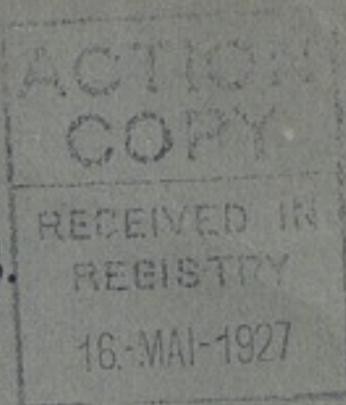


FEDERATED MALAY STATES.



HYGIENE AND PUBLIC HEALTH IN JAPAN,  
CHOSEN AND MANCHURIA.

# REPORT

ON

CONDITIONS MET WITH DURING THE TOUR

OF THE

LEAGUE OF NATIONS INTERCHANGE  
OF HEALTH OFFICERS.

BY

A. R. WELLINGTON,  
*Senior Health Officer, Federated Malay States.*

KUALA LUMPUR:

PRINTED AT THE FEDERATED MALAY STATES GOVERNMENT PRINTING OFFICE.

1927.



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A. R. WILKINSON

Health Officer, Singapore

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## THE PURPOSE OF THE INTERCHANGE

The purpose of the interchange of health officials was to allow for a mutual exchange of information and to provide for the exchange of views on the various subjects which were to be discussed during the tour.

The interchange was held in the form of a series of meetings, which were held in the various countries visited during the tour.

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## MEMBERS OF THE TOUR

The members of the tour were selected by the various countries which were to be visited during the tour. The members of the tour were selected by the various countries which were to be visited during the tour.

### PART I.

#### INTRODUCTION.

The Purpose of the Tour.

The Manner in which it was carried out.

The Members of the Interchange.

PART I  
INTRODUCTION

The Purpose of the Book  
The Material in which it was carried out  
The Methods of the Investigation

### THE PURPOSE OF THE INTERCHANGE.

The purpose of the "Interchange of Health Personnel" under the auspices of the League of Nations is to afford opportunity to Health Officers of different countries for seeing the organisation of and equipment of, and the methods employed by the health service of the country visited and to meet and mix with the officers of that service on terms which permit of a frank exchange of views on the problems met with and the means adopted for their solution.

To get a proper idea of the problems concerned it is necessary to have an understanding of the psychology of the nation under consideration, which understanding can only be obtained by actual contact with the people on their own soil and under natural conditions, taking into account their history of development.

In a country like Japan, it is no easy matter for a foreigner, unable to speak the language, to gain a clear understanding of the actual conditions especially in such a short time as six weeks.

### ARRANGEMENTS FOR THE TOUR.

The arrangements for the tour were made by the Sanitary Bureau of the Japanese Home Office. The programme which was drawn up with careful attention to detail was such that the maximum was accomplished in the time allowed. Inspection of medical institutions and places of hygienic interest was interspaced with social receptions and sight seeing, in such a manner that every hour of the day was fully occupied. The arrangements for transport and for accommodation were perfect and everything possible was done for the comfort of those participating in the tour. Free passes were issued by the railway and motor cars were everywhere provided at Government expense.

With regard to official recognition the delegates were looked upon as national guests. Dinners and receptions were given by the Minister for Home Affairs, the Minister for Foreign Affairs and the Governor of every prefecture visited. Invitations were received for a Royal garden party. The Interchange was also entertained by the Mayors of several cities and by Medical Associations of various prefectures and by certain prominent citizens.

Following the custom of the League of Nations interchange no distinction was made between the delegates. Each in turn became the guest of honour and replied on behalf of the party to the address of welcome.

In order to permit of personal attention being given to each visiting Health Officer, the party was divided into groups of five. To each group was attached a Health Officer from the Department of Home Affairs, two interpreters and a senior clerk.

There can be no doubt that a great deal of thought and energy was expended in making preparations in order that the members of the interchange should see and learn the maximum in the time at their disposal. Without such careful preliminary work the very extensive programme which had been drawn up could never have been carried out.

At every institute visited lectures in English describing the place and giving statistics were handed to the delegates. This was very necessary for the majority of Japanese doctors find it difficult to express themselves in English. Specimens and charts were exposed for inspection and everything was arranged on labour saving principles.

In spite of this many places had to be rushed and important matters which deserved careful study merely glanced at. Often there was so much to see and items followed each other in such quick succession that it was impossible to take it all in. There was little time to take notes during inspections and the social arrangements of the evening prevented the proper studying of the literature gathered during the day.

However without the rush during the day the delegates could not have seen all that they did see and without the social functions in the evenings they could not have experienced that personal contact which is probably of more value to the "interchange" than academic lectures, demonstrations and discussions.

The delegates were unanimously of opinion that the tour was cleverly planned and admirably carried out.

## THE MEMBERS OF THE INTERCHANGE.

Country.	Official Position.
Australia ... ..	Director, Division Tropical Hygiene.
China ... ..	Senior Medical Officer to Ministry of Interior.
Dutch East Indies ... ..	Chief of Local Public Health Service, Samarang.
Hong Kong ... ..	Assistant Medical Officer of Health.
India ... ..	Director of the Bombay Bacteriological Laboratory. Assistant Director, Public Health, United Provinces. Assistant Director, Public Health, Bengal.
French Indo-China ... ..	Medicine Principal desler Clarse (Tonkin). Medicine Principal desler Clarse (Cochin-China).
Federated Malay States ... ..	Senior Health Officer.
New Zealand ... ..	Deputy Director-General.
Philippines ... ..	Health Officer.
Russia ... ..	Two officers—"Representant du Commisariat du Peuple de Sante, Union des Republico Sovietistes Socialistes."
Siam ... ..	Divisional Sub-Director, Public Health Department.
Straits Settlements ... ..	Principal Civil Medical Officer.
League of Nations ... ..	The French Medical Officer attached to the League. The Secretary (Japanese) attached to the Health Committee of the League. The Chief Health Officer of the Sanitary Bureau, Department of Home Affairs, Japan, was General Secretary to the Interchange.

PART II.

JAPAN.

- Chapter I.—Programme and itinerary.
- „ II.—Psychology, education, general, technical and medical.
- „ III.—Hygiene administration, central organisation, health.
- „ IV.—The Civil Service and the Government Health Service.
- „ V.—The prefectural organisation for the promotion of hygiene and health.
- „ VI.—Quarantine and prevention of the introduction of disease.
- „ VII.—The prevention of the spread of disease.
- „ VIII.—Urban sanitation.
- „ IX.—Vital statistics.
- „ X.—Infant welfare, school hygiene and physical education.
- „ XI.—Tuberculosis.
- „ XII.—Leprosy.
- „ XIII.—Venereal diseases.
- „ XIV.—Mental diseases.
- „ XV.—Beri-beri.
- „ XVI.—Infectious diseases of the alimentary system.
- „ XVII.—Protozoal diseases.

THE HISTORY OF THE

Chapter I—Programme and history, and scope of the work

II—Psychology, education, physical, technical and medical sciences

III—The human mind, physical, technical, education, health

IV—The Civil Service and the Government Health Service

V—The professional organization in the form of a system and health

VI—The maintenance and development of the functions of the service

VII—The structure of the service

VIII—The service

IX—The service

X—The service and the service

XI—The service

XII—The service

XIII—The service

XIV—The service

XV—The service

XVI—The service

XVII—The service

## THE PROGRAMME.

The itinerary of the tour in Japan which commenced on the 18th of October and ended on the 22nd of November is as follows :

Date.	Place.
October 18 ... ..	Tokyo—Reception by the Director of the Sanitary Bureau of the Home Department.
.. 19 ... ..	Tokyo—Conference at Home Department after opening address by the Minister of Home Affairs. Visit to Bureau of Statistics, and Government Institute for Infectious Diseases.
.. 20 ... ..	Tokyo—Conference at Social Work Bureau of Home Department. Conference at Department of Education. Visits to Japan Red Cross Hospital and the Kitasato Institute for Infectious Diseases.
.. 21 ... ..	Tokyo—Visits to Igumibashi Charity Hospital, Hygiene Laboratory of Home Department, Veterinary Laboratory of Department of Agriculture, Sewage Disposal Works.
.. 22 ... ..	Tokyo—Visits to Institute of Physical Chemical Research, Imperial Government Institute for Nutrition, Bacteriological Laboratory of Metropolitan Police Board, Bancho Primary School, Tokyo Blind School.
.. 23 ... ..	Tokyo—Visits to Municipal Sanatorium for Tuberculosis, Oushi Laidan Saisei Kwai Hospital (Imperial Government Charity Hospital), Keio University Medical Department.
.. 24 ... ..	Tokyo—Visits to Municipal Hygiene Laboratory. .. Visits to Municipal Office.
.. 25 ... ..	.. Sunday.
.. 26 ... ..	.. Visits to Meiji Shrine. .. Municipal Water Works. Matsuzawa Lunatic Asylum.
.. 27 ... ..	Tokyo—Visits to Zensei Leprosy Hospital at Higashimua Ayama, visits to Intake Reservoir, Municipal Water Works.
.. 28 ... ..	Tokyo—Visits to Tokyo Deaf and Dumb School, Imperial University Medical Department.
.. 29 ... ..	Omiya—Visits to Field Laboratory for Research of Preventable Diseases. Imaichi— Nikko—Visit to Hospital for Infectious Diseases.
.. 30 ... ..	Nikko—Visit to Mansolea.
.. 31 ... ..	Chuzenji—Visit to Fish Nursery, meeting of Prefectural Association of Physicians.
November 1 ... ..	Tokyo and Kamakura—Visit to Suoshima Tuberculosis Sanatorium.
.. 2 ... ..	Yokohama—Nagahama Quarantine Station. Tokyo—National Athletic Meeting.
.. 3 ... ..	Tokyo—to Odawara—to Miyanoshita Lake Hakone.
.. 4 ... ..	Miyanoshita to Kyoto—travelling all day.
.. 5 ... ..	Kyoto to Osaka—by train.
.. 6 ... ..	Osaka—Visits to Municipal Office, Municipal Hygiene Laboratory, Osaka Medical College, Osaka Prefectural Office, Namba Women's Hospital for Venereal Disease, Citizens Hospital.
.. 7 ... ..	Osaka to Kobe—Visits to Abattoirs, Electric Generatorium, ship fumigation. Kobe to Nara
.. 8 ... ..	Nara—Visit to temples and shrines.

