No. 10 was supervised by Hunan Flood Rehabilitation Committee and not reported in detail. See text, page 117.

DYKE WORK DONE, DISTRICT NO. 11

Section			Names of	Length	Top Width	Slope		(*Fongs*)	(Short Tons)	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Front	Back	Work Done	Consumed Wheat	
1	C. F. Pan	Mei Ho Kou to Nu Shan Pa, Feng Tai	Dykes along North Bank of Hwai River	38.3	3	1:3	1:3	578,427	3,555.600	
2	C. C. Hsueh	North side: Shui Kang Chi to Mei Ho Kou West Bank South side: Opposite side of Shui Kang Chi to Hsin Tien Pu.	Dykes along both banks of Hwai River	39.8	3	1:2 1:3	1:3	392,701	2,130.060	
3	T. S. Sheng	Left side of Ying Ho: Kiang Liu Chi to Mei Ho Kou Right side of Ying Ho: Opposite side of Liu Kiang Chi to Mei Ho Kou West Bank	Dykes along both banks of Ying Ho	46.3	3	1:2½ 1:2	1:2½ 1:3	292,391	1,562.610	
		Dykes along Pi Ho, South West of Chen Yang Kuan	Dykes along Pi Ho	52.0				44,114	141.000	
4	D. M. Kuo	North side of Hwai River: Nan Chao Chi to Shui Kang Chi South side of Hwai River: Opposite side of Nan Chao Chi to opposite side of Shui Kang Chi, and Huang Pan Tou to Niu Huai Kang	Dykes along both banks of Hwai River	121.9	3	1:2 1:3	1:3	279,991	1,551.980	
		Dykes along Jun Ho: Wang Chang Mao to Jun Ho Kou	Small dykes along Jun Ho	6.4				16,200	40.000	
5	C. Cheng	North of Hwai River: Hung Ho Kou to Nan Chao Chi South side of Hwai River: Lin Shui Chi to opposite side of Nan Chao Chi	Dykes along both banks of Hwai River	104.9	3	1:2 1:3	1:3	129,611	701.120	
		New Dykes along Wa Cha Ho: Ti Li Cheng to Wu Fan Ho Kou	New Dykes along Wu Cha Ho	21.0				15,602	78.070	

DYKE WORK DONE, DISTRICT NO. 11 *Cont.*

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
		Circle dykes located at the North of San Ho Chien Chen	Circle dykes of Hwai River							
6	K. Y. Wu	Left side: San Tso Fen, Ying Shang Hsien, to Kiang Liu Chi Right side: Hsia Liu Chi to opposite side of Kiang Liu Chi	Dykes along both sides of Ying Ho	38.7	3	1:2	1:3	161,590	964.020	
Total				469.3				1,910,627	10,724,460 (1)	

(1) Includes { Transportation allowances 8.140
Advances to miscellaneous gangs not completely worked out 37.700

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 12

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	C. C. Loo	Ko Ho Kou to Ta Hsu Chia Tai Tzu Ko Ho Kou to Shang Kou Chi Kuei Shan Tou to Shang Kou Chi Chin Shan Chia to Chih Tzu Hu	Dykes along left bank of Hwai River Dykes along left bank of Ko Ho Dykes along right bank of Ko Ho Shih Yang Pa	73.9	3	1:2 1:5	1:3	685,367	3,813.633	
2	C. C. Li	Ta Hsu Tai Tzu to Tai Chi	Dykes along left bank of Hwai River	30.0	3-4	1:2 1:5	1:3	235,360	1,220.207	
3	Y. V. Tsung	Mao Tai Chi to Huang Ni Kou Tsao Shan to Fou Shan	Dykes along left bank of Hwai River Dykes along right bank of Hwai River	101.8	3	1:2 1:5	1:3	739,746	3,911.690	
4	C. Chang	Ma Tou Cheng to Chin Shan Chia	Dykes along left bank of Hwai River	9.5	3-5	1:2 1:5	1:3	125,890	704.653	
5	T. S. Cheng	Huang Tung Yao to Ma Tou Cheng Lo Ho Chia to Su Chia Kang Shang Yao to Hsin Cheng Kou Lo Ho Chia	Dykes along left bank of Hwai River Dykes along right bank of Hwai River Dykes along left bank of Yao Ho Dock on south bank of Hwai River	45.3	3	1:2 1:5	1:2 1:3	509,469	2,933.716	
6	C. C. Yin	Hsia Yao to Huang Tung Yao	Dykes along left bank of Hwai River	20.5	3	1:2 1:5	1:3	156,936	779.822	
7	C. D. Cheng	Huang Ni Kou to Wu Ho Hsien Wu Ho Hsien to Tsao Lin Chang	Dykes along left bank of Hwai River Dykes along right bank of Kuai Ho	10.6	3	1:2 1:5	1:3	233,710	1,583.444	
8	C. Y. Wang	Tien Tzu Chi to Hsia Yao Ta Shan Chi to Yao Chia Wan	Dykes along left bank of Hwai River Dykes along right bank of Hwai River	27.3	3	1:2 1:5	1:3	250,479	1,323.603	
	Sub-Total			318.9				2,936,957	16,270.768	

CHANNEL WORK WORK DONE, DISTRICT NO. 12 (*Cont.*)

Section			Names of	Dimensions					Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
No.	Engineer	Terminals		Length (Kms.)	Depth (Meters)	Bottom Width (Kms.)	Top Width (Meters)	Slope			
2	C. C. Li	Hu Chia Tai to Liu Chiao	Peh Fei Ho	5.1	1.50	60	66	1:2	84,662	929.792	
4	C. Chang	Mei Ho Kou to Chang Chia Tsui	Peh Fei Ho	11.0	1.50	60	66	1:2	279,286	2,477.616	
6	C. C. Yin	Chang Chia Tsui to Hu Chia Tai	Peh Fei Ho	9.7	1.50	60	66	1:2	158,213	1,866.918	
Total				25.8					522,161	5,274.326	
Culverts										1,198.641	
Dyke work (See preceding sheet)				318.9					2,936,957	16,270.768	
Total District No. 12				344.7					3,459,118	22,743.735	

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 13

Section			Names of	Length	Top Width	Slope		Work Done	Wheat Consumed	Remarks
No.	Engineer	Terminals	Dykes or Places	(Kms.)	(Meters)	Back	Front	(*Fongs*)	(Short Tons)	
1	C. C. Shen	Fou Shan Chi to Wuho Hsien	Dyke along North Bank of Hwai River and dyke along To Ho	20.3	3	1:2	1:3	343,509	2,048.452	
2	T. H. Ko	Wuho Hsien to Fan Chi	Dyke along East Bank of To Ho	24.8	3	1:2	1:3	233,767	1,481.862	
3	V. H. Lee	Szu Chen Chang to Liang Chia Wa, Wuho Hsien	Dyke along North Bank of Kuai Ho	24.0	3	1:2	1:3	384,401	2,561.850	
4	I. T. Wang	Pai Kan Chi to Fou Shan Chi	Dyke along South Bank of Hwai River	9.5	3	1:2	1:3	69,862	369.066	
5		Yun Cheng Chi to Kao Kou Chi	Dyke along North Bank of Kuai Ho							Interrupted by "Red Spear" activities
6	S. S. Wu	Fan Chi to Hsu Wei Tzu	Dyke along East Bank of North To Ho	8.7	3	1:2	1:3	40,883	304.536	
7	H. T. King	Szu Chen Chang to Tai Tzu Li Chang, Wuho Hsien	Dyke along West Bank of To Ho	25.0	3	1:2 1:5	1:3	319,001	2,050.579	
8	C. C. Mei	Tai Tzu Li Chang to Hao Cheng Chi	Dyke along West Bank of To Ho	21.0	3	1:2	1:3	88,759	639.000	
9	S. D. Wu	Opposite side of Hao Cheng Chi to Li Chang	Dyke along East Bank of To Ho	10.2	3	1:2	1:3	12,822	108.120	

DYKE WORK DONE, DISTRICT NO. 13 (*Cont.*)

Section			Names of Dykes or Places	Length (Kms.)	Top Width (Meters)	Slope		Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
No.	Engineer	Terminals				Back	Front			
10	I. T. Wang	Li Chang to Hsu Wei Tzu	Dyke along West Bank of North To Ho	14.0	3	1:2	1:3	6,282	47.083	
11		Liang Chia Wa to Lien Cheng Chi	Dyke along North Bank of Kuai Ho						8.066	Interrupted by "Red Spear" activities
Total				157.5				1,499,286	9,618.614	
Transportation									7.198	
Grand Total									9,625.812	

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 14

Section			Names of Dykes or Places	Length (Kms.)	Top Width (Meters)	Slope		Work Done (*Fongs*)	Consumed Wheat (Short Tons)	Remarks
No.	Engineer	Terminals				Back	Front			
1	C. L. Chow	Liu Cha to Chao Kuan Pa, Kiangtu Hsien	West Dyke of Grand Canal	72	3.2-5.0	1:3	1:2	74,806	1,732.298	
2	C. W. Ting	Lu Chin, Kiangtu Hsien to Yueh Ho Kang, Kaoyu Hsien	West Dyke of Grand Canal	15.4	3.2	1:2	1:2 1:3	115,340	2,432.644	
3	F. C. Wang	Chieh Shou to Huang Pu, Pao Ying Hsien	West Dyke of Grand Canal	38.0	3.2	1:2	1:2	90,755	1,554.563	
4	Y. T. Chang	Ho Pao Tang, Hwai Ying to Yo Tai, Pi Hsien	Dykes along Central Grand Canal	147.9	3.2 22.0	1:2- 1:3	1:2 1.3	108,039	1,360.359	
Total				208.5				388,940	7,019.864	Including payment for 109.176 men days of Miscellaneous Work
									802.422	Subsidy for repairing Kui Yu dykes
									1,017.563	Subsidy for sealing of breaks at La Shen An
									3,751.560	Subsidy for Grand Caral Commission
Grand Total									12,591.409	

*Subject to minor revision on final audit.

WORK DONE DISTRICT No. 15

District No. 15 was consolidated with District No. 16.

CHANNEL WORK DONE, DISTRICT NO. 16

Section			Name of River	Dimensions				Slope	Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
No.	Engineer	Terminals		Length (Kms.)	Depth (Meters)	Bottom Width (Meters)	Top Width (Meters)				
1	C. C. Wang	Chuan Chang Ho to Hsin Yang Kang	Tung Men Cha	2.24	4.5	14	32	1:2			
		Tien Fei Cha to North End of Tung Men Cha	Hsin Yang Kang	0.89	7.0	19	47	1:2	169,442	2,118.048	
		North End to South End of Chien Shui Ho	Chien Shui Ho	5.6	7.0	60	88	1:2			
2	M. L. Yang	Tou Mo Lou, Tang Chia Wan and Peh Yang An	Hsin Yang Kang, "Reservation" River	1.03	5.0	25	45	1:2	25,528	169.579	
3	C. L. Fu	Kai Pen Kang and Ju I Kang	Hsin Yang Kang, "Reservation" River	1.88	5.0	25	45	1:2	20,383	204.964	
4	C. W. Chang	Chi Chia Tai	Hsin Yang Kang, "Reservation" River	1.97	5.0	25	45	1:2	14,875	120.123	
5	M. W. Chang	Pa Chang Ho	Min Pien Ho	9.43	8.0	45	80	1:2.2			
		Wu Chang Ho	Min Pien Ho	9.22	5.8	30	50	1:7.5			
		Original Wu Chang Ho	Min Pien Ho	5.78	6.0	30	60	1:2.5	250,750	1,617.930	
		La Pa Ho	Min Pien Ho	9.84	4.0	21	30	1:11			
			Total	47.88					480,978	4,230.644	

CHANNEL WORK DONE, DISTRICT NO. 17

Section			Name of River	Dimensions				Slope	Work Done (*Fongs*)	Wheat Consumed (Short Tons)	Remarks
No.	Engineer	Terminals		Length Kms.	Depth Meters	Bottom Width Meters	Top Width Meters				
1	H. H. Pan	Tso Chia Tai to Chuan Tung Tsao	Ho To Ho	9.40	3.50	18.00	32.00	1:2	208,069	1,107.776	
2	S. H. Liu	Tso Chia Tai to Chuan Tung Tsao	Ho To Ho	5.00	3.50	18.00	32.00	1:2	115,729	645.427	
3	C. L. Yen	Chuan Tung Tsao to Hsin Chuan Kang	Ho To Ho	4.24	3.50	18.00	32.00	1:2	91,195	667.038	
4	Y. Z. Tso	Ma Chia Wan to Chao Shui Pa	Tso Kang	14.69	4.00	20.00	44.00	1:3	198,808	1,162.726	
5	C. C. Shun	Yin Chia Tsao to Pa Kou, Wang Chia Kuei to Hsin Ho Kou.	Wang Kang	3.82	3.60	15.00	36.60	1:3	83,379	406.159	
6	C. H. Chao	Chen Chia Kuei to Tung Feng Chu	Tou Lung Kang	3.82	4.80	20.00	48.80	1:3	155,298	838.366	
7	T. S. Shih	Niu Wan Ho Kou to Lou Shu Wei Tzu, Man Tu to Hsia Min Tun	Tou Lung Kang	4.90	4.80	20.00	48.80	1:3	46,946	330.559	The unfinished work of this section was continued by National Economic Council
8	C. C. Shih		She Yang Ho (Upper part)						8,171	95.316	Ditto
9	C. H. Chao		She Yang Ho (Lower part)							20.934	
	For excavating machine									6.107	
Total				45.87					907,595	5,280.408	

*Subject to minor revision on final audit.

DYKE WORK DONE, DISTRICT NO. 18 SHA HO SUB-OFFICE

Section		Location	Earth Work			Stone Work				Miscellaneous Expenses (Short tons)	Total Wheat Consumption (Short tons)	Remarks
No.	Engineer	of Camp	Length (Km.)	Work Done (*Fongs*)	Wheat Consumed (Short tons)	Length (Km.)	Work Done (*Fongs*)	Wheat Consumed (Short tons)	Rate per *fong* (Catties)			
1	P. C. Yao	Yeh Hsien	30.7	61,648	232.286	0.264	1,120	310.486	415.00	13.707	556.479	Repaired dykes; constructed 15 spur dykes and repaired one small bridge
2	J. J. Wang	Yeh Hsien, Wu Yang Hsien, Hsiang Hsien	18.1	55,509	196.969	0.522	2,940	583.050	297.50	3.333	783.352	Repaired dykes; constructed 10 earth dams and 15 spur dykes
3	T. L. Hu	Hsiang Hsien	6.1	25,767	91.036	0.254	800	164.875	308.50	4.580	260.491	Repaired dykes; constructed spur dykes and repaired stone bank protection in two places.
4	Y. W. Yen	Wu Yang Hsien	38.9	90,951	320.300	0.262	700	162.670	348.50	10.614	493.584	Repaired dykes; constructed 15 spur dykes and repaired stone bank protection in two places
5	H. L. Kiang	Yen Cheng Hsien	20.1	85,673	337.409	0.748	1,570	898.800	859.00	470.075	1,706.284	Repaired dykes; constructed 2 spur dykes and 4 stone bank protections
6	M. F. Chang	Hsi Hua Hsien	9.6	95,287	385.166	0.246	789	40.400	76.80	4.959	430.525	Repaired dykes; constructed 6 spur dykes
7	K. C. Hou	Hsi Hua Hsien, Hwai Yang Hsien, Shang Shui Hsien	1.5	12,071	48.283	0.217	1,660	420.137	380.00	3.575	471.995	Repaired dykes and channeling work
8	K. I. Tung	Hsiang Cheng Hsien, Shen Chiu Hsien		1,422	30.000		—	—	—	275.100	305.100	Removed sand and gravel from the river bed
Sub-Total			125.0	428,328	1,641.449	2.513	9,570	2,580.418	404.45	785.943	5,007.810	

DYKE WORK DONE, DISTRICT NO. 18 (*Cont.*)

Name of Sub-office	Section No.	Section Engineer	Location of Camp	Earth Work Length (Kms.)	Earth Work Work Done (*Fongs*)	Earth Work Wheat Consumed (Short Tons)	Stone Work Length (Kms.)	Stone Work Work Done (*Fongs*)	Stone Work Wheat Consumed (Short Tons)	Stone Work Rate per *fong* (Catties)	Miscellaneous Expenses (Short Tons)	Consumption Total Wheat (Short Tons)
Yin Ho Sub-office	1	S. F. Yang	Yencheng	68.1	481,347	1,283.593					136.087	1,419.680
	2	T. S. Ma	Hsi Hwa Hsien Hwai Yung Hsien, Shang Shui Hsien	76.4	444,648	1,629.310					94.503	1,723.813
	Total			144.5	925,995	2,912.903					230.590	3,143.493
Ih Lo Ho Sub-office	1	F. W. Kuo	Loyang	3.8	33,949	284.690	2.100	3,830	840.070	329.00	82.60	1,133.020
	2	C. F. Chow	Yen Shih	44.5	103,803	309.070	0.200	520	37.586	108.40	5.316	351.972
	3	S. C. Ma	Kung Hsien	3.1	25,273	97.150	0.649	777	232.710	450.00	7.024	336.884
	4	J. T. Ka	Kung Hsien	7.4	18,107	65.698	—	—	—	—	1.804	67.502
	5	H. F. Kuo	Loyang	34.9	227,431	423.500	—	—	—	—	5.677	429.177
	6	L. S. Yi	Loyang	6.8	20.136	44.123	—	—	—	—	1.667	45.790
					533	—	—	1,472	—	—	404.821	404.821
	Total			100.5	429,232	1,224.231	2.949	6,599	1,110.366	252.40	434.569	2,769.166
Grand Total				370.0	1,783,555	5,778.583	5.462	16,169	3,690.784	342.40	1,451.102	10,920.469

*Subject to minor revision on final audit.

APPENDIX VI—5

REPORT ON INSPECTION OF DYKES AND OTHER WORKS CONSTRUCTED BY THE NATIONAL FLOOD RELIEF COMMISSION

Shanghai, February 13, 1933.

His Excellency,

Mr. T. V. Soong,

Chairman of National Flood Relief Commission.

Sir,—

The undersigned were appointed by Your Excellency to make an official inspection of the dykes and other works constructed by the Engineering and Labor Relief Division of the National Flood Relief Commission. Your instructions were embodied in a letter to us substantially as follows:—

> "As the engineering and labor relief is now drawing to a close, it is necessary that the works constructed by the Engineering and Labor Relief Division be inspected and reported upon with a view to their official acceptance. You are invited to be a member of the Committee to carry out this inspection, and I would appreciate it if you will render me a report along with others at an early date."

In accordance with the above instructions we left Shanghai on November 26, 1932 and proceeded to Nanking where a formal ceremony in connection with the completion of the work was conducted on board S. S. Kianghsin. We proceeded up the Yangtse River and arrived in Hankow on December 3rd, 1932. On December 4th, we took a small ship for Kienli on the

middle Yangtse. After our return on December 10th, we went to Yokow on the upper reaches of the Han River. On December 14th, we left Hankow for Honan by rail, reached Pengpu on December 19th and proceeded thence to Chengyangkwan, Wuho and other cities. On December 22nd, we arrived in Yangchow, and went to Kao Yu, both on the Grand Canal. On December 31st, we arrived in Tungtai. On January 9th, 1933, we returned to Shanghai, thus concluding the trip.

The following is a brief account of what we have found.

1. Yangtse River Dykes

The total length of Yangtse Dykes from Chinkiang up to Shi-sher Hsien in Hupeh, repaired or reconstructed by the Division, was about 1,800 kilometers. We selected the more important works and gave them careful inspection, namely: in District No. 1, Kiangsu, Foo Kao Chow Dyke and Kwoa Tung Dyke on the north bank; in District No. 2, Anhwei, Ko Chi Shan Dyke, Lo Kong Dyke, Hwang Sze Tai Dyke and Lo Pei Chang Dykes; in District No. 3, Kwang Chi Wei Dyke, Ma Wha Dyke in Anhwei; in District No. 4, Wei Kow and Tuan Yao Dykes near Kiukiang (constructed by the C.I.F.R.C. under an arrangement with this Commission) ; in District No. 5, Hupeh, Wu Wei Dyke, Wu Fung Dyke, Yang, Po Dyke, Wukiang Dyke, Kiang Yung Dyke, Hankow City Bund Dyke (built by Hupeh Flood Rehabilitation Committee under an arrangement with this Commission), Chang Kung Dyke; in District No. 6, Hupeh, Hu Chia Chow Dyke, Ying Chia Ma Do Dyke, Chow Ma Do Dyke; in District No. 7, Hupeh, Shang Chu Wai Dyke, Dykes in Kienli Hsien.

All the above named dykes (with the exception of Lo Pei Chang Dyke in District No. 2 on which work was still in progress under the National Economic Council, its commencement having been delayed) were found to have complied with the standards of the Division and to be in satisfactory condition. Most of them below Hankow had a height one meter above the 1931 flood level, and above Hankow a height equal, as a general rule, to the level of that flood. The top width was over four meters, and in the case of some special dykes in Hupeh Province, the top width was found to be as much as eight meters. In all cases, the earthwork was found sound and stable.

As we recalled the sufferings of millions of people in the Yangtse Valley as a result of the flood of 1931, and as we realised the excellence of the crops gathered in this region in 1932, we could not but appreciate the value of the work of the Commission in restoring these dykes. Banditry of all kinds has disappeared as the flooded districts were rehabilited.

Our only criticism, if at all, was the use of both slopes of the dykes in places to build houses thereon or to plant food crops. Measures should be taken immediately to prohibit such practice.

2. Han River Dykes

In this region during 1931 and 1932, the "red" bandits were rampant. There, great difficulty had been experienced in carrying out the Flood Commission's program. Our party left Hankow on December 10, 1932, by omnibuses, passing Han Chuan, Yung Mung, Ying

Cheng, Ching Shan, Tien Meng to Yokow. Those places had just been wrested from the grip of communists by the National Army, and everywhere we found desolation, and heard stories of the terrible suffering that the people had passed through, involving the death of many thousands. On the next day, we returned by steam launch and inspected dykes in Districts No. 8 and No. 9, namely, Ching Hwa Sze, Lee Chia Chu, Chow Chia Yueh, Yang Chia Yueh, Peh Sha Tai, Sien Tao Chen, Too Sze Chen, etc. These also were found to have complied with the standards of the Division, and to have been constructed in accordance with the particulars in the "Compendium" as regards the height above 1931 flood level. All the earthwork was found to be sound and stable.

Considerable damage had been done to dykes above Yokow by the flood of 1931, but owing to the presence and interference of the "red" bandits, no repairs could be undertaken except the closing of breaches. As the bandits have now been suppressed, additional work should be done there to strengthen the old dykes.

3. Work in Honan Province

The work done by the 18th District was of two kinds:—

(a) Masonry and concrete work—On Sha Ho, as at Chow Chia Kow, Lai Ho Sa, Yencheng (outside of West and South Gates) and Loyang (South Gate), the banks were protected with bricks and stones, but were in a very dilapidated condition. The Commission has done a most extensive and imposing work of repair along the banks of the rivers Sha Ho, E-Ho, and Lo Ho.

(b) Earthwork on dykes along the Sha Ho, Ying Ho, Lo Ho, and Ying Ho which were considerably strengthened everywhere.

We have carefully inspected both classes of work, and found them satisfactory, particularly the earthwork which was accomplished at a minimum expenditure. The inhabitants in Yencheng told us that owing to the completion of channelling and dyke work along the Yin River alone, over 300,000 *mow* of arable land had yielded excellent crops, and that the harvest was the best in fifty-four years. Before the completion of these dykes, the value of land was less than 10 dollars per *mow* whereas now the same land has appreciated to 120 dollars.

Our only regret was that as the allocation was small and the work started late only a limited amount could be completed. Considerable work still remains to be done. The province has been visited alternately by flood and drought, and the inhabitants have been in a pitiable plight. It is hoped that additional funds may be made available so that further work of a similar nature can be carried out in the near future.

4. Hwai River Dykes and Culverts

This region was divided into three districts. The dyke work extended from Yu Yi Hsien up to Cheng Yang Kwan, a distance of 1,000 kilometers. Channelling work was about 20 kilometers in length, and was on the upper part of the Peh Wei Ho. The culvert work consisted of 24 re-inforced concrete installations. The magnitude of the three kinds of work combined was unprecedented in this part of China.

The area to be covered by inspection was so large and the time at our disposal so limited that inspection was of necessity selective rather than comprehensive. At Wuho, we inspected dykes on the Hwai River and its tributary Wei Ho and Tow Ho, and proceeded up to Lin Huai Kwan, Peh Wai Ho Kow, Pengpu, Huai Yuen, Lo Ho Kai, Feng Tai, and Ya Shan Kow, till Cheng Yang Kwan was reached. At all these places, we went ashore and inspected dykes or culverts. They were found to conform to the Division's standards, the height of dykes being about one meter above the 1931 flood level. We were informed by the field workers that above Feng Tai owing to the presence of "red" bandits, the dykes on both sides of the Huai River have not been finished even up to first stage i.e. up to their pre-flood level. We were also told by Mr. Chang, Superintendent of District No. 13, that the dyke work in that District was done according to plans of the Huai River Commission, but that owing to lateness in starting, certain portions of the work on the To Ho were still unfinished. Through the opposition of large land owners, and the interference of "Red Spear" bands, the dykes on both sides of Wei Ho could not be completed according to schedule. These unfinished works have been taken over by the National Economic Council.

5. Grand Canal Dykes in Northern Kiangsu

The portion of the Grand Canal in Northern Kiangsu forms an important link for the passage of water from the Hwai and Nie Rivers into the Yangtse River. On the proper functioning of this canal depends the well-being of people in twenty *hsiens* in northern Kiangsu. In

the 1931 flood, twenty-seven breaches occurred in the east side dyke while serious erosion took place on the west side dyke. District No. 14 was responsible for the greater portion of the earthwork on the west side dyke, but the actual construction was placed in the hands of the Northern Kiangsu Rehabilitation Committee and the Chinese Foreign Famine Relief Committee, with a subsidy from this Commission.

Our inspection started from Lo Cha northwards, passing Lai Shen An to Kao-yu. We noticed that all the breaches in the east side dyke had been properly closed, including Lai Shen An, which had to be reconstructed several times owing to the treacherous nature of the foundation soil. If the slopes of the west dyke, which has also been properly repaired, are protected with stone the structure will be still stronger.

The earthwork on the west side dyke has also been completed.

6. Channelling Work in Lee Sha Ho

The five channels in Northern Kiangsu originally formed outlets of the Huai River to the sea. In the last one hundred years, there has been considerable accretion to the coast line of this region with the result that all the five outlets have deteriorated seriously. The Hwai River has been unable to drain off its surplus water, and the result has been havoc for almost a century. The flood of 1931 broke the Grand Canal dykes, and inundated the entire Lee Sha Ho basin to a depth of over ten feet. The basin is below sea level, and the flood water was thus unable to escape. The Division's plan was to drain

off this water by straightening the bends and by deepening the channels of the five outlets, while two new channels, Ho Tow Ho and Ming Pien Ho were also completed. The construction of tidal gates now in progress will prevent the inflow of salt water during high tide.

We have found that the following works have complied with the Division's standards and agree with the particulars in the "Compendium".

In District No. 17:

Deepening and straightening of Ho To Ho at and below Chuen Chia Ngo.

Straightening of bend on Chu Kong at Tien Shui Wa Tze.

Straightening of bend on Wong Kong at Shi Chia Wai.

Straightening of bend on Tow Lung Kong at Tung Feng Chu.

In District No. 16:

Straightening of bend on Sing Yang Kang at Nanyang Ngo.

Channelling work Tung Men Cha Ho, Tien Fer Cha, Yai Shui Ho.

The work in District No. 16 was still unfinished at the time of inspection, and, according to reports of men in the field, the earthwork has already been taken over by the National Economic Council. The tidal gates at Tow Lung and Ho To outlets to the sea are being constructed by the National Economic Council. We feel that the tidal gates at Wong Kong and Cho Kong outlets are also important, and if they can be started as soon

as possible, the inhabitants will be very grateful to the Government.

Conclusion

In accordance with your instructions, we have inspected all the work distributed over five Provinces, and have found it in all cases to have complied with the standards of the Division and to agree with the particulars supplied by the Engineering and Labor Relief Division of the Commission. The funds have been economically handled. The mobilization of a large number of Chinese engineers almost at a moment's notice, the completion of difficult works of gigantic proportions in a short time, are unprecedented in Chinese history. They are the result of the able direction of your Commission. The appreciation of the people benefited was shown by the spontaneous welcome given to us wherever we went.

The unfinished work has now been taken over by the National Economic Council. For the finished works, special regulations are required for proper care and maintenance. Those who were responsible for the excellent results of this form of relief merit your special consideration.

Col. Stroebe's daily note is herewith attached for perusal.[1]

Respectfully submitted,
Sir John Hope Simpson
C. H. Lee
G. G. Stroebe
Z. Y. Chow
P. S. Shen

[1] Not included in this report.

APPENDIX VII

Table

1 Financial Report, Department of Hygiene and Sanitation.

2 The National Flood Relief Commission Department of Hygiene and Sanitation, Organization Chart.

3 Number of Patients Treated and Preventive Inoculations Given by the Field Units and Travelling Clinics for Labour Relief Districts, September, 1931 to September 1932

4 Number of Patients Treated by the Hospitals According to Classification of Diseases, September 1931 to March 1932.

5 Number of Patients Treated by the Travelling Clinics for Labour Relief Districts According to Classification of Diseases, February to September 1932.

6 Sanitation Work of Field Units and Travelling Clinics for Labour Relief Districts, September 1931 to September 1932.

7 Number of Persons Given Preventive Inoculations by Field Units and the Travelling Clinics for Labour Relief Districts, September 1931 to September 1932.

8 Cholera Epidemic in China during 1932.

9 Number of Patients Treated in Special Cholera Hospitals, April to September 1932.

10 Malaria Survey at Nanking, Soochow, Hangchow, Wukong and Yangtse Ports, November 1931 to January 1932.

11 Malaria Survey at Nanking, 1932.

12 Number of People Sick Per 1,000 Persons.

13 Comparative Data on Deaths of Refugees, 1931.

APPENDIX VII—1

Financial Report

Department of Hygiene and Sanitation, September 1931 August 1932:—

Receipts:

1.	From the Commission..	$610,093.61	
2.	Appropriation from National Famine Relief Commission	20,000.00	
3.	Contribution for drugs from the Women's Foreign Missionary Society, Peiping	5,000.00	
4.	Appropriation from the International Famine Relief Commission to the Wuhu Field Unit..	1,000.00	
5.	Interest from Bank	663.79	
6.	Refund for damage of bedding..	5.00	
7.	Refund from the North Anhwei Station for extra amount advanced	10.00	
	Total Receipts		$636,772.40

Disbursements:

1.	Salaries	$202,426.39	
2.	Running expenses	123,352.95	
3.	Equipment	38,288.69	
4.	Medical instruments and drugs	177,718.08	
	Total Disbursements		$541,786.11
	Balance, August 31, 1932		$ 94,986.29

The balance of $94,986.29 as of August 31, 1932 was transferred by the Commission to the Central Field Health Station of the National Economic Council to carry on unfinished work in connection with the Anti-cholera and Anti-epidemic Campaign.

APPENDIX VII—2

ORGANIZATION CHART

Department of Hygiene and Sanitation

APPENDIX VII—4

NUMBER OF PATIENTS TREATED BY THE HOSPITALS AND TRAVELLING CLINICS OF FIELD UNITS ACCORDING TO CLASSIFICATION OF DISEASES

September 1931 to March 1932

Diseases	Wuhan	Northern Kiangsu	Kiukiang	Nanking	Wuhu	Total
Infectious Diseases:						
Smallpox	203	—	—	—	—	203
Measles	306	529	—	—	—	835
Meningitis	5	—	—	—	—	5
Typhoid	239	84	8	—	—	331
Cholera	810	1	16	—	—	827
Dysentery	9,336	7,433	454	—	—	17,223
Typhus	—	—	12	—	—	12
Malaria	8,104	3,196	804	—	—	12,104
Others	1,137	9	9	—	—	1,155
Unclassified	—	—	—	2,116	—	2,116
Medical:						
Gastro-intestinal diseases	6,852	3,129	1,301	2,085	—	13,340
Common cold	—	990	—	4,665	—	5,655
Others	6,055	3,365	719	—	—	10,139
Surgical	2,938	—	186	4,014	—	7,138
Trachoma	1,283	885	—	—	—	48,372
Ear-Nose-Throat	—	—	1	1,233	—	2,168
Skin Diseases	38,071	4,173	3,061	3,067	—	1,234
Others	19,856	5,972	2,201	35	—	28,064
Unclassified	—	—	—	—	6,250	6,250
Total	95,195	29,766	8,772	17,188	6,250	157,171

Note:—The above figures do not include the number of patients treated by the Travelling Clinics for Labour Relief Districts, which were organized since February, 1932.

APPENDIX VII—5

NUMBER OF PATIENTS TREATED BY THE TRAVELLING CLINICS FOR LABOUR RELIEF DISTRICTS ACCORDING TO CLASSIFICATION OF DISEASES

February to September 1932

DISEASE	District Number														Total
	1	2	3	4	5	6	7	8	10	11, 12 & 13	14	15	16	17	
Infectious Diseases:															
Smallpox	1	2	1	—	40	4	5	4	1,576	1	6	11	—	—	1,651
Measles	1	—	2	2	41	—	2	7	127	8	10	37	—	—	237
Whooping Cough	—	3	—	—	38	—	14	33	—	—	—	—	—	—	88
Cerebro-spinal meningitis	2	—	—	—	—	—	—	—	—	—	4	1	—	—	7
Typhoid	—	8	—	—	96	—	71	55	425	2	6	37	—	—	700
Dysentery	37	162	548	415	2,080	2	261	1,024	2,736	328	153	189	37	—	7,972
Cholera	—	1	—	—	19	—	57	100	244	—	29	178	3	110	741
Typhurs	—	5	—	—	—	—	—	—	—	—	—	106	—	—	111
Malaria	49	438	330	675	3,291	313	265	816	2,065	414	872	446	51	198	10,223
Others	2	2	14	398	1,542	26	202	176	1,363	1,376	312	189	—	166	5,768
Medical:															
Gastro-intestinal diseases	167	346	170	251	3,147	617	538	1,527	5,902	777	129	221	29	93	13,914
Tuberculosis	16	37	18	374	1,260	40	91	120	396	4	—	—	—	—	2,356
Others	298	1,984	894	1,823	3,185	1,270	195	3,779	7,168	618	190	343	10	225	21,982
Surgical:															
Injuries	77	432	153	1,520	1,445	38	129	237	350	967	—	—	—	—	5,348
Others	59	529	385	559	1,660	119	120	2,365	1,178	118	—	—	—	—	7,092
Skin Diseases:															
Scabies	713	5,512	1,663	13,697	18,545	3,720	1,372	14,106	8,693	2,360	—	—	—	—	70,381
Others	94	1,015	551	50	9,538	217	182	3,885	3,332	918	997	589	48	847	22,263
Venereal Diseases:															
Syphilis	37	5	7	15	19	—	8	122	75	1	—	—	—	—	289
Gonorrhea	2	21	1	23	28	1	34	24	188	3	—	—	—	—	325
Others	1	1	1	4	528	—	1	1	14	7	—	—	—	—	558
Eye Diseases:															
Trachoma	205	603	394	605	1,157	15	177	644	1,145	555	194	202	7	138	6,041
Others	52	97	67	21	372	12	41	605	1,103	338	—	—	—	—	2,608
Ear-Nose and Throat	6	66	2	90	291	—	57	716	193	356	—	—	—	731	2,508
Others	31	117	103	—	106	—	344	7	66	5	1,790	1,743	177	—	4,489
Total	1,850	11,386	5,304	20,522	48,428	6,394	4,166	30,353	38,339	9,056	4,692	4,292	362	2,508	187,652

APPENDIX VII—6

Sanitation Work of Field Units and Travelling Clinics for Labour Relief Districts
September 1931 to September 1932

	Wuhan Section	Kiukiang Section	Nanking Section	North Kiangsu Section	Wuhu Section	Anking Section	North Anhwei Section	Section Shanghai	Loyang Section	Total
Sanitary Inspections and Improvements	164	—	8	928	3,578	78	127	—	—	4,883
Disinfection of water	—	7,202	54,147	7,660	—	1,888	898	18,553	755	91,103
Water-holes built	1,600	—	12	—	—					1,612
Cesspools built	18	56	—	—	—					74
Tubewells built	9	—	—	—	—					9
Corpses buried	13,893	—	—	484	—					14,377
Incinerators built	34	2	—	—	—					36
Garbage trenches dug	1,657	37	—	—	—					1,694
Garbage trenches covered	1,793	83	—	—	—					1,876
Cwts. of garbage removed	—	—	876,681	39,032	3,100					918,813
Latrines built	1,075	34	16	—	14					1,139
Latrines disinfected	—	—	—	8,231	—					8,231
Feces trenches dug	2,308	—	2	—	—					2,310
Feces trenches covered	2,407	—	2	—	—					2,409

APPENDIX VII—7

NUMBER OF PERSON GIVEN PREVENTIVE INOCULATIONS BY FIELD UNITS AND TRAVELLING CLINICS FOR LABOUR RELIEF DISTRICTS

September 1931 to September 1932

	District	Anti-Cholera Inoculations	Smallpox Vaccinations	Anti-Meningococcus Inoculations	Total
Field Units	Wuhan	113,686	106,859		220,545
	North Kiangsu	44,881	29,238		74,119
	Nanking	42,641	18,628		61,269
	Wuhu	14,000	5,000		19,000
	Kiukiang	4,270	5,919		10,198
	Shanghai	5,103	2,869		7,972
	Total	224,590	168,513		393,103
Travelling Clinics for Labour Relief Districts	District No. 1		587	229	816
	„ „ 2	12,811	11,867		24,678
	„ „ 3	18,724	412		19,136
	„ „ 4	75,618	691		76,309
	„ „ 5	2,753			
	„ „ 6	6,276			
	„ „ 7	9,456	13,892		96,101
	„ „ 8	9,950			
	„ „ 10	53,774			
	„ „ 11				
	„ „ 12				
	„ „ 13	30,228	1,688		31,916
	„ „ 14	31,321			
	„ „ 15	29,291	59,278		198,765
	„ „ 16	20,074			
	„ „ 17	58,801			
	Total	359,077	88,415	229	447,721
Others	Hankow	179,914			179,914
	Wuchang, Hanyang	107,993			107,993
	Ichang, Wusueh, Shasi, Hsinti, Yenning, Chinkow, Shaoshih	23,579			23,579
	Changsha	18,282			18,282
	Changteh, Yiyang, Paoching, Hengshan, Hengyang	14,107			14,107
	Nanchang	36,329			36,329
	Fengyang	4,800			4,800
	Tungshan, Tangshan	8,400			8,400
	Paoshan, Kiating, Taichang, Kuenshan	127,223			127,223
	Nanking Municipality	136,421			136,421
	Shanghai „	660,000			660,000
	Total	1,317,048			1,317,048
TOTAL		1,900,715	256,928	229	2,157,872

APPENDIX VII—8

CHOLERA EPIDEMIC IN CHINA DURING 1932

Place	Number of Infected Cities	Number of Cases	Number of Deaths	Death Rate
Shanghai	1	4,260	317	7.4
Nanking	1	1,588	373	23.5
Peiping	1	493	391	79.3
Kiangsu	38	10,430	1,606	15.4
Hopei	64	14,517	5,036	34.7
Honan	30	10,558	2,362	22.4
Shantung	27	18,153	2,926	16.1
Shansi	29	——	6,928	0
Kiangsi	14	5,918	1,955	33.0
Anhwei	19	3,349	1,214	36.2
Shensi	17	12,614	3,468	27.4
Hupeh	12	2,832	1,231	43.5
Chekiang	13	6,423	657	10.2
Suiyuan	6	2,000	1,057	52.9
Chahar	7	618	183	29.6
Fukien	5	1,879	973	51.9
Hunan	4	1,553	338	22.0
Kwangtung	2	1,084	358	33.0
Yunnan	3	54	9	16.7
Chinghai	3	121	12	9.9
Szechuan	6	1,968	501	25.5
Kwangsi	1	2	1	50.0
Kansu	3	222	78	35.1
Total	366	100,666	31,974	31.8

APPENDIX VII—9

NUMBER OF PATIENTS TREATED IN SPECIAL CHOLERA HOSPITALS

April to September, 1932

Hospitals	Patients Admitted	Patients Recovered	Deaths	Case Mortality Rate
Hankow Anti-Cholera Hospital	402	356	46	11.4
Wuchang-Hanyang Anti-Cholera Hospital	550	483	67	12.2
Nanking:				
Central Hospital	1,011	876	135	13.4
Isolation Hospital	39	34	5	12.8
Hsiakwan Anti-Cholera Hospital	133	126	7	5.3
Other Hospitals	72	57	15	20.8
Taichow Anti-Cholera Hospital	138	128	10	7.2
Yencheng Isolation Hospital	4	4	0	0.0
Wu-hu Anti-Cholera Hospital	85	72	13	15.0
Nanchang Anti-Cholera Hospital	623	564	59	9.5
Amoy Anti-Cholera Hospital	327	256	71	21.7
Anti-Cholera Hospitals in adjacent Hsiens of Shanghai	389	358	31	8.0
Total	3,773	3,314	459	12.2

APPENDIX VII—10

MALARIA SURVEY AT NANKING, SOOCHOW, HANGCHOW, WUKONG AND YANGTZE PORTS

November 1931 to January 1932

	Number of Persons Examined			Number with Enlarged Spleen			Number with Anaemia			No. with Previous Attacks	Blood Examinations						
											Total	Negative	Positive for				
	Under 12 yrs.	Above 12 yrs.	Total	Under 12 yrs.	Above 12 yrs.	Total	Under 12 yrs.	Above 12 yrs.	Total				P. vivax	P. malariae	P. falciparum	Mixed	Total
Nanking	4,590	1,449	6,039	104	45	149	101	58	159	64	354	274	38	2	40	0	80
Soochow	1,270	4	1,274	26	1	27	5	0	5	2	0	0	0	0	0	0	0
Hangchow	712	54	766	46	9	55	29	0	29	40	86	52	5	1	28	0	34
Wukong	74	0	74	17	0	17	2	0	2	0	19	15	2	0	2	0	4
Yangtsze Ports:																	
Wuhu	349	0	349	1	0	1	2	0	2	0	1	0	1	0	0	0	1
Anking	1,561	195	1,756	12	37	49	7	0	7	8	58	23	6	0	24	5	35
Kao-ho-pu (Anhwei)	44	3	47	0	0	0	0	0	0	4	4	4	0	0	0	0	0
Chung Yang Tsen (Anhwei)	116	20	136	5	0	5	0	0	0	0	2	2	0	0	0	0	0
Hsiao Chih Kou (Kiangsi)	43	9	52	1	1	2	0	0	0	1	3	1	0	1	1	0	2
Hukow (Kiangsi)	93	0	93	2	0	2	3	0	3	8	13	13	0	0	0	0	0
Sah-ho (Kiangsi)	31	0	31	6	0	6	3	0	3	24	33	31	2	0	0	0	2
Nanchang	1,395	195	1,590	31	8	39	12	3	15	0	52	49	2	0	1	0	3
Kiukiang	426	212	638	51	7	58	0	8	8	4	70	68	0	0	2	0	2
Hankow	364	0	364	6	0	6	3	0	3	1	10	7	3	0	0	0	3
Wuchang	700	106	806	16	4	20	11	2	13	0	6	6	0	0	0	0	0
Total			14,015			436			249	156	711	545	59	4	98	5	166

APPENDIX VII—11

MALARIA SURVEY AT NANKING, 1932

Age	Number of Persons Examined	Malaria			Splenic Enlargement						Blood Examinations			
		No. without previous attacks	No. with previous attacks	Malarial cases	0	I	II	III	IV	Total	P. vivax	P. malariae	P. falciparum	Mixed
Under 1 year	52	46	1	5	48	2	1	1	..	52	4	..	1	..
1-4 years old	479	267	153	59	370	68	20	10	9	479	76	1	16	1
5-9 years old	858	407	368	59	574	124	78	22	13	858	95	11	43	2
10-19 years old	1,772	712	857	121	1,274	168	65	40	11	1,772	129	17	55	1
Above 20 years old	4,503	2,166	1,847	306	3,475	222	50	16	7	4,503	139	21	168	5
Total	7,664	3,598	3,226	550	5,741	584	214	89	40	7,664	443	50	283	9

APPENDIX VII—12

NUMBER OF PEOPLE SICK PER 1000 PERSONS

11,791 Farm Families in 245 Localities in 87 *hsien*, 1931 Flood, Yangtze and Hwai Valleys.

Province	With fever	With diarrhea	Other causes	All causes
Hunan	48	32	53	133
Hupeh	107	35	82	224
Kiangsi	42	24	55	121
South Anhwei	30	39	37	106
South Kiangsu	9	28	35	72
North Anhwei	90	74	87	251
North Kiangsu	23	119	63	205
Average	57	50	60	167

APPENDIX VII—13

COMPARATIVE DATA ON DEATHS OF REFUGEES, 1931

ITEMS	Information from	
	11,791 farm families in 245 localities in 87 *hsien*	3,796 farm families in refugee camps in Wuchang, Shanghai & Nanking
Deaths per 1,000 (in first 100 days of flood)	22	63
Per cent of persons who died who were		
Males	55	51
Females	45	49
Of males per cent:—		
Under 5 years of age	33	33
5-14	20	31
15-29	15	14
30-44	14	6
45-59	9	8
60-or more	9	8
Of females per cent:—		
Under 5 years of age	27	27
5-14	20	32
15-29	14	14
30-44	12	8
45-59	10	8
60-or more	17	11
Per cent of deaths caused by:	100	100
Drowning	24	10
Disease	70	87
Starvation	1	0
Others	1	—
No information	4	3

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