[Distributed to the Council and the Members of the League.]

Official No.: **C. 118. M. 38.** 1930. III.
[C.H. 842.]

Geneva, February 12th, 1930.

LEAGUE OF NATIONS

HEALTH ORGANISATION

PROPOSALS OF THE NATIONAL GOVERNMENT OF THE REPUBLIC OF CHINA

FOR

COLLABORATION WITH THE LEAGUE OF NATIONS ON HEALTH MATTERS.

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Series of League of Nations Publications

III. HEALTH

1930. III. 3.

PROPOSALS OF THE NATIONAL GOVERNMENT OF THE REPUBLIC OF CHINA

FOR

COLLABORATION WITH THE LEAGUE OF NATIONS ON HEALTH MATTERS.

MEMORANDUM ON CONSULTATION WITH THE NATIONAL GOVERNMENT OF THE REPUBLIC OF CHINA, WITH NOTES ON THE PROPOSED COLLABORATION.

Origin of the Mission.

It will be remembered that, during 1922 and 1923, Dr. Norman White undertook an enquiry into the prevalence of epidemic disease and port health organisation in the Far East as the result of a decision of the Health Committee, adopted on the motion of Professor Miyajima:

> " . . . to collect information regarding the incidence of epidemic diseases, especially those of international importance, in important ports, and the measures taken to prevent the transmission of these diseases to other ports " (Health Committee Session of August 29th, 1922).

In his report (document C.H.130), which contains detailed information on these subjects for the ports of Canton, Shanghai and Newchwang in China, and general information concerning Manchuria, he gave an outline of the then existing Sanitary Administration in Peking.

The influence in China of Dr. Norman White's studies was considerable. As his surveys and proposals had led to the establishment of the League's Far-Eastern Epidemiological Bureau at Singapore, it became evident that the League was taking real interest in the health problems of the Far East.

A group of Chinese medical leaders and their foreign friends in Peking advised the Central Government, at the end of 1925, to invite the continuation of the survey begun by Dr. Norman White two years previously, in the hope that the creation of a skeleton National Quarantine Service might be recommended, and that it would serve as a nucleus for the setting-up of a modern public health service.

The Medical Director, who was visiting Japan during the "interchange" in 1925, was semi-officially asked to come to Peking to explore the ground. He reported to the Health Committee on April 26th, 1926 (document C.H.433), on the discussions he had had with the Minister of the Interior (whose Department included a Central Sanitary Bureau), with other State officials and with medical leaders. No official action was taken during the succeeding period of civil war, but correspondence continued with the group which initiated the project.

When this group was called upon, in October 1928, to organise the Ministry of Health of the National Government of China at Nanking, it decided to avail itself of the experience of the League's Health Organisation.

In January 1929, the Medical Director was appointed member of an International Advisory Council of Three, set up by the Ministry of Health, and was invited to come to Nanking as soon as possible to discuss plans for co-operation. Official correspondence ensued and resulted in a telegraphic request addressed to the Secretary-General of the League of Nations by the Foreign Minister of China on September 14th, 1929, for the " despatch of a sanitary mission from the

S.d.N. 1345 (F.) 1350 (A.) 3/30. Imp. Kundig.

Health Organisation of the League to make a survey on port health and maritime quarantine ". The Council having declared, after examination of the request, that full assistance should be given to China in her efforts for her development, the Secretary-General, in consultation with the President of the Health Committee, instructed the Medical Director and Doctor F. G. Boudreau of the Health Section to proceed to China in order to discuss with the competent authorities a detailed project to be submitted to the Health Committee.

Scope of the Enquiry: Correspondence with the National Government of the Republic of China, and the Action taken by the Health Committee at the Special Session at Geneva convened for this Purpose, March 5th to 8th, 1930.

On our arrival in Shanghai, on November 9th, 1929, we were informed that the Minister of Health desired us to undertake, in addition to a preliminary survey of the quarantine arrangements at certain ports, and an examination of steps to be taken for the establishment of a National Quarantine Service, a general study of the organisation and working of medical and sanitary institutions in various special municipalities and administrative divisions, with particular reference to medical education, to the training of sanitary personnel, to the status of a provincial health organisation, to the work of the National Epidemic Prevention Bureau, and to the problem of the control of cholera and smallpox in the Shanghai area.

We were cordially welcomed at Shanghai by representatives of the Chinese Government, who assured us of their wish to afford us every facility in our work. A detailed memorandum on health organisation in China,[1] prepared for us on the order of the Minister of Health by an official of that Ministry, was presented to us, and arrangements were made for our transport. Members of the staff of the Ministry of Health were detailed to accompany us throughout our stay in China. The Minister of Health himself accompanied us whenever his duties permitted him to leave Nanking. Provincial and municipal officials gave us a warm welcome and spared no pains to make our stay as profitable as possible. If, in spite of the civil war and the disturbances incident to the political stabilisation of a large country after a successful revolution, we were able to examine a wide range of medical and public health developments, and to secure a large amount of useful information on these subjects, credit must be given to those officials of the National, Provincial and Municipal Governments who left no stone unturned in their efforts to assist the purpose of our visit.

As soon as possible after our arrival in Shanghai, we proceeded to Nanking[2], the capital, where we were received most hospitably by the Government. The Minister of Health prepared an itinerary for the Mission, which he considered would enable us to secure the largest amount of information on health conditions in China in the limited time at our disposal. During our stay in Nanking, we had the opportunity of numerous conferences with the Minister of Health and his technical assistants, who furnished us with information concerning Chinese health problems and the methods adopted or planned for their solution.

Before we left China, the following letters were received from the Minister of Health and the Minister of Education, which contain the text of the proposals of the National Government of the Republic of China for co-operation with the League of Nations in health matters:

" Ministry of Health,

" Nanking, December 26th, 1929.

" In acknowledgment of your letter of December 16th,[3] confirming your understanding of our proposals for collaboration, I am pleased to be able to inform you that this programme was approved by the Government on December 24th, and that steps are being taken to secure an extraordinary appropriation for the establishment of the various institutions necessary for its success. I am attaching the approved proposals for you to present to the League of Nations Health Committee for confirmatory action. I am seeking the necessary authorisation to attend the forthcoming session of the Health Committee at Geneva, when the plan is coming up for discussion.

" May I avail myself of this opportunity to express the appreciation of the Government for the spirit in which the League acceded to its invitation to send your Mission to China. The members of the Government, most of whom had had opportunities of discussing pertinent phases of the proposals with you, expressed not only admiration for the manner in which the Mission had acted upon our specific suggestions, but felt that, almost as important as the results of your visit, has been the increased appreciation of the League itself. To the Mission, and especially to yourself, the Ministry of Health wishes to record its appreciation for the very signal service that has already been rendered.

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[1] " Health Organisation in China, and Brief Surveys of the Special Municipalities of Canton, Peiping, Shanghai, Nanking, Tientsin and Hankow ", by Tsefang F. Huang, M.D., Counsellor, Ministry of Health.

[2] See itinerary of Mission, Annex 3.

[3] See Annex 1.

" The Ministry of Health would gladly follow your suggestions as to the designation of medical and health leaders in China for association with specific studies engaged upon by the League and would recommend that Dr. F. C. Yen, the Dean of the Central University Medical College, be associated with studies of the Commission on Education in Hygiene and Preventive Medicine; Dr. Robert Lim, Professor of Physiology at the Peiping Union Medical College, and President of the National Medical Association, with the work of the Health Committee on vitamins and cognate subjects; Dr. Tsu Min Yi, Member of the Central Executive Committee, with the studies on physical education; and Dr. Shisan F. Fang, former Director of the National Epidemic Diseases Prevention Bureau, with the work of the Commission on social medicine.

" The Government has learned with satisfaction of the appointment of one of the Ministry's officers to the Health Section of the Secretariat, and more especially that you yourself could visit China periodically.

(Signed) J. Heng Liu."

" Proposals for Collaboration with the League of Nations Health Organisation.

" 1. The presentation to the Government of the proposals of the Ministry of Health for collaboration with the League of Nations Health Committee was made the occasion for re-defining the general scope of the work of the Ministry, including the manner in which the League's assistance would contribute to its success. It was pointed out that, before effective nation-wide results could be achieved in such fields as child, school, and industrial health, social hygiene, vital statistics, general sanitation, epidemiology and communicable diseases control, etc., there were two necessary pre-requisities: first, the development of administrative principles best adapted to local means and conditions and, second, the provision of facilities for training personnel in the different branches of medical practice.

" 2. While the Ministry, within the limitations of the reconstruction period, is undertaking the functions of a central health authority in regard to initiating policy and activities in the above general fields of public health, it feels that collaboration of the League at this time would prove invaluable in the following six activities:

" (*a*) The previous decision of the Government to transfer the Quarantine Service, now administered by the Ministry of Finance, to the Ministry of Health, in concurrence with established precedent, led to the request for the League's collaboration in obtaining the benefit of the experiences of health services in other countries and in accelerating the building-up of confidence in the reorganised technically improved port health administration. It is requested that the Health Organisation should study, in conjunction with the Transit Organisation of the League, the steps that should be taken in the transfer and reorganisation of the present Quarantine Service. It is understood from the Director of the Health Organisation that a scheme may be elaborated during 1930 and that the preliminary study begun by the present Mission will be completed this year. The Ministry hopes also to participate in the forthcoming Port Health Officers' interchange and for two or three officers to be trained abroad by the League for responsible posts in the reorganised service.

" (*b*) The Ministry of Health has decided to use its technical headquarters staff for field activities and to begin by establishing a central field health station as the nucleus of an eventual national field health service. The important rôle that will be played by this central station is appreciated and, as such, even the fundamental activities will take time to build up. Collaboration is desired in drawing up the detailed plan for this station; in providing facilities for study abroad of officers selected for important position in this station and the association of an expert from the Health Organisation during the initial stage of its organisation and development.

" (*c*) In view of the necessity of providing a national institution for undergraduate instruction and for post-graduate training, as well as to create national traditions in administering such institutions, the Government has decided to promote the establishment of the First National Hospital.

" (*d*) While the central field health station and the First National Hospital will serve the purpose of establishing the principles of fundamental health activities for the country, and while, already, institutions elsewhere have undertaken health work on a more limited scale, it is felt that the elaboration of a provincial health administration should be taken up for serious study, and the Government has decided on collaboration with one of the provinces where conditions are favourable. It is already the intention of the Chekiang Government to establish a provincial hospital, which will also be utilised as a base for the development of preventive medical activities. It is hoped the latter will be extended gradually to the districts of the province, and also throughout the country by utilising existing educational institutions as bases for public health work.

" Assistance is desired in planning the first National and Chekiang Hospitals, in providing facilities for their senior administrators to study abroad and especially in advising as to the gradual extension both of the preventive activities of the Chekiang unit as well as in the extension of the activities to other areas.

" (*e*) The Ministry of Education regards medical education as a major question which requires urgent reform in providing suitable facilities both in regard to undergraduate and post-graduate instruction. It is hoped to secure the collaboration of the competent commission of the Health Organisation in preparing a memorandum on the recent progress in the reform of medical teaching; for the provision of facilities for a study tour of the officer who is to have charge of post-graduate instruction, and for the delegation to China, for a period of some months, of a League expert to advise with the National Commission on Medical Education of the Ministry of Education.

" (*f*) While the foregoing will build up the foundations for a modern health administration, there is the immediate problem of smallpox and cholera control in Shanghai. During the stay in China of the League's Mission, the Ministry invited the collaboration of the Health Services of the two Foreign Settlements, and it is hoped it may be also possible that, as a member of its Advisory Council, the Chinese Government may secure the collaboration of the Far-Eastern Bureau of the League. Collaboration is also desired in a joint epidemiological study of the cholera and smallpox situation in Shanghai, and the services of the Director of the Far-Eastern Bureau for a time during the application, in 1930, of control measures.

" 3. It is therefore hoped that it may be possible for the League to provide advice and assistance along lines on which it has been made available to other countries, namely:

" (*a*) The technical collaboration of the Health Organisation and its commissions, as well as other technical organisations of the League, for consultation in drawing up specific health schemes;

" (*b*) To make available opportunity for participating in the advantages offered through the League interchanges of technical officers, and study fellowships;

" (*c*) Collaboration in the establishment and the development of the central field station by stationing a technical officer of the Health Organisation in an advisory capacity during the initial stage;

" (*d*) Collaboration with the Commission on Medical Education of the Ministry of Education. A request from the Minister of Education is attached herewith.

" 4. It is especially desired that the services of the Health Organisation for the study of these problems, as well as in a general advisory capacity, will be available through an acceptance by the League of this Government's invitation for continued collaboration.

" Nanking, December 24th, 1929. "

" Ministry of Education,

" Nanking, December 27th, 1929.

" Realising that the subject of Medical Education in China needs to be studied thoroughly so that standards may be improved and a sufficient number of competent physicians trained to meet the medical needs of the country, the Ministry of Education, with the collaboration of the Ministry of Health, is organising a National Commission on Medical Education.

" We request that the Health Organisation of the League will give this Commission assistance in:

" (*a*) Supplying information on the programme of similar National Commissions in other countries; and

" (*b*) Collaboration of the League's Commission on Education in Hygiene and Preventive Medicine, which perhaps may be able to delegate an expert for several months in the coming year to China to work in conjunction with our National Commission.

(*Signed*) CHIANG MON-LIN,

Minister of Education."

This official correspondence respecting the proposals of the National Government of the Republic of China, together with the present report, were communicated on February 13th, 1930, to the members of the Health Committee which was convened in special session at Geneva on March 5th, 1930.

The National Government of the Republic of China was represented at this session by Dr. Woo KAISENG, Director of the Permanent Bureau of the Chinese Delegation to the League of Nations at Geneva, accompanied by Dr. L. C. YEN, Director of the Medical Administration Bureau of the Ministry of Health, Nanking.

The Health Committee adopted the following resolutions which will be presented to the Council of the League of Nations during the forthcoming session in May 1930:

A. " The Health Committee,

" After studying the proposals of the National Government of the Republic of China for collaboration which it desires with the League of Nations on health matters, and having examined the report of the Medical Director concerning the Mission carried out on the invitation of the Government of China;

" Approves the report as a whole and expresses appreciation of the attitude adopted by the Government of China."

" The Health Committee,

" Considering that the Council of the League of Nations has expressed the wish that all necessary assistance should be afforded in the development of China,

" That the collaboration requested is entirely in harmony with the programme and aims of the technical organisations of the League of Nations, and, while fully appreciating the difficulties of the task with which it would be entrusted and the length of time required to accomplish it;

" Recommends to the Council the approval of the entire programme of collaboration presented by the Government of China as set forth in the report of the Medical Director, and requests the latter to make arrangements for providing the assistance of the Health Organisation in giving effect to that programme if approved by the Council."

B. *Re-organisation of the Quarantine Service of the Chinese Ports.*

" The Health Committee,

" After study of the proposals of the National Government of the Republic of China, concerning the collaboration of the League of Nations in the re-organisation of the quarantine services of the Chinese ports, and on the advice of the Commission for Quarantine Measures in China nominated during the present session:

" 1. Accepts the proposals made by the Chinese Government to obtain the benefit of the experiences of health services in other countries in the re-organisation of the present quarantine services.

" 2. Approves the arrangements proposed by the Health Section that Dr. Park should visit China forthwith in order to complete the survey which has already been begun, and report to the Commission thereon at an early date. In his report, Dr. Park should give special consideration to the possibilities of the satisfactory application of the provisions of the International Sanitary Convention of 1926.

" 3. Notes that the Commission has given Dr. Park certain guiding lines for this survey. These include the sanitary equipment of ports; the nature of the action to be taken against the importation and exportation respectively of infectious diseases and the measures needed to deal with the special conditions of coastal traffic.

" Notes that, on the completion of Dr. Park's survey, he will submit proposals for consideration by the Commission regarding the scheme to be submitted to the Chinese National Government.

" 4. Requests that the Commission, in so doing, should confer with any experts who may be delegated by the Communications and Transit Organisation of the League, in conformity with the request of the Chinese Government, before submitting the scheme to the Health Committee."

Chapter I.

NOTES ON PUBLIC HEALTH AND MODERN MEDICINE IN CHINA.

It would be presumptuous on our part to pretend that this report represents anything more than notes on these proposals and observations on the activities we were asked to visit. Nothing like a survey of preventive medicine has been attempted or could have been attempted in the time and with the facilities at our disposal.

Nevertheless, we are assured by our Chinese colleagues that the indications furnished by these observations and the conclusions which we have reached in agreement with those colleagues, would not have been different had we travelled more extensively or examined more closely the development of modern medicine and public health in a wider range of provinces and municipalities. Modern medicine has only recently gained a precarious foothold in China. Preventive medicine is only beginning to extend its beneficent influence from the few centres in which it has found a soil suitable to its growth. We are told by our Chinese friends, who have had the best opportunities of acquainting themselves with actual conditions, that the visits we have made and the institutions and work we have studied comprise a very large proportion of all such institutions and work in China. We, in the West, have been familiar with countries in which modern medicine is taken for granted—its benefits have been present for generations. In China the case is quite different, for there comparatively young men can remember the time when modern medicine was first introduced in the larger centres, and the greater part of the population do not to-day recognise the existence of such an art.

Modern Medicine, Hospitals and Public Health Work in China.

In order to understand the medical and public health problems of China, it is necessary to realise that, even in those centres where modern medicine has gained a foothold, the large majority of the population seeks medical relief, not from its practitioners, but from the vastly more numerous practitioners of empirical medicine, who, at their best, may not fall far short of the modern graduate in the relief of pain in cases not requiring surgical intervention and, at their worst, possess the advantage of a long—though weakening—tradition and place in the social structure of the community.

This is not the place to describe the practice of so-called empirical medicine in China, even if sufficient information were available. Nevertheless, a few general statements on this subject are essential to our understanding of the difficulties facing modern medicine in China to-day.

We visited a school where empirical medicine is taught, and we inspected a few hospitals maintained by graduates of such schools. The course was said to last four years. Practically no equipment for teaching purposes was to be seen except a few anatomical charts. These schools maintain hospitals, however, ostensibly for teaching purposes. There is apparently no difficulty in securing students, and patients come willingly to the wards and out-patient departments on a paying basis. There was an X-ray apparatus in one of these hospitals. The pharmacy was, in each case, an orderly institution, and it must not be supposed that the medicines are without virtue. Ephedrin was developed from a preparation long used by the practitioners of empirical medicine. Among the native preparations there must be a number possessing anodyne properties, and it is said that quinine is dispensed freely by native pharmacists.

The school of medicine is, however, a new development in empirical medicine, a majority of the practitioners having been trained by the apprenticeship system, and mention is made of it here simply to emphasise that modern medicine must overcome a system willing to utilise certain of the weapons of its adversary in the form of organised instruction, hospital dispensaries and pharmacies dispensing modern drugs as well as the older preparations.

Against this system must be set the few thousand practitioners of modern medicine [1], the few hundred modern hospitals, the small percentage of the population who appreciate the advantages of a new method still bearing the stamp of foreign influence.

Empirical medicine is said to have reached its height many centuries ago and to have steadily declined since. It is fighting a losing battle with modern medicine because of its disbelief in surgery, its lack of knowledge concerning midwifery, and the success of modern medicine in such fields as the treatment of eye diseases.

The practitioners of empirical medicine correspond to the quacks in Western countries. In China, as in the West, resort is had to quack medicine in some instances even by educated and highly placed officials. The difference between China and the West in this respect is that, in China, quacks are numerous and well distributed, whereas modern practitioners are few and concentrated in a few large centres.

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[1] An official of the Ministry of Health estimates that there are approximately four thousand medical graduates in China.

Our Chinese colleagues informed us that the small army of Chinese practitioners of modern medicine is split up into a number of groups, according to the country where their training was received. Thus, there is a group of students returned from England, another from France, another from America, Germany, Japan, etc. Even in the case of graduates of medical colleges in China, these, as a general rule, have received their training in French or in English, or in German, and quite naturally tend to associate themselves with others of the same language group. For medical instruction is seldom given in Chinese for a variety of reasons:

(1) A very large majority of the medical schools are in the hands of foreigners, principally missionaries;

(2) Even in medical schools controlled by the Chinese the majority of the important chairs are frequently held by foreigners;

(3) Medical textbooks in the Chinese language are few;

(4) The official Chinese language is said not to contain a sufficient number of technical terms.

Hence in medical discussions and professional conferences the language employed is frequently the one in which the students were trained. This has had the very natural tendency to split the practitioners of modern medicine into language groups, and differences of standards and conditions in the various countries of training have accentuated this tendency so that there are a number of medical associations, several of them national in scope, corresponding to the different groups. The small number of modern nurses is split up into similar groups.

The necessity of resisting this tendency and of uniting in a common effort has been fully realised by the leaders of modern medicine in China to-day. During our visit, an attempt was made to unite the most important medical associations into a national society, representative of all the groups, for the purpose of defending their professional interests.[1]

That something more than the establishment of a national association was needed did not, however, escape our colleagues in the Ministry of Health. It is their belief that a real merging of the groups will only result from their participation in a joint effort on a scale big enough to appeal to all, and it is their hope to link up this effort with a scheme for the provision of post-graduate medical instruction, the medium of instruction being the Mandarin language.

Further information on problems of medical education will be found under the proper heading in this report. Here, these general statements are intended only to illustrate the situation facing colleagues whose duty it is to provide for a measure of health protection in China to-day.

Practitioners of modern medicine require hospitals in which to develop their art, and hospitals exist in China, particularly in the larger centres of population, although their number is woefully inadequate. The first hospitals were missionary enterprises; the pioneer of these (at Macao) dates back to 1825. The first modern-type hospital in Canton was established in 1865 and is still operating. But these two are exceptions; the institution of the modern hospital in China is very recent. Besides the missionary hospitals there are public and private institutions of various types — some maintained by municipalities, others by medical schools, a few by the Plague Prevention Service in North Manchuria and several by the Army. A comparatively few, our colleagues inform us, have been built and are being maintained and administered solely by Chinese doctors. The handicap of a shortage of hospital beds of an extent unprecedented in Western countries further ties the hands of those who practise modern medicine, as well as our colleagues who occupy responsible posts in the National, Provincial and Municipal Health Services.

The number of hospital beds per unit of population in China is given in a volume on " China and Modern Medicine ", written by Dr. Harold BALME, and published in 1921 (United Council for Missionary Education). These data relate to 1920.

Province	One bed per unit of population
Fukien	9,210
Kiangsu	9,240
Chekiang	9,850
Kwantung	11,940
Manchuria	20,100
Chihli	20,130
Hunan	23,700
Shansi	31,130
Hupeh	36,590
Shantung	38,240
Honan	42,550
Kwangsi	44,000
Szechuan	58,180
Anguei	70,800
Kurochow	76,500
Shensi	81,250
Kansu	86,540
Kiangsi	151,600
Yunnan	246,490

[1] A conference held in Peiping in January 1928 was the first at which all groups were represented, and the steps taken by that Conference look forward two years hence towards amalgamation into one association.

These figures must be contrasted with conditions in the United Kingdom, where there is one bed in a voluntary hospital for one in every six hundred of the population, not including the large number of additional beds provided by the Poor Law Infirmaries (*idem*).

Since 1920, a number of hospitals have undoubtedly been constructed, but a much larger number have been closed. For instance, the *China Year-Book* for 1929-30 is authority for the statement that, in 1927, 33.3 per cent of the missionary hospitals in the south had been closed.

Hospitals in China are, as a rule, in foreign hands; they are directed, controlled and frequently financed by non-Chinese. This does not mean that Chinese doctors are not employed, for the majority of the subordinate staff is frequently Chinese. But the medical direction of hospitals is not in their hands, and there are only a handful of Chinese doctors in China to-day who have had experience as the administrative heads of hospitals.

If there is a dearth of hospitals in China, the absence of asylums, leprosaria, sanitaria and other special institutions is even more striking.

Our colleagues in the Ministry of Health are facing this situation with resolute determination. They have decided to establish certain hospitals at once, and to utilise them for the training of hospital staff. Beginning with two large hospitals (one financed by the Provincial Government), they hope to continue in other provinces and at other centres, so that, presently, their staff will acquire the necessary experience in hospital administration, and their people will become accustomed to the benefits of hospitalisation.

It was pointed out to us that, some time before, during and after the Old Chinese New Year (now abolished by Decree of the National Government), the majority of beds in even the best and longest-established hospitals were empty, all patients able to be moved insisting on spending these holidays at their homes.

It is also the custom in China for the patient in hospital to be accompanied by a servant or member of his family, who frequently acts as nurse in the absence of trained nursing staff, and visiting is much more common than in Western countries. Undue restriction of these customs tends to prevent popularisation of the modern hospital system, and our colleagues are faced with the nice task of striking the balance between the long-established habits and customs of the people and the requirements of modern medical institutions.

Problem of Medical Relief in China.

If, in these opening paragraphs, we appear to have over-emphasised the problems of modern medicine and its institutions it is because our colleagues have insisted on the magnitude of their problem of medical relief.

Reference has been made to the scarcity of modern doctors and hospitals and to their concentration in the larger centres. This problem is further complicated by the size of the country, the density of the population, the scarcity of modern methods of communication and transport and the economic and political instability of recent years. The few railway lines offer facilities of transport only between the larger centres. Roads suitable for motor travel are few; the total mileage is said to be two thousand.[1] The Chinese have long been accustomed to utilise their magnificient waterways for travel, but these fall far short of the requirements for health work and medical relief. Even in some of the larger cities transport is slow and difficult. For example, in Canton, the sedan chair was the only vehicle able to penetrate the narrow streets of the old city until recently when a system of broad modern thoroughfares was constructed. Now the tracks for a street railway system have been laid and autobuses give regular services.

In the rural districts, resort must be had to rickshaws, and even these must be replaced by wheelbarrows in the rainy season. One of the obstacles facing the staff of health centres, for example, is the difficulty of reaching the people, and the time consumed by archaic methods of transport.

No reference has been made to the sanitary problem in China. Public water supplies exist in a handful of cities—Shanghai, Peiping, Tientsin, Tsingtao, Hankow, Harbin, Mukden, Amoy and Canton. Plans for such supplies have been made in Nanking, Hangchow and Changsha. Even in those cities where public water supplies exist, the service is not extended to the whole population, and the quality is not always above suspicion. Systems of sewerage are restricted to a still smaller number of cities, and these are very incomplete. The vast majority of the population uses polluted water and enjoys none of the sanitary advantages known to Western civilisation.

Faced with these conditions, and with the small staff at its disposal, the Ministry for Health has decided wisely to concentrate on a few activities in three or four districts, and has asked for the co-operation of the Health Organisation of the League on these few activities in which there is reasonable hope for success in the not-too-distant future.

The Ministry realises the impossibility of drawing up and carrying out a general programme of sanitary reconstruction in China at the present time. There must be a long period devoted to fact-finding and to acquiring experience before sufficient information will be available upon which to base a plan of work.

By concentrating for a few years on a few basic activities and on gathering facts, the Ministry hopes to progress slowly towards the period when the methods of solving its most baffling problems, those of sanitation and modern medicine, will become apparent.

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[1] There are said to be 7,000 miles of railroad and 20,000 miles of roads suitable for motor traffic, but 90 per cent of the latter consists of graded dirt road, only 2,000 miles being macadamised.

In applying its present programme, the Ministry enjoys the moral prestige which is traditionally associated in China with the Central Government. Even in those provinces in which the present regime is looked upon with disfavour, we were informed that the technical advice of the Ministry would be respected and its support would lend strength to the efforts of the local health authorities.

Under these circumstances the Ministry can hope for the fullest support from the local authorities with whose co-operation it proposes to carry on a few activities of fundamental importance.

The Modern Health Movement in China.

As far as we could gather from the information placed at our disposal, the modern health movement in China began in 1912, and owed its origin to the extensive epidemic of pneumonic plague which occurred in Manchuria in 1910. At that time an Imperial Decree was issued requiring the Ministries of Foreign Affairs, Civil Affairs and Communications to take joint action in the application of preventive measures. A Plague Prevention Bureau was established at Peking, and the Ministry of Civil Affairs organised a Public Health Commission composed of the leaders of modern medicine in Peking. Quarantine measures were applied for a time in the various ports and railroad centres through which the disease might spread. Most important of all, a group of medical students, under the leadership of Dr. Wu Lien Teh, was sent to Harbin to take charge of control measures. An international conference on plague was held in Manchuria to devise methods for the prevention of similar epidemics in the future.

This epidemic resulted in the organisation of the North Manchurian Plague Prevention Service with headquarters at Harbin. This service was placed under the Ministry of Foreign Affairs at the time it was founded and it remains under the Ministry of Foreign Affairs in the present Nationalist Government. The Minister of Health plans to have it transferred to his Ministry. It has survived all the political upheavals which have passed over the country since its establishment some seventeen years ago (1912). Its staff has carried on important studies relating to the epidemiology of plague and made many contributions to our knowledge of the disease. Full information concerning its work may be found in the reports published annually and in the contributions of members of its staff to scientific journals. We did not have occasion during the present visit to study the work of the North Manchurian Plague Prevention Service, and it is only necessary to point out here that it has a well-equipped laboratory, a trained staff of laboratory workers and epidemiologists and six hospitals located at strategic points in North Manchuria.

The influence of this service has been of value in a variety of directions, and it is an outstanding example of the stability which a purely technical organisation may enjoy in China in despite of political changes and the unsettled conditions incident to civil war.

The Organisation of the National Epidemic Prevention Bureau in 1918 was the next important step marking the growth of the modern health movement in China. Public concern had been aroused by the repeated epidemics of cholera, plague, diphtheria and smallpox, and, in 1916, the Ministry of the Interior had drawn up regulations governing the methods of controlling epidemics. An advisory committee, composed of the leading Chinese and foreign physicians in Peking was appointed to advise the Minister, and it was largely due to their efforts that the National Epidemic Prevention Bureau was finally organised.

The spread of pneumonic plague in 1916 from Mongolia to the adjacent provinces in North China and the heavy toll of lives resulting (13,000) further increased public and official alarm.

This Bureau began to function in 1919, its staff being engaged, on the one hand, in the manufacture of sera, vaccines and other biological products and, on the other, in experimental diagnostic and preventive work and general administration. One of the most important tasks undertaken by the Bureau was the systematic collection of information concerning the prevalence of epidemic diseases from all the provinces of China. After the organisation of the Eastern Bureau of the League of Nations at Singapore, this information was transmitted regularly to that Bureau and published for the benefit of Health Administrations in the Far East.

The lack of information concerning the occurrence and prevalence of communicable disease is one of the greatest problems confronting the health authorities of China. The leaders of the National Epidemic Prevention Bureau realised fully the need for all possible information on the movement and prevalence of the diseases which it was their business to control. They determined to levy on every possible source of information, and turned naturally to doctors practising modern medicine, to missionary hospitals and to any other hospitals conducted according to modern methods. It was naturally impossible for such doctors and such hospitals to furnish exact figures concerning the incidence of disease in a province with a population of thirty or forty millions of people. All they could do, all they were asked to do, was to give their impressions, based on their practice, their observation, and their treatment of cases in the hospital, as to whether a particular disease was sporadic, prevalent or epidemic.

By utilising all information from these sources, the National Epidemic Prevention Bureau was able to secure a general idea of the movement and prevalence of epidemic diseases throughout the country. It is true that this information was based on a comparatively few observations and gave no indication of the actual number of cases, but it was far in advance of anything that had been done before in China along this line, and it provided important indications of the public health needs of China and of the problems which most pressed for solution.

The National Epidemic Prevention Bureau, with headquarters at Peking, continued to function along the lines indicated above until the present Ministry of Health was organised at Nanking. It has now been placed under the Central Hygienic Laboratory of the new Ministry as the branch responsible for biological production and research, while the chemical and pharmacological laboratories will be located elsewehre.

Influence of Returned Medical and Public Health Students.

The National Epidemic Prevention Bureau and the other health agencies mentioned in this report could not have attained the measure of success which crowned their efforts without the services of technical men who had been given the opportunity to study public health and hygiene abroad and at home. Some of these had taken public health degrees, others had studied in famous institutes, and still others had undergone practical training in the field abroad. In China itself an excellent course in hygiene and public health has been given for some years at the Peking Union Medical College, and the Health Station or Demonstration maintained by that school in co-operation with the National Epidemic Prevention Bureau has furnished a useful field for training students of public health, be they medical undergraduates, nurses in training, or midwives. The influence of a growing number of medical graduates trained in public health and hygiene resulted undoubtedly in the creation of a national department of health in the Ministry of the Interior, in the establishment of health bureaux in various municipalities and provincial centres and, finally, in the organisation of a Ministry of Health at Nanking in November 1928.

The Ministry of Health.

The Ministry of Health is one of the eleven Ministries now under the authority of the Executive Yuan, or Council, which is the highest executive authority of the Government. There are four other Yuans, or Councils, in the Central Government.

The Legislative Yuan is the highest legislative authority; the Judicial Yuan is the highest legal and judicial authority, and the Examination Yuan is the supreme authority in charge of the national civil service. The Control Yuan is the highest supervisory organ and is vested with the powers of impeachment and auditing.

The Ministry of Health is divided into five departments, each headed by a Director:

(1) Department of General Affairs (Secretarial);

(2) Department of Medical Administration (hospitals, pharmacies, physicians, training, propaganda, etc.);

(3) Department of Health and Sanitation (medical relief, health insurance, foods, maternal and infant welfare, industrial hygiene, etc.);

(4) Department of Communicable Disease (in man and animals, maritime quarantine);

(5) Department of Vital Statistics (births, deaths, marriages, morbidity and mortality statistics).

Each department has from two to four divisions.

The annual budget of the Ministry is slightly over half a million Mexican dollars.

There is a National Board of Health, composed of from 13 to 17 members, appointed and presided over by the Minister of Health, with advisory functions. This board is supposed to meet twice a year and has already met once (February 1929). The following were the items on its agenda:

1. The policy to be adopted in regard to the old-style medical practice.
2. Training of health and medical personnel.
3. The principle of health demonstrations.
4. Health education and publicity.
5. The standardisation of the practice of health administration for special municipalities.

In February 1929, the Ministry of Health also called a conference of the Commissioners of Health of special municipalities and the directors of public health in the ordinary municipalities, in order to learn at first hand the character of the problems confronting municipal health officials. The discussion, which lasted for five days, dealt with nearly all the questions with which such officials are required to deal.

While the Ministry of Health is the supreme authority in health matters, it has particular responsibilities with regard to the special municipalities of which there are seven (Nanking, Peiping, Shanghai, Hankow, Tientsin, Tsingtao and Canton). All other cities are under the authority of the Provincial Governments, but there is no intermediary between the Central Government and these special municipalities. For practical purposes, this means that the health commissioners of these seven cities are appointed by the Central Government on the motion of the Mayor, who is also an appointee of the Central Government. Moreover, in these special municipalities a department of health is provided for by statute, whereas in the ordinary municipalities the establishment of such a department is permissive.

In the provinces, public health protection and poor relief are functions of the Department of Civil Affairs.

Apart from the ordinary municipalities the Provincial Government is responsible for the administration of the " hsiens " or counties. Each " hsien " is administered by a magistrate appointed by the Provincial Government, and the protection of the public health is a function of the " hsien " division of public safety, primarily concerned with the police.

In order to preserve a sense of proportion it must be pointed out here that the political subdivisions mentioned above do not correspond at all in point of population to the political subdivisions of Western countries.

The population of China is variously estimated at from approximately three hundred to four hundred and fifty millions. The lowest estimate for the smallest province is five millions (Kansu), while that of the largest (Szechuan) is nearly fifty millions. Each special municipality is supposed to have a minimum of a million population and some are very much larger, while a few fall short of that figure.

Provincial Health Administration.

A memorandum on public health in China, furnished us by the Ministry of Health, is our authority for the statement that, during the last six or seven years, a considerable effort to alleviate sanitary conditions and to improve the public health was made by the authorities of the two provinces Shansi and Yunnan. In Shansi, a number of sanitary regulations were enforced and an attempt made to collect information on causes of morbidity and of mortality. In Yunnan, improvement of sanitary conditions progressed hand in hand with road building and other general administrative improvements of a reconstructive nature.

These two provinces enjoyed comparatively peaceful conditions, and were not subject to the rapid political changes which occurred so frequently elsewhere.

After the establishment of the Nationalist Government at Nanking, the province in which the most rapid progress was made in the direction of public health protection was Chekiang, the capital of which is Hangchow, one of the most beautiful cities in China. The itinerary prepared for us by the Ministry of Health provided for a visit to Hangchow, and the detailed description of provincial health administration in this report will be confined to what we were able to learn of the health programme in the province of Chekiang.

Health Administration in the Province of Chekiang.

The province of Chekiang, situated on the sea-coast, south of Kiangsu (Shanghai is situated in the province of Kiangsu), is estimated to have a population of over twenty-six millions. Its three principal cities are Hangchow, the capital, population 380,000, Ningpo, population 284,300, and Wenchow, population 202,700. There is a railway connecting Hangchow to Shanghai, and Hangchow is also the southern terminus of the Grand Canal.

The province is chiefly agricultural, although some coal is mined. Silk is the principal product, Chekiang producing 30 per cent of the total of fresh cocoons produced in China, a figure only equalled by Kwantung. Other important products are cotton and tea. To the casual observer the province appears to be well cultivated, and this, together with its recent immunity from serious political disturbances, probably accounts for its comparative prosperity.

The epidemic diseases prevalent in Chekiang are said to be smallpox, diphtheria, dysentery, typhoid fever, scarlet fever and malaria. Epidemic meningitis was prevalent in 1927-28 and an epidemic of influenza also occurred. Chekiang is said to be one of the centres in China where malignant tertian malaria prevails. Leprosy is also present.

Public health work in the Province of Chekiang is said to have begun only after the accession to power of the present Nationalist Government, and the organisation of the present Provincial Government, hence due allowance must be made for the recent introduction of health measures. It is very natural that the organisation of a framework of government should precede the application of reconstructive measures, and this has been the policy adopted by the provincial authorities.

The administration of the province is in the hands of a Committee (nine to thirteen members) and a Chairman, appointed by the National Government. The Executive organs are the Secretariat and the following departments:

(1) Department of Civil Affairs;
(2) Department of Finance;
(3) Department of Reconstruction;
(4) Department of Education;
(5) Department of Agriculture and Mining;
(6) Department of Industry, Labour and Commerce.

There is a chief secretary of the Secretariat and a Chief of Department at the head of each department, the latter being appointed at the instance of the Ministries concerned.

Two activities of the Provincial Government, outside the field of health, are worthy of mention in this report. One is the building of roads, which play such an important part in opening up the country to the work of public health agencies. An important highway linking up Nanking with Hangchow is now open to travel.

The other notable activity is the organisation of a school for local government officials. This school is now functioning regularly and has at present an attendance of 300 students. Candidates for entrance to this school must first pass examinations conducted in the different " hsien ". Five or six of the candidates having the highest grades in each " hsien " examination are subjected to an entrance examination, from which the two candidates with the highest grades are selected as students. In exceptional cases more than two candidates from a " hsien " may be allowed to enter

the school providing their qualifications and examination grades are unusually high. The course lasts eighteen months, and is divided into three periods of six months each; the first at the school in Hangchow, the second in the " hsien " for practical work, and the third and final period in the school. Instruction is given in political science, agriculture, hygiene, administration and physical culture. The expenses of the school are borne by the Bureau of Civil Affairs in the Provincial Government, which provides for the board, lodging and tuition of the students. Travelling expenses are borne by the " hsien ".

On graduation, these students will assume posts in the government of the different " hsiens ". The knowledge of agriculture they have secured in the school will permit them to exercise an influence over the agricultural population. Their knowledge of hygiene should make of them active agents of the provincial health authorities. When the programme of reconstruction is established, it is planned to utilise the graduates of this school for the purpose of applying reconstructive measures.

There are said to be a number of such schools in the various provinces of China, but we were assured by the Dean of the school at Hangchow that the Chekiang Provincial School differed from the others in a number of important particulars, such as length of course, selection of students, subjects taught, etc.

The health administration of the province is in the hands of the Chief of the Department of Civil Affairs, who works through a Provincial Health Commissioner. We were informed by the Chief of the Department of Civil Affairs that his health programme for the province included the following:

1. *Provision of Proper Facilities for Medical Training.*

There were until recently two medical schools in Hangchow. One, a missionary school, was closed down during the recent troubles preceding the establishment of the present Nationalist Government; the other is about to close down as it cannot conform to the standard required of medical schools by the Ministry of Education. This second school was one of the best of the provincial medical schools in China, and a serious effort was made by its staff to provide for proper instruction with the inadequate facilities (especially clinical) at their disposal. It is the intention of the Chief of the Department of Civil Affairs to assist in the creation of a medical school with proper equipment and sufficient clinical material for teaching purposes.

2. *Provision of Proper Hospital Facilities.*

It is the intention of the Provincial Government to build and equip, as soon as possible, a 400-bed hospital in Hangchow, and to utilise this hospital for teaching purposes. The provincial health department and the provincial laboratory will be housed in the hospital, which will become a centre for the public health work and medical relief in the province. The hospital will have out-patient departments and mobile clinics, the latter to act as health centres as well as stations for medical relief. Nurses will be trained in the hospital, and utilised in the field.

The division of sanitary engineering, forming a part of the provincial health department, will also be housed in the hospital, which will eventually become the headquarters of all public health and sanitary activities in the province.

The hospital facilities of Hangchow consist of:

(1) The Municipal Hospital;
(2) The Chekiang Provincial Medical School Hospital;
(3) Hangchow Hospital;
(4) A sanatorium for tuberculosis;
(5) A leprosarium.

None of these institutions is really modern, although, with some renovation, one or two might be utilised for hospital purposes. There is, however, a fairly high-grade missionary hospital of large capacity. In addition to the projected 400-bed hospital, it is the intention of the Provincial Government to build a sanatorium and a leprosarium to replace those at present in use.

3. *Provision of Trained Midwives for the Province.*

According to the Chief of the Department of Civil Affairs, there are at present in the province a large number of old-style midwives, who are ignorant of the need of cleanliness and asepsis. He has decided upon two steps to remedy this condition; first, to give short courses to these old-style midwives in order to impress upon them the need for cleanliness and asepsis (he had considered the policy of prohibiting them from practising, but realised that he must first arrange for a supply of properly-trained substitutes); secondly, the provision of proper facilities for the training of midwives. Accordingly the Provincial Government has organised a training-school for midwives at Hangchow. The present enrolment is eighty. The course lasts for two years and includes a certain amount of instruction in public health and hygiene. Their practical instruction is to be given in a maternity home, now almost completed; a building that was formerly a hospital is being reconstructed for the purpose. It is the aim of the Department of Civil Affairs to provide each " hsien " (of which there are some seventy-five in the province) with two properly-trained midwives, and, when this has been done, it will be possible to prohibit the old-style practice of midwifery.

4. *Provision of Adequate Laboratory Facilities.*

There is the nucleus of a provincial hygienic laboratory. The organisation of this laboratory was begun late in September 1929. The institution is housed in temporary quarters, and the equipment has been ordered but not yet received. The director of this laboratory is a German bacteriologist, formerly employed at the Hygienic Institute at Basle and the Robert Koch Institute at Berlin. There are a number of Chinese assistants.

This institution is to serve all the purposes of a provincial laboratory, including the ordinary diagnostic work, epidemiological research, manufacture of sera and vaccines, and clinical microscopical work in connection with the provincial hospital, to which it will be removed.

5. *Provision of a Supply of Trained Health Officers for the Province.*

The Provincial Government has sent a group of young physicians to the Public Health Department of Peking Union Medical College for a special course which will fit them for use as health officers in the province.

6. *Programme of School Hygiene.*

There are sixteen hundred elementary schools in the Province of Chekiang, attended by over half a million school children (provincial report). While this number is not a large proportion of the total children of school-age, it is said to represent a high state of development as compared to most of the other provinces.

There is a normal school in Hangchow, supported by the Ministry of Education and attended by 1,030 students. In the opinion of prominent Chinese educators, this school is of a high standard.

The vitality of the educational movement in China is very striking, as we have had occasion to observe on our various visits. Nor is this movement local or regional in scope. Everywhere we went, north, centre and south, we had occasion to remark activity and devotedness on the part of those who were interested in the different branches of education, and it is a matter of regret that the shortness of our visit did not permit us to secure a first-hand knowledge of the Mass Education Movement, which is said to be playing such a large part in the awakening of the people.

The Government of the province of Chekiang is anxious to link up its health activities with the schools by preparing and applying a programme of school hygiene. A beginning is to be made in Ching-Po Primary and Secondary School, located in Hangchow, where, in co-operation with the municipal health authorities, a full programme of school hygiene will be provided, including medical inspection, school nursing, correction of defects and instruction in hygiene.

7. *The Control of Malaria.*

Chekiang is one of the provinces in which malignant tertian malaria prevails. In co-operation with the Ministry of Health, the provincial health authorities are preparing a programme for the study of the disease and the application of preventive measures.

8. *Improvement of Environmental Sanitation.*

The public health programme of the provincial authorities, as sketched briefly above, will give an idea of the difficult health problems existing in the province, and the courage and vision with which these problems are being faced. No mention has been made of the more elemental sanitary problems, such as the need for public water-supplies, sewerage systems, garbage collection and waste disposal.

In the city of Hangchow plans have been made for the construction of a public water system. At present the water used in the city is drawn from a lake bordering the city, which is heavily polluted, and from a number of ponds and wells, so located as to render them subject to contamination.

Throughout China night soil is highly prized as a fertilising agent, and its collection and removal are attended with danger of the spread of parasitic and intestinal disease. Night soil is employed as a fertiliser for mulberry trees used in the cultivation of silk, and hookworm disease prevails among the silk growers.

The safe collection and disposal of night soil in China is a problem compelling the attention of the health authorities. In Canton some interesting work has been done in attempting to find an agent which will increase the fertilising value of night soil and at the same time destroy the eggs of hookworm and other intestinal parasites.

The city of Hangchow is celebrated in Chinese literature and contains many temples, monasteries and shrines to which thousands of pilgrims, many from long distances are attracted every year. On this account the influence of epidemic diseases prevailing in Hangchow may be felt in many nearby and distant parts of China. The provincial and municipal authorities are fully alive to the necessity of providing for the highest degree of health protection possible with the means at their disposal.

The Ministry of Health, in its policy of concentrating on a few fundamental activities, has decided to co-operate with the provincial authorities in the directions outlined in the correspondence exchanged between the Minister of Health and the Medical Director of the Health Organisation, with respect to the facilities which that Organisation might afford to the health programme in the province.

Municipal Health Administration.

The first modern health administration in China was said (*China Year-Book*, 1928) to have been established at Tientsin in 1902, when a sanitary division was created in the Police Department. This example was soon followed by Peiping and other large cities. The above statement does not, of course, apply to the International Settlements and Foreign Concessions. Public health administration continued to form a division of police work, and was, as a rule, carried on by non-medical and non-technical personnel for many years. The chief health work carried on was street cleaning and attention to matters of elementary sanitation.

In 1920, a modern health department was organised at Canton and placed in charge of a graduate of the Johns Hopkins School of Hygiene and Public Health. This department has continued to function until the present time, although it has been directed during the interval by a number of health commissioners, each for a short period only. The numerous changes in its direction are said to have interfered greatly with its efficiency.

A modern health department under a trained health commissioner was established in the City of Greater Shanghai (the Chinese Municipality) in August 1926. This example was shortly followed by Hankow.

During our stay in China visits were made to the Health Departments of the most important cities, such as Nanking, Shanghai, Peiping, Tientsin and Canton. The memorandum furnished us by the Ministry of Health contains brief accounts of the health administration in these cities. The present notes are restricted to areas in which the Minister of Health proposes to carry on work in which he hopes that the Health Organisation of the League of Nations will co-operate.

It is for this reason that these notes refer to health work in the province of Chekiang only, and that the description of municipal health administration is restricted to Shanghai.

Shanghai is situated on both banks of the Whangpoo River about eight miles from its junction with the Yangtze, where the latter empties into the China Sea. It is the most important port in China (see report on quarantine) and was one of the first five ports opened to foreign trade. Shanghai is one of the chief industrial centres of China, having many cotton and silk mills, shipbuilding works, a Government arsenal, dock and engineering works, etc.

The metropolis of Shanghai is made up of an International Settlement, a French Concession and the Chinese city, which surrounds the first two. Estimated populations are as follows:

The Chinese city	1,700,000 [1]
The International Settlement	833,265 [2]
The French Concession	357,996 [2]
Total	2,891,261

The foreign population, largely Japanese and Russian, in these units is as follows:

	Number	Percentage
The International Settlement	30,565	3.67
The French Concession	9,920	2.8

There is no real separation between the three cities, one merging into the other. This naturally makes for administrative difficulties requiring for their solution the closest and most cordial co-operation of the three municipal governments, a condition which has, unfortunately, not always obtained.

Lack of co-operation between the health departments of these cities is due to a variety of causes, among which the following may be mentioned.

The wealth of Shanghai is concentrated to a large extent in the International Settlement and the French Concession, so that means for carrying on health work are much more abundant there than in the Chinese city.

The health department of the International Settlement has been built up through a period of years, while that of the Chinese city was first organised in 1926.

The directing personnel of the first was trained in the English school, while the Health Commissioner of the Chinese city was trained in America.

The training of the Health Commissioner of the Chinese city and the circumstances in which he is placed have led him to undertake activities which are described by the term social hygiene, rather than those pertaining to fundamental sanitation. This is a natural tendency in view of the fact that the area for which he is responsible is some thirty times larger than the area of the International Settlement and the French Concession combined. The provision of the fundamentals of sanitation in that city would be almost prohibitively costly, and, with the means at his disposal, he has naturally undertaken activities of a different character, such as those pertaining to school hygiene.

Finally, the health department of the International Settlement has felt that its first duty is to the foreigners within its area.

The operation of these causes, and the tension existing between Chinese and foreigners, on account of such questions as extraterritoriality, have tended to prevent such co-operation as is essential to the proper regulation of this metropolitan area, although due credit must be given to the personnel of both departments for their attempts to arrive at a *modus vivendi*.

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[1] Statement of Health Commissioner.
[2] *China Year-Book*.

The following table gives the death rates for Chinese and foreign population in the International Settlement since 1918 (Report of the Commission of Public Health for 1928):

Year	Death Rate	
	Chinese	Foreign
1919	14.3	20.6
1920	11.2	15.2
1921	11.0	18.2
1922	11.7	19.3
1923	10.3	17.2
1924	11.2	17.1
1925	11.2	16.4
1926	15.3	20.1
1927	12.3	14.9
1928	13.2	16.1

It is probable that the true general death rate among the Chinese is much greater than that stated for reasons given in Dr. Norman White's report on the Far East, namely, that, in addition to the percentage of deaths among the Chinese which escapes notice, many of those afflicted with chronic or incurable complaints leave the Settlement for their native villages to die.

The following table shows the number of deaths from certain communicable diseases among the residents of the International Settlement:

Year	Smallpox	Cholera	Typhoid fever	Scarlet fever	Tuber-culosis	Cerebro-spinal meningitis
1919	1	680	23 [1]	87	1,123	15
1920	0	144	30 [1]	103	1,098	76
1921	227	122	19 [1]	152	913	29
1922	240	101	30 [1]	152	908	12
1923	57	94	284	71	879	5
1924	98	0	293	78	926	7
1925	66	99	328	84	933	6
1926	181	373	424	598	1,190	8
1927	7	98	472	45	1,031	11
1928	159	6	462	71	946	20

Scarlet fever and measles, especially the latter, occur in severe forms in Shanghai. The notification of cases of communicable disease in the Settlement is not sufficiently complete to warrant the calculation of case-fatality rates, but the number of deaths from scarlet fever averaged 47 a year during the last decade. In 1928, there were 375 deaths from measles in the Chinese population. Leprosy, typhus fever and malaria in benign form occur sporadically in Shanghai. Malaria began to assume noticeable dimensions in 1927 and, in 1928, there were 100 fresh infections notified, of which 80 occurred among soldiers.

During the period 1916 to 1928, only four cases of human plague occurred, all in 1924. During the same period infected rats were found as follows: 6 in 1916, 2 in 1920, 3 in 1924 and 1 each in 1925 and 1926.

The relative freedom of Shanghai from plague cannot be accounted for otherwise than on the assumption that *X. cheopis* is relatively scarce. This is borne out by some studies carried out from February 22nd to April 12th, 1923, by the Health Department of the International Settlement, which yielded 266 Ceratophyllus, 114 Ctenopoylla and 2 Xenopsylla in a total of 382 rat fleas. Of a total of 129 rats examined, 98 were *Rattus rattus* and 31 *Rattus decumanus*; the average number of fleas per rat being 2.78 in the case of *Rattus rattus* and 3.48 in the case of *Rattus decumanus*.

In view of the importance of this subject these observations should be repeated.

Smallpox and Cholera in Shanghai.

Smallpox and cholera are apparently endemic in Shanghai, although exact data based on careful epidemiological studies of these diseases are unfortunately not available.

During the eight months January to August, 1929, there were four hundred and thirty-three deaths from smallpox registered in the Chinese municipality of Greater Shanghai (Report of the Health Commissioner). The number of deaths from smallpox in the International Settlement during 1928 was 159, of which 20 occurred among the foreign population. The disease is virulent in Shanghai, as these 20 deaths among the foreign population resulted from 62 cases, a case-fatality rate of 32.25 per cent.

To combat the ravages of smallpox, vaccination is practised on a voluntary basis by the health departments of the Chinese municipality and of the International Settlement. In the latter 55,734 vaccinations were carried out during 1928; a marked increase over previous years. In 1929, the Health Department of the Chinese municipality vaccinated 86,665 persons; also a distinct increase over the record of previous years.

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[1] Foreign population only.

This number of vaccinations yearly undoubtedly results in restricting the spread of the disease, but it will have to be increased considerably in order to wipe out smallpox in the metropolitan area. None of the health departments in the area can hope to make smallpox vaccination compulsory without similar action on the part of the other two departments, for the limits of each jurisdiction are too easily passed.

Shanghai is known throughout the ports of the Far East as a centre for the spread of cholera. The number of deaths from cholera per year in the International Settlement have already been given (366 in 1926, 94 in 1927 and 6 in 1928). During the year 1928, cholera was quiescent, but it broke out afresh in 1929. During the eight months January to August, 1929, 161 deaths were registered in the Chinese municipality, and the system of registration is of too recent introduction to yield anything like complete results. During the same period, 842 deaths from typhoid fever were registered and 1,460 deaths from " other forms of gastro-intestinal diseases ".

To control cholera, the usual steps are taken, such as isolation of cases, treatment of water supplies, laboratory investigations, etc. The use of cholera vaccine is also resorted to, 8,512 doses having been issued in 1928 by the Health Department of the International Settlement. During the summer of 1929, the Health Department of the Chinese municipality inoculated 131,173 persons against cholera, about twice the number it had been able to inoculate during the previous year.

The incidence of cholera is not restricted to the metropolitan area of Greater Shanghai, but extends to Nanking and Hangchow, both districts connected with Shanghai by rail (201 and 120 miles distant, approximately) and the former also by river steamers. Intermediate stations are also affected, and cholera occurs in the province of Kiangsu, outside the cities mentioned.

Health Work in the International Settlement of Shanghai.

A public health department[1] is maintained by the Shanghai Municipal Council. Its work is carried out by the following divisions:

Administration and Vital Statistics Division;
Laboratory Division;
Hospital Division;
Food, Dairies and Markets Division;
Sanitation Division.

The expenditure for public health work in the International Settlement is estimated at 90 tael cents *per capita*, which corresponds roughly to 55 cents gold. The following analysis of the estimates for 1929 was furnished by the Health Department:

	Taels
Administration	92,600
Laboratories, (pathological, chemical and dispensary)	87,050
Hospitals (isolation—Foreign and Chinese; mental ward, T.B. sanatorium; district nursing; radiology services; Mokanshan sanatorium; ambulances service, etc.)	264,330
Police Medical and Hospital Services (Indian and Chinese)	33,200
Police Hospitals, Gaols, Remanded Prisoners, etc.	
Free Clinics (tuberculosis and venereal diseases)	28,560
Food, Dairies and Markets Division	73,500
Sanitation Division (including disinfection, plague prevention, mosquito and fly reduction, publicity	179,160
Municipal Cemeteries and Swimming-Pools	5,730
Contribution to Port Health Work	6,000
Grants-in-aid—Civil Hospitals[1]	119,400
Total	889,530

[1] This item represents 15.5 per cent of the total.

According to the report of the Public Health Department for 1928, the staff numbers 135, of which 11 are Chinese physicians. The responsible posts are held by non-Chinese.

The policy of the Department has been directed as a rule towards the improvement of sanitary conditions and the restriction of epidemic diseases rather than towards so-called social hygiene. However, free clinics for venereal diseases and tuberculosis have been organised, the latter in 1927. During 1928, 679 patients attended the venereal disease clinic, and 238 visited the tuberculosis clinic.

The Department possesses 16 branch offices in the charge of sanitary inspectors, where vaccinations are carried out, health lectures are given, and other types of health work carried on.

The sanitary work of the Health Department has been particularly noteworthy in respect of markets, which it has constructed and organised, slaughter-houses and dairies.

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[1] It is not our intention to describe public health work in the International Settlements and Foreign Concessions of China. Nevertheless, two reasons lead us to include this note on the health department of the International Settlement of Shanghai—first, because it is the only modern health department in Chinese territory and, secondly, because it is an important element of the problem constituted by Greater Shanghai.

The work of the Municipal Laboratory has grown steadily since its establishment in 1900. A total of 40,117 examinations were carried out during 1928, divided into routine diagnostic and public health analyses (bacteriology of water, foods, etc.). The laboratory prepares anti-rabies vaccine and manufactures anti-smallpox, anti-typhoid, anti-cholera and anti-plague vaccines.

The public health department is in the hands of a Health Commissioner, with long experience in the East, who is about to retire. He and his predecessors have built up a department in all respects equal to the health department of an average provincial town in England.

Campaign against Smallpox and Cholera.

In the report on quarantine mention is made of the precautions taken by other Chinese ports against Shanghai when cholera prevails in that city. Vessels from Shanghai are also subject to preventive measures in foreign ports on account of cholera.

These considerations induced the Ministry of Health to take steps to initiate the control of smallpox and cholera on a co-operative basis in the Shanghai area.

The Minister of Health called together the health commissioners of the three municipalities, medical officers of the railways and one of us on December 27th, and announced that the initiation of certain measures against smallpox and cholera had been decided on, and that the co-operation of the health authorities of the foreign settlements was invited. These measures were:

(1) Anti-cholera inoculation and smallpox vaccination on a very large scale, with the possibility of applying compulsion;
(2) Study of the epidemiology of cholera in the area;
(3) The supervision of water-supplies and the provision of a number of artesian wells in the Chinese municipality in areas where the present supplies are contaminated;
(4) Arrangements for the isolation of cases;
(5) Supervision of foods exposed for sale;
(6) Anti-fly campaign;
(7) Precautions regarding the disposal of night soil;
(8) Supervision of water traffic in Soochow Creek, along the Whangpoo and Yangtse Rivers and from the coast through the port quarantine service.

The principle of co-operation was accepted by the health authorities concerned, and all agreed on the necessity for the epidemiological study.

In view of the importance of Shanghai as an international centre for the spread of smallpox and cholera, and of the importance to the Far East of the campaign to be undertaken, the Minister of Health requested that the Director of the Eastern Bureau of the League of Nations at Singapore should come to Shanghai during the campaign.

The Minister of Health requested us to study the programme of emergency measures outlined above, and the Chief Statistician of the Health Section is now in Shanghai to plan the epidemiological study of cholera and smallpox in association with officials of the Ministry and of the three health departments concerned.

Certain steps to be taken by the Ministry of Health will facilitate the application of emergency measures against smallpox and cholera in the Shanghai area.

First, an order will be adopted permitting the compulsory requirement of inoculation against cholera and smallpox.

Secondly, a high official of the Ministry will be appointed to act as epidemic commissioner, in order that the work of the health and other authorities in the various districts concerned may be properly co-ordinated.

Thirdly, the Ministry will make a financial contribution to the campaign and will also assist by providing vaccine.

Health Work in the Special Municipality of Greater Shanghai.

We were much impressed by the health work being carried on in the Chinese municipality under the inspiring leadership of Dr. Hou-Ki Hu, who heads the Health Department established in August 1926. Changes have taken place in the organisation of the department but the Health Commissioner has been retained, and the work has steadily progressed owing to the continuity of policy permitted by his retention. The present form of organisation dates from July 1928, when the municipality of Greater Shanghai was established. There is a Secretariat, a public health laboratory, rural health centres at Woosung and Kao-chiao, and four divisions, as follows:

First Division — Charged with vital statistics, medical registration and office supervision;
Second Division — Responsible for street cleaning, health education, sanitary police and general sanitation;
Third Division — In charge of meat and dairy inspection;
Fourth Division — In control of communicable diseases, hospitals, school hygiene, public health nursing and rural sanitation.

The staff consists of 72 staff members, 8 sanitary inspectors, 19 sanitary police, 17 foremen and 495 scavengers. The Health Commissioner has a degree from the Johns Hopkins School of Public Health, and two of his divisional chiefs have had special training in hygiene. A majority of the staff members are medical school graduates.

The budget of the health department calls for an expenditure of approximately 200,000 Mexican dollars a year.

Activities of the Health Department of Greater Shanghai.

The registration of births and deaths was begun in January 1928. Forms for the certification of births and registration of deaths were distributed to the police authorities, doctors and hospitals. The Health Commissioner believes that about forty per cent of births and deaths are now reported, and he is making every effort to increase the efficiency of the system. During the period January to August 1929 inclusive, 13,100 deaths were registered, corresponding to a crude death rate of approximately 12 per thousand per year. Of these, 2,049 were due to tuberculosis, 132 to diphtheria, 99 to scarlet fever, 233 to smallpox, 36 to measles, 842 to typhoid fever, 161 to cholera, 344 to puerperal disease, 1,294 to unknown causes.

It is evident that the registration of deaths and the certification of causes are far from accurate. This is due, in part, to the small number of qualified physicians. There have been registered in the department, 2,722 old-type Chinese medical practitioners and 504 modern medical graduates, many of the latter residing in the International Settlements and the French Concession.

During the eight months January to August 1929, there were registered 10,040 births, corresponding to a birth rate of less than nine per thousand per year. This is obviously incomplete.

In order to interest the public in its work and to secure their co-operation, three health campaigns have been conducted in two years. A health exhibit open to the public during the month of April 1928 was attended by 150,000 persons.

A health monthly and quarterly are published by the department.

Posters, pamphlets, leaflets and handbills are prepared and distributed in large numbers (214,000 in 1929) calling attention to the need for vaccination against smallpox, inoculation against cholera, etc.

As stated previously, 86,665 persons were vaccinated and 131,173 persons inoculated against cholera during 1929.

A School Health Service was started in November 1928, when a physician with special training (Peiping Union Medical College) and a public health nurse were employed for this purpose. In the beginning, the work was restricted to treatment, but, in April 1929, a systematic and modern school health service was begun for 14 of the municipal schools with a student population of about 9,000. This service began by the complete physical examination of all these school-children, but will be restricted in future to the examination of all older school-children at three-year intervals and of new scholars on admission. Parents of the children are invited to attend during these examinations.

School nurses are employed to follow up these examinations to see that the necessary corrections are made. Arrangements have been made with the Shanghai Red Cross Hospital and with certain eye, ear, nose and throat specialists to give the necessary treatment at a very low cost.

A special dental clinic in charge of two part-time dentists is held every morning. Trachoma clinics for the diagnosis and treatment of this disease are held in the different schools from time to time.

The school physician and nurses hold morning inspections in the schools for the detection of communicable diseases and to teach health habits. Teachers are being instructed in the method of conducting such inspections and, when trained, will be responsible for such work.

Most of the school-children have been vaccinated and inoculated against cholera and epidemic meningitis, without charge.

Each school is visited twice a week by a school physician and a nurse for the purpose of giving treatment for minor defects.

A complete and detailed examination of the school plant is made once a year, and a report with recommendations is sent to each school and to the Bureau of Education. In July 1929, 14 of the 20 schools were examined in this manner.

The following is a summary of the work done from April 1st to October 31st, 1929:

Physical examinations	6,160
Smallpox vaccinations	4,824
Cholera inoculations	200
Anti-meningitis inoculation	945
Total of treatments given	11,052
Examinations for trachoma	3,780
Weighing school-children	6,160
Health lectures (public)	24
Classroom health lectures	41
Consultations with parents and students	51
Number of defects corrected (other than dental)	42
Number of school-children given dental treatment	853
Number of home visits	27

Detailed arrangements have been made for the treatment of children with physical defects, and modern forms for recording all findings are used.

An unexpected result of the first stage of this work in the schools was pressure on the municipal government, as well as on the Health Department, to extend the work to all the city schools, so popular did it prove. The municipal authorities were willing to provide funds for its extension, but trained personnel was not available, this indeed being one of the chief problems in China. The Health Commissioner found it necessary to increase the size of the

school population served to twenty thousand, and expects to be able to extend this work to all the city schools within two years.

Some of these schools are located in the International Settlement and the French Concession, although controlled exclusively by the Chinese authorities. The Health Department of the Chinese municipality is carrying on health work in these schools as the municipal authorities of the two foreign districts have not yet undertaken this work.

Other Activities of the Health Department of Greater Shanghai.

Meat Inspection.

Beginning in January 1928, only slaughter-houses registered with the Department were permitted to kill, and these were all inspected. A municipal abattoir to which all slaughtering will be restricted is planned. The carcases are inspected and stamped, and those condemned as unfit for food are as a rule confiscated and sterilised, the grease being sold for soap-making. Other by-products are also sold. This work progressed by stages until on October 11th, 1929, cattle and sheep, as well as swine, slaughtered in the Chinese territory received ante-mortem as well as post-mortem examination. In ten months of 1928, the Health Department inspected 205,078 pigs slaughtered in the city.

Dairies are also inspected and registered. A majority of these are located in the Foreign Settlements and are also inspected by the Health Department of the International Settlement.

Hospitals.

In Greater Shanghai, hospitals are registered by the Municipal Health Department under the authority of regulations promulgated by the Ministry of Health. Twenty-two of these have been registered, of which four are in the International Settlement and the French Concession. Practitioners of old-style empirical medicine frequently maintain a few beds for their patients, and these are being tolerated for the time being and are registered as "offices".

Registration of physicians, midwives, dentists and pharmacists is also carried out and has given rise to a considerable amount of opposition from the medical profession.

It is not necessary to enter into details regarding the street-cleaning work, which here, as elsewhere, is a duty relegated to the Health Department. Night soil is removed by contract under the supervision of the Health Department.

The refuse collected from the streets is used for filling, and attractive streets have been built in this way where formerly were ponds and creeks. About 500 tons of refuse are removed daily.

Certain Characteristics of Greater Shanghai.

Where this city surrounds the foreign settlements, it is built up and consists of narrow streets lined with one and two-storey houses. But the municipality takes in a very large area, some of which might be regarded as rural territory, consisting of a number of villages with intervening sparsely settled areas. Moreover, there is a large population afloat on Soochow Creek and its branches and on the Whangpoo River. This population lives in boats, summer and winter; so large is the number of boats and so densely are they packed together that, in places, the water can hardly be seen. The banks of the creeks and rivers are also lined with huts of a miserably poor type, and these two conditions present a housing problem which is hardly paralleled in Western countries. It is this population which suffers most from cholera and other gastro-intestinal diseases. Many of the ricksha coolies live on the creeks, and many factory workers are housed in boats or on the banks of these waters.

The municipality has adopted a plan to solve this problem, but, owing to the large sums involved, several years will elapse before it is completely realised. One group of 100 houses has been built and is occupied. Each house consists of a living-room and bedroom, and not more than five persons are permitted to live in each house. The houses are in blocks separated by wide streets. There is an artesian well, a sanitary screened latrine and a community hall in which night classes are held. When a sufficient number of these groups of houses have been erected, the worst features of the housing problem will have been solved.

The municipality has a public water supply which is said to be delivering water of safe quality, but it serves only a small percentage of the population. In 1926, the same supply was grossly polluted, and there is evidence that it was at least partly responsible for an outbreak of cholera. To extend the supply to the remainder of the population would be prohibitively costly owing to the long distances involved and the scattered population. At present the Health Commissioner is attempting to solve the problem of water supply by sinking a number of artesian wells in areas where the ordinary sources are most polluted, *i.e.*, near creeks and ponds. In spite of the fact that it is not the habit of the Chinese to drink unboiled water, this is in all probability one of the important sources of cholera, dysentery, typhoid and paratyphoid fevers.

The disposal of night soil is also a difficult problem. This material is highly prized for its fertilising value, and is bought and collected by contractors who sell it to farmers. The installation of a water-carriage system would be prohibitively costly for reasons stated above in connection with the water supply, but in the most densely populated regions of the city this will have to be the eventual solution of the problem.

The garbage and refuse collected is not suitable for treatment in a reduction plant according to the Health Commissioner, and the quantity is too large to be wholly utilised for filling. The

Health Department is planning the construction of one or more large incinerators for this purpose.

The two rural health demonstrations carried on under the auspices of the Municipal Health Department at Woosung and Kao-Chiao, the former in co-operation with the medical school of the Central University, are described later on in this report under the heading of " Health Centres ".

Plans for the Extension of Public Health Work in Greater Shanghai.

The Health Commissioner of Greater Shanghai has a carefully prepared plan for the extension of the work of his department. He has divided the plan into five periods, one to follow the other as financial limitations permit. By the end of the five periods a full programme of modern health activities will be applied in Greater Shanghai.

Public Health Laboratory.

The Municipal Health Department possesses a public health laboratory in which routine diagnostic work, bacteriological and chemical examinations, and the manufacture of sera and vaccines are carried out. During the period from July 1928 to June 1929, the laboratory carried out 1,798 examinations, including 707 Wassermann tests, 197 sputa for tuberculosis, 73 Widal tests, 227 examinations for parasites, 73 examinations for typhoid, dysentery and cholera, 110 water analyses, 25 examinations of milk, etc. In addition, there were 1,212 examinations carried out in the chemical division, and some cholera serum, smallpox vaccine and material for Pasteur treatment was manufactured.

One branch of the National Public Health Laboratory is housed in the same building as the municipal laboratory.

Health Centres in China.

The operation of several modern health centres is one of the most hopeful signs for the future of public health work in China. There are three of these—described in the following pages—and the nucleus of a fourth, at Hsoao-Chuang, near Nanking, linked up with the educational movement which is so full of vitality everywhere in China.

The Peiping Health Centre.

This centre was established in 1925 jointly by the National Epidemic Prevention Bureau (representing the Government) and the Department of Hygiene of the Peiping Union Medical College. Professor J. B. Grant, who heads that department, is largely responsible for the organisation of the centre. The Government conferred on the medical college administrative responsibility for the area of the health centre and contributes a sum equal to the proportion of the municipal health budget that would be normally alloted to that area. The Medical College provides any sums required over and above this amount for expenses incurred in affording the facilities for teaching and investigation. The personnel is appointed by the college subject to the approval of the municipal authorities.

The centre[1] is housed in a converted temple. The lack of religious prejudice in China is indicated by the fact that the use of temples for health work is not resented. The area for which the centre is responsible is a city ward, conveniently located within two parallel streets, with a population of 95,956. Within this area a modern health programme is applied, and such studies have been made as throw much light on municipal health problems in this part of China.

The work of the centre is divided into three: general sanitation, vital statistics and communicable diseases, and medical services.

The division of general sanitation is responsible for general sanitary conditions, including supervision of foods, beverages, drinking-water, etc.

The functions of the division of vital statistics and communicable diseases are registration of births and deaths, investigation of causes of death, control of communicable diseases and the administration of preventive inoculations.

The division of medical service maintains a school health service for 1,800 students, an industrial health service for 1,200 workers, and acts as a health centre for about half of the population of the ward by the provision of five preventive and fourteen treatment clinics weekly. There is, of course, a public health nursing service.

The need for medical relief is illustrated by the investigation of the first thousand deaths which yielded the following results:

	Percentage
Received no medical treatment	36
Received old-style Chinese medical treatment	48
Received modern medical treatment	16

The staff of the health centre consists of 6 physicians, 17 nurses, 1 dental hygienist, 1 pharmacist, 3 sanitary inspectors, 1 secretary and 3 clerks. Two physicians from the Department of Medicine of the College assist in the infant and tuberculosis clinics.

The budget of the centre amounts to 60,888 Mexican dollars yearly, divided into 52,388 Mexican dollars for salaries and the balance for expenses.

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[1] " Methods and Problems of Medical Education ", Fourteenth Series, the Rockefeller Foundation, New-York, 1929, page 109.

The third annual report furnishes an idea of the work:

Sanitary inspections	78,870
Deaths investigated by physicians	1,148
Total curative treatments (44,575 for trachoma)	57,778
Health examinations	1,769
Smallpox vaccinations	2,590
Cholera inoculations	625
Typhoid vaccinations	255
Dick tests	327
Schick tests	3
Toxin-antitoxin immunisations	21
Scarlet fever antitoxin injections	86
Communicable diseases excluded from schools	96
Generalised nursing—home visits (3,976 patients)	25,660
Attendance at health lectures	8,737

This centre is utilised as a means of instructing medical undergraduates in hygiene and public health administration. Each undergraduate is required to make a community health survey, and to act as a clerk for three weeks at the centre.

The following death rates are from the first health area in Peiping in which the centre is located. It is not to be assumed that they are complete [1]:

Corrected birth rate (1928-29)	26.4
Corrected death rate (1927-28)	28.3
Corrected death rate (1928-29)	23.7
Infant mortality rate	200 per thousand births
Typhoid fever death rate	33 per 100,000 of population

Health Centre at Woosung.

This centre was established in 1929 under the auspices of the Medical School of the Central University (situated at Woosung) and the Department of Health of Greater Shanghai. It began to function in September 1929, so that it is too early to give the results of its work. This centre is utilised for the training of medical undergraduates in hygiene and public health. It is directed by the Professor of Hygiene of the Medical College.

The population of Woosung is about 9,000 and there are about 30,000 people in the surrounding districts.

The work of the centre is carried on by four divisions, as follows:

1. Division of Administration and Vital Statistics.
2. Division of Medical Service and Laboratory examination.—This division is in charge of the general clinics at which the attendance so far has been about 60 daily. A small laboratory has been fitted up for clinical work, and the laboratories of the medical school are utilised for the more difficult analyses.
3. Division of Public Health. — In charge of health education, school hygiene, industrial hygiene, communicable diseases, maternal and infant welfare and public health nursing. School health work is carried on at two primary schools and one middle school, the number of school-children being 650.
4. Division of Sanitation. — The work of this division is carried on in co-operation with the sanitary forces of the municipal health department.

The personnel of the centre is not yet complete. The chief of the centre is also in charge of three of the divisions. There is a small nursing staff in the charge of a chief nurse.

The budget for 1930-31 is 31,000 Mexican dollars, of which one-third is to be contributed by the Medical College.

While it is too early to give the results of the work of this centre, due credit must be given for the progress already made. The centre has done much to gain the confidence of the population in its area; it has already made some marked improvements in the sanitary conditions by filling ponds and swamps, by arranging for the collection and disposal of wastes, and by controlling the system of night soil collection and removal.

The confidence of the population is shown by their willingness to attend its clinics, and the character of the work done at these clinics commands respect.

The greatest difficulty of the centre at present is the lack of qualified personnel to fill posts now vacant.

Kao-Chiao Rural Health Centre.

This is located in the rural part of the Chinese municipality of Greater Shanghai, bordering on the Whangpoo River, opposite Woosung, some miles from the centre of the city. While the centre is in a small village, the work will also extend to neighbouring villages, for here, as elsewhere in China, the rural districts are densely populated.

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[1] General death rates in China are much more nearly complete than birth rates in practically all deaths are reported to the police, while there is a prejudice against the notification of births.

The problems which the staff of this and other health centres in China are called upon to face may be imagined when it is understood that modern medicine and modern hospitals are unknown, no information exists as to the composition of the population, or as to prevailing diseases, death rates and causes of death, the wells and ponds used as sources of water supply are contaminated, there are no modern methods of transport (rickshas are used by the staff when the roads are good, wheel-barrows in the wet season), the large majority of the population is illiterate, night soil is disposed of in such a way as to favour the spread of intestinal diseases and parasites, and housing conditions are extremely primitive.

This demonstration was started in July 1929 and is organised under four divisions, as follows:

1. General Administration. — Responsible for clerical work and vital statistics.
2. Medical Service. — In charge of free medical clinics, the free obstetrical clinic, and registration of physicians, midwives and dentists.
3. Infectious Diseases Control. — This division is responsible for environmental factors injurious to health, laboratory service and the control of communicable diseases.
4. Health Promotion. — This division is responsible for maternal and infant welfare, school hygiene, industrial hygiene, public health nursing and health education.

The health centre is too recently organised to have produced any startling results. Nevertheless, its work has already gained the appreciation of the population it serves. For example, in a little more than two months, a total of 4,313 patients were treated or given preventive inoculations.

An artesian well has been sunk in the village where the centre is located, and this source of pure water has proved to be unexpectedly popular. A flyproof watertight public latrine is being constructed.

Vaccination against smallpox is carried out by a mobile unit consisting of one physician, one nurse and a sanitary policeman.

The laboratory services are limited for the present to the examination of blood smears for malarial parasites, sputum for tubercle bacilli, stools for intestinal parasites, etc. Some fifty-two examinations of this kind have been carried out.

The work of this rural health centre has confirmed the fact that malaria is a serious health problem in the Yangtse valley.

Infant mortality is also extraordinarily high, and tetanus is responsible for a large percentage of deaths among the new-born.

The health centre is housed in a temple taken over for the purpose, illustrating again the lack of religious prejudice among the Chinese. Their open-mindedness is shown by their willingness to accept modern medical treatment such as public health nursing, obstetrical service and smallpox and anti-cholera inoculation. The greatest difficulty will consist undoubtedly in prevailing upon them to change their habits of life, which conduce to the spread of disease. Here, as elsewhere, the practice of health habits can be taught with success only to the young.

The future programme of this centre emphasises health education, communicable disease control, school hygiene, sanitation, maternity and infant welfare, and the development of vital statistics.

The Health Centre at Hsiao-Chuang.

The interest of this health centre which is still in a very early stage of its development, lies in its connection with the educational movement. Hsiao-Chuang is a rural area, some miles outside of Nanking, where a normal school for rural education has been started. The population in the area is about 13,000, living in scattered villages. A physician with public health training carries on the health work in the schools, assisted by two nurses. A clinic is maintained for the villagers at which the attendance is about twenty-five daily. There is a complete school plant, beginning with a kindergarten at one end of the scale and ending with a normal college where science is taught at the other. New schools are being opened in the villages, and attention has been paid to community welfare by such steps as the organisation of a defence force (against bandits, who were last seen a few months previously) and clubs for various purposes.

The graduates of the normal college have been instrumental in starting other educational demonstrations. When sufficient funds are available, it is hoped to extend the present health services into a complete " county " unit.

The community lacked any form of social organisation when the demonstration was started, and this illustrates the problem facing educators and sanitarians in China to-day.

The health work at Hsiao-Chuang is carried on under the auspices of the Ministry of Health.

We were much impressed by the spirit which appeared to animate all those concerned with this movement. No difficulties appeared to be too great to be overcome, and no problem too serious for solution. This small community in rural China is learning something of modern science, something of sociology, something of civilisation in the world to-day. The students of the primary classes are thinking about the place of China in the world community, and several of them revealed a knowledge of international affairs which could not have been expected of a high-school student in countries having a more highly-developed educational system.

The educational authorities hope for the multiplication of such educational demonstrations, and the health authorities will find in them splendid opportunities for carrying on experiments in public health administration.

Chapter II.

NOTES ON MEDICAL EDUCATION.

1. Modern medicine in China is still strange and unfamiliar to the masses. The native art of healing was in its golden age in the twelfth and thirteenth centuries B.C., when it was in advance of any practice known at the time. But its progress since has been slow and reluctant. To-day, the more up-to-date old-type practitioner has acquired the jargon of modern medicine and has probably reached the level and the prominence of the lay quacks of all kinds who have multiplied of late years in Western countries. His clientele probably does not differ from that of his Western colleagues. His poorer and more ignorant brothers, of whom there must be hundreds of thousands, provide medical relief for the millions by methods based on " dark age " experience. This old type of practitioner caters for the upper and middle classes, and sometimes even for the leaders of the country, again not unlike his Western *confrères*, over whom, however, he enjoys an enormous advantage. To compete with him, there is only a handful of doctors trained in modern medicine.

2. The Commissions sent out by the Rockefeller Foundation in 1914 and 1915 to study conditions of public health and medicine in China reported that " estimates made from good independent sources, foreign and Chinese, substantially agreed in saying that there are not more than from 45 to 55 Chinese practitioners of Western methods who have been educated in Europe, or in the United States of America. Some of these are engaged in practice, but most are found only in the hospitals and medical schools. There are, of course, some Chinese who have been trained in missionary medical schools in China and who are practising. These cannot be many in number, as it is known that most of the graduates of these schools are on the staff of the various mission hospitals ".

The Commission found a few Chinese practitioners of modern medicine who had been educated in Japan. None of these, as far as the Commission's observations went, had attended any one of the Imperial Universities. Apart from the mission hospitals and outside the Treaty Ports, there are very few practitioners in China who have had any training at all in modern medicine, and almost none who have been adequately trained.

3. Very considerable progress was accomplished during the fourteen years since these findings of the Commission; but to-day the exact number of practitioners of Western medicine is still a matter of official and semi-official conjecture. The Ministry of Health estimates the number at approximately 4,000, of whom probably not more than 1,000 obtained their training abroad or at the better-grade medical schools in China. The majority still elect to reside in the chief seaports and the main cities of the country.

With the advent of the Western trained graduates a new difficulty arose, due to the persistencein China of their linguistic and technical allegiance to the medical schools at which they were trained abroad. Students returned from America and England grouped themselves into the " National Medical Association of China ", and continued to use the English language for keeping records in hospitals, for technical discussions at their own societies and as a medium of teaching. The second group in importance, namely, the Japanese, adopted the same practice for a time, although there has been in late years a certain amount of amalgamation of this group with the National Medical Association. Next in influence—the German group, and the least numerous—the French group, continued to use the German and French languages much in the same way as the English and the Japanese groups. The various groups developed in course of time a certain corporate exclusiveness, which is strengthened by the use at leading national medical schools in China of English (in most cases), German and French as the medium of teaching. As a natural consequence, the hospital and teaching staff are as a rule selected from amongst the " National Groups ", with the result that the mutual aloofness is further strengthened. The manifest drawbacks of this system are fully realised by the leaders of the groups, who came together at the end of 1929 to form an inter-group union, which, however, has as its object the defence of the professional interests of the practitioner, and not the advance of modern medicine in China. Steps are to be taken in February 1930, however, at the Conference of the National Medical Association, towards amalgamation of all groups into one Association.

There is, thus, a divided medical profession, the bulk of which has not had adequate training. But even those who were educated at the best schools find themselves greatly handicapped in the exercise of their practice by the lack of medical institutions.

4. The hospital was unknown in China until very recently and was never recognised as a national institution in the development of her ancient civilisation. Hospitals owe their origin to missionary enterprise, although the first was opened in Macao in 1827 by Thomas Richardson Colledge (of the East India Company). The first missionary hospital of the Far East—the Ophthalmic Hospital of Canton, known to-day as Canton Hospital, was opened in 1835. The first missionary hospital in Shanghai was opened in 1834, after the establishment of dispensaries in Macao and Hong-Kong; in 1842 in Amoy; in 1843 at Ningpo; in 1856 in Foochow. By the year 1850, there were at least 10 such hospitals. By 1899, the number had grown to 61. Since that date the increase has been much more rapid. The Rockefeller Commission in 1914 inspected

88 hospitals in China and Hong-Kong, situated in 28 cities and 10 different provinces. Thirty-nine of these were classified as representing the work of missionary organisations (23 Protestant, 4 Catholic); 25 were non-missionary; 10 controlled by the Chinese Government; 3 by private societies; 2 by the Chinese Red Cross and 5 by foreign organisations. The whole number of hospitals at that time must have exceeded 200, of which the great majority were missionary institutions.

From observations made 14 years later we can state that, while great progress has been made, the conclusions of the Rockefeller Commission still hold good, *i.e.*, " that the study of the hospitals in China resolves itself almost completely into a consideration of missionary enterprise. The more important of the non-missionary hospitals, controlled by foreigners, are established for the care of foreign patients, and thus have no very definite influence on Chinese destiny. The hospitals under Chinese control, whether Governmental or private, are, with few exceptions, ineffectual, and they are of chief interest as demonstrating how small an impression high-grade Western medicine has as yet made in China ".

While several very efficient hospitals under Chinese control have been organised since the Commission reached these conclusions, such as the Central Hospital in Peiping (with 125 beds), opened in 1918, the Shanghai and Peiping Red Cross Hospitals the Orthopœdic Hospital in Shanghai, the small Metropolitan Hospital (with 40 beds), the Women's Hospital in Tientsin, etc., and while very considerable improvement has been effected in the standard of the missionary hospitals, as regards modern buildings, the medical staff and the general level of technical work, yet the majority of the Chinese controlled hospitals still fall under the description of the Rockefeller Report, and the bulk of the missionary hospitals, particularly the smaller institutions, do not seem to have progressed much beyond the level reached ten years ago, when the China Medical Missionary Association issued (in 1920) the results of the " Enquiry into the efficiency of missionary hospitals in China ". The enquiry brought to light the very difficult conditions under which many hospitals, even in important towns and cities, had to carry on their work owing to the lack of facilities for modern medical treatment.

Thus it was shown that:

34 per cent of the hospitals from which reports were received had no nurse whatever, either foreign or Chinese: 60 per cent not more than one trained nurse; 37 per cent depended entirely on the patients' friends for all nursing, while 62 per cent had no night-nurse;
37 per cent possessed no bedding, or only sufficient for a very few patients;
58 per cent were unable to clothe their patients in clean hospital garments;
8 per cent only had a pure water supply, and 6 per cent only had running water laid on throughout the hospital;
50 per cent seldom or never bathed their patients, and 43 per cent had no laundries, or only inadequate accommodation for dealing with the hospital linen;
34 per cent did not possess a steriliser for dressings, and 73 per cent had no means of sterilising bedding or mattresses;
37 per cent had no protection whatever against flies or mosquitoes and 65 per cent had no isolation block or courtyard;
31 per cent did not possess a laboratory of any kind, while 82 per cent had no bacteriological incubator;
87 per cent did not possess an X-ray apparatus.

The National Medical Association estimated that, in 1928, there were 580 hospitals in China. A number of these, as many as 35 per cent, were closed during the revolutionary years. The situation improved in 1929, but many remain unopened to-day. The general character of the missionary hospitals can still best be stated in the terms of the report of the Rockefeller Commission of 1914.

> " One of the first things that the traveller in China learns is the inaccuracy of all general statements. The country itself is so enormous, the physical, geographical, social and political conditions differ so profoundly in the various parts, and indeed in closely adjacent districts, that what may be perfectly true of one city is wholly untrue even of its near neighbour. In few fields of activity is this more definitely brought home to one than in medical work, which, by its very nature, comes into intimate touch with that most conservative of classes—the common people. Moreover, in a study of medical work, as it is carried on by foreign missions, one soon finds that the accuracy of generalisations is limited, not only by the inherent local factors, but also by the great differences existing among the foreigners who control the work. This depends in part on the mission body under the auspices of which the work is done but more frequently on the individual who is in direct charge. Thus one doctor devotes his attention chiefly to the development of the medical efficiency of his hospital, while another is more interested in evangelistic work and regards the hospital more as a means to that end. One man has an executive, business-like mind, while in another this may be quite lacking. One man is, by nature and as a result of previous experience in his city, a conservative, while another is boldly a progressive. It is a common experience to be told that some thing " cannot be done in a hospital in China at the present time ", and then to find that exactly this thing is being done in another hospital only a short distance away. Sometimes, of course, the local conditions are different in the two places, but not infrequently the difference lies in the doctors themselves. Besides the personal element in determining the differences found in medical work, there are other factors of importance. Financial support, mission policy, size of the staff, whether foreign or Chinese, the presence or absence of nurses, and other similar questions, all tend to diversify the efficiency and standards of different institutions. "

5. The position of the practice of modern medicine in China may be summed up in a few sentences. There are some 4,000 general practitioners, of whom the majority have not had proper training; a very few competent general or special hospitals under Chinese control; a few foreign hospitals comparable to good-class institutions of the West, of which the majority are for foreign patients, a small number of modern missionary hospitals and a large number of small institutions much below the Western standard. There is no doubt, therefore, that in the exercise of his profession the Chinese Western-trained doctor finds himself much more handicapped than any of his colleagues in other countries, even of the Far East.

Despite the difficulties noteworthy results have been achieved during the last fifteen years by Chinese doctors. A devoted group of workers on the staff of the North Manchurian Plague Prevention Service, has won a record of successful campaigns during three widespread outbreaks of pneumonic plague. Useful work has been accomplished by the National Epidemic Diseases Prevention Bureau in Peiping in the preparation of biological products' in epidemiological enquiries and in anti-epidemic activities. At three or four centres, small groups of health officers have developed useful work (described in detail in another part of this Memorandum). Individual medical officers have taken a prominent part in initiating measures for the control of leprosy, for the creation of provincial hospitals and for the study of problems of industrial hygiene. Medical research has claimed the attention of another limited group which has distinguished itself particularly in the domain of physiology.

But, by far the largest proportion of those who have had proper training is engaged in private practice, in the exercise of which they are " swamped by the relatively great mass of poorly-trained practitioners of so-called Western medicine, jealous of changes, which they fear may endanger their livelihood and lessen their social esteem ".

6. The ranks of the profession are very inadequately filled by graduates of existing medical schools.

Teaching of modern medicine consisted at first in the training of young men to assist the Western missionary doctors, for the most part in surgical procedures. The majority of the graduates of this apprenticeship system remained on the staff of the missionary hospitals, and some of them in their turn engaged in teaching, although they had usually very little general and pre-medical education.

7. At first, modern medicine seems not to have attracted Chinese intellectuals, either on account of the original reluctance for foreign intercourse and the importation of Western practices, or on account of the fact that the foreign teachers were not of high grade. The practice of surgery, ophthalmology and midwifery was particularly aimed at.

The first properly organised medical school was opened at Tientsin in 1881, under the patronage of the Viceroy, owing to the personal influence of a British missionary physician, Dr. Mackenzie. It has passed through various vicissitudes, and is known to-day as the Naval Medical College. Instruction is still given in English, although since 1901 the teaching has been in the hands of French practitioners and Chinese graduates trained mostly in France.

The present decadence of this school is symptomatic of the fate which has befallen the early institutions. Since 1914, the Government has established special medical schools in the provinces, the record of which, judging by the quality of the graduates, was so unsatisfactory that they did not receive support after the establishment of the National Government, and many of them ceased to function between 1925 and 1926, or have been ordered to be closed since. They were organised mainly by students who went to Japan to study medicine between 1905 and 1915 at lower-grade schools, *i.e.*, schools giving no real laboratory training in physics, chemistry and biology. A year or two after graduation, these men took posts as Deans and Professors, and established Government schools, such as the National Army and Medical College at Peiping, provincial schools at Hangchow, Soochow, Woochang, Paotingfu. A competent observer rightly states of these teachers that " they were unprepared for such heavy responsibility. The deplorable results which followed might easily have been anticipated. The presence here and there of a devoted worker, struggling against heavy odds, did little more than accentuate the prevailing gloom in such institutions, staffed mainly with incompetents, and subsisting on pitiably inadequate funds ". Eleven or more of these provincial medical schools and several private Chinese schools have had a more or less precarious existence during the past ten years.

8. The missionary system of instruction is also changing. When the apprenticeship system gave way, the medical missions began organising small medical schools, mainly as a development of the classes for ward assistants which had been started in connection with a number of the more important hospitals. The movement spread, and missionary medical colleges were opened all over the country, although suitable teachers were few and funds for development limited.

At first, such schools required middle-school graduation or its equivalent for admission. The minimum standards of a high-type medical curriculum now require two years pre-medical work of college grade, followed by five years work in a medical school, of which the last year is the intern-ship in a hospital connected with the medical college. But very few missionary schools are up to this standard. Under the influence of the Missionary Medical Association it was decided, in 1914, that no further medical schools be established until the eight mission colleges then in existence had been made into efficient units, and it soon became evident that, even then, the number was far beyond the power of the missions to render effective.

In Annex 2 will be found the " Requirements for Registration in the China Medical Association (Missionary) as an approved Medical School in China ", which it was found necessary to draw up in order to provide a standard at which to aim. At present, the only school in China fully up to

this standard is the Peiping Union Medical College. The schools holding registration are those at Mukden, Tsinan, Chengtu, and the Women's and Mission Colleges in Shanghai. The Hsiang Ya School at Changsha was provisionally registered before the break-up, and also the Hangchow Missionary Medical School, since closed.

In 1925-26 there were eight schools. These were:

	Students	Total Faculty	Graduates to date
Organised as a School of a University:			
Tsinan, Shantung Christian Missionary School of Medicine	90	25	193
Shanghai: St. John's University School of Medicine	28	31	64
Szechuen: West China Mission University Faculty of Medicine	39	36	20
Separate Medical Colleges up to Full Medical College Standards:			
Peiping: Women's Christian Medical College	8	20	?
Hsiang-Ya: College of Medicine	49	24	43
Separate Medical Colleges of College Grade, but not up to Medical College Standards:			
Mukden Medical College	103	19	131
Hangchow Medical Training College	65	23	150
Hackett Women's Medical College	55	31	155
	437	209	756

Some above schools have ceased to function. St. John's University may reopen this year. The Hangchow Missionary Medical School remains closed. The closing of these resulted either from revolutionary action or from reluctance to comply with the new regulations issued by the Ministry of Education of the Nanking Government. There is a scheme under discussion of organising a Federated East China Christian University in order to utilise fully the existing facilities.

Of the 437 students registered in 1925-26, about one-third has graduated since; others have dispersed with the closing of the schools, and the remainder are continuing their studies.

It will be noted that half of the graduates were trained at colleges " not up to the Medical College Standard " of the missionary classification.

9. Foreign non-missionary schools were organised at several places; an excellent Japanese school in Mukden; a very efficient German school in Shanghai, the " Yale-in-China ", in the interior of the country at Changsha, and the short-lived " Harvard Medical School of China " in Shanghai. Most of these schools aimed at a high standard of education and achieved good results. The German school graduated perhaps more than any other foreign college, namely, upwards of 300 students in the 15 years of its existence. Its curriculum is that of German Faculties of Medicine before the introduction of the new standard. It has now become a national University, the Ministry of Education being responsible for the salaries of the teachers and the upkeep of the institutes. The medium of instruction continues to be German and the German staff is maintained.

The " Yale-in-China ", which " had been one of the few institutions with sufficiently high standard to give it national significance ", was voluntarily closed and has been changed into the newly established National Medical College of the Central University at Shanghai (Woosung) under its former Dean, Dr. F. C. Yen.

To the list of Protestant Missionary Schools must be added the high-grade but small French Jesuit Medical College " Aurora " in Shanghai, with clinical facilities at a big model charity hospital. It will probably close down, as it declines to comply with the Ministry's regulations.

But the determining factor in high-grade medical training was the creation by the Rockefeller Foundation in 1915 of the China Medical Board. During the last ten years the Board has given aid to medical education, to hospitals, and has granted fellowships and scholarships. It is largely due to this aid that the foreign mission hospitals and medical schools were able to raise their standard, but its most notable contribution consisted in the creation of a medical school of the very highest standard in Peiping. Pre-medical work began in this Peiping Union Medical College in 1917 and, in October 1919, the first medical classes began regular studies. It has at present some 200 students, and 51 have graduated since its inception. During the ten years of its existence, this school has exercised a profound influence on the development of modern medicine, public health and medical research in China.

10. In addition to the above, a number of schools of lesser importance, public or private, continue to exist and to attract large numbers of students of both sexes.

While the higher-grade colleges require two or three years pre-medical study after graduation from middle schools, the second-class colleges admit middle-school graduates without any further examination, although some of them require further study of the language which may be the medium of teaching at the school (*e.g.*, German).

Two years pre-clinical and two to three years clinical studies constitute the curriculum of good schools. Facilities for post-graduate study do not seem to be largely utilised outside the Peiping Union Medical College.

The teaching staff of the higher-type medical schools is predominantly foreign, American, British, German, Japanese and French, with the exception of the almost purely Chinese Central University Medical College at Shanghai. The teaching staff is recruited either from among Universitarians (Peiping Union Medical College) or amongst medical practitioners (Tungchi, Aurora, St. John's and other missionary colleges).

11. The lower-grade schools present a melancholy picture. At one of them, in Shanghai, some 150 boys and girls, eager to learn, are huddled together in a small compound, with laboratories hardly big enough to accommodate ten people, without necessary apparatus or material (no practical anatomy for two years), with a clinic of thirty beds, shockingly lacking in cleanliness and in modern equipment, and with an operating room which demands peculiar powers of survival of the patients, who fortunately but seldom are condemned to be its victims. Such " schools " are operated by medical firms, who see their practice extended by the recommendations of their former students. The National Ministry of Education has ordered all schools of this type to be closed, but they continue to flourish in the International Settlement of Shanghai, unlicensed and unchecked by the Municipal Council. The graduates are allowed to practise in the Settlement, where registration of medical practitioners, foreign or Chinese, is not enforced.

Such medical " shops " are not, in fact, much better than some of the schools maintained by firms of old-type practitioners, which have sometimes as many as 100 students in one compound and give rudiments of teaching in modern pathology and other pre-clinical subjects, while emphasis is laid on Chinese pharmacology and the art of healing, to the complete exclusion of surgery and midwifery.

With the higher type of college at the top of the ladder and the low-class schools at the bottom, a gradation of types fills the intermediate stages. Ascending these steps, one finds an Army Medical School (recently closed) turning out military surgeons usually found wanting in knowledge and experience, a moribund provincial school, not divested of a certain charm of a peculiar learning, with practically no facilities for clinical teaching; another medical college, once famous, and now bearing marks of past glories and present decrepitude (no financial remittances for 44 months); a National Medical College, full of promise, with some 200 keen, earnest and zealous students, modest laboratories used to good purpose and with an out-patient department, reminiscent of illustrations in early-Victorian medical textbooks, while provision for medical teaching is inadequate in every sense.

12. The total output is not very great. The higher-class schools have not produced many graduates. The Peiping Union Medical College has turned out about 51 in the ten years of its existence and the graduation of all the others can hardly exceed 850 to 1,000.

It is very difficult to state accurately the present situation of medical schools in China. Some are closing, others re-opening and several are under the ban of the Ministry of Education. But there are actually in function of the higher type:

(a) *Foreign:*

In the North:

Peiping — Peiping Union Medical College, of the Rockefeller Foundation;
Mukden — Medical Colleges (Japanese and Christian);
Tsinan — Shantung Christian University Medical Faculty;

In the East:

Shanghai — Shanghai Medical School (Missionary);
Women's Christian Medical College (Missionary);
French School of Medicine (Missionary);

In the West:

West China Mission University College of Medicine;

In the South:

Canton — Hackett Medical College for Women.

(b) *Chinese:*

Peiping — The National Medical College;

Shanghai — The National Central University Medical School;

The National University Medical College (Tung Chi) (German);

Canton — The Chung Shan University Medical School;

The total enrolment this year may be estimated at:

Foreign schools. .	some 720
Chinese schools. .	some 500

13. Post-graduate studies and medical research do not attract many of the graduates; public health, or perhaps an administrative career a few more. But with the rapidly extending scope for modern surgery and diverse specialities, most of the graduates are attracted by the

pecuniary benefits of private practice. So-called private hospitals which are, in fact, paying clinics, abound, particularly in the greater cities and foreign concessions, and the exercise of medicine is rapidly becoming commercialised. Specialists are many, and their numbers are increasing, but not many leaders have as yet emerged, even from the best schools. Hence the difficulty in the establishment of new modern colleges. Very few experienced hospital administrators have so far been discovered. The appeal of social service in public health, which calls for heavy sacrifice, perhaps to a higher degree in China than elsewhere, has been felt, up to the present, by only a small number of workers.

Programme of Reform.

14. The National Government has decided to close practically all provincial medical schools. Their intention is to improve and develop three Government institutions, namely, The National Medical College at Peiping, the National Central University Medical School at Shanghai, and the Chung Shan University Medical School at Canton. An experienced observer states that " these three schools alone can, for a few years, absorb more teachers and adequately-prepared students than the country is ready to supply, and it will be difficult enough to secure the additional funds of which these schools are in urgent need ".

There is general agreement as to the necessity for exerting every effort to bring these schools up to a high standard and to maintain it. Opinions differ as to subsequent policy. Should these three colleges be regarded as " normal schools ", for the preparation of leaders in the medical profession and teachers in other schools ?

It must be remembered that they will only be able to graduate a limited number of students during the next five or ten years. There is, however, a growing tendency to demand that the Government should authorise the establishment of a number of second-grade medical schools, aiming at " quantity production ". The National Federation of Practitioners is particularly insistent upon this and, last November, even requested the Government to reinstate the " special medical schools ", namely, the provincial and other low-grade medical institutions which the Government had ceased to support. Apart from other considerations, there would be real practical difficulty in adopting such a course, owing to the lack of adequate teaching personnel. The unusual opportunities for private practice which are open to leading physicians in China makes it difficult even to provide the three high-standard schools with suitable staff. Advocates of the proposal contend, on these grounds, that the second-grade schools should be opened gradually as teaching staff becomes available.

Another view, held by certain very competent observers of medical education in China, is that, while " a strong *prima facie* case can be built up for such schools, in view of the immense number of doctors needed in China ", such a programme is "impractical, unnecessary and undesirable at the present time and should not be officially encouraged ". *Impractical*, because " a rather rare type of teacher is implied if men both competent and willing to undertake such a responsibility were to be sought . . . The plan to produce mediocrities is unnecessary, since the high-grade schools will themselves produce mediocre individuals in considerable quantity; mediocre schools will almost inevitably exist for a time, in any event, without the deliberate effort to create them, and, if proper attention is given to the training of nurses and technicians, the physicians will be relieved of most of that part of their work which does not require the highest possible skill ". *Undesirable*, because " it will raise up a large number of practitioners fated to be handicapped throughout life by an inferiority complex, which will lead them to oppose progress, often with success. . . . If a time comes when a highly-trained medical profession is exerting a dominant influence on medical affairs, and sufficient numbers of well-trained men are available to supervise a larger number of second-rate assistants, then the medical profession of that day should decide for itself whether special schools should be provided for the production of those men ".

The question of the standard of admission, of the length of study and, above all, of the language to be used as a medium of instruction, are also the subject of exhaustive discussion. The National School at Shanghai gives its instruction in English; the one in Canton in German; it is only the Peiping School which uses the Chinese language.

In view of the complexity of the problem, the Government has decided to set up a National Commission for the study of the reform of medical practice, and will await its findings before formulating a definite programme. The members of this Commission were selected by the Ministers of Education and of Health, and, among its nine members, there are high officials from the two Ministries, as well as leading members of the medical profession and directors of the principal medical schools.

The Minister of Education, on behalf of the Government, requested the Health Organisation to assist this Commission by supplying information on the programme of similar national commissions in other countries, and by the collaboration of the League's Commission on Education in Hygiene and Preventive Medicine, possibly delegating an expert for a few months during the present year to work in China in conjunction with the Chinese Commission.

Chapter III.

PORT HEALTH ORGANISATION AND PROCEDURE IN CERTAIN CHINESE PORTS.

On September 14th, 1929, the Government of China invited the Secretary-General of the League of Nations to send a Commission of Experts to make a survey on port health and maritime quarantine in Chinese ports (cable from the Minister for Foreign Affairs to the Secretary-General of the League). After consideration and approval of this request by the competent organs of the League of Nations, we arrived in China on November 9th, 1929, to discuss the possibilities of future co-operation with the Ministry of Health, and to make a preliminary survey of quarantine for the purpose of furnishing to the Health Committee the information necessary to its future deliberations on this subject.

The Ministry of Health prepared a programme, and facilitated our work in every possible way, making generous arrangements for transportation, and collecting in advance needed information concerning the status of port health work. The Ministry also detailed the Director of the North Manchurian Plague Prevention Service to accompany us, as well as two members of the Quarantine Division, who took it in turns to visit ports in advance, and make all necessary preparations for the survey.

The ports actually visited according to the programme of the Ministry were, in chronological order, Shanghai, Tsingtao, Antung, Tientsin, Amoy and Canton. At Tientsin time did not permit a visit to the quarantine station, which is located some miles away from the city. Information on this station and on port health work at Newchwang is included in this report, on the basis of detailed reports furnished by the medical officers concerned.

The ports visited are, according to the Ministry of Health, the most important in China, and the methods adopted for carrying out port health work illustrate the general condition of port health practice in China.

General Remarks on Port Health Organisation and Procedure in China.

It is the intention of the Chinese Government to transfer, in the near future, the responsibility for quarantine from the Ministry of Finance to the Ministry of Health.

Port health work in China is now carried on as a rule by the Chinese Maritime Customs, under the Ministry of Finance. The two exceptions are Canton and Tsingtao, where, in each case, the municipality has taken over the work. There are important differences in quarantine procedure at the various ports, so that it is hardly possible to make a general statement which applies to them all. In general, however, port health work was begun by the authorities of the foreign concessions in Treaty Ports as a measure of protection against ships arriving from ports where plague, cholera and smallpox prevailed. Later, the work was taken over by the Chinese Maritime Customs, and placed as a rule under the direction of the harbour-master, who is assisted by one or more medical officers and a varying number of auxiliary staff. The chief port officer is usually a foreign medical officer, sometimes engaged in private practice, hence devoting only a part of his time to this work, while, in a number of ports, Chinese medical officers are employed in a subordinate capacity. There are important exceptions to all these statements, as will appear below in the more detailed descriptions of the various ports.

In a majority of the ports, a number of quarantine regulations have been agreed upon and sanctioned by the Superintendent of Customs and the Treaty Power Consuls. These regulations differ widely, but, in the main, provide for the precautions to be taken with a ship having on board an infectious or suspected disease, or arriving from a port declared to be infected. At present, ports in the Far East are considered to be infected on the basis of the information furnished by the Eastern Bureau of the Health Organisation of the League at Singapore. In case a port fails to furnish either positive or negative information to the Bureau, it is also considered to be infected. In such cases, the Superintendent of Customs asks the Treaty Power Consuls to agree in declaring such a port infected, and when such agreement is received from all the Consuls, the port health officers are authorised to deal with ships arriving from that port according to the provisions of the sanitary regulations in force.

In general, port health authorities suffer from the lack of (1) sufficient competent staff, (2) adequate laboratory equipment, (3) proper accommodation for detention and hospital purposes, (4) equipment for boarding vessels and organising inspection of passengers and crew. These deficiencies will be apparent in the further description of each port. In general, Shanghai is the only Chinese port possessing equipment which may be regarded as reasonably adequate for purposes of deratisation. While it is true that little equipment is required for the use of sulphur dioxide, and that reagent is regarded as reasonably effective by many authorities, there are certain difficulties inherent in its use in Chinese ports. For these are not terminal or final ports, that is to say, vessels are only partly unloaded and fumigation must be carried on while such vessels are in cargo. Sulphur dioxide is destructive to many articles, and shipmasters are loth to permit the use of such a reagent. Again, while sulphur dioxide is effective when properly utilised, this implies trained crews experienced with the method. Sulphur dioxide fumigation is, moreover, one of the slowest methods of deratisation.

The lack of proper laboratory equipment is a hindrance to quarantine work, especially with regard to the examination of persons for cholera, and of rats for plague, not to mention cases, or suspected cases of dysentery and diphtheria. It may not be necessary in the case of

every port to have a laboratory attached to the quarantine service, for, in some ports, arrangements may be made for the municipal diagnostic laboratory to handle the work, but laboratory facilities must be at the disposal of every such service.

At present the examination of rats for plague in ports or on ships is much too limited, even non-existent, so that a valuable source of information on which preventive measures might be based is not utilised.

Lack of proper accommodation for the detention of suspects and carriers, and of hospital facilities for cases are serious deficiencies in the majority of the ports. In some cases where some such accommodation exists, it is so inconveniently located as to be almost inaccessible at certain periods of the year.

Lack of proper facilities for boarding vessels and for inspecting crew and passengers render port health work of uncertain value and cause vexatious delays to shipping. The ideal is to secure the maximum of protection from infectious diseases with the minimum of interference to shipping. This implies sufficient competent staff with proper equipment, a centralised control, and identical sanitary regulations applying to all the ports. The different regulations now applied in the various ports must constitute a source of annoyance to shipping interests.

Port Health Work at Shanghai.

Shanghai is one of the great ports of the world, and the most important of Chinese ports. During 1928, the number of vessels entered and cleared at the Maritime Customs under general regulations was 22,268, with a tonnage of 34,586,406. By far the greater amount of this tonnage represented ocean steamers, but it also included 4,276 river steamers (6,206,818 tons), 905 sailing vessels (213,998 tons), launches and native craft, including chartered junks. This was the largest amount of tonnage entered and cleared at the Maritime Customs between 1919 and 1928 (*Shanghai Annual Trade Report and Returns*, 1928).

These vessels come from ports all over the world as well as from Chinese ports. The largest passenger and freight vessels plying in the Far East enter Shanghai port, which has excellent harbourage and wharfage facilities.

The port is located on both banks of the Whangpoo River, twelve miles from its entry into the Yangtze River at Woosung. The situation of Shanghai makes it the entrance port for the Yangtze River, which is navigable to large river vessels (minimum navigable depth 8-10 feet) as far as Hangkow (600 miles) and to smaller vessels in the summer for another 800 miles, not to mention navigable tributaries.

The city group of Shanghai consists of the Chinese city (a special municipality) and two Foreign Settlements, one International and one French. The estimated population of these three areas is as follows (*China Year-Book*, 1929-30):

	Foreign	Chinese
Foreign Settlement	30,565	802,700
French Concession	9,920	348,076
Special Chinese Municipality	—	1,700,000
	40,485	2,850,776

Separate Health Departments exist in each of the three areas, the latest to be established being that of the special (Chinese) municipality (1926). Vital statistics are not well developed, and the returns from the International Settlement appear to be the most accurate.

A description of health conditions in Shanghai will be found in other chapters of this report. The present chapter deals only with port health organisation and procedure. It should be noted in passing, however, that Shanghai suffers from periodic outbreaks of cholera and smallpox, and both may be considered as being endemic in the Shanghai area. On this account the health authorities of other Chinese and foreign ports periodically declare Shanghai infected, and deal with shipping from that port accordingly.

History of Port Health Work in Shanghai.

In 1894, the epidemic of bubonic plague in Chinese ports was responsible for the establishment of a sanitary station at Yangtze Point, about two miles outside the harbour limits, as they were defined at that time. The plant appears to have consisted of lighters for the housing of staff and the detention of contacts.

No further attempts to establish a permanent station were made until 1899, when the continual menace of bubonic plague led to the construction of a sanitary station on Chung Pao Sha Island in the Yangtze River opposite Woosung. This station was utilised only during epidemics of plague until 1902, when the port sanitary regulations were revised to cover other malignant contagious diseases, and the station was kept open permanently. An isolation station for Chinese was established on Pheasant Point at the entrance to the Whangpoo River.

In the meantime, it had become necessary to find a new location for the foreign station at Chung Pao Sha Island, which was being rapidly washed away by the action of the tides. A site was selected next to the Chinese Isolation Station at Pheasant Point, and the new station was opened in 1905.

It consisted of accommodation for Chinese patients, suspects and contacts who were placed under the care of a Chinese medical officer appointed and maintained by Chinese merchants until 1915, when the department was taken over by the Chinese Red Cross. There were also

facilities for the accommodation of foreigners, in charge of the port health officer, who had also sole jurisdiction with regard to examining, admitting and discharging all patients and contacts, whether Chinese or foreign.

In 1912, both Chinese and foreign departments were moved a short distance south of the old site to new land reclaimed by the Conservancy Board owing to dredging operations carried on by the latter. This is the station at present in use.

The foreign side consists of 22 mou [1] of land on which stand fairly substantial buildings capable of housing twenty-four persons, or even more in case of necessity. The bedding and furniture in store are sufficient for only eight persons, however. There is ample space in the station for the erection of temporary huts.

The Chinese station, located immediately adjacent to the foreign station, consists of fairly substantial buildings capable of housing thirty-six patients comfortably, or more in case of necessity.

Both stations suffer from the lack of running water, or even pure water; there is no provision for bathing except the large earthernware jars known as kongs, and there is no lighting system. There is an old steam autoclave which may be utilised, but it is insufficient for disinfecting purposes. The most serious defect, however, is the situation of the station, a long distance from the quarantine anchorage, and at low tide so far away from the water that it would be prohibitively expensive to build a proper landing-stage. As it is, patients and suspects must be carried over the mud. Furthermore, a highway runs along the front of the station, and as there are no natural barriers on any side, contacts can easily break out of the station, and have done so.

The staff consists of a port health officer (foreigner, full time) one sanitary sergeant, one male nurse, two cooks, a carpenter, a washerwoman, a bamboo-man, seven coolies and two boatmen (with a sailing sampan). This last does not include the personnel of the Chinese side, which includes one full-time Chinese doctor and his staff. This doctor has no duties other than to maintain the Chinese station and care for any Chinese patients or contacts who may be isolated.

These two stations lie idle most of the year.

The port health officer lives in a house opposite the station at Woosung Forts, over a mile away. He is fairly conveniently located as far as boarding vessels in the quarantine anchorage in the Yangtze is concerned, although this anchorage is not well protected from storms from certain quarters. His boarding vessel is the Sanitary Service tender " Pootoo ", a staunch vessel of about 100 tons gross, with a crew of 15 men, which he considers unnecessarily expensive to maintain and larger than is needed for the purpose.

Income and Expenses.

The sanitary account is made up of grants from the following sources:

	Hk. Tls [2] yearly
Superintendent of Customs	10,772.00
Shanghai Municipal Council	5,386.00
French Municipal Council	1,885.08
	18,043.08
Annual expense of upkeep (average last five years):	
Sanitary Station [3]	907.49
S.S. " Pootoo "	1,620.96
Annual working expenses (average last five years):	
Sanitary Station [3]	538.52
S.S. " Pootoo "	3,223.04
Salaries of staff	17,832.85
Total annual expenses	24,122.86

This account is not self-supporting. A certain amount of revenue is derived from the fumigation of vessels let out on contract to the Shanghai Disinfecting Company, but this revenue is used as a sinking fund to pay off an advance made to the company by the Customs.

Work of the Shanghai Disinfecting Company.

The headquarters of this company is located near the Bund. The equipment consists of:

1. The " Jessie O. Hughes ", a floating disinfecting-plant fitted with two gas generators, one for carbon monoxide or carbon dioxide fumigation, the other for sulphur dioxide. The first is capable of delivering 130,000 cubic feet of gas per hour, the second only 35,000 cubic feet. The hulk is also equipped with 16 shower baths divided into compartments, cold and warm water laid on. There is a dressing-room adjacent to the bathrooms where clothing may be removed and passed down a steel shute to a steam steriliser below. This clothing may then be returned to the bathers when they step out of the shower. The hulk is fitted with the machinery necessary for operating fans, heating water, lighting, etc. There is a small office for the medical officer.

2. The " Junie " is a steel tug of about 120 tons gross. She has ample power to tow the " Jessie O. Hughes " anywhere the latter may be required.

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[1] Regarded at Shanghai by custom as equivalent to one-sixth of an English acre.

[2] A Haikwan (or Custom's) tael exists as book currency only. It is supposed to contain 583.3 grains of silver, 1,000 fine. The Mexican dollar contains 417.8 grains, fineness, 902 65/75. The value of silver with respect to gold varies considerably but during our visit 2.50 (Mex.) equalled $1.00 (Gold).

[3] Foreign side only.

3. The " Poo Chi " is a steel tug of over a 100 tons burden. She is fitted with a gas generator for carbon monoxide and carbon dioxide gas. So far the vessel has not been placed in commission as the " Jessie O. Hughes " has been able to take care of all necessary fumigation.

During the period from November 1st, 1924, to October 31st, 1929 (five years), the company has fumigated 4,846 vessels with an underdeck tonnage of 11,243,912. During the course of this fumigation 43,509 rats have been destroyed. Only a small proportion of these rats were examined and, among the small number, none infected with plague were found.

Carbon dioxide gas is usually used, but sulphur dioxide is employed occasionally for steerage, crews' quarters, etc. The work is apparently done very thoroughly but without sufficient preliminary inspection for traces of rats, and the opening and breaking down of rat harbourages.

As noted above, a charge is made for fumigating vessels, and a percentage of the receipts is paid into a fund for paying off the advance made by the Customs to the disinfecting company.

The port sanitary regulations require vessels to be fumigated if a certificate of fumigation within six months cannot be produced.

Port Sanitary Regulations.[1]

These regulations, applying to plague, cholera, yellow fever, smallpox or scarlet fever, were issued by the Superintendent of Customs and the Board of Treaty Power Consuls who have the authority to declare when ports are infected, when such ports are no longer infected, and to authorise such other precautions as may be expedient to prevent the importation or exportation of epidemic disease. These regulations provide for the anchorage of vessels at quarantine, their inspection by the port health officer, and the precautions to be taken with vessels having on board cases or persons suspected of having any of the diseases mentioned above. Rules are also laid down with regard to the fumigation of lighters, and to certain articles from ports declared to be infected. There is a tariff of fees applying to the sanitary station, another for the various procedures of fumigation, and a list of precautions to be observed on steamers in process of being fumigated.

New Location for Sanitary Station.

A block of land near the quarantine anchorage is owned by the Chinese Maritime Customs and, we understand, is being reserved for the new sanitary station which is so urgently needed. The location and topography are ideal for the purpose, for there is a sea-wall to prevent washing, the land is well protected, and comparatively large vessels may discharge passengers there without the necessity of making use of a long landing-stage.

Present Quarantine Procedure.

There is only one port health officer, and he is on duty from 6 a.m. to 6 p.m. daily. When he is obliged to visit Shanghai, the duties of inspection must be handed over to a non-technical sergeant. Under the circumstances, only vessels arriving from ports declared to be infected, or having on board bodies of persons who have died from unknown causes, are boarded and inspected.

In 1928, the port health officer boarded 156 vessels and inspected 27,443 crew and passengers. Of these, 122 vessels were from Vladivostock, Hong-Kong and Canton, ports declared to be infected, the first because it furnished no returns to the Singapore Bureau of the League of Nations, the second and third on account of epidemics of smallpox. The port of Pakhoi was also declared to be infected with plague and cholera during the year.

Seven vessels were found to be infected. Only two of these were detained for over an hour.

Of the vessels from non-declared ports, twenty-three had deaths on board, four were importing corpses from foreign ports and seven were infected. Fifteen corpses were landed at the sanitary station for disinfection, the remainder landed at Shanghai after inspection.

Old gunny bags, carried on these vessels from Hong-Kong and Canton, were disinfected.

When foreigners suffering from infectious diseases are found on ships at quarantine, they are removed to one of the isolation hospitals at Shanghai.

The port health officer believes it would be wise to increase his staff so that additional medical officers might board and inspect a larger number of vessels. He believes there is evidence to show that Shanghai is sometimes infected with cholera from abroad or from other Chinese ports. In his opinion, at least, the larger junks should also be boarded and inspected. For proper inspection of vessels carrying a large number of passengers, a force of sanitary police would be necessary, so that the work might be properly organised and be carried through accurately and without delay.

He also considers that it would be advantageous to station a vessel having on board a gas generating apparatus at Woosung, under his immediate direction.

The port health officer also complains of the bad conditions of the sanitary station, particularly with respect to the difficulty of landing passengers, the lack of proper equipment and the impossibility of restraining the movements of contacts. He is strongly in favour of building the new station on the site already selected by the Customs.

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[1] These were agreed upon and sanctioned by the Superintendent of Customs and the Treaty Power Consuls at the port in 1925, taking the place of others adopted previously. The British Government has not, however, signified its approval of the regulations in their application to British subjects, in view of certain inconsistencies between the regulations and the terms of the International Sanitary Convention of 1926.

The Port of Tientsin.

Within recent years (1927-1928) the usefulness of this port has been greatly impaired by silting, so that the navigable depth of the river has been reduced to 11 feet or less. Large vessels now anchor outside Taku Bar and cargo is discharged into lighters and towed up the river. Tongku and Taku are villages situated on the river between the Gulf of Pechihli and Tientsin harbour, the sanitary station being located at Taku, at the river mouth, a distance of 15 miles from the anchorage outside the bar.

The port health work is carried on by the Customs, under the direction of the harbour-master. The personnel consists of a port medical officer (a foreign practitioner, devoting only a part of his time to the work) located at Tientsin, two Chinese medical officers (full time) at the sanitary station, one dispenser and cashier, one clerk, one nurse, one cook, one servant, five policemen, two sailors and four coolies.

The following description of the sanitary station was furnished by the Assistant Port Health officer. It was built some thirty years ago and is now in a dilapidated condition, there being much corrosion from the action of sea-water. There are eight rooms for first-class passengers, capable of accommodating sixteen persons, two second-class rooms, capacity four persons, and an isolation quarter of twenty rooms, capacity 40 patients, the last ruined by soldiers who were quartered there from 1924 to 1929. The station possesses a steam autoclave for disinfecting purposes.

Although the quarantine anchorage is fifteen miles distant from the sanitary station, the port health officer has no means of transport, except a row-boat, and must depend on the Customs or other vessels which may have business to transact with ships at anchor.

There is no laboratory at the station, and only one microscope, so that bacteriological examinations, other than of a simple microscopical character must be made at Tientsin, a long distance away.

Fumigation of vessels is carried on by means of sulphur dioxide generated by the pot method.

Ports where the chief epidemic diseases are reported to be prevalent by the Singapore Bureau of the League of Nations are declared to be infected on the motion of the Customs Commissioner and the approval of all Consuls and Chinese sanitary authorities at Tientsin. The Customs Commissioner usually calls a meeting of those concerned for this purpose.

All vessels arriving from a port declared to be infected must undergo medical inspection at Taku Bar. After inspection, a certificate is delivered by the port health officer, which is handed to the Customs officer when he boards the vessel.

Should a case of infectious disease be found on board, the patient is removed to the sanitary station and the vessel placed in quarantine for a variable period depending on the nature of the disease (cholera five days) and the development of further cases. In 1929, four ships were quarantined for periods of two days in three instances, and eight days in one instance for smallpox, epidemic meningitis and cholera.

Warships excluded, 2,389 vessels arrived at the port of Tientsin in 1929. Of these, 268 vessels were boarded and inspected. From April 16th to June 30th, 159 ships coming from Shanghai were boarded and inspected at Taku anchorage on account of the epidemic of acute cerebro-spinal meningitis at Shanghai. From August 15th to October 13th, 109 vessels were inspected on account of the epidemic of cholera at Shanghai.

For the twelve months from October 1928 to October 1929, the expenses of the quarantine service were as follows:

	Mex. dollars
Salary and wages	8,073.22
Maintenance	1,024.55
Repairs	622.92
Total	9,720.69

For the last three years, payment of these expenses has been made by the Customs. Prior to that period, salaries were paid by the Peiyang Sanitary Department, the former Chinese Provincial Board of Health.

Tsingtao.

Tsingtao is an important port in Kiaochow Bay, developed by the Germans, who leased the territory in 1898, captured by the Japanese in 1914, and returned to China in 1922.

Port health work was, in all probability, started during the German occupation, but the quarantine or sanitary station was built by the Japanese. It is now utilised as barracks for soldiers and will require extensive repairs before it can be used for port health work.

The municipality has charge of the quarantine work, which is in the harbour-master's department, divided into four bureaux, as follows:

(1) General administration;
(2) Wharves and warehouses;
(3) Engineering;
(4) Harbour, including quarantine section.

There is one chief quarantine officer (medical) and three assistant medical officers. Two clerks complete the staff of the quarantine division.

The plant and equipment consist of the sanitary station mentioned above and a steam launch for boarding vessels.

The sanitary station is admirably situated on a point jutting into the bay, separating the quarantine anchorage from the port. Vessels at the quarantine anchorage are within easy distance of the quarantine station. The station consists of eight solid masonry buildings, each capable of housing sixty or eighty passengers, and smaller buildings for administrative purposes. The walls and roofs are still good, but the interiors have been partially destroyed.

The quarantine service has no laboratory, no isolation quarter, although the municipal isolation hospital might be used for this purpose. The City Health Commissioner is organising a laboratory in the isolation hospital which might be utilised, at least temporarily, by the quarantine service.

There are sufficient port sanitary officers to permit of all vessels being boarded on arrival.

The rules and regulations governing the management of the Quarantine Section of the Harbour and Wharf Administration of the City of Tsingtao are issued in book form in English and Chinese. Chapter 1 provides that every ship entering the port shall be inspected to determine whether passengers or crew are infected with plague, cholera, smallpox, scarlet fever, typhoid fever, typhus fever, diphtheria, dysentery, yellow fever and cerebro-spinal meningitis. The medical officer is authorised to inspect cargo, and is required to report the presence of certain explosives. Vessels are required to be fumigated every six months.

Chapter 2 deals with disinfection and fixes the tariff of fees for the various disinfecting procedures.

Chapter 3 defines infected vessels and authorises the port medical officer to take certain measures such as removal of suspects to the quarantine station, disinfection and quarantine. The periods of quarantine are fixed at ten days for plague and five days for cholera and other contagious diseases.

Chapter 4 gives the tariff of inspection fees after office hours, and the charges for treatment and subsistence at the Quarantine Station or Isolation Hospital, or on board ship.

There is an old disused launch with apparatus for fumigating ships, but its condition is too bad to permit of repair. Fumigation of ships is carried on by means of the sulphur pot method. There is no examination of rats for plague.

More than 2,000 vessels enter the port every year, and nearly all are boarded and inspected. In 1927, 1,594 vessels, gross tonnage 4,211,512, were inspected. These vessels had on board 300,741 passengers and crew.

In 1926, four vessels were found with cases of cholera on board. No infectious diseases have been found on board ships since that time.

The expenses of the quarantine service are as follows:

	Mex. dollars yearly
Salaries of medical officers	4,320.00
Wages of clerks and launch crew, expense of operating launch and miscellaneous.	7,680.00
Total	12,000.00

It is understood that the receipts of the Harbour-Master's Department include wharfage dues amounting to about 7,000 dollars a year and that this sum is credited to the quarantine section, so that the deficit to be made up from other sources amounts to approximately 5,000 dollars.

The Port of Antung.

Antung is situated on the right bank of the Yalu River, about eight miles from its mouth, in the Peninsula of Liaotung, South Manchuria. It is the first Chinese station on the railway connecting Korea and Manchuria. The city is divided into two parts, the Chinese city proper and the Japanese railway area, the two combined having a population of about 75,000, of which 10,000 are Japanese. The city has suffered in prosperity owing to two serious floods in 1923, which did much damage to crops and property in the neighbourhood. The port has decreased in importance in recent years, chiefly because of the depression in the timber trade, formerly a great asset.

Owing to its northerly situation, the port is closed for four months during the year because of ice formation in the Yalu River.

The number of vessels entered and cleared under General Customs Regulations is shown by the following table (Customs Statistics):

Year	No. of vessels	Tons
1925	1,008	446,798
1926	990	363,526
1927	1,018	430,484
1928	834	338,206

In addition, there is a comparatively large river traffic, the number of vessels entering and clearing each year under Customs' Inland Steam Navigation rules averaging over 1,000, with a tonnage of over 120,000.

Port Health Organisation and Procedure.

Port health work is directed by a board consisting of the Mayor of Antung (Director), the Customs Superintendent (Co-Director) and the Customs Commissioner (Co-Director and Treasurer).

This Board controls the Antung Quarantine Station which is located eight miles from Antung on the right bank of the Yalu River, near its mouth and immediately behind the village of San-tau-lang-tou.

The port health officer is a Chinese physician, with foreign medical and public health training. He lives at the quarantine station.

This station consists of four blocks of buildings on a site comprising approximately 12 mou of land, about 150 yards from the water-front.

The buildings are of brick, substantially built, and the station is surrounded by a solid wall.

1. In the main block are located the consulting room, dispensary, surgical rooms, hospital supply room, the laboratory, the office and living-quarters of the officer.
2. The hospital ward has a capacity for twelve beds or more in case of necessity, and a room for a nurse.
3. The disinfection building contains a large steam autoclave, and is divided into two parts by a partition, in which the autoclave is set.
4. The detention building has a capacity for 35 beds, or slightly more in case of necessity.

There is a good water-supply, and the general equipment is in good condition.

The building of the station was sanctioned by the Ministry for Foreign Affairs in 1923, and it was opened in 1924. It cost about 35,000 Mexican dollars.

The laboratory was organised last year, as the result of a grant of 1,600 dollars by the Board. The equipment is modest but well chosen, and should permit the port medical officer to make any examinations necessary for the conduct of quarantine.

The staff consists of the port medical officer, one dispenser, one dresser and eight attendants. The budget is 12,000 Haikwan taels per annum, but the whole sum is seldom expended, and there is a considerable saving to the credit of the account.

The Sanitary Regulations for the Port of Antung and Tatungkow were sanctioned by the Superintendent of Customs and agreed to by the Consular Body of the port in 1911.

They provide for the declaration of infected ports by the usual procedure (Superintendent of Customs and Treaty Power Consuls) and for the treatment of vessels having on board cases, or suspected cases of plague, cholera or other infectious disease, known as infected vessels. Vessels which arrive within seven days of their departure from a port declared infected are known as suspected vessels.

Directions are given regarding anchorage at quarantine, medical inspection, detention of suspects and contacts, etc.

The import of certain articles from infected ports is forbidden (rags, fresh fruit, vegetables, coffins, corpses, etc.), and rules are laid down with respect to disinfection. There is no provision for deratisation of vessels at regular intervals.

There are also regulations in regard to the import of certain articles, such as rags, furs, vegetables, gunny bags, etc.

Recent Quarantine Procedure.

During 1929, quarantine measures were taken against ships arriving from Shanghai for cerebro-spinal meningitis and cholera, and Osaka and Swatow for smallpox. Twenty-eight ships, having on board 3,107 persons, were inspected, but no cases were found.

Work of the Hospital.

The quarantine work is not sufficient to occupy all the time of the port medical officer and his staff. Consequently, cases of infectious disease occurring in the vicinity are occasionally cared for in the hospital, although the Quarantine Board objects to this practice. On the other hand, navigation at Antung is open for only eight months during the year, and for four months the port health officer and his staff must remain idle. During the winter months the station is almost inaccessible from Antung, for traffic in the river is held up by ice, and the road, eleven miles long, connecting the city to the station is practically impassable except on foot or on horseback. A severe frost set in just before we arrived, so that the road was passable to motors, but the surface was so rough that one car broke down during the journey, and we expected the other to give out at any moment. The journey each way took nearly two hours, under circumstances which were said to be exceptionally favourable. The village near the quarantine station is so small as to provide hardly any work for the staff.

On the other hand, the port medical officer states that public health work in Antung is practically non-existent. There is a Health Department in the Public Safety Bureau, which devotes the main part of its attention to the cleaning of streets. City hospital accommodation includes a Danish Mission Hospital in the Chinese city and a South Manchurian Railway Hospital in the Japanese railway area, both doing good work. The city authorities are considering the registration of births and deaths and the building of an isolation hospital. They have improved conditions at the native market and opened up several thoroughfares and a public park.

The port medical officer would like to spend his spare time in Antung carrying on medical and public health work, for which his training has fitted him. It is unfortunate from this point of view that the quarantine station is located so far away from Antung, but, should the city build an isolation hospital, this might be utilised by the port medical officer and his staff. The work of the quarantine hospital at Newchwang, described hereafter, is not confined to port health activity, and there appear to be certain advantages in this method. Well-trained medical officers,

who have little opportunity to apply in practice the knowledge they have acquired, are inclined to become merely administrative officers, while the localities in which these officers are stationed suffer from the lack of trained medical and public health personnel.

The port medical officer recommends the building of a new block at the quarantine station in which to house the dispensary and laboratory. He considers it necessary to increase the accommodation of the detention camp, which has not now a capacity sufficient to detain passenger-contacts, in case an infectious disease is discovered on board ship. He also points out the advantages of having port health work directed by a Governmental health agency instead of by a lay board.

Newchwang.

The Mission did not have an opportunity to visit Newchwang, but the medical officer in charge of the new quarantine hospital was kind enough to prepare a very complete report for us from which the following details are abstracted. This medical officer also met us at Mukden and furnished us with much additional detailed information.

Newchwang was opened to foreign shipping as a Treaty Port in 1864. It is situated on the western coast of the Peninsula of Liaotung, about sixteen miles from the mouth of the Liao River. Since 1899, this river has had two channels to the sea, thus diverting a certain amount of river traffic from the old port and reducing the navigable depth of the river.

Prior to 1907, Newchwang was the chief outlet for Manchurian trade, but, since that time, Antung and Dairen have proved powerful competitors. Newchwang, like Antung, is icebound during four months of the year, while Dairen is open all the year round. There is also a troublesome bar at the mouth of the Liao River, which prevents the entry of large ocean steamers. Above Newchwang, the river is so shallow as to prevent, almost entirely, river carriage of grain to Newchwang, formerly an important item. The population of the city is about 107,000 including slightly more than 8,000 foreigners, of whom nearly all are Japanese.

In 1928, 1,724 ocean steamers, of a gross tonnage of 1,568,304, entered and cleared under general Customs Regulations, while the number of vessels from inland waters which entered and cleared was approximately (figures are not complete) 436, with a gross tonnage of 213,556.

The harbour regulations for the port of Newchwang, agreed to and sanctioned by the Treaty Power Consuls at the port in so far as they concern foreign interests, contain only one paragraph on quarantine. This paragraph provides that vessels having infectious disease on board, or a death from an infectious disease (or suspected in either case), must anchor at an appointed place and fly the quarantine flag until granted pratique by the health officer. Vessels arriving from ports declared to be infected must conform to the quarantine regulations, which, however, are not published in any greater detail.

The Newchwang Quarantine Hospital is situated in the western part of the city, near the native Customs. It stands on a lot three acres in area. The hospital was opened on July 10th, 1920, and consists of:

1. A main block, containing the hospital proper (30 beds), nurses' quarters, operating, anæsthesia and sterilising rooms, out-patient department, laboratory, pharmacy and rooms for the resident medical officer;
2. A disinfection block, containing the large steam autoclave, capable of handling mattresses and bedding, and various rooms for attendants and administrative arrangements;
3. An isolation block, consisting of five wards, lavatories, baths, etc.;
4. A mortuary.

The detention camps consist of three rectangular buildings (150 feet by 24 feet) each capable of housing 100 contacts and the necessary attendants, a block for women, capacity 50, and an " L " shaped block for private families, capacity 13 families, or 100 individuals.

The examination block (built in 1927) consists of waiting and examining, dressing and consultation rooms, doctor's quarters, etc.

The hospital proper has central steam-heating and electricity is supplied throughout.

The staff consists of the Director and Chief Medical Officer, one port health officer, one resident medical officer, one nurse, two dressers, three attendants, one seamstress, one cook and two coolies.

Port Health Work.

During the period July 12th, 1929, to October 10th, 1929, 136 vessels were boarded and inspected, having on board 10,215 passengers and 7,924 crew. During the same period three vessels were quarantined for periods of seven days, and 89 passengers detained. The port health officer is a foreign practitioner, devoting only a part of his time to quarantine work.

Hospital Work.

In addition to the port health work carried on by the personnel of the station the hospital is utilised as an isolation hospital for Newchwang, and an out-patient department is maintained. The number of out-patients treated has increased steadily from 1920-21, when 3,225 out-patients applied, to 1928-29, when the number was 11,254.

In 1920-21, there were 21 medical and 22 surgical patients admitted to this hospital, while in 1928-29, the numbers were 40 medical and 61 surgical. During the same period (1920-1929)

a number of patients suffering from infectious diseases was treated, *i.e.*, 81 cases of cholera, 13 of erysipelas, 10 of diphtheria, 5 of scarlet fever, 4 of measles, 3 of smallpox, 3 of typhoid fever, 43 of mumps and 2 of meningitis.

This practice of using a quarantine station for medical and preventive work in the community in which it is situated is an interesting development. It is true that this station was planned for the purposes in view, and hence is better adapted for utilisation for both purposes than the ordinary quarantine stations. Moreover, the port which it serves is ice-bound during four months of the year.

Amoy.

Amoy, population about 250,000, is the principal city of Fukien Province. It is the seat of an extensive emigration, principally to the Straits Settlements, the Netherlands East Indies and the Philippine Islands. Approximately 100,000 Chinese emigrated to these countries through Amoy during 1929 (60,000 to the Straits Settlements, 16,000 to Manila and the balance to Java). Amoy is a port of call for coasting vessels as well as for larger vessels sailing from Chinese ports to Japan and other foreign countries. The city possesses a fine natural harbour, and extensive improvements are being made to the wharfage facilities. Amoy is situated on the mainland, and there is a Foreign Settlement on a small island (Kulangsu) opposite the city, where the principal hospitals are located. Vessels usually anchor in the roads between the mainland and Kulangsu.

The port health work is in the hands of the Chinese Maritime Customs, as in the majority of Chinese ports. There is a part-time port health officer who is a foreign practitioner. The port possesses no quarantine facilities of any kind, either for the detention of contacts or for the isolation of patients with infectious diseases.

The quarantine regulations were agreed to and sanctioned by the Superintendent of Customs and the Treaty Port Consuls at the port on August 11th, 1920.

They are divided into definitions and regulations proper. The definitions relate to the following terms: port health officer, infected vessel, suspected vessel, healthy vessel and quarantine anchorage. The diseases and conditions provided for in the regulations are cholera, typhus fever, yellow fever, plague, smallpox, scarlet fever, cerebro-spinal meningitis, any other infectious (or suspected) disease, or dead bodies suspected of having been infected.

The regulations provide for the declaration and notification of infected ports, and prescribe the measures to be taken in respect of vessels arriving from such ports. The only exceptional precaution applies in the case of ships from a port infected with pneumonic plague, which cannot be admitted to pratique until the lapse of seven days from departure.

Directions for the discharge of cargo, the use of ratguards and fumigation are laid down for vessels arriving from plague-infected ports. The regulations also contain lists of conditional and prohibited imports and dangerous articles, with particulars, where necessary, concerning each item.

Port Health Procedure.

Vessels are boarded and inspected by the port health officer only when they arrive from a port declared to be infected. The present port health officer, an American surgeon in charge of the Hung Ning Hospital, was appointed in December 1929, and has not carried out any port health work so far. Enquiry from the Customs failed to disclose any reports on previous port health work, and the former port health officer could not be seen, as he was abroad.

Examination and Vaccination of Emigrants.

Certain precautions are required by the three countries receiving emigrants from Amoy (Straits Settlements, the Philippines, Java) with respect to physical condition and vaccination status. At present this work is done by two foreign practitioners. Emigrants who intend to land at the Straits Settlements are dealt with by a British doctor, the former port health officer and his assistant. The present port health officer examines and certifies the emigrants for the Philippines and Java. The examination in the latter case consists of an inspection of the emigrants on board the vessel which is to carry them to their destination. They are stripped to the waist and pass in review before the medical officer, who notes the presence or absence of any evident disease, and observes whether the vaccination he has performed previously has taken. If the vaccination has not been successful, it is repeated. The emigrants are not under the observation of the medical officer before embarkation, except when they appear for vaccination. There are no buildings for isolating and observing these would-be emigrants before they sail, so that they live in native boarding houses. The customary charge for the vaccination and certification is one Mexican dollar.

The salary of the port health officer is 75 Haikwan taels a month, and apparently this is the only expense attached to port health work at Amoy. The present incumbent is also attached to the Customs as medical officer for the treatment of the Customs personnel.

Smallpox and cholera prevail at Amoy. There was an epidemic of plague in 1926, consisting of 112 cases. Dysentery appears frequently as a cause of death on the death certificates at Kulangsu. Morbidity and mortality statistics are not, of course, even moderately complete.

Port Health Work at Canton.

The present port health service at Canton was established on September 16th, 1926. Previous to that time the quarantine work was in the hands of the Chinese Maritime Customs, and the port health officer was a foreign medical practitioner, with one or more Chinese medical assistants. In 1926, the work was taken over by the Municipal Bureau of Public Health and placed under the direction of the Chief of that Bureau. As there are two entrances to Canton harbour from the sea, two quarantine stations have been established, one comparatively near the City, at Nam Shek Tau, and the other some miles away at Whampoa. Two port health officers are stationed at each of these places. We were able to visit the more important and nearer of the two stations at Nam Shek Tau.

This consists of an office building for the two port health officers, situated on the bank of Pearl River, on a low hill overlooking the quarantine anchorage. The building is of substantial construction, but of small size, consisting only of six or seven rooms and is utilised only for administrative purposes. There is a plan to build, on a small lot adjoining, close to a village, an isolation hospital and a building for housing passenger-contacts, but it is doubtful if there is sufficient space. The Municipal Bureau of Public Health possesses three motor-launches which may be used for boarding vessels. There is no disinfecting apparatus either for clothing or for fumigating ships.

The amount of shipping entering the harbour is as follows (Report by the Quarantine Service):

Year Sept. to Sept.	Number of Ships	Tonnage	Passengers
1927	1,192	1,352,987	54,728
1928	1,442	1,449,180	63,271
1929	1,006	1,079,822	41,905

All ocean-going vessels entering the harbour are boarded and inspected by the port health officers. Since the establishment of the service, there have been discovered on board ships entering the harbour two cases of cholera, two of beri-beri, four of pulmonary tuberculosis, four of pneumonia, two of leprosy and one of measles.

The annual expenditure of the service amounts to 17,544 Mexican dollars, all of which is obtained from the Municipal Treasury through the Bureau of Public Health.

The quarantine service possesses no laboratory, but there is a municipal laboratory in connection with one of the city hospitals where all necessary bacteriological investigations may be carried out, although it is inconveniently situated for this purpose.

The City of Canton possesses one isolation hospital for infectious diseases, with a capacity for forty-two patients, and, in addition, there are 44 beds for this purpose scattered among three other hospitals. In 1929, 222 cases were treated in the municipal isolation hospital, including 1 case of cholera, 61 of dysentery, 20 of leprosy, 32 of smallpox, 12 of measles, 38 of typhoid fever.

At least two of the port health officers—those located at Nam Shek Tau, the station nearest to the city—devote only a part of their time to the work, the balance being given over to private medical practice.

Port Quarantine Procedure and Regulations.

Port quarantine regulations were adopted by the municipality in 1927, and are published in English and in Chinese in pamphlet form. These regulations provide that all ships entering the harbour must be inspected by the port health officers. An exception is made, however, in the case of ships plying only in the river, as in the case of the packets which provide daily and nightly service for passengers and freight between Canton and Hong-Kong. Neither does the quarantine service at Hong-Kong inspect these ships.

The diseases subject to quarantine are cholera, smallpox, plague, typhus fever, yellow fever and any other infectious diseases which the health officer may consider dangerous to the safety of the port.

A port having an average daily number of three or more cases of any of the above diseases is declared to be infected.

Ships are declared infected if a case of smallpox has occurred on board within twelve days, or cholera, plague or yellow fever within seven days.

Ships are designated as suspected if, having had cases of disease subject to quarantine on board, no new case of smallpox has occurred within twelve days, or of cholera, plague, typhus fever or yellow fever within seven days.

Passengers and crew of infected or suspected ships must remain on board, be removed to the observation station or, in exceptional cases, report daily for observation until the twelve or seven-day period has elapsed.

The regulations contain specific instructions for the anchorage and inspection of ships, and for action in case an infectious disease breaks out while a ship is in harbour.

One of the articles provides that no ship shall enter the harbour before 6 a.m. or after 6 p.m., the hours when the port health officers are on duty.

Penalties are provided for any breach of the regulations. The City Health Officer is planning the purchase of a Clayton apparatus for fumigating ships. In regard to disinfection, the regulations provide that a ship must be disinfected when deemed necessary by the health officer.

Policy of the Ministry of Health with regard to Quarantine.

1. The Ministry of Health has decided that the port quarantine services which it must take over require to be reorganised, modernised and brought under central technical control. These services will form a Division of the Ministry.

2. It is the Ministry's intention to undertake this work by stages and after careful study so that every change effected will be an obvious improvement on the present procedure. With this object in view, the Ministry has requested that the present study be continued and a very careful and thorough examination made of the principal Chinese ports by a medical officer from the League's Health Section experienced in port health work and familiar with national as well as international requirements of port health procedure.

3. As a first step, the Ministry will take over the work in Shanghai in the summer of 1930, in order to bring about improvements in the present port health work, which suffers from a lack of personnel, equipment and financial support. This step will also provide training facilities for the medical officers to be assigned to other ports in the future. The Ministry hopes that all ports will be provided with modern and efficient quarantine services within two years.

4. The Ministry desires to establish a system of port health work which will eradicate obsolete practices and institutions, while playing as effective a part as possible in the prevention of disease. For this reason, it wishes to take a full share in the study of port health procedure which the Health Organisation of the League will carry out by means of an interchange of port health officers in the Far East in 1930. This study of Chinese ports will constitute a necessary preliminary to the preparation of this interchange, for which the Ministry will nominate one or more Chinese medical officers of the port health service.

5. The Ministry of Health has indicated its desire that the Health Organisation should provide facilities for the training of two or three medical officers who will be given important appointments in the new port quarantine services. Arrangements for these individual missions have been made.

6. Realising fully the value of international co-operation in building up a system of port health protection, since this is a matter in which the interests of other countries are involved, the Ministry of Health desires the assistance, not only of the Health Organisation, but also of the Transit Organisation of the League, in view of the shipping and commercial interests involved. In the Ministry's view, the expert knowledge and experience possessed by the leading maritime countries, made available through these League organs, will not only be a source of strength in the organisation of the new services, but will also ensure friendly relations and mutual confidence in its future work.

For these reasons, the Ministry has requested the Health Organisation of the League to study, in conjunction with the Transit Organisation, the steps that should be taken in the transfer and reorganisation of the present quarantine services. The Ministry hopes that the preliminary study begun by the present Mission may be completed, and a scheme of reorganisation drawn up during 1930.

Need for Continuance of Present Study.

1. Reference has been made already to the fact that the sanitary regulations applied in the various ports are not identical. These rules and regulations need revision to bring them into line with the most recent international agreements in regard to quarantine. The preparation of a code of regulations suitable for recommendation to the Ministry of Health should be one of the objects of the further study.

2. An interesting point has been raised in connection with port health work at Newchwang and Antung. At Newchwang the isolation hospital belonging to the quarantine station is not restricted to the care of patients removed from ships, but also performs a useful service to the community in which it is located, since it has out-patient departments, and is being used for the treatment of infectious cases from the city.

A similar policy has been adopted by the port health officer at Antung, but here the quarantine station is almost inaccessible to the city during the winter months, and the port health officer wishes to utilise his staff for hospital work in Antung during the period when quarantine work is at a standstill.

There is need for a further study of this question. At this time, it is only necessary to point out that, in the ports in China to-day, the number of qualified doctors and of modern medical institutions is all too few, so that those which exist must be fully utilised. Moreover, there are distinct advantages in furnishing a field of daily experience to medical officers whose technical ability requires constant exercise.

3. With respect to each port there are important problems concerning coastal and river traffic and the regulation of lighters. Further detailed study should determine the recommendations to be adopted concerning the proportion of this traffic which needs inspection. The possibility of periodical deratisation of the various types of lighters also requires further study.

4. Lastly, it is necessary to determine what shall be the relation of the port health service to the local health departments and medical institutions in each case, for only by the closest co-ordination and fullest utilisation of all existing health agencies can the greatest efficiency be secured.

The fact that we are able to lay before you a certain amount of information concerning public health and medical problems in China is due in very large part to the unremitting efforts of national, provincial and municipal authorities, who gave us every opportunity of studying their work and who discussed with us very frankly their problems and plans.

Thanks to the facilities given by these authorities and by the leaders in medicine, education and other fields of social work, the short time we were able to spend in each locality was utilised to the best advantage.

Our best thanks and sincere appreciation for these services and for many personal kindnesses are due to Dr. J. Heng Liu, Acting Minister of Health, as well as to the members of his staff, particularly Drs. P. Z. King and L. C. Yen.

To other members of the Government, particularly to Dr. Chang Mon-Lin, Minister for Education, and the Minister for Foreign Affairs, Dr. C. T. Wang, our gratitude is due for their friendly reception and much practical assistance.

Our itinerary did not bring us into many provincial capitals, and we need only gratefully acknowledge here the assistance given by the Chairman of the Chekiang Provincial Government, Chang Jen-Chieh, the Director of the Provincial Department of Civil Affairs, the latter being responsible for health work in the province, and the Provincial Health Commissioner.

Municipal authorities everywhere received us warmly and rendered every possible aid, in particular at Greater Shanghai, Nanking, Hangchow, Tientsin, Peiping, Tsingtao, Canton, Amoy, Wusih and Antung. Our longer stay in Greater Shanghai, Hangchow and Peiping permitted us to benefit by the hospitality of the municipal authorities of those cities in greater measure than elsewhere, and we must make particularly appreciative reference to the kind offices of Dr. Hou-ki Hu, Health Commissioner of Greater Shanghai, and of the Mayor of Hangchow.

Our study of port health work brought us into contact with officials of the Chinese Maritime Customs, who afforded us every facility and to whom we are specialy grateful, in particular to the Director-General and the Inspector-General, as well as to the Superintendent and Commissioner of Customs at each port we visited.

Wherever we travelled, the University authorities showed readiness to befriend and assist us, and grateful acknowledgments are made to these authorities in Hangchow, Tientsin, Peiping, Canton and elsewhere.

The Faculties of Peiping Union Medical College and the National Medical School at Woosung were indefatigable in helping us to collect information on medical education, hospitals and hygiene generally. To Dr. F. C. Yen, Dean of the latter, and to Dr. J. L. Grant, Professor of Hygiene at the former school, are due our most sincere thanks.

Dr. Tsu Min Yi, member of the Central Executive Committee of the National Government, was unremitting in his efforts to place at our disposal the most valuable sources of information, as well as advice and counsel.

We are particularly indebted to those technical officials who accompanied us during our travelling in China; Dr. Tsefang Huang, Counsellor of the Ministry of Health; Dr. Wu Lien Teh, Director of the North Manchurian Plague Prevention Service; and Drs. Tsai and Ho of the Quarantine Division of the Ministry of Health.

During our stay in Shanghai we were greatly assisted by the authorities of the International Settlement, particularly Mr. Fessenden, Secretary-General of the Municipal Council; Dr. C. Noel Davis, Commissioner of Health and his staff. Grateful acknowledgment is also due to the authorities of the French Concession at Shanghai, in particular to the French Consul-General, and M. Verdier, in charge of municipal affairs.

Space does not permit of our recording the names of every individual, Chinese and foreign, who helped us in so many different ways to secure some slight knowledge of the medical and sanitary problems and needs of China.

Annex I.

LETTER FROM THE MEDICAL DIRECTOR OF THE HEALTH SECTION OF THE LEAGUE OF NATIONS TO THE ACTING MINISTER OF HEALTH, NANKING.

Shanghai, December 16th, 1929.

On our arrival last month (November 9th), by the direction of the Council of the League of Nations, in response to the communication addressed by your Foreign Minister to the Secretary-General of the League (September 14th, 1929), and in pursuance of the invitation to serve as one of your international advisers, with which your Ministry has honoured me (January 31st, 1929), we were informed that you would desire the Mission to undertake, in addition to a preliminary survey of the quarantine arrangements at certain ports (Shanghai, Tientsin, Dairen, Antung, Tsingtao, Amoy, Canton) and an examination of steps to be taken for the establishment of a National Quarantine Service, a general study of the organisation and functioning of medical and sanitary institutions in various special municipalities and administrative divisions, with particular reference to medical education, to the training of sanitary personnel, to the status of a provincial health organisation, to the activities of the National Epidemic Prevention Bureau and to the problem of the control of cholera and smallpox in the Shanghai area.

2. It was our common understanding that proposals for continuous collaboration on some or all of these questions would be framed to be presented to the Health Committee of the League of Nations, and before entering into a discussion of the proposals, I may be permitted to state the spirit in which your Government's invitation for co-operation was received at Geneva. The Members of the Council of the League at a public meeting assured the representatives of your Government of their desire to see your request acted upon to the fullest extent and every assistance afforded to you in the development of public health in your country. I need not add how gladly the Health Organisation follows the Council's desire and how eager my colleagues and myself are to be of service in the work of sanitary reconstruction undertaken by your Government.

3. The League's Health Committee and, on its report, the League's Council will learn with the greatest interest the nature and the extent of the proposals which will issue from our present discussions, and the League, in its turn, will have to define the limits and modalities of the projected collaboration.

4. In framing the national programme of its activities, the National Ministry of Health fully realised the immense amount of effort required to ensure primary but effective and indispensable elements of sanitation at the chief centres of national activity—both urban and rural, to provide them with adequate facilities for medical relief, to organise in these places fundamental medico-sanitary institutions, to set up the framework of a devoted, well-trained and efficient public health service, and to introduce into the practice of the nation's daily life health habits adapted to the national conditions.

Your Ministry recognised that the attainment of a modern standard of public health is dependent as much upon the economic development and the financial re-organisation of the country as on the success of the educational effort, and that a general condition of stability is a factor of major importance in the work of national reconstruction. No health services, be they national or international in scope, have responsibility over these factors, some of which escape even the control of national Governments.

5. The Ministry has therefore decided, if I am interpreting accurately the trend of our discussions, to concentrate on a few fundamental issues with the primary object of forging an effective arm with which to carry out its stupendous work in successive stages. This programme includes:

(*a*) The formation of an efficient technical headquarters staff for the study of essential problems of public health in selected areas and for practical application in the field, as well as for the training of public health personnel and auxiliary staff;

(*b*) The setting-up of a network of indispensable medical and public health institutions in two or three areas on a sufficiently wide scale to serve as a nation-wide training-field, yet limited in scope to the possibilities of a thorough and effective realisation;

(*c*) The intensive study, jointly with the Ministry of Education, of the existing facilities for medical education and of the programme of reform for the immediate future;

(*d*) The gradual establishment of a National Quarantine and Epidemic Diseases Prevention Service;

(*e*) The initiation of control, on a co-operative basis, of cholera and smallpox in the Shanghai area.

6. This programme, to be rendered effective, requires, in your view, a considerable effort, and it is your hope that its success will gain the confidence of the leaders of the nation for the young Chinese Public Health Service. This same confidence, which constitutes the solid foundation of stability, the Ministry desires to ensure on an international scale for the projected quarantine service, as well as for the other projected creations, such as the Headquarters Technical Service, the extended and stabilised National Epidemic Diseases Prevention Bureau and the new national hospitals, etc., by a close association and interchange of technical information

and experience with the sanitary administrations of other countries through the intermediary of the League of Nations, as well as by calling upon the experience of the League's Health Organisation for the effective realisation of the Ministry's programme.

7. The spirit of partnership in which you wish the subject of collaboration approached is fully in consonance with the League Health Organisation's methods of working. The Health Organisation has insisted on the principle that public health activities are essentially national in their character, and that, while fundamental problems of public health do not differ, their solution must be adapted to the psychology of each country. It is for the process of this adaptation that the pooled experience of other services is made available by the League. There is therefore reason to believe that your projects of collaboration may be materialised, and it will now be convenient to discuss them one by one.

The National Field Health Service.

8. It is my understanding that you propose utilising your technical staff for field studies and activities, retaining at the Ministry only such administrative staff as may be needed for ensuring liaison with other Ministries and for non-technical, legislative and administrative work, etc.

The technical staff would be transferred to a national field health service, directed by the technical head of the Ministry.

The activities of such a technical service would not be limited to the Central Station, however, but would extend to whatever centres the Ministry decided to study or supervise.

At the headquarters, plans would be made for the study of the most important public health problems, such as:

(*a*) The fundamentals of community sanitation (most suitable types of wells, bath-houses, disinfecting-places, houses, dispensaries, hospitals, etc.);
(*b*) Methods of collecting demographic statistics (deaths, births, morbidity, mortality);
(*c*) Epidemiological problems;
(*d*) Quarantine problems;
(*e*) Medical relief, such as health centres for social medicine.

These studies could be undertaken by the technical staff at health stations located in the centres to which the Ministry has decided to limit its activity in the beginning, and these health stations would provide experimental areas furnishing the central authorities with the data on which to base the future health policy for the country.

In order to provide the technical staff with the necessary facilities for its work, these health stations in the various centres will be linked up with the central station which would have divisions corresponding to the various subjects with which it is dealing, such as sanitary engineering, epidemiology, epidemic diseases, etc. The technical staff appointed to these divisions would be entrusted with the task of supervising the health work in the several areas of demonstration, giving expert advice on technical subjects, preparing programmes of study in respect of the major health problems mentioned above and, eventually, of training the various categories of sanitary personnel.

You have suggested that, for this training and other purposes, the central station might itself consist of various stations, each division having charge of one or more—or, in some cases, collaborating in the direction of one or more—such stations. This would provide the technical staff with field work located within a reasonable distance for teaching purposes, while at the same time it would permit the Ministry to participate practically in the solution of pressing health problems which are of national as well as international importance (cholera, smallpox, etc.).

It is, further, the Ministry's intention to utilise the existing hygienic laboratory and the municipal diagnostic laboratory as the laboratory divisions of the central field station, as well as to secure the collaboration of the Department of Hygiene of the Central National Medical School.

When once fully developed, the central field station would be entrusted with the training of health officers, sanitary inspectors, health visitors and a special category of "sanitary secretaries", to whom the Medical Officer could confide a major part of administrative office routine. The field service would likewise organise courses in public heath for various types of educational and social workers.

The work of the field service would thus, in many respects, correspond to that of schools of hygiene in various countries. These schools are linked up by the Commission on Education in Hygiene and Preventive Medicine of the League's Health Organisation. You desire to profit by the experience of the Commission for the working out of the programme of the central field station. The Government is also anxious to obtain continuous expert advice on the activities of some divisions of the field health service by the delegation, for a stated period of time, of experts of the Health Organisation.

You wish also to recommend for League scholarships certain selected medical officers who will be given posts of responsibility in the field service.

From the observations which our Mission was able to make, the creation of purely Chinese national health and medical institutions, involving Chinese technical, administrative and financial responsibility, with such foreign advisory collaboration as each case will, in your opinion, warrant, is one of the greatest needs which confronts you. In the field of national education, there are numerous outstanding examples of the signal success of such endeavour; of the effective support it can command at the hands of the Government, national and provincial, as well as

of the public generosity, and sometimes real munificence which it attracts. We believe none of your initiatives is more worthy of wholehearted support than the decision to set up national public health and medical institutions.

But an institution, to become a real school and centre of study and of action, must acquire its own tradition of technical accomplishment if administrative efficiency and if financial solvency is to be assured. This tradition cannot be created unless the staff has a reasonable security of tenure, ensuring its continuance for a sufficient period to permit it to secure results. In view of your limited resources in personnel and financial possibilities, it was a wise precaution which you took to limit the number of the new institutions to two or three at most (the national field health service and its central station, and two new national hospitals).

To ensure stability, the Ministry intends, I understand, to follow the example of great educational institutions by endowing the new institutions with the statute of an autonomous institution under Government control, with a Government grant-in-aid or endowment, and with an advisory board composed of public-spirited citizens representing the various medical groups as well as public effort in educational, social work, professional and trade union associations, etc.

You conveyed to us also your plan of obtaining through the Ministry of Finance the assignment of funds for the establishment and the maintenance of the central field station and, in part, for the first National Hospital.

CREATION OF FIRST HOSPITALS OF NEW TYPE AS A BASE FOR MEDICAL AND SANITARY ACTIVITIES.

9. (*a*) *First National Hospital.* — You informed us that the majority of the hospitals of China are under foreign missionary or educational management, and it is not surprising, therefore, that only a few Chinese medical officers have had full responsibility in the administration of public hospitals. It is therefore the Ministry's intention to promote the building of a 400-bed hospital under exclusive Chinese responsibility, in order to provide facilities for medical relief for the population of the special municipality, to serve the purpose of clinical teaching, and to be utilised in conjunction with the Public Health Department in a manner to be determined later on.

We cannot but applaud sincerely your decision, and will gladly recommend that the officer selected as director of the hospital be given a study scholarship by the League to acquire practical experience in hospital administration in two or three selected countries.

(*b*) *A Provincial Hospital as a Base for Medical Relief and Public Health Activity in a Province.* — There is not at present in China, according to the Ministry's information, a properly constituted health service, nor adequate provision for medical relief in any of the provinces, even the most prosperous, and those which have enjoyed the longest term of peace and stability. Active steps are, however, being taken by certain progressive provincial and municipal Governments to provide the population under their care with modern and comprehensive sanitary services and essential public health improvements (such as reliable water supplies for capital cities).

You have selected for our study the Province of Chekiang, with its capital city of Hangchow, which lends itself admirably for demonstrating, on a nation-wide scale, the possibilities and methods of applying a considered programme of sanitary reconstruction.

The enlightened Government of the province has a corps of unusually able and energetic well-trained and public-spirited chief officials. The Mayor of Hangchow is a sanitary engineer who graduated at the Massachusetts Institute of Technology. The province has the requisite conditions for economic development, both agricultural and industrial, and its population (estimated at some 26 millions) is industrious and prosperous. The capital is but four hours distant by rail from Shanghai, ten hours by motor road from Nanking, while hundreds of thousands of pilgrims from all parts of China worship annually at its temples, and tens of thousands of tourists are attracted every year by the beauties of its scenery.

The Provincial Government is proceeding with the application of a general plan of reconstruction. It has established a school for the Civil Service (300 students), which is now functioning normally; it is developing a large Higher Agricultural School (500 students), whose graduates will serve as instructors throughout the province; it co-operates with a reconstituted National University, led by a group of enthusiastic young workers in the fields of education and social study.

The Mayor is to provide Hangchow with a modern water-supply, and has obtained, on the recommendation of the Provincial Government, the support of the Ministry of Finance for floating " Water-Supply Bonds ", which, under the circumstances, will be bought up by large credit institutions. The Mayor maintains the streets of the city in a state of remarkable cleanliness and is anxious to improve and modernise the city hospitals and other sanitary institutions.

The Government of the province has decided on a vast sanitary programme; the building of a 400-bed general hospital; the training of midwives (two for each " hsien "), the post-graduate training at the Peiping Union Medical College of selected groups of medical practitioners who are to act as health officers in the " hsiens ", the establishment of a provincial public health laboratory under a German technician, a new leprosarium, an endeavour to organise modern school medical inspection at Hangchow, an active interest in the development of physical culture. The breadth of this programme and the activities already undertaken are evidence of an earnest desire for a thorough and systematic reform.

The Ministry has decided, therefore, to co-operate with the Governments of the province and of the municipality in the fulfilment of their programmes. You believe that the provincial hospital should be a joint undertaking of the province and of the municipality with such national support as will be feasible at the proper time. You intend proposing that the hospital be considered as the headquarters and the base of all the public health activity in the province. In the view

of the Ministry, the first obligation of the authority is to provide sick relief. There is only a handful of western-type medical practitioners in the province, and some of these have neither had opportunities of proper training, nor are adequate facilities for laboratory diagnosis or institutional treatment now at their disposal.

Under the circumstances, proper medical relief can be afforded only by hospitals and clinics directed by fully competent doctors, and efficiently administered. But the population has not yet fully developed the habit of utilising the existing institutions. In your view, relief should be brought to the homes of the patients; the joint national-provincial hospital should organise an efficient social service and establish its own dispensaries in the several urban districts. In two or three neighbouring "hsiens", permanent clinics and travelling dispensaries should be organised by the Hospital and staffed by its personnel, utilising at the same time local medical practitioners who would benefit by this association, both by enlarging their knowledge and experience, and, materially, by fees for services rendered. You thought that the "hsien" service should only expand gradually as the staff of the hospital acquires experience and corporate tradition, and that the hospital should also become a training-school for bedside nurses, for midwives and social visitors.

In Chekiang Province, the health services are yet to be created. The sanitary authorities have hardly anything to administer and their real usefulness lies in the field. You felt they should be associated from the outset with the Provincial Hospital, their office should be situated there, and the provincial laboratory should also be located at this hospital. The health officers would have to act through health visitors and sanitary inspectors. One of their major preoccupations will be the sanitation of urban and rural districts selected for the first programme of application. Thus, in addition to the bureau of the Health Officer, with its demographic and epidemiological work and to the provincial laboratory, will need to be added a division of sanitation established, like these others, in the hospital. The school medical service will use the hospital dispensaries and clinics. In the detection and isolation of infectious cases, the hospital information service and other facilities will be utilised. The dispensaries and clinics established by the hospital will, in fact, be converted into health centres.

A big provincial health and medical unit so constituted would, in your view, be capable of serving for medical teaching, while it will necessitate a high standard for its comprehensive medical personnel.

You have emphasised that, if this endeavour is to succeed, a careful plan should be worked out in co-operation with the Central Health Authorities. You have asked me, and the provincial and municipal authorities have likewise desired to ascertain, if the League's Health Organisation might co-operate in the development of such a project. We have agreed with you to include on the list of candidates for special studies abroad to be arranged by the League's Health Organisation the Chekiang Provincial Health Officer and one senior officer of the national field health service, who will be commissioned by the Ministry for work in Hangchow. We will likewise suggest to the Health Committee the advisability of arranging for expert advice of the competent technical Commissions and for their guidance in carrying out the programmes and the study of selected problems (malaria, intestinal infection, rural sanitation, training of personnel, etc.).

Association with the Educational Movement.

10. The central station of the national field health service, the First National Hospital and the Chekiang project constitute in your view, a programme of primary necessity, on which the energies of your staff will have, of necessity, largely to be concentrated.

But the Ministry, being a national institution, and the sanitary needs of China being so stupendous, has also to face its larger responsibilities of helping in the general reconstruction of the country by promoting the improvement of sanitation. As pointed out already, you believe this improvement is bound up with many factors, over which the Ministry has no control, and in face of the overwhelming character of the task you feel the need of directing the effort along certain strategic lines, and of associating public health activity with a well-organised national movement of a cognate character.

The educational movement appears to be your natural ally. It derives its strength from the innate and widespread desire of your people—however humble their status in life—to give their children the best possible education, and this popular sentiment is based on a centuries-old tradition. The movement is led by a large and increasingly numerous group of singleminded scholars and young workers who are imbued with a real spirit of service, and already able to point to truly remarkable achievements. This movement has maintained its pace throughout the agitated period of revolution and post-revolutionary adaptation, and has succeeded in securing stability for its varied institutions by the universal acknowledgement of its accomplishments, while following the lead and directions of the National Government. It has received financial support from proper national sources, while maintaining its international relationships.

The primary purpose is to create a new mentality in the coming generation. If this fails, you feel you will not succeed. If it succeeds, as everything leads to believe it will, you are confident that public health will benefit in the measure of the closeness of the association.

You have decided, therefore, that, in planning new "Health Demonstrations" and in helping to set up new health centres, you will establish them at normal schools, at training colleges for elementary-school teachers, at agricultural colleges, in conjunction with the Department of Education, of the several national universities, and in association with the field experiments, such as the Mass Education Movement.

You are doubtful of the value of courses in health education given to teachers and adolescents who have no opportunity of practising the precepts taught to them in the course of their every-day life, and it is the Ministry's hope that the health centres and demonstrations will provide fields for this real experience, indispensable for those who are to be the educators of masses of the population less able than themselves to grasp the significance of public health education.

You have discussed with us the possibilities of a useful collaboration with the League in this field. Your projects will evolve as time goes on. We could train abroad health officers to take charge of the more important of these educational demonstrations. We might, in collaboration with other organs of the League, give similar facilities to some of the teachers and educationalists particularly interested in health work as a means in general reconstruction schemes. These two types of scholarships may be considered for next year's programme while the Health Organisation discusses with the competent Organisations of the League how best to supply the several educational institutions with adequate and systematic information on analogous activities elsewhere in the world. The question of physical education for school-children may be brought before the Health Committee by Dr. Tsu Min Yi, whose collaboration we will gladly invite in this field of study of the League's Health Committee.

Medical Education and a Post-Graduate Medical College at Shanghai.

11. In the several schemes here discussed, medical education was mentioned as one of your major preoccupations. With but a few thousand practitioners of modern medicine for the whole of your immense country, and a majority of them graduates of schools of an inadequate standard, the difficulty felt by the Ministry in advising on methods of safeguarding public health is a very real one. The Ministry is vitally interested in the rapid improvement of the standard of the present medical practice. It is no less anxious to see a steadily increasing supply of properly trained young doctors being made available for any system of medical relief in China which ultimately emerges from the present and future studies and consultations.

You intend collaborating with the Ministry of Education by delegating your representatives to a Commission on Medical Training, composed, in addition to the representatives of the Ministries, of delegates of premier National Medical Colleges, of delegates of Medical Associations, and of expert educationalists. In conversation with the Minister of Education, we informed him that similar National Commissions have been constituted abroad, as the question of the reform of medical training is being considered in a number of countries. I understand it to be the desire of the Government to obtain for the Chinese National Commission all available information on the progress of work of the several National Commissions, and, for this purpose, the Government may propose asking the Health Committee for the collaboration of its Commission on Education in Hygiene and Preventive Medicine, which may delegate an expert for several months to China to work in conjunction with your National Commission. The Advisory Board of the Singapore Bureau will discuss, at its session in February 1930, the advisability of collecting information on medical education in the area of the Bureau's activities, and this information, when collected, will be made available for your Commission.

The improvement of the practice of medicine as exercised at present in China may, in your opinion, best be effected by utilising at a great centre such as Shanghai as many as possible of the existing hospitals, both foreign and Chinese, for the provision of post-graduate courses in general medicine and in special clinical subjects. As such courses are held in most of the important university cities of the world, we will gladly provide you with full relevant information.

You would propose the organisation of two or three types of courses. First " refresher " courses in special subjects such as clinical, laboratory and bacteriological diagnosis, midwifery, pediatrics, surgery, ophthalmology, ear, nose and throat work, radiology, etc.

Secondly, general courses covering the entire field of clinical medicine, with such additional pre-clinical subjects as may be found necessary, and divided, perhaps, into three and nine months' courses, according to the training of the medical practitioner taking the course.

There would be, in your view, no need to organise a special medical school if the attempt at federating the existing institutions and those to be created proves successful. It would suffice to have a headquarters office, with a central medical library, study and conference rooms, which may be combined with those of the Medical Associations.

A Committee constituted on the same lines as that of the Commission on the reform of Medical Education would make arrangements with existing institutions to draw up the programme of the courses. This Commission would comprise the leaders of the best medical schools, and you feel strongly that it should decide on the Chinese language as the medium of teaching. To achieve this object, the courses at the foreign hospitals would have to be given by the Chinese members on their medical staff. This method would also avoid the difficulties inherent in the formation of a multi-national Faculty and of an inter-institutional representation.

The candidates for these courses would probably fall into two or three categories:

(*a*) Medical men in practice eager for " refresher " courses which could be attended without interfering with their professional work;

(*b*) Medical practitioners graduated from lower-grade schools, who would derive an immediate pecuniary benefit from the certificate delivered at the end of the general course;

(*c*) Medical officers of various State, municipal and voluntary organisations delegated or seconded to attend any of the three types of courses.

A system of scholarships might be devised for young medical men without established practices, who are unable, without aid, to follow the longer courses.

Should the Shanghai Post-Graduate Medical College prove successful, it would serve more than one purpose. In addition to raising the standard of medical practice, it would serve to bring together in an atmosphere of common work the various medical groups. It would represent a serious effort at introducing the Chinese language as a medium of teaching and contribute to the publication of medical handbooks and monographs in Chinese. Finally, it would allow of selecting from among the students outstanding men of mature judgment and large experience, who only need additional knowledge and continuous contact with a serious medical institution to qualify as teachers at the existing medical schools or at those to be established.

I understand the Ministry would be glad if one of the medical officers entrusted with organising post-graduate medical training could be included in the list of candidates for the League of Nations Health Committee's scholarships.

The Control of Epidemics.

12. You have asked the League's Health Mission to consider in particular the steps to be taken in establishing a national quarantine service, and in the control of cholera and smallpox in Shanghai.

(a) *The Port Quarantine Service.*

With respect to the port quarantine services, I understand that the National Government has decided that these should be reorganised, modernised and brought under a central technical control which would act as a division of the Ministry of Health. It is the Government's purpose, however, to undertake this work by stages, so that every change effected will be a demonstrable improvement over the present procedure. In your opinion, it is necessary to continue a very careful and thorough study of the principal Chinese ports, and for this purpose, at your request, a medical officer from the League's Health Section, experienced in port health work and familiar with national as well as international requirements of port health procedure, will complete the survey commenced already by us.

The Government has also decided, as a first step, to take over the port of Shanghai in the summer of 1930 in order to bring about improvements in the present port health work, which suffers from a lack of personnel, equipment and financial support, as well as to provide training facilities for the medical officers to be assigned to other ports in the future. It is also your hope that other ports will follow, so that in two years all ports will be provided with a modern and efficient quarantine service.

In your desire to establish a system of port health work which will not continue obsolete practices and institutions, while at the same time playing as effective a part as possible in the prevention of epidemic diseases, you have expressed the wish to share fully in the study of port health procedure which the Health Organisation will carry out in connection with an interchange of port health officers in the Far East to be held in 1930. The study of Chinese ports mentioned above will constitute a necessary preliminary to the preparation of this interchange, for which the Ministry will nominate one or more Chinese medical officers assigned to port health work.

In addition, you have asked me, and I have agreed, to provide facilities for the training of two or three medical officers who will be appointed to important posts in the new port quarantine services.

In view of the fact that the shipping interests involved are of many nationalities, you considered that it would be advisable that there should be consultation and collaboration with the Transit Organisation of the League, as well as with the Health Organisation.

It is therefore your intention to request that the Health Committee of the League, in collaboration with its Transit Organisation, should draw up a complete scheme for consideration of the Ministry.

You have invited the collaboration of the Health Organisation of the League in the establishment of a national quarantine service, because you realised that through this Organisation it would secure the benefit of the expert knowledge and experience possessed by the health administrations of the leading maritime countries. In the Government's view, the collaboration of the Health and Transit Organisations of the League will be a source of strength, not only in the organisation, but also in the initial functioning of the new quarantine services, for it will ensure a friendly spirit of reciprocity and helpful mutual confidence, which will overcome the difficulties inherent in the launching of such a scheme.

Cholera and Smallpox at Shanghai.

13. The continued prevalence of cholera in Shanghai during the last 25 years (on 15 occasions in 25 years) is a serious preoccupation of the sanitary administrations of various countries, particularly since 1919, when cholera broke out in every year except 1924 and 1928 (six cases only reported from the International Settlement).

The area of Shanghai has also a worldwide reputation as a danger centre in regard to smallpox.

The Ministry of Health is anxious that energetic measures for the control of cholera and smallpox be taken next year throughout the area, and it desires to initiate a programme of definite collaboration in this respect between the Health Department of the Special Municipality of Shanghai and the Health Departments of the International Settlements.

The measures are to include preventive vaccinations on a very large scale, the control and supply of drinking-water, and an agreement regarding facilities for the isolation and treatment of

cases. The question of the water traffic and of the floating population in Soochow Creek and of the medical supervision of all incoming and coasting sea traffic by a port quarantine system is also to be considered, representing as it does a vital element of the problem.

We have ascertained that the health departments concerned are anxious in principle for such a collaboration. The question is forming the object of study by your officers and of conversations on our part, and I hope to communicate with you further in regard to the plan of emergency measures which you desired us to study. I am asking Mr. K. Stouman, the Chief Statistician of the Health Section, who is at present on special mission at the Singapore Bureau, to come to Shanghai and to study, in association with the Chinese and Foreign Health Services, the epidemiology of cholera and smallpox in recent years.

14. It may be convenient at this stage to restate the questions which the Government would propose may form the subject of collaboration with the League:

I. *The Quarantine Survey.*

(*a*) A general study by the Health Committee in conjunction with the Transit Organisation of the League.

(*b*) A detailed survey by a Health Section expert of all the ports at which the Ministry intends to take over the quarantine services during the next two years.

(*c*) The participation of Chinese officers in the study of the port health procedure in the Far East by a group of quarantine officers invited by the League, and under the leadership of an expert of the Health Section.

(*d*) The training by the Health Section in 1930, at appropriate quarantine stations, of two or three health officers selected for responsible posts in the new service.

(*e*) The presentation of the scheme to the Ministry in the course of 1930.

II. *The National Field Health Service* (Central Field Station).

(*a*) The preparation of a detailed plan of the new institution (with respect to its programme of work, organisation and functions).

(*b*) The co-ordination of its activities with those of the existing schools and institutions of public health here and abroad. (One method of utilising such co-ordination would be the consideration by the League's Commission on Education in Hygiene and Preventive Medicine of an annual report from the Institute.)

(*c*) Expert assistance in the direction of selected divisions of the institution for a stated period of time.

(*d*) The granting of special study scholarships to one or two officers, to whom responsible field studies will be entrusted in the application of the Ministry's fundamental projects.

III. *The New National Hospitals.*

(*a*) The supply of relevant information and technical assistance in planning the institutions.

(*b*) The granting of a study scholarship for the officer designated as Medical Superintendent of the First National Hospital.

IV. *The Demonstrations at the Educational Centres and in the Province of Chekiang.*

(*a*) The collaboration of technical Commissions of the Health Organisation in certain special activities by the supply of information, by aid in planning, and, eventually, by the delegation of expert members for a limited period of time (*e.g.*, malaria).

(*b*) The granting of special study fellowships to the Chekiang Provincial Health Officer and to the Special Commissioner of the Ministry in preparation of the scheme.

(*c*) The granting of a study fellowship to a senior officer selected for the demonstration at the educational centre.

(*d*) The studies abroad of educationists designated for health work.

V. *Medical Education.*

(*a*) Furnishing special memoranda on the progress of studies of the several National Commissions in medical reform.

(*b*) The delegation of an expert to participate for a limited period of time in the study of the Chinese Commission on Medical Education.

(*c*) The supply of special memoranda on post-graduate training and post-graduate colleges abroad.

(*d*) The studies abroad, under the auspices of the League of the officer selected to organise the Post-Graduate Medical College.

VI. *Epidemic Diseases Control.*

(*a*) The co-ordination of the joint effort for the control of cholera and smallpox in the Shanghai area.

(*b*) The facilities for training of selected technicians for the reorganised National Epidemic Diseases Prevention Bureau.

The collaboration projected on the above lines is in your belief to assist the Ministry in the building-up of fundamental national institutions and in organising areas of application at which

to train officers of the national field health service and of the future quarantine and epidemic prevention service.

You were good enough to suggest that I should visit China periodically, and recognising that, when accepted by the competent League authorities, this programme will entail a continuous effort on the part of the Health Section, you enquired if it would be possible to arrange for a prolonged stay in China, preferably at the central station of the national field health service, of one of our colleagues of the League's Health Organisation in a technical advisory capacity.

I feel sure that, if his functions be so clearly limited, the Health Committee will have no hesitation in recommending to the Council of the League of Nations the approval of such an arrangement, particularly as you have decided that your programme, as outlined above, is to be carried out slowly and methodically, stage by stage, so that your staff may concentrate its work on the development of one item before another is taken up.

Nor will the Health Committee feel any hesitancy, I am sure, in adopting a plan of collaboration which you have decided, after mature reflection, to limit to the few proposals mentioned above.

15. The Health Committee will discuss your proposals at a special session at the beginning of March 1930. I had the honour of extending to you an invitation to represent the Ministry on this occasion.

May I express the hope that, in the new Health Committee which will be appointed by the League's Council in May 1930, we may have your permanent participation ?

I understand that the Government has appointed Dr. Wu Lien Teh, the Director and Chief Medical Officer of the Manchurian Plague Prevention Service, to be the permanent delegate to the Advisory Board of the Eastern Bureau of the League of Nations Health Organisation.

I hope also that Dr. F. C. Yen, the Dean of the Central University Medical College, may be associated with the studies of the Commission on Education in Hygiene and Preventive Medicine; Dr. Robert Lim, Professor of Physiology at the Peiping Union Medical College and President of the National Medical Association, with the work of the Health Committee on vitamins and cognate subjects; Dr. Tsu Min Yi, Member of the Central Executive Committee, with the studies on Physical Education, and Dr. Shisan C. Fang, former Director of the National Epidemic Diseases Prevention Bureau, with the work of the Commission on Social Medicine.

Finally, I am glad to inform you that the Secretary-General of the League of Nations has, on my recommendation, appointed Dr. Tsefang F. Huang as member of the Health Section of the Secretariat.

(Signed) L. RAJCHMAN.

Annex 2.

REQUIREMENTS LAID DOWN BY THE COUNCIL ON MEDICAL EDUCATION OF THE CHINA MEDICAL ASSOCIATION FOR REGISTRATION IN THE ASSOCIATION AS AN " APPROVED MEDICAL SCHOOL " IN CHINA.

EXTRACT FROM " CHRISTIAN HIGHER EDUCATION IN CHINA ".

(A study for the year 1925-26, by Earl Herbert Cressy; Bulletin No. 20, 1928, published by China Christian Educational Association, Shanghai.)

1. *Entrance Standards:*

Admission from a recognised middle school or its equivalent, followed by thorough instruction in the pre-medical sciences, either (1) as included in the minimum two years' pre-medical courses provided by approved arts colleges in China; or (2) as evidenced by examination (written and practical) covering, in general, the same ground.

Chemistry. — Four semesters' work (two academic years) in general inorganic chemistry, qualitative analysis, quantitative analysis and organic chemistry, of which not less than one-half should be devoted to individual laboratory work.

Physics. — At least three semesters' work (one academic year and a-half), of which not less than one-half should be devoted to individual laboratory work.

Biology. — At least three semesters' work (one academic year and a-half), of which not less than one-half should be devoted to individual laboratory work.

2. *Medical Course:*

A five-years' course, of which the last year may be devoted to clinical or laboratory work; the four years to consist of four sessions of not less than 32 weeks each, in four calendar years, comprising a total of not less than 3,600 hours devoted to professional subjects, and divided into 1,800 hours devoted to pre-clinical subjects and 1,800 hours devoted to clinical subjects.

3. *Faculty:*

(*a*) Anatomy, physiology, physiological chemistry, bacteriology, pathology, and pharmacology would be under the charge of instructors who have had specialised training and experience in these subjects, and, except in the case of pharmacology, to be under the charge of full-time teachers.

(*b*) A full-time Faculty of 15, where part-time expert service is not available or of 10, where such part-time expert service is available.

4. *Laboratory Facilities:*

Laboratories adequately equipped for the individual teaching of students in anatomy, histology, embryology, physiology, physiological chemistry, bacteriology, pathology, pharmacology and clinical diagnosis.

5. *Human Dissection:*

Each student to dissect at least half a human cadaver.

6. *Clinical Facilities:*

(*a*) Hospital, or hospitals, under the control of the school, with 150 beds and one or more daily dispensaries.
(*b*) Each student to be present at not less than six maternity cases.
(*c*) Each student to be present at not less than twelve autopsies.

7. *Other Teaching Facilities:*

(*a*) A working medical library containing modern text books and reference books and receiving, every year, at least twenty-five volumes of different medical periodicals published annually.
(*b*) A working medical museum, with anatomical, embryological, pathological and other specimens, duly prepared, labelled and indexed.
(*c*) Opportunities for experimental laboratory work.
(*d*) A sufficient supply of auxiliary apparatus such as manikins, stereopticon X-ray apparatus, etc.

Annex 3.

ITINERARY.

	1929
Left Geneva	October 2nd.
Cherbourg	,, 4th.
New York	,, 10th.
Vancouver	,, 16th.
Yokohama	,, 28th.
Tokio	,, 28th.
Kyoto	,, 31st.
Moji	November 7th.
Nagasaki	,, 8th.
Shanghai	,, 9th.
Nanking	,, 12th.
Wusih	,, 14th.
Shanghai	,, 14th.
Hangchow	,, 21st.
West Lakes	,, 23rd.
Shanghai	November 25th.
Tientsin	,, 29th.
Peiping	December 1st.
Shanghai	,, 14th.
	1930
Hong-Kong	January 3rd.
Singapore	,, 8th.
Penang	,, 12th.
Colombo	,, 14th.
Bombay	,, 17th.
Aden	,, 22nd.
Suez	,, 26th.
Port Said	,, 27th.
Marseilles	,, 31st.
Geneva	,, 31st.

DR. BOUDREAU'S ITINERARY NOVEMBER 27TH, 1929, TO JANUARY 4TH, 1930.

	1929
Shanghai	November 27th.
Tsingtao	,, 28th.
Dairen	,, 29th.
Port Arthur	,, 30th.
Mukden	December 1st.
Antung	,, 2nd.
Mukden	,, 3rd.
Peiping	1929 December 4th.
Shanghai	,, 14th.
Amoy	,, 29th.
Canton	,, 31st.
	1930
Hong-Kong	January 2nd.