	Date.		Place.
Sunday	...	...	Nara to Kyoto by train.
November	9	...	Kyoto—Visit to Morita's Dairy Farm, Municipal Infectious Disease Hospital.
"	10	...	Kyoto—Visit to textile factories.
"	11	...	Kyoto to Okayama by train, visits to Okayama Medical College, visit to Industrial Bazaar.
"	12	...	Okayama—Visit to Kurashiki Central Hospital, the property of a Spinning Company. Okayama to Miyagima by train—travelling all day.
"	13	...	Itsukushima—there to Shimonoseki by train.
"	14	...	Shimonoseki to Moji to Beppu by boat-train. Beppu—Visits to hot springs.
"	15	...	Beppu—Visits to industrial bazaar, municipal medicinal baths. Beppu to Osaka by boat.
"	16	...	Osaka—Visit Municipal Office for Infectious Diseases, cattle quarantine station, hair disinfecting station. Osaka to Tokyo by train—Incinerator.
"	17	...	Tokyo.
"	18	...	Tokyo—Conference at Department of Home Affairs.
"	19	...	Tokyo—Conference at Department of Home Affairs.
"	20	...	Tokyo—Conference at Department of Home Affairs. Leave Tokyo for Korea.
"	21	...	Travelling all day—Left Japan by night boat for Korea.

The distance covered by train in Japan was approximately one thousand seven hundred and fifty miles.

## CHAPTER II.

### PSYCHOLOGY, EDUCATION, GENERAL, TECHNICAL AND MEDICAL.

#### JAPANESE PSYCHOLOGY FAVOURABLE TO HYGIENE PROMOTION.

In order to get a comprehensive view of the hygienic conditions prevailing in Japan it is necessary first to know something of the psychology and habits of the people and the general standard of education.

The Japanese are by nature cheerful, even tempered and patient. They possess plenty of self-confidence, are hard working and persevering and have a quiet but dogged determination to succeed in anything they undertake.

They are a very cleanly race both as regards their persons and their houses and even the poor aim at bathing once a day.

Manners and deportment have a high place in Japanese life and consideration for one's neighbour is well to the fore. Children are taught to be dignified and polite, to control their passions and even their facial expressions, to be proud of what is good, ashamed of what is bad and to be cautious in word as well as in deed.

They are intensely patriotic and reverence the Emperor and Royal Family to a degree almost incomprehensible to a foreigner. Patriotism does not stop here and both sexes are ever ready to sacrifice something and at times a great deal for country or for family.

This spirit of patriotism is fostered by Government and is taught in the temples, the schools and the homes.

The prevalent idea that the Emperor through his Ministers and officials governs the country for the peoples good makes the populace ready to accept and obey any order which may be promulgated and to regard the police and officials as friends.

The Japanese are kind to children and to animals. Children never appear to receive corporal punishment from their parents nor is the need for it manifest. Corporal punishment has been abolished in all schools.

Animals are well-looked after. At the abattoirs humane killing is practised. Outside the Kobe abattoir is a large monument with an inscription to the effect that it is dedicated to the spirits of the animals which were killed for food. In the Keijo University there is a monument to the spirits of those animals which gave up their lives for the advancement of medical science.

The Japanese have been described as an imitative race but they are very careful only to imitate that which is good and useful. Having imitated anything they strive to improve it and they very often succeed.

Western education, arts and sciences, have been extensively adopted and everywhere one sees evidence that the Japanese can compete with Westerns in education, manufacture and commerce.

In matters of public health great interest is being taken. The country is full of voluntary societies whose aim is the maintenance of bodily vigour and the improvement of physique. There is no doubt that the spirit of "health" has spread throughout the land. The physiological attributes of the race are favourable to its development and it is more than probable that the advance in hygiene will be just as remarkable as has been the case with commercial arts and sciences.

#### EDUCATION.

The Japanese place the highest value on education and nowhere has more attention been given to the subject. Education is not only good but it is cheap due to the fact that practically all the schools are Government institutions which high and low, rich and poor, attend.

The different grades of schools and the length of their courses are as follows :

Class of school.		Length of course.
Primary	...	6 years
Middle	...	5 ..
Higher	...	3 ..
Colleges for teachers, for commerce, for agriculture, for various professions including medicine		4 to 5 years
Universities, courses for arts, law and engineering		3 years
Course for medicine		4 ..

Primary education is compulsory for all so that the whole adult population can read and write. School life commences at 5 years of age.

There are special schools for the blind, for the deaf and dumb and for those who require special attention.

The schools are all built on occidental lines, are well up to date and approach the American rather than the British in architecture, furniture and equipment.

The teaching institutions, the number of teachers and the number of students are shown in the following table :

Class.	No.	Teaching staff.	Students.
Primary Schools	25,562	189,476	8,872,000
Secondary Schools	385	8,242	194,416
Higher School for Girls	580	3,453	176,808
High Schools	17	674	10,202
Medical Schools	9	288	5,457
Dental Schools	6	202	2,115
Special Arts and Measures	13	525	4,286
Special Agriculture	8	308	2,129
Special Commerce	9	302	3,940
Technical Schools :			
Arts	61	1,102	14,996
Agriculture	324	2,571	48,870
Commerce	165	2,567	63,462
Deaf, Dumb and Blind	74	500	Blind 2,408, Deaf and Dumb 1,740

## MEDICAL EDUCATION.

There are two standards of medical qualifications recognised by law, viz. : medical schools licences and University degrees.

To obtain a licence the student goes straight from the middle school to the medical school where he undergoes a four years' course of instruction.

To obtain the University degree the student passes from the middle school to a pre-medical school where he spends three years studying chemistry, physics, biology and mathematics. From the pre-medical school, he enters the University where the course has a duration of four years.

The Universities grant one grade of qualification only—that equivalent to Doctor of Medicine. The medical schools grant licences.

There are post-graduate courses extending over four weeks and there are research scholarships courses lasting one year.

Up to date no post-graduate course covering the whole field of public health has been established and no degree in hygiene has been sanctioned by the medical education authorities.

A course and examination similar to that for the British Diploma of Public Health is under consideration.

## CHAPTER III.

## HYGIENE ADMINISTRATION, CENTRAL AND PREFECTURAL. THE CENTRAL ORGANISATION FOR THE PROMOTION OF HYGIENE.

## A.—The Advisory Councils, viz. :

The Board for the Investigation of National Hygiene.

The Central Board of Health.

The Council for the Investigation of the Pharmacopœia.

## B.—The Sanitary Bureau.

## C.—The Laboratories, viz. :

The Government Institute for Infectious Diseases.

The Institute for Nutrition.

The Hygienic Laboratories.

## HYGIENE ADMINISTRATION.

Though the knowledge that hygiene is one of the most essential factors in the advancement of a nation is rapidly spreading through all classes in Japan systematic hygiene has not reached the stage of having a separate ministry for its co-ordination and control.

At present, hygiene other than that connected with the army, the navy, the schools, the prisons and the railways, comes within the province of the Minister of Home Affairs.

The Health Organisations of the Department of Home Affairs are :

## I.—Central,

## II.—Prefectural or Provincial.

The Central Organisations are under the control of the Minister direct, the Prefectural ones are under the control of the local Governors who are responsible to the Minister for their efficiency.

Military hygiene is under the control of the War Office

Naval hygiene is under the control of the naval authorities.

Railway hygiene comes under the purview of the Railway Department.

Prison hygiene is the concern of the Department of Justice.

School hygiene is under the control of the Minister of Education.

#### THE CENTRAL ORGANISATION FOR HYGIENE ADMINISTRATION.

The Central Organisation for Hygiene Administration includes the advisory bodies, the Sanitary Bureau, the bureau for social work and the laboratories.

The advisory bodies are:

- A.—The Board for the Investigation of National Hygiene;
- B.—The Central Board of Health;
- C.—The Council for the Investigation of the Japanese Pharmacopœia.

The laboratories are:

- A.—The Government Institute for Infectious Disease;
- B.—The Hygiene Laboratories;
- C.—The Institute for Nutrition.

#### THE BOARD FOR THE INVESTIGATION OF NATURAL HYGIENE.

In 1916, because of the high sickness and death-rates prevailing, the Government decided to establish an advisory board composed of high officials, medical experts and experts in the allied sciences for the purpose of enquiring into the state of the public health, of investigating the forces natural and artificial which influence it both for good and for evil and of advising as to what should be done to raise the national physique and bring about an improvement in the sickness and death-rates.

The Board as at first established, failed to produce the desired effect, the reason being that it had no direct administrative authority, and its members having official duties to perform could not spare the time to see that the various plans devised for the improvement of national hygiene were put into proper execution.

In 1921 a reorganisation resulted in the addition to the Board of a Secretary, two Medical Officers of Health, and a number of under officers and experts whose duty it was to put into effect the results of the investigations carried out and the recommendations made by the Board.

In order to raise the status of the Board, and to ensure that its recommendations should receive the recognition their importance merited the Minister of Home Affairs consented to be its Chairman. The members which number 40 in all include

- The Vice-Minister of Home Affairs;
- The Director of Sanitary Bureau;
- The Chief of the Section for Infectious Diseases;
- The Director of the Bureau of Social Affairs;
- The Section Chief of the Bureau of Social Affairs;
- The Chief of the Medical Section of the Home Department;
- The Director of the Institution for Nutrition.

Special Committees have been appointed to investigate

- (a) the causes for the high mortality among infants and pre-school children;
- (b) the health of the infants of Tokyo;
- (c) the question of improvement of the quality of drinking water;
- (d) the public health and sanitary conditions of cities;
- (e) venereal disease and its prevention;
- (f) the promotion of national health by athletics, sports and physical exercises;
- (g) public health propaganda.

The problems which have been studied are

1. Maternity and child welfare;
2. The prevention of tuberculosis;
3. The prevention of venereal disease;
4. The prevention of leprosy;
5. Mental diseases and their treatment;
6. Foods and drinks and the establishment of a institute for nutrition;
7. The establishment of national parks;
8. The public health and sanitation of rural districts;
9. The public health and sanitation of cities;
10. Parasite diseases and their prevention and control.

A very important part of the duties of the Board is the promotion of public health propaganda, and this is done by

1. The distribution of pamphlets on different subjects;
2. The preparation and supply of motor picture films;
3. The arrangements for popular lectures;
4. Exhibitions;
5. Aids to voluntary organisations interested in the spread of the knowledge of hygiene.

There can be no doubt that this Board has been instrumental in stimulating all classes towards the observance of the principles of hygiene.

#### THE CENTRAL BOARD OF HEALTH.

The Central Board of Health which was first established in 1877 when cholera was prevalent to investigate and consult on measures to be taken in connection with quarantine and the inspection of vessels is now an advisory body in regard to affairs relating to sanitary administration.

Whereas the Board for the Investigation of National Hygiene deals with the study of hygiene and the propagation of hygienic knowledge—the Central Board of Health is concerned with the practical application of the principles of hygiene.

Being advisory as regards practice the Board is chiefly made up of men of practical experience.

The Chairman is Baron Kitasatu, Director of the Kitasatu Institute. The members which number 30 include:

- The Director of the Sanitary Bureau;
- The Director of the Bureau of Social Affairs;
- The Director of the Bureau of Court Physicians;
- The Director of Infectious Disease Investigation Institute;
- The Director of the Bureau of Medical Affairs, War Office;
- The Director of the Bureau Medical Affairs, Navy Department;
- The Director of the Bureau of Agricultural Affairs;
- The Director of the Bureau of Engineering;
- The Director of the Bureau of Police Affairs;
- The Director of the Bureau of Local Affairs.

The chief duties of the Board are to advise Government

- (a) on various questions connected with sanitary law;
- (b) on the best means of executing the law.

#### THE SANITARY BUREAU.

The Sanitary Bureau consists of a number of medical experts and clerks under the directorship of a civil servant. As the law stands only a civil servant can be the Director—but the law is about to be amended to allow of a medical man holding the appointment.

Broadly speaking, the functions of the Sanitary Bureau are investigative, inspective, actuarial and advisory. The investigative duties include investigation both in the laboratory and in the field. The inspective functions include the inspection of local conditions and the appraisalment of the local executives. The actuarial side is concerned with the compilation, the collation, and the evaluation of vital statistics. The advisory functions include advice to the central authorities, the local authorities and the general populace.

For convenience the Bureau is divided into four sections called, respectively, the public health section; the section for the prevention of acute infectious diseases; the section for the prevention of chronic infectious diseases; and the medical section.

The public health section is concerned with health statistics, diffusion of the knowledge of hygiene, water supplies, scavenging and the disposal of refuse and sewage, foods, beverages, nutrition and the encouragement of physical exercises.

The section for the prevention of acute infectious disease is concerned with:

- (a) Measures for the prevention of the introduction of disease through quarantine and port health activities;
- (b) Matters relating to the prevention of the spread of infectious diseases, both in urban and rural areas, including the regulation of the movements of cases and contacts, the disinfection of premises and personal effects, preventive vaccination and inoculation;
- (c) Matters connected with vaccines and sera prepared for the purpose of preventing and treating communicable diseases.

The section for the prevention of chronic infectious diseases is concerned with tuberculosis, leprosy, mental diseases, beri-beri and diseases of a parasite or protozoal nature.

The medical section is concerned with the registration and control of medical practitioners, dentists, drug manufacturers, druggists with medicines, patent medicines and deleterious drugs—with hospitals and with midwives and nurses.

#### THE BUREAU OF SOCIAL WORK.

The Bureau of Social Work deals with the sanitation of factories and mines, with the protection of the workers, with workmen's compensation, with health insurance, with labour exchanges and unemployment relief, and with charity and general relief and with child welfare.

According to the "Brown Book" the essential aims of the regulations with regard to industrial sanitation are "to offer guidance, to promote improvement and advancement and not to detect or punish offences."

Efforts are being made to establish a close relationship between the factory inspectors and the local health officers. In some cases the Health Officer has been appointed the factory or mines inspector.

The law with regard to hygiene of factories is much the same as that pertaining to mines.

A factory is a place employing 15 or more persons. A mine is a place where mining operations are carried out irrespective of the number of persons employed.

It is forbidden to employ women or persons under 16 years of age:

- (a) for more than 11 hours a day;
- (b) between 10 p.m. and 4 a.m.;
- (c) in dangerous trades or occupations injurious to health.

When an employee is taken ill, or is injured, or killed, in the course of his work the owner of the factory or his agent must give relief to the labourer or if he be dead to his relatives.

The compensation paid is half-pay for sickness up to three months—after that one-third pay.

In case of a death the surviving relative receives 170 days' pay and 10 yen for funeral expenses.

It is forbidden to employ persons suffering from an infectious disease. It is also forbidden to employ a woman within six weeks of her confinement.

For their own benefit the workers have combined to form sick clubs or mutual relief associations. These associations insure their members against accidents, sickness and death. In a great many instances the employers pay half the fees.

#### HEALTH INSURANCE.

The Health Insurance Act of 1922 applies to every person engaged in a factory or in a mine who is not employed temporarily and whose yearly income is not over 1,200 yen.

A person may insure voluntarily.

The State undertakes the insurance of persons who are not members of recognised voluntary health insurance societies.

The benefits for which an insured person is eligible are:

1. Medical attendance during sickness;
2. Sick or accident benefit, the rate paid being 60 per cent. of the daily wages;
3. Child birth benefit—viz., 20 yen as confinement benefit, and a sum equal to 60 per cent. of the daily wage;
4. Death benefit—Funeral expenses up to 20 times the daily pay of the insured person are paid with a minimum of 20 yen.

The State Treasury bears 10 per cent. of the expenditure for insurance benefits. The insured person and his employer bear the remainder in equal parts.

#### THE GOVERNMENT INSTITUTE FOR INFECTIOUS DISEASE.

The Government Institute for Infectious Disease is both an institute for medical research, a hospital for the treatment of special cases, an institute for the manufacture of vaccines and sera, and a laboratory for the investigation of material of epidemiological concern.

Standing in its own grounds of 20 acres this large establishment is equipped with every modern implement and apparatus for the investigation of disease.

Presumably because of its scope as a teaching institution it is attached to the Tokyo Imperial University and is under the control of the Minister of Education.

In so far as matters pertaining to sanitary administration are concerned it is under the supervision of the Home Minister.

The staff of the institute includes a Director, 10 experts, 25 paid assistants and 20 unpaid assistants.

#### THE HYGIENIC LABORATORIES.

There are two Imperial Hygienic Laboratories under the Home Department, one being situated at Tokyo and the other at Osaka.

The following are the functions of these laboratories :

1. The analyses of air, water, soil, foodstuffs, mineral waters, etc., etc.;
2. Examinations for medico-legal purposes;
3. Examinations for determining the constituents of medicines—and of substances containing opium;
4. Analyses of Chinese and Japanese medicines not contained in the pharmacopœia;
5. Matters concerning the improved production of medicinal plants—and the investigation of the medicinal products of plants;
6. The examining and testing of spirits and wines and affixing labels of certification.

#### THE IMPERIAL GOVERNMENT INSTITUTE FOR NUTRITION.

The institute which is situated in Tokyo is an imposing building standing in its own grounds. It has laboratories for chemistry, for physics, for physiology, for bacteriology, for bio-chemistry and for food industry. There is a library, a lecture room, a museum and an experimental kitchen. All the apparatus and appliances necessary for the investigation of the various questions connected with nutrition research are to be found here.

The staff consists of the Director, seven experts, fifteen assistant experts, two secretaries and ten volunteer investigators. Of the experts six are medical men, five are pharmacologists, six are agricultural college graduates, four are chemical engineers and one is a general scientist.

The activities of the staff are divided into routine work and research. In order to properly apportion the work and to maintain a keen interest in all workers each is given a certain amount of routine in addition to his research work.

Among the problems being investigated are :

1. The suitability for human food of vegetables not hitherto used for that purpose;
2. The composition of different foods with regard to their carbohydrate, protein and vitamine contents.
3. The changes which ensue on the storage of rice and other grains;
4. The changes brought about by methods of preparation and of cooking;
5. The metabolic changes in animals brought about by excess or insufficiency of various food elements including vitamins.

In this institute experiments with white rats show that gall-stones, bladder stones and kidney stones can be produced by feeding with foods deprived of vitamine 'A' and that the stones can be made to disappear by subsequently supplying the necessary vitamine.

Meetings of the members are held once a month to report progress in the different subjects under investigation. These meetings are open to the public and by permission of the Director a visitor may join in the discussion.

## CHAPTER IV.

## THE GOVERNMENT CIVIL SERVICE AND THE GOVERNMENT HEALTH SERVICE AND THE PLACE EACH OCCUPIES IN THE ORGANISATION FOR THE CONTROL OF HYGIENE.

## THE CIVIL SERVICE.

As the permanent Civil Service is in administrative control of general hygiene both in Tokyo and in the provinces, a short description of that service is necessary in order that the reader may understand the situation.

The Civil Service which is open to all is recruited by competitive examination. It consists of two classes as in England, the higher being filled with men of University rank, the lower with those of a lower standard of education. There is a sharp distinction between the classes and it is very seldom that a man from the lower grade is promoted to the higher one.

The higher service contains four grades, promotion being made by seniority and selection after passing the bar examination to the grade in question. The subjects of the bar examination include law, administration and economics.

The country is divided into 47 "Prefectures" each having a Governor as its administrative head. There are certain cities which have been granted a considerable degree of self-government but even these are not entirely independent. The Mayor of a city is elected by the people but the approval of the Governor must be obtained before he assumes office. In practice sanction is rarely refused.

Police are all prefectural and under the control of the Governor, the Commissioner being a member of the Senior Civil Service, the other officers members of the junior branch.

Ranging from above downwards the ranks of the Senior Civil Service are as follows:

- First: Governors of Prefectures, the Governor-General of Korea, the Governor of the leased territory of Kwan Tung, and the Governor of Formosa;
- Second: Vice-Governors of Prefectures in charge of the local Departments of Internal Affairs, Prefectural Commissioner of Police, Director of Bureau at Tokyo such as the Sanitary Bureau;
- Third: Secretaries to Governors;
- Fourth: Clerks.

## THE GOVERNMENT HEALTH SERVICES.

Candidates for the Government Health Services must be fully qualified graduates of a University or recognised medical school.

There being no post-graduate courses covering the whole field of public health such as that for the British Diploma in Public Health and no degree in hygiene granted by the medical education authorities—a "hall-mark" of general competency cannot be insisted on.

Appointments in the lower grades of the service are made by the Prefectural Governors but the sanction of the Minister of Home Affairs is necessary before an officer can be promoted to one of the higher posts such as that of Chief Sanitary Officer of the Prefecture.

The Chief Sanitary Officer may rise from the ranks or he may be appointed direct to the post because of some special work done at a University, in a hospital, or in a laboratory.

Government full-time medical officers are pensionable. After 15 years' service an officer can claim a pension of one quarter of his salary. In Chosen, Kwantang or Formosa the period is reduced to ten years.

There is no old-age limit and provided the authorities agree an officer may continue to hold his appointment until 60 or over.

At present, there are over 300 medical officers employed by Government for the prevention of communicable diseases.

The Minister of Home Affairs has the power where occasion demands to temporarily increase the number of health officers. This power is exercised whenever there is an epidemic, which cannot be dealt with by the ordinary staff.

## CHAPTER V.

## THE PREFECTURAL ORGANISATION FOR THE PROMOTION OF HYGIENE AND THE CONTROL OF SANITARY MEASURES. MUNICIPAL HEALTH ORGANISATIONS AND THEIR RELATION TO THE PREFECTURAL AUTHORITIES.

## THE PREFECTURAL ORGANISATION FOR THE PROMOTION OF HYGIENE.

Hygiene promotion in the prefectures is controlled by the Police Departments which has medical experts and medical officers attached to their staffs.

The situation on first sight appears to differ widely from that which prevails in western countries. Closer examination shows that the difference lies more in nomenclature than in actual practice. The Commissioner in administrative charge of the Police Bureau, though he wears a uniform and sword, is not a police officer by profession but a member of the Senior Civil Service and his duties are those which would be performed by a Secretary to Government in a British Colony or Protectorate. The Adviser to the Commissioner and the real executive Director of Hygiene is a medical expert called the Chief Sanitary Officer. In a town of any size full-time medical officers are attached to police head-quarters and in smaller towns and villages part-time medical men.

Health experts on the staff of the Central Sanitary Bureau, Tokyo, inspect the work in the prefectures and report on it. They offer advice to the prefectural officers, but issue no orders. Orders can only be given through the round about way of communicating with the Director of the Central Bureau who communicates with the Home Minister who communicates with the Prefectural Governor.

## CONTROL OF HYGIENE IN MUNICIPALITIES.

Large cities like Tokyo, Osaka, Kobe, etc., have both Prefectural Health Officers and Municipal Health Officers, the former being paid by Government, the latter by the municipality.

The exact division of duties does not appear to be very clearly defined. The Prefectural Governors have the right of inspection in any matter which concerns hygiene and they keep an eye on the conditions prevailing in a municipality and on the methods adopted by the municipal health authorities. The Prefectural Health Officers and the Municipal Health Officers are in close touch with each other and it is probable that the division of duties is to a certain extent a matter of mutual agreement.

As a general rule waterworks, scavenging and sewage disposal, municipal hospital and sanatoria are under the direct control of the municipality. Infectious disease comes under the prefectural authorities as do also matters pertaining to the manufacture and sale of foods, drinks and drugs.

Notifications of infectious disease are made to the police, who through their hygiene department, take action. When cases are removed to the municipal institutions, they are, after admission, in the charge of Municipal Medical Officer.

## CHAPTER VI.

## THE ORGANISATION WITH REGARD TO QUARANTINE AND THE PREVENTION OF THE INTRODUCTION OF DISEASE.

## QUARANTINE AND THE PREVENTION OF THE INTRODUCTION OF DANGEROUS INFECTIOUS DISEASE.

The proximity of Japan to countries where plague, cholera, small-pox and other dangerous infectious diseases are endemic, the extent of the intercourse between the one and the others, and the present day quickness of transit make it imperative that every precaution shall be taken at Japanese ports to guard against the introduction of disease. The importance of Japan's foreign trade necessitates that shipping should be interfered with as little as possible and though the powers given to quarantine officers are very full they are intended to be used with discretion and as much liberty allowed as is compatible with safety.

## PORT QUARANTINE.

The business of port quarantine comes under the jurisdiction of the Customs Department which is itself under the Department of Home Affairs. The quarantine staff of a port including the port medical officers do duty under the Harbour Master of the Customs house that supervises the port.

The following ports have a regular quarantine staff, arrangements for disinfecting both ships and cargoes, accommodation for segregating sick persons and contacts, and laboratories for the investigation of diseases—Yokohama, Osaka, Kobe, Moji and Shimonoseki, Wakamatsu, Nagasaki, Kuchimotsu, Miike and Tsuruga. In ports other than the above quarantine regulations are controlled by the police.

All vessels coming from a foreign port are liable to inspection and until they are granted free pratique they are prohibited from communicating with the shore.

The master, the crew and the passengers must answer any questions put to them by the quarantine officers, and, if so required, must make a written declaration and sign the same. If required the log book must be produced and facilities given for examining the whole vessel.

The diseases for which sanitary inspection is required are cholera, plague, small-pox, yellow fever and scarlet fever. The quarantine period for plague is ten days, for cholera and yellow fever five days and for small-pox 14 days.

Bearers of pathogens (carriers) are taken to be sufferers from the disease itself.

A vessel is considered suspected and subject to full inspection (a) which has left a locality where infectious disease prevails, has stopped at an infected port during the voyage, or has communicated with a vessel tainted with virus or is suspected to be so tainted.

(b) On which there has been during the voyage a case of infectious disease or a death therefrom.

(c) On which there is a case of infectious disease or a death therefrom.

Such a vessel must hoist the quarantine signal before entering a port and retain it until pratique is granted.

Ordinary vessels are only inspected between sunrise and sunset but mail boats may be inspected after sunset. The procedure is as follows: The quarantine officers board the vessel at an appointed anchorage. The Health Officer hands the master a form to fill in and then proceeds to inspect the passengers and crew. While the Health Officer is performing this duty certain of his staff make an inspection of the general sanitary conditions on board. Everything being satisfactory, pratique is granted and free communication with the shore permitted. In the case of war vessels a written declaration by the captain and the surgeon is accepted.

The following information is required from the master:

1. The nationality, description and name of the vessel.
2. The gross tonnage, the registered tonnage.
3. Owner of the vessel or his agent.
4. Port of departure, and date of departure therefrom.
5. Ports of call and dates of arrival and departures.
6. Crew, officers and engineers, sailors and firemen.
7. Places where provisions and drinking water were taken on.
8. Description of the cargo and place where shipped.
9. Any rats among cargo and place where shipped.
10. Port of destination.
11. Whether during the voyage or stay in port there were any cases on board of plague, cholera, small-pox, yellow fever, scarlet fever or any disease resembling them.
12. Any other disease on board during the voyage or stay in port.
13. Any deaths and if so the cause.
14. Any communication with a suspected vessel either during the voyage or at a port of call.
15. Any dead rats.
16. When the vessel was examined, disinfected, or detained by order of any port authority.

The form containing the above information must be signed by the master and by the doctor.

The officers and crew are required to render assistance in all matters concerned with the inspection and disinfection of the vessel and the landing of persons for quarantine.

Where on inspection the ship is found to be infected the quarantine officer may

1. Detain the vessel.
2. Give instructions for the disposal of patient, dead body, or articles.
3. Carry out the disinfection of the vessel and other things.
4. Destroy rats and insects.
5. Detain passengers and crew at the quarantine station for such periods as may be laid down by law.

Vessels which are detained are dealt with as follows:

1. The vessel anchors opposite the quarantine station.
2. The case or cases are placed in the hospital.
3. The passengers and their goods are disinfected.
4. When necessary the passengers and crew are isolated either in the station or on board the ship.

Ships are disinfected by generator gas or by sulphur dioxide. Launches specially equipped with the gassing apparatus are placed alongside; and delivery pipes are connected with the various compartments to be disinfected. Sulphur is used chiefly when the ships have no cargo. It has the advantage of being less dangerous to human life than generator gas yet more effective in destroying rats and insects. The quantity of sulphur used is one and one-third pounds per 1,000 cubic feet.

Generator gas is produced by burning carefully selected coke in special furnaces. The composition of the gas is

CO 3.3—6.6 per cent., CO<sub>2</sub> 17-19, N. 76-77.

The quantity produced per hour is 27,000 cubic feet per apparatus.

#### THE PORT OF YOKOHAMA QUARANTINE STATION.

The Yokohama port quarantine station which is situated at Nagohama is a model of its kind. Here are segregated first class, second class and third class passengers under conditions of comfort similar to what they would enjoy at hotels catering for their wants. The first class and second class have the choice of European or Japanese accommodation.

The passengers land at one pier, pass to the bath rooms where after bathing they are provided with clean clothes. Their personal baggage is disinfected under conditions appropriate for each class of article. Each passenger is given a check bearing a number for his clothes, his boots and leather goods, and for his valuables. The check is in the form of a metal ring which he wears (even in his bath) until his clothes and personal effects are ready to be handed back to him.

Small galvanised iron boxes in size 8 x 6 x 3 inches fitted with locks are provided for valuables. Clothes are put into galvanised iron cages measuring inches 24 x 16 x 10 and the cages locked. Boots and leather goods are placed in cage provided with locks.

Disinfection is done by (a) steam at a temperature of 100 cent., (b) steam and formaline at 60 centigrade, formaline at ordinary temperatures, (d) SO<sub>2</sub> gas.

There are wards for contagious diseases and for non-infectious diseases, and there is a thoroughly equipped and up-to-date laboratory.

At present there is detention accommodation for first class passengers and second class passengers 16 persons and for third class 100 persons. It is proposed to erect in the near future accommodation for 1,000 third class passengers.

It is usual to land only the sick and the immediate contacts. If necessary the remainder of the passengers are quarantined on board the ship.

#### CHAPTER VII.

##### THE LAW FOR THE PREVENTION OF THE SPREAD OF INFECTIOUS DISEASE.

1. The law for infectious disease is No. 36 of 1897 as amended by No. 32 of 1922.
2. The term infectious disease means plague, cholera, small-pox, typhus, enteric, paratyphoid, dysentery, cerebro-spinal meningitis, diphtheria and scarlet fever.
3. The Minister of Home Affairs may apply the law wholly or in part to any infectious disease other than the above and may specify the area in which such application shall effect.
4. A bearer of pathogens ("carrier") of an infectious disease is deemed to be a sufferer from that disease.

5. Where there is within a premises a suspected case of infectious disease it is the duty of the person in charge of the premises to call in a physician to make a diagnosis, or to report to the police.

6. When a physician has examined a person suffering from an infectious disease he shall indicate the precautions to be taken and without delay make a report to the police. Failure to report within 12 hours is a punishable offence.

7. The Police Department is the sanitary authority where infectious disease is concerned and action with respect to isolation, disinfection, disposal of the dead, etc., depends on the instructions issued by the competent officer of that department and in most cases this is the Government Health Officer.

8. Until the arrival of the competent officer no action shall be taken regarding

1. The removal of the case whether dead or alive.
2. The removal or disposal of clothing or other articles suspected of being infected.

9. The competent officer shall give instructions concerning

1. The isolation of the case whether in the house itself or in a hospital or other suitable place.
2. The isolation of the contacts.
3. The isolation of premises suspected of being infectious.
4. Cleaning and disinfection.
5. The disposal of the dead.

10. The body of a person dead of infectious disease shall be cremated unless permission to the contrary is obtained. If burial be permitted the body shall not be disinterred before the lapse of three years.

11. The competent officer has power of entry into any house, vessel or train or any other place if he deems it necessary for the prevention of disease.

12. The local Governor may

1. Cut off communication with the whole or part of a city, town or village or isolate its inhabitants.
2. Restrict or prohibit the gathering of persons for festival or other purposes.
3. Issue orders for health examinations or post-mortem examination.
4. Restrict movements with regard to old clothes, rags, etc.
5. Prohibit the sale or transfer of foods and beverages.
6. Order cleansing, disinfection, the provision and control of water supplies, sewerages, scavenging operations and the arrangements for the disposal of refuse and night-soil.
7. Cause the destruction of rats and insects.
8. Restrict or suspend fishing or swimming in a specified place or the use of its water.
9. Cause physicians to be engaged and arrangements made for the prevention of infectious disease in railway trains, vessels, factories, and other places where a number of persons are congregated.
10. Order a city, town or village to provide a hospital for infectious diseases, isolation wards or disinfection stations.
11. Establish a sanitary association to make and put in operation regulations relating to cleansing, disinfection, and other measures for the prevention and relief of disease.

13. In case an infectious disease prevails or is likely to prevail, the local Governor may

1. Order a city, town or village to appoint a committee for the purpose of inspection and prevention including cleansing and disinfection and the destruction of rats and insects.
2. Appoint a committee of inspection to take charge of matters relating to inspection and prevention of disease with special regard to vessels, trains and electric cars.

14. A person suffering from an infectious disease, or suspected to be tainted with the virus of infectious disease, in a vessel, train or electric car may be taken to a hospital for infectious disease or an isolation ward established in the neighbourhood. If deemed necessary the competent officer may detain the vessel, train or car together with the crews and passengers carried for the requisite number of days.

15. The following expenses shall be borne by the prefecture:
1. Those connected with the inspection and detention of vessels, trains and electric cars.
  2. Compensation for destruction of a building under the order of the Governor.
  3. Those connected with the isolation of the whole or part of a city, town or village.
  4. All other expenses connected with the preventive work carried out by the prefecture.
16. The following expenses shall be borne by the city, town or village concerned, viz., those connected with
1. The prevention committee.
  2. Cleansing disinfection and vaccination.
  3. The payment of physicians and other persons engaged for preventive work.
  4. Hospitals, isolation houses and disinfecting stations.
  5. The isolation of cases and contacts.
  6. The support of pauper patients.
  7. Destruction of rats, vermin and insects.
  8. The supply of water.
  9. Compassionate allowances and condolence allowances.
  10. Supplies to persons isolated when the whole or part of a city, town or village is cut off from communication with the outer world.
17. Cities, towns and villages shall receive grants-in-aid from the Prefectural Treasury to the extent of not less than one-third of the expenditure in the case of cholera and plague outbreaks and not less than one-sixth in the case of outbreaks from other diseases.
18. When a city, town or village or private person fails to carry out the necessary duties the prefectural authorities may carry them out and charge the offending party with the cost.
19. Arrangements for the spread of information concerning infectious disease outbreaks is as follows:
- (a) The local Governor informs the Home Minister and the Governors of the Prefectures in close communication, concerning the occurrence of a case.
  - (b) When there is an outbreak of infectious disease which is not included in the ten mentioned in the ordinance the local Governor reports to the Home Minister stating the nature of the outbreak, its extent, and expressing opinion concerning action regarding the extension of the law.
  - (c) The police authorities, the head of the city, town or village and the committees formed for the purpose of inspection and prevention of disease inform each other concerning the receipt of reports from physicians concerning cases of infectious disease.

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## CHAPTER VIII.

### URBAN SANITATION.

#### TOWN PLANNING AND TOWN IMPROVEMENT.

Town planning so far as main streets are concerned dates back at least 1,000 years when Kyoto was built. This city which was planned on the rectangular system consists of nine main thoroughfares running north and south, an equal number east and west and a number of smaller streets parallel to one or the other. Altogether 2,732 streets were included in the plan. Some of the main streets are 280 feet wide which shows that even in those early days the importance of wide streets was realised by some.

The cities of Osaka, Kobe and Nara were also planned on the rectangular system.

The impression gained by the foreign sanitarian in Japan is, that though care was taken to plan out the line of streets, little attention was afterwards devoted to the lay out of the lots between the streets or to control the building operations on them. The houses and out-houses appear to cover practically all the ground and little has been left for open spaces, courts or gardens. Many of the houses are back to back.

The majority of buildings are small and only one story in height.

The first legislation with regard to town improvement was Imperial Ordinance No. 62 which dealt with the improvement of streets in Tokyo. It was not until 1918 that the above regulations were extended to other cities and then only to Kyoto, Osaka, Yokohama, Kobe and Nagoya.

In 1919, the first City Town Planning Act was passed and applied to the six cities mentioned above, later it was extended to 25 other cities.

In 1923 after the great earthquake and fires which destroyed the greater part of Tokyo and Yokohama a special act was passed to control the reconstruction of these cities. In its provisions were made for zoning, for open spaces, for width of streets, for heights of buildings, for back lanes, for open areas about houses—in fact for everything deemed of importance in modern town planning and housing.

The new town plan of Tokyo is on the rectangular system which shows that the Japanese after studying the various methods devised by town planners have decided to adhere to the simple and regular system which has proved so satisfactorily in America.

#### HOUSING CONDITIONS.

The members of the interchange were given little opportunity for enquiring into house sanitation, any knowledge acquired being the result of casual observations made during the tour.

The sanitary condition of a house has a most important influence on the health of those occupying it and through them on the public health. The homes of the people where they spend half their lives, where they partake of food and drink and where they pass their excretions may justly be described as the principle foci for the spread of communicable diseases.

Ignorance of housing conditions therefore means ignorance of one of the most important factors connected with national hygiene and it is a pity that some time was not devoted to the subject.

The majority of houses, whether in cities, in towns or in rural areas are small and of but one story in height. The walls are wood or of bamboo framework plastered with mud. Most of the roofs are covered with dark grey tiles though some are of thatch.

Provision for natural lighting and ventilation consists of sliding doors and windows the panels of which are of translucent paper.

Electricity is the medium generally used for artificial lighting.

The ordinary form of artificial heating is a portable charcoal brazier which is carried from room to room according to requirements.

Every house except the poorest has its bath tub and those persons who possess none borrow from a neighbour. Every person takes a hotbath at least once a week.

In comparison with western houses, there is very little furniture.

The interiors are scrupulously clean and no one enters without first removing his or her shoes. Every room is swept twice a day. Once or twice a year all articles of furniture and all mats are removed from the rooms and exposed to the sun for three or four hours.

The latrine accommodation is often very primitive consisting of a platform over a pit or cesspool, the latter being sometimes under the house, sometimes in the yard by the side. In some cases buckets are used.

The following statement was made at the conference by Dr. Jamura: "For years investigations for the improvement of house privies have been carried out. At present we have several types of privy patented and are examining their practical merit. In order however to be practical and popular it must have such conditions that it should be at once of simple design and inexpensive, should not soil the place when removing the contents, should be kept clean after removal of contents, etc. Unfortunately, none answering these conditions have so far been devised".

#### WATER WORKS AND WATER SUPPLIES.

All the cities and most of the towns have water works similar in design to those of western countries. In some cases rivers, in others wells form the sources of supply. Wherever necessary treatment is given by storage, filtration, or by chlorine treatment according to needs of the case—slow sand filtration is the treatment most used.

The water works law requires that there shall be periodical testing of the quality of the water by both chemical and bacteriological methods.

The Tokyo water works—which were the ones visited by the Exchange—consist of a catchment area, an impounding reservoir, three sets of filters, pumping apparatus and a delivery system of pipes.

The catchment area which is the basin of the river Tarun is partly under forest, partly cleared. It is ultimately intended that an area of 120,000 acres shall be under forest. Between 1910 and 1920 over 5,000 acres had been afforested. The idea of the forest is to conserve the supply and make it more regular. Registration as a forest reserve assists in the control of the catchment area and the prevention of contamination.

The impounding reservoirs situated some 30 miles from Tokyo and formed by the damming of a valley consist of two lakes one at a higher level than the other. Together they have a capacity of 650 million cubic feet which is sufficient to supply the city with water for fifty days.

The purification works consist of storage basins and slow sand filters. The rate of filtration is 5" per hour. There are three installations, the largest and most modern being that at Yodobashi on the outskirts of the city. At Yodobashi there are four settling basins and twenty-four filters.

The supply to the lower parts of the city is delivered by gravity but that to the higher areas has to be pumped.

Thirteen million five hundred thousand cubic feet of filtered water reach the city daily, a quantity which allows forty gallons per head of population.

Analyses are made daily at the works and at the periphery—and the figures show that a very high standard of purity is maintained. In many of the towns in the hilly regions springs are tapped and water conducted straight to the houses by pipes—no filtration being necessary.

It is curious to find that in the great city of Tokyo with its magnificent water supplies, unprotected earth wells are still permitted in some parts.

It is probable however that this is only temporary and that when the reconstruction of the city is complete, these wells will disappear.

#### SCAVENGING, CONSERVANCY AND SEWERAGE.

The duty of keeping his premises clean falls upon the owner or occupier who has to provide a suitable receptacle for the reception of waste matter. Dirt heaps in direct contact with the ground are not permitted.

The law requires cities, and, where the local Governor so directs, towns and villages to remove and dispose of the waste matters collected. A supplementary provision exempts them for the time being from the duty of collecting and disposal of night-soil and makes the owner and occupier responsible.

With regard to refuse disposal eight cities and three towns have incinerators, five cities and twelve towns burn in the open. Of the remaining corporations some use the refuse for filling in swamps and low lying land while others merely dump it.

All through Japan human excrement is looked upon as a valuable manure and, except in the cities where the amount is an excess of that required for fertilizing the neighbouring land, the farmers are ready to buy it and remove it.

In some cities the municipal authorities do the removal but in others the owner or occupier makes a contract with the local night-soil merchant.

With regard to water carriage of excrement and its ultimate treatment there are many private installations but only 23 cities and towns have put in public installations.

The private plants are for the most part simple septic tanks with or without the addition of aeration beds. Many patterns are in use but provided there is no overdosing all appear to be satisfactory.

#### SEWERAGE.

Sewerage under Japanese law means "drain pipes" sewers and their accessories which are laid with the object of draining the rain-water and foul-water in order to keep the ground clean.

The Home Minister may order a city to construct sewerage—and his sanction must be obtained before a corporation can establish a system.

Where sewerage has been constructed it is the duty of the owner, user or occupier to make provision for draining his land or his premises and to make the necessary connection between his drain and the sewer. In case it is necessary for drainage from land A to pass through land B, use may be made of drains already constructed on B or new drains may be made—but such methods must be employed which will cause least damage. The expenses of the construction and supervision of such drains shall be shared in proportion to the benefits derived therefrom.

As mentioned above throughout the whole of Japan there are only 23 cities and towns equipped with a water carriage system. The reason for this failure to adopt modern methods is stated to be the value of human excrement for manure. The State is however encouraging the general construction of sewers by making grants from the Treasury amounting to one-third of the cost of construction.

#### THE DISPOSAL OF NIGHT-SOIL IN TOKYO.

Until as late as 1918 all contracts for the transportation of night-soil were made between the house-holder and the night-soil farmer. Since that time the city has assumed responsibility.

A large scheme for the sewerage of the whole Tokyo is being executed and 1928 should see its completion. At present only the northern section of the city is complete with sewers, and water carriage for one-fifth of the population has been established.

The disposal works which are situated at the suburb of Mikawashima on the Arakawa river are thoroughly up to date. The sewage in succession passes through:

- (a) A detritus chamber where sand and other heavy detritus is deposited;
- (b) A grate where larger solids are prevented from going further and are removed by a series of rakes working on an endless chain;
- (c) A number of tanks where biological action and sedimentation takes place;
- (d) Contact aeration beds where the solids in solution and suspension are oxidised;
- (e) Final settling beds.

The final effluent, clear and odourless, passes into the river.

Some of the sludge is pumped into barges and carried away but some is used to raise the surface of low lying ground adjacent.

The cost of the plant including the pumping station was Y 4,480,000.

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### CHAPTER IX.

#### VITAL STATISTICS.

##### THE COLLECTION OF STATISTICS IN URBAN AND RURAL DISTRICTS. THE COMPILLATION AT THE STATISTICAL BUREAU. THE STATISTICAL BUREAU OF THE SANITARY BUREAU.

The vital statistics of Japan are probably the most accurate and complete of any in the world. They include data concerning births, still births, marriages, divorces, and deaths.

Records are kept locally by both the police and the head men of cities, towns, villages and rural districts.

Full data are sent monthly by the heads of the cities, towns and villages to the Statistical Bureau where they are compiled.

The Imperial Bureau of Statistics which is connected with the Cabinet and which is the central organ for statistics in general is a very busy institution employing a director, three secretaries, seventeen senior statisticians, seventy-four clerks and two hundred and forty-five calculators. It consists of five departments, viz.: the Secretariat, the international section, the population section, the labour section and the tabulation section.

Counting is done by card punching system. Girls punch cards at the rate of 300 per minute. The cards variously punched are placed in a counting machine which sorts them, counts them and records the counts at the rate of 360 cards per minute.

All the staff appear to work at very high pressure, there being two hourly stretches of work separated by 15 minutes rest. Every kind of graphic formula is employed, columns, squares, circles, clocks, etc., etc.

The following are some of the publications issued:

- The Statistical Year Book of Japan, issued yearly;
- Vital statistics of the Empire of Japan (yearly);
- Description of the vital statistics of the Empire (yearly);
- Résumé of the vital statistics of the Empire (yearly);
- Concise international statistics (yearly);
- Concise labour statistics (yearly);
- The labour statistics journal (every four months).

The non-periodicals concerning hygiene issued include:

- Beri-beri as observed by figures, 1906;
- Analysis of mortality of Japanese subjects resident abroad;
- Local death-rates statistics classified by age;
- Statistics of mortality due to acute infectious diseases;
- Statistics of deaths caused by cancer;
- Statistics of deaths caused by diseases of respiratory organs;
- Statistics of deaths caused by intestinal diseases;
- Statistics of deaths caused by nephritis;
- Statistics of deaths caused by diseases due to conception and delivery.

In the Central Sanitary Bureau there is a statistical department which is concerned with the vital statistics required for the compilation of the Bureau Year Book on health and hygiene.

The census taken on the 1st of October, 1920, showed the population of the Empire to be 76,983,379 of which 55,963,058 were in Japan proper, 17,254,119 were in Chosen (Corea), 3,655,308 in Taiwan (Formosa) and 105,899 in Karafue (Japanese Saghalien). The population is increasing at the rate of 700,000 per year.

The city of Tokyo contains two million inhabitants, Osaka  $1\frac{1}{2}$  million, and Kicto, Nagoya and Yokohama about one-half million each.

The birth-rate is among the highest of all countries being 33.79 per mille population.

The death-rate is high being 21.22 per mille population.

The principal diseases causing deaths, their death-rates and the ration to the total deaths are as follows:

Disease.	Death-rate per mille per year.	Percentage of total deaths.
Diarrhoea and enteritis ...	2.7	12 (70 per cent. of children's deaths)
Pneumonia and bronchitis ...	2.2	10
Cerebral haemorrhage ...	1.83	8.2
Pulmonary tuberculosis ...	1.42	6.3
Meningitis ...	1.22	5.4
Nephritis ...	1.11	5.0
Cancer ...	0.82	3.0
Heart disease ...	0.7	3.0
Acute bronchitis ...	0.33	1.4
Chronic bronchitis ...	0.31	1.3
Beri-beri ...	9.33	1.4
Typhoid fever ...	0.25	1.1

The infantile mortality is 166 per 1,000 births.

The proportion of infant deaths to total deaths is 1 to 3.

## CHAPTER X.

### INFANT WELFARE.

Child welfare is of recent development in Japan and is officially fostered by the Bureau of Social Affairs of the Home Office.

Two maternity homes with schools for midwives have been opened under the aegis of the Japanese Red Cross Society and it is proposed to increase the number as opportunity offers.

Arrangements have been made for trained midwives to visit free of charge women who are too poor to pay for their services.

In 1923 there were 18 welfare centres and the number has considerably increased.

There are few public orphanages but the State gives relief to needy children. Religious bodies: Buddhist, Christian, and others maintain 138 orphanages.

The high death-rate among infants is causing much concern and it is likely that in the near future maternity and infant welfare work will receive greatly increased attention.

## SCHOOL HYGIENE AND PHYSICAL EDUCATION.

The department for school hygiene is under the jurisdiction of the Minister of Education and is divided into four divisions called, respectively :

The division for medical affairs.

The division for the hygiene instruction.

The division for physical training.

The division for general affairs.

The division for medical affairs deals with sites, buildings and furniture, with the prevention and treatment of disease, and with questions connected with nutrition and drinking water.

The division for hygiene instruction is concerned with hygiene instruction, with physical examination to detect abnormalities, and with the supervision of children abnormal either physically or mentally.

The division for physical training deals with gymnastics, physical exercises and games, and with the development of weak children.

The division for general affairs deals with the collection and co-ordination of statistics and with all business which does not come under the purview of the other three divisions.

School sites are very carefully selected being often on high ground where the buildings may form a feature of the landscape. School buildings both as regards their actual siting and their architecture and their furniture are in general accordance with western ideas. Standards have been laid down for lighting, air space, area for desks, etc., etc., and these standards are not inferior to those in use in the occident.

Attached to the educational section in each prefecture there is a medical officer of hygiene of the Sonin rank who has general supervision over all questions of school hygiene including physical education.

According to the law every district having a population of 50,000 must have a school physician whose duty it is to visit the school twice a month, inspect the general sanitary arrangements, detect ailments or physical deformities among the children, direct physical training and generally to co-operate with the teachers in their endeavour to promote the health of the children. In some districts there are in addition school nurses who assist in attending to the needs of the scholars. Many of the larger schools have visiting dentists and oculists.

Out of the 24,442 schools in the country 19,906 are regularly attended by school physicians.

Every April each of the students and scholars in the universities, colleges, public schools and private schools undergoes a physical examination conducted by the physician responsible. From the results obtained statistics are prepared and published.

Special schools have been established for those who are mentally or physically defective. There are schools for the blind, the deaf and dumb, for tuberculosis children, for weak children and for those who are mentally defective.

In order to prevent undue physical and mental strain lessons and physical exercises are interposed systematically so that the child may be properly developed both in body and in mind.

Punishment is as light as possible and corporal punishment is prohibited.

Physical training for boys includes Swedish drill, gymnastics, fencing and judo. Field sports and games are encouraged. Physical training for girls includes dancing, gymnastics, tennis, basket ball and field sports. Summer vacation camps are arranged at the seaside, in the mountains and in the forests.

The Physical Research Institute which was established recently deals with scientific investigation of and research into physical education including gymnastics and sports.

Physical training is not confined to schools and the education department is co-operating actively with voluntary associations for the advancement of sport. All over the country one sees evidence of a keen interest in physical development and in the promotion of sport. There can be no doubt that the time is rapidly approaching, if it has not already arrived, when the Japanese will compete on equal terms with the best athletes and with the best teams of the occident.

Every year a national athletic meeting takes place at the Meije Shrine, Tokyo, where the champions from each prefecture meet in final competition.

MEDICAL INSTITUTIONS AND ARRANGEMENTS FOR THE CURE OF DISEASE.

The Medical Institutions of Japan may be divided into:

- (a) General hospitals for the treatment of general diseases with limited accommodation for infectious cases, venereal diseases and mental diseases.
- (b) Special hospitals for the treatment of tuberculosis, of leprosy, of mental diseases.
- (c) Hospitals for infectious diseases.
- (d) Hospitals for venereal diseases.

The general hospitals come under one or other of the following four categories:

- (1) Those under State management—viz.: asylums for disabled soldiers, and those in connection with the Imperial Universities and Government Medical Colleges.
- (2) Those under the management of public bodies—viz.: municipal charity hospitals and departments for free medical treatment at prefectural and district hospitals and at public medical colleges.
- (3) Those under semi-official management—viz.: those of the Saiseikai or charity association, the Japan Red Cross.
- (4) Those under private management—viz.: those managed by charitable associations, religious bodies, wealthy industrial companies, physicians' associations, medical societies, etc., etc.

In the Annual Report of the Sanitary Bureau of the Home Department for the year 1924—a distinction is made between public hospitals and charity hospitals and it is not clear what comes under the definition of the one and what under that of the other.

*Public hospitals.*—At the end of 1924 there were 74 general hospitals and one mental hospital and the total number of beds were 7,145 for general diseases, 443 for infectious diseases, 162 for tuberculosis and 347 for mental cases.

*Private hospitals.*—The total number of private hospitals at the end of 1924 was 1,565, there being altogether 25,211 beds for general cases, 2,405 beds for mental cases, 1,118 beds for tuberculosis cases and 822 beds for infectious cases.

*Charity hospitals.*—The total number of public and private charity hospitals was 43 and the number of beds were for general cases 1,496, for tuberculosis 1,812, for mental cases 755 and for infectious cases 2,241.

*Municipal tuberculosis sanatoria.*—At the end of 1924—eight sanatoria had been established with a total accommodation for 1,620.

*Infectious diseases hospitals and isolation wards.*—The total number of infectious disease hospitals was 1,470 and the number of isolation wards was 7,823. The total number of beds for infectious diseases was 27,808 in the isolation hospitals and 72,170 in the isolation wards.

*Prefectural leper asylums.*—There are five prefectural leper asylums with a total accommodation for 2,080 patients.

*Hospitals for prostitutes.*—At the end of 1924 the total number of hospitals for prostitutes was 162 and the total number of beds 5,277.

The hospitals vary in character both as regards fabric and equipment from simple unpretentious buildings to magnificent structures built on the latest western plans and equipped with the most modern instruments and appliances.

As a rule the ventilation in the wards is not so good as that of hospitals in England and America and the temperature maintained is higher.

The custom of allowing the patients friends to remain in the wards appears to make it difficult to obtain that discipline and orderliness which is western lands is necessary for attainment of the best results. However different races require different treatment and it is probable that the custom in vogue is that which has proved the best for local conditions.

Practically every hospital has an up-to-date X-Ray apparatus and every hospital has a laboratory for conducting bio-chemical examinations. Restrictions against the use of animals for inoculation purposes are not so stringent in Japan as in England and diagnoses through animal reactions are much more common.

A notable feature of a Japanese hospital is the strength of the medical and surgical staff which is at least double that deemed sufficient for similar institutions in the occident.

## CHAPTER XI.

## TUBERCULOSIS.

1. Tuberculosis ranks first as the cause of death in Japan. In all its forms it caused during the years 1915 to 1920 an average death-rate of 2.3 per 1,000 for the whole country and 3.6 per 100 for the cities exceeding 50,000 in population.

2. The average death-rate in a number of villages taken at random was 1.5 showing that here as in other countries whose statistics are known tuberculosis is more prevalent in urban than in rural areas.

3. The principal forms of the disease are pulmonary and intestinal the former being to the latter (as judged by deaths) in the proportion of 3 to 1.

4. Intestinal tuberculosis may be classed as a disease of infants and young children while pulmonary tuberculosis is more a disease of adolescents and adults the death-rate curve being highest for the ages 15 to 25.

5. The law for the prevention of tuberculosis which deals only with the pulmonary and laryngeal forms was enacted in 1919. Under its provision is made for both prevention and cure.

6. Under prevention rules are laid down for the patient, the doctor attending him and the authority of the district in which he resides. Notification is not compulsory.

7. The physician attending must instruct his patient regarding precautions and disinfection and the patient must carry out such instructions.

8. The administrative authorities may make regulations regarding the conduct of the tuberculous persons and generally for the prevention of disease.

9. Regulations have been made regarding light and ventilation in buildings, the prevention of spitting, the prevention of tuberculous persons engaging in certain trades, the periodical disinfection of premises occupied by consumptives.

10. Every town of 50,000 inhabitants or over must build a sanatorium—Grants-in-aid from one-sixth to one-half of the total may be made by the local authorities, and grants may be made for upkeep.

11. In the general hospitals it is prohibited to have consumptives and others occupying the same wards

## CHAPTER XII.

## LEPROSY.

It is estimated that there are over 16,000 lepers in Japan or one for every 4,000 inhabitants.

The number of lepers in Japan as evidenced by the investigations of the Home Department were as follows:

Year.	Male.	Female.	Total.
1906	16,607	7,208	23,815
1916	11,669	4,592	16,261

Until 1907 when the law for the prevention of leprosy was promulgated there were no Government leper hospitals and sufferers from this disease wandered from place to place trying to get a living and incidentally spreading infection. The figures obtained from the examination of conscripts show that between 1899 when the rate was 1.28 lepers per 1,000 examined and 1906 when the rate was 1.24 there was no appreciable diminution in the numbers. The rate for 1905 was 1.37. In 1908 the rate was 1.11 and in 1921 it had fallen to 0.59.

It is plain from the above that the incidence rate is decreasing.  
Under the law of 1907 :

- (a) Leprosy was made notifiable, the onus of notifying being on the physician treating the case.
- (b) The physician attending was obliged to give advice to the patient and his family concerning methods and the means to be employed—disinfection.
- (c) A leper who had no means of treatment and no one to relieve him had to enter a leper hospital.
- (d) Arrangements were made for prefectures to combine for the purpose of erecting hospitals.
- (e) Arrangements were made for the Treasury to furnish grants-in-aid up to half of the cost of erecting and furnishing hospitals also to give financial aid to private institutions.
- (f) The local authority was obliged to render financial aid to needy lepers who could be maintained in their own homes not only for the needs of the leper himself but for his family also.

Later regulations included :

- (1) Detailed instructions concerning home isolation and home precautions.
- (2) Prohibition regarding eating-houses, inns, public conveyances and public gatherings.
- (3) Prohibition regarding certain trades.

The country was divided into five districts in each of which a leprosorium was established.

The following table shows the accommodation provided :

Location.	Capacity.
Tokyo Prefecture ... ..	750 beds
Aomori ,, ... ..	160 ,,
Osaka ,, ... ..	400 ,,
Kagawa ,, ... ..	270 ,,
Kamamoto ,, ... ..	500 ,,
Total ... ..	2,080 ,,

Besides the above there are private hospitals established by Japanese and foreign missionaries which have accommodation for 308 altogether.

According to the official brown book issued to the "Interchange" the number of lepers in 1919 was 16,261 of which 10,000 required relief. The Annual Report of the Sanitary Bureau of 1923 states that at the end of that year the number of patients in the various asylums totalled 1,633. From the above it will be seen that the number of lepers outside the asylums exceeded those inside by about ten to one.

"The Government recognises the necessity of bringing the well-to-do patients to a certain fixed region within the limits of which they will be allowed to wander freely, thus enabling them to spend the rest of their lives in tranquility and at the same time preventing the spread of disease. No plan however has so far been adopted."

As the scheme has not gone beyond the stage of recognition and as the number of lepers outside the lepratoria is nine times greater than the number segregated therein the steady decline in the incidence rate cannot be due to the institutional segregation alone but to other causes also. Probably home segregation is an important factor. Among cultured people like the Japanese where every adult can read and write the chances of getting proper precautions taken in the homes is of course much greater than would be the case in a polyglot country like Malaya where education is not so far advanced and where it is infinitely more difficult to spread effective propaganda.

Speaking of Corea—which is now under Japanese administration, Professor Shiga gave it as his opinion that in a country where there are thousands of lepers, life-long incarceration is not only impracticable but against humanitarian sentiment. He believes the hope for eradication of leprosy lies in propaganda impressing on the populace not only the infectiousness of the disease but hopefulness of cure or at least cure to such an extent as removes the fear of further infection.

The aim should be to put hope into the leper so that he will voluntarily seek treatment early.

## THE ZENSEI BYOIN—TOKYO.

The Zensei Byoin some 20 miles from Tokyo is the Government Leper Asylum which the members of the interchange visited.

The asylum stands in its own grounds of 46 acres. It is surrounded by a fence which is easily climbable. No police or guards were in evidence. A patient who is not a pauper can leave the asylum. There are 721 patients of which 185 are females. Non-lepers are not allowed to reside in the institution so that a wife leaves her husband and a husband his wife when she or he enters the institution.

Marriage between lepers is allowed—sterilization by vasectomy is practised by request. The operation, which is a bloodless one and finished in twenty minutes, sterilizes the male without interfering with his sexual desires or his power of copulation. Up to date 80 have submitted to the operation.

Any children born on the premises are left with the parents for one year and then boarded out. The Director stated that the foetus is not infected in utero and that the child probably receives or develops a considerable immunity. For all that the Director considers that the baby should not be left with the mother.

There have only been 30 births in 17 years. The idea prevalent is to entice lepers into voluntary segregation in the institute by making it so attractive that the patient shall find himself more comfortable inside than outside. Paupers are forced to enter, the others come by choice.

The grounds which are 46 acres in extent are divided into the "non-infected" area occupied by offices and residences for the staff and the "infected" area in which are the wards, the clinics, the meeting house, library, amusement hall, bath houses, the recreation grounds and the gardens. The offices and residences of the staff require no comment.

The sick wards and living quarters of the lepers which are built by the patients themselves are simple unpretentious wooden buildings with adequate lighting and ventilation. Like most Japanese houses they are kept scrupulously clean. There are houses for the unattached males, for unattached females and for the married. Each ward is divided into rooms sufficient for the accommodation of four to eight persons. Each married couple has a room to themselves.

For the first two weeks the patients occupy an observation ward after which they are distributed. The hospital has an up-to-date X-Ray room, a good operating theatre and a well-equipped laboratory.

*Treatment.*—The treatment most in favour is hypodermic injections of pure "Chaulmoogra oil" derived from *Hypnocarpus Antermintica*. This oil is administered three times a week in doses of 2-6 grammes the amount varying with the individual.

According to the Director "When the patient has been given 30 injections, the nostrils, hitherto clogged, will be open, breathing becomes easy, and there are signs that the ulcers in the nose are healing and the swellings are disappearing". Lepa bacilli gradually disappear and patients in different stages show in some cases enormous improvement. "But even though the lepra bacilli have almost entirely disappeared from the skin, we have experience of cases in which after periods of from five to ten years bacillus of leper disease again has broken forth, many nodules again appearing and the chaulmoogra oil injections have henceforth become ineffective".

Ethyle esters have not been found to be superior to chaulmoogra oil—and the thymol treatment has been without result.

## DAILY LIFE OF THE PATIENTS.

The forenoons are spent in treatments and the afternoons in work and recreation.

Work is paid for at different rates varying from 3-20 sen per day. The coinage is distinctive. The farm produces almost sufficient to feed the whole population.

There is a school for the young.

## RECREATION.

In the big hall there are entertainments. Once a week there is a cinematograph show. Three times a year the patients produce a play. There are radio sets and gramophones.

There is a well-stocked library and in connection with it is a publication called "Yamasakura" (Wild Cherry) to which the patients contribute.

There are several tennis courts. The standard of play is much above what one would expect.

## COST.

Including salaries of staff, food, treatment, repairs, etc., etc., the cost works out at 79 sen per patient per day.

## CHAPTER XIII.

## VENEREAL DISEASES CONTROL.

According to Doctor T. Satow, the first case of syphilis recorded in Japan occurred in 1512, the patient being one who had contracted the disease in China or the Loochoo Island where it was known as the Loochoo pox. Fifty years later, a physician published an article concerning the diagnosis and treatment of bubo and syphilis.

Courtesans existed from early times. It is said that under the Ashikaga Military Government (1336-1573) a distinction was first made between licensed and secret prostitutes.

At the beginning of the Tokugawa Military Government, 1615, the authorities caused all women of easy virtue in Yedo the capital to remove to Yoshiwara. This was the beginning of the practise to confine licensed prostitutes to certain areas.

In 1872 prostitutes were freed from bondage, but were prohibited from living in their employers' premises. In 1881 the Metropolitan Police Board required prostitutes in Tokyo to live in special licensed premises and this practice has spread throughout the country.

In Japan venereal disease is looked upon chiefly as an infectious disease which is causing an immense amount of harm physically to the nation. The religious factor which looms so large in the eyes of certain occidental nations is not here deemed to be so important as to warrant interference with the physical means advocated by physicians for the prevention and eradication of disease.

Prostitution is looked upon as a dangerous trade therefore the premises are licensed and those engaged therein are subject to medical examination and to strict control. For convenience of control the houses or brothels are congregated in certain areas.

A person who wishes to take up the profession must present herself at the Police Office and hand in a written statement containing the following particulars:

- (1) Reasons for becoming a prostitute.
- (2) Date of birth—the minimum qualifying age is 18 years.
- (3) That she has obtained the consent of her nearest relative.
- (4) Her place of residence after becoming a prostitute.
- (5) If she has previously been a prostitute, her previous history and her reasons for abandoning the trade.

Before getting a licence the candidate must pass a medical examination.

Once licensed the prostitute comes under strict police control and has to undergo health examinations according to the prefecture ordinances and to enter hospital when diseased. Article 12 of the Ordinance states, "No person whatever shall obstruct a licensed prostitute in her communication, meeting others, reading of her letters, and possession and purchase of things, and her freedom in other matters."

Article 6 states—with respect to applications for erasure from the licensed prostitutes list no person whatever shall be permitted to make any obstruction.

There were at the end of 1923 licensed quarters 539, licensed prostitutes 48,323, lock hospitals and similar institutions 237 containing altogether 5,001 beds.

The control of "secret prostitutes" is also provided for in law—A "confirmed" secret prostitute has her name entered on a list.

In addition to the control of prostitutes the arrangement for the prevention of venereal diseases include:

- (1) propaganda concerning the nature of venereal diseases and advice concerning prevention and cure;
- (2) free examination, free advice and free treatment for those who cannot afford to pay. The sero-diagnosis of syphilis is given on application.

Propaganda includes popular lectures, cinematograph shows and the distribution of leaflets and pamphlets. In some of the cities there are museums containing wax models which faithfully portray the physical signs of disease in its various stages.

Venereal disease is not yet notifiable and therefore exact figures are not available. The medical examinations carried out yearly in connection with conscription give figures which form a useful basis for calculation and allow of conclusions as to the rise or fall of venereal disease throughout the country. The conscription statistics indicate that "Venereal Diseases seem to be on the decline in recent years". The figures given show that the rate per 1,000 for venereal diseases has dropped from 26.57 in 1923 to 15.23 in 1924.

## CHAPTER XIV.

## MENTAL DISEASES.

The guardian, husband or wife, a relative by blood to the fourth degree or the head of the house of an insane person is under obligation to take custody of such person—and except with the permission of the authorities no persons other than those named may have custody of a lunatic. Where there is no person under legal obligation or where the conditions are unsuitable the head of the city, town or village may appoint a person or persons to take charge of a lunatic according to the provisions of the law.

Application to keep or place a lunatic in custody must be made within 24 hours through the police to the local Governor. The police can give permission for temporary confinement. Each application must be accompanied by a physician's certificate.

No room for confinement in a private house, a public or private asylum or public or private hospital may be used, without the permission of the administrative authorities. The provisions relative to structure, accommodation and management are laid down by ordinance.

The Minister for Home Affairs may order an asylum for the insane to be established in any prefecture. The national treasury may prescribe half the expenses of the establishment of an asylum and one-sixth of the expenses of its upkeep.

Any person who thinks his rights have been infringed by unlawful measures may complain to the Court of Administrative Legislation.

The expenses of an inmate of an asylum are chargeable to the guardian, husband or wife or relative by blood up to the fourth degree and the head of the house. Where they cannot be recovered from the above the charges are borne by the local authority.

In conformity with modern custom all lunatic asylums are now called mental hospitals.

## THE MATSUZAWA MENTAL HOSPITAL.

The Matsuzawa hospital near Tokyo was the one visited by the Interchange. This institution which has accommodation for 750 is provided with all modern requirements for the treatment of mental disorders.

The medical staff consists of a superintendent, two chief physicians and eight physicians. There are 190 nurses and attendants.

The hospital which is built on the pavilion system stands in its own grounds of 200 acres the buildings themselves occupying 20 acres. The extensive grounds include park land, farm land and gardens.

The administration building includes laboratories of pathology, experimental psychology and serological chemistry, also a library and museum.

The wards (each of which has accommodation for 30-50 beds) are divided into four groups. There is one nurse or attendant for every five patients.

The accommodation is graded according to the amount paid. Four classes are provided—special class at 6 yen per day, first class at 4 yen, second class at 1½ yen and third class at .98 cents. The chief difference between the accommodation provided for each class appears to be the amount of space allowed each patient. Special class cases have a separate room each.

Treatment includes re-education and occupational therapy. There are also treatments by drugs and by physical means.

The statistics published show that at the end of 1923 there were 9,078 insane persons in confinement. Besides these there were 43,406 "publicly known to be insane" who did not require to be confined. According to Professor Miyake only one-tenth of the total number of insane are confined in public institutions. Lunacy appears to be on the increase in Japan. The rate has gradually risen from 6.96 per 10,000 population in 1914 to 8.99 in 1923.

## CHAPTER XV.

## BERI-BERI.

Beri-beri is a disease which has long been known in Japan. In former times its ravages especially in the navy and army and in the prisons caused great concern to the authorities.

From 1878 to 1883 the navy suffered severely, there being from 230 to 390 cases per 1,000 sailors. Dr. Takaki the head of the naval medical service formulated the theory that the disease was due to faulty diet and in 1883 he brought about a change whereby more nutritious diets were issued. In 1884 general regulations regarding diets were laid down and in 1886 the combined rice and barley diet was generally adopted.

In 1884 the number of cases were reduced to 127.4 per 1,000 and in 1885 the rate had fallen to 5.9 and 1886 to 0.4, a most remarkable drop. From that time the incidence of the disease has remained low. There has been some increase in late years but the incidence rate in 1923 was only 2.40 per 1,000.

In 1891 the army followed suit and the soldiers' diet was changed to a mixture of barley and rice. The results were good though not so striking as was the case in the navy. With regard to the general population the incidence rate has never been known, but from the death-rate which was 0.09 per 1,000 in 1912, 0.42 in 1918, 0.40 in 1921, it is obvious that during this period there was an increase.

Great interest has been and is being taken by the medical profession in the investigation of the beri-beri problem. At the Congress of the Far Eastern Association of Tropical Medicine held at Tokyo last autumn 18 Japanese members put up papers on the subject.

Every effort is being made to reduce both incidence and deaths. The education of the public by popular lectures, by demonstrations, by propaganda in the papers and in the cinematograph halls, is actively being carried out. Prominent in this work are the staff of the Imperial Institute for the study of nutrition. From this institution articles are sent to the press explaining why care is necessary in the preparation of menus, and model menus are from time to time published. Posters showing model menus are exhibited in the food shops. The object is to keep the populace healthy by advertising diets which are cheap but which contain all the elements necessary for health. Dr. Saiki, the Director of this institute, is one of the foremost dieticians of the world.

The view held by most Japanese experts is that the disease is due to lack of vitamins in the diet the basis of which is rice deprived of its vitamins containing layer.

As polished rice is more attractive, more palatable and more assimilable than the unpolished variety and as the necessary vitamins can readily be obtained from other foods, propaganda is being directed towards persuading the populace to take their vitamins in accessory foods and no attempt is being made to stop the use of polished rice.

As the Japanese working man wants polished rice and will have it, and as there is no logical reason why he should not have it as part of his diet the medical fraternity are wise in approaching the beri-beri problem from the other side—viz.: the provision of the necessary vitamins in other articles of diet.

## CHAPTER XVI.

## INFECTIOUS DISEASES OF THE ALIMENTARY SYSTEM AND THEIR INVESTIGATION AT OMYA.

The custom prevalent in Japan of using untreated human excrement as a fertilizer for farms and vegetable gardens greatly predisposes to the spread of those diseases whose causative organisms have a habitat in the human alimentary system.

The diseases belonging to this category include cholera, typhoid, paratyphoid, dysentery, diarrhoea, and the pathogenic conditions produced by certain parasites, worms and flukes.

In the case of the germ diseases where the causative agent exists in the faeces in a form which is infective to the human the medium of spread is contaminated food or drink. Examinations of market vegetables have proved that they may be contaminated by either pathogens or the eggs of intestinal worms.

The custom of working bare-footed and bare-legged in the fields conduces to the spread of ankylostomiasis. The habit of eating raw fish and crabs which are the intermediate hosts of flukes assists in the spread of flukes disease.

The degree of infection has been a source of anxiety to the authorities for years. Efforts are being made to discover some means whereby the valuable manurial properties of human excrement may be made available without risk of the spread of disease.

The stool examination of 17,000 villagers showed that out of every hundred

69.6 had ascaries.

56.2 ,, trichocephalus disper.

28.5 ,, ankylostomes.

3.4 ,, triche strongylus orientalis.

1.1 ,, clonorchis sinensis.

0.7 ,, metagonimus zokogawi.

0.2 ,, paragonimus westermanni.

Writing on the subject of intestinal diseases Doctors Takane, Katsumata and Naite, Medical Officers of the Sanitary Bureau of the Department of Home Affairs, state:

- "A. Infectious diseases of the digestive organs are not as yet effectually suppressed. Typhoid fever is on the increase, so it is inferred that there is a considerable number of mild patients or bacilliary carriers and the pit in every household must be attended with precaution. It is a phenomenon deserving attention that in Japan the incidence of typhoid and dysentery occur just alike in cities and rural districts.
- B. As to the parasites the majority of Japanese people are sufferers from them, so that the pit in almost every household may be considered to contain parasite eggs of some kind or other.
- C. So long as the farmer uses excreta as a fertiliser these will continue (unless some means be found to break the sequence) the endless cycle of infectious diseases—viz., from farm to human being and from human being to privy. The most urgent problem requiring solution is at what stage the cycle may be broken. Once spread on the fields the subsequent processes cannot be checked. It is impossible to prevent the rural population from touching the soil and it is impracticable to boil or disinfect all vegetables before eating."

The only chance is to deal with the privy and its contents. To store the contents of each privy long enough to allow auto-disinfection is one good device but it is a most difficult thing to put in practice.

In Omya a small town some twenty miles from Tokyo and in the midst of an agricultural area there has been established a "field laboratory" for determining the infectivity of faecal matter under different conditions. Here trials are being made of different processes in an endeavour to evolve a practical solution of the night-soil danger.

Pathogens may be destroyed by heat or chemicals but neither of these methods can be called practical when dealing with night-soil intended for manuring fields and which is collected and distributed by persons who are not scientists. City and town authorities could collect and disinfect night-soil before handing it over to the farmer but the chances of the individual house-holder carrying out the process satisfactorily are too remote for serious consideration.

The process that appears to offer a possible solution is that called "septic decomposition" in which after a shorter or longer period, according to the temperature, pathogens disappear and eggs become sterile probably as a result of the action of non-pathogenic bacteria. This process is the same as that which goes on in any septic tank used for the digestion of sewage.

In Omya it has been found that during the summer months the process is so active that all pathogenic bacteria and all eggs are dead in a few weeks. In the winter however both may remain alive for months. It is hoped to devise a simple septic tank privy where there will be an assurance that the liquor drawn off has been under digestion for months and thus free from disease germs and eggs. Up to date however such a perfect latrine has not been invented.

## CHAPTER XVII.

## PROTOZIAL DISEASES.

The protozual diseases of Japan include:

- (a) The spirochaetoses of syphilis, icterus haemorrhagica, and rat-bite fever.
- (b) Amoebic dysentery.
- (c) Malaria.

## SYPHILIS.

There is nothing about the syphilis of Japan which calls for comment. The problem here is the same as in most other civilised countries.

## ICTERUS HAEMORRHAGICA.

Icterus haemorrhagica or Weils disease occurs chiefly in Fukuoka, Toyama and Chiba Prefectures. Doctor Quada and the late Dr. Ido of Kyushu Imperial University discovered the causative agent to be a spirochaete. Investigations are being carried out at the Kitasato Institute and the Government Institute for Infectious Disease.

## RAT-BITE FEVER.

Rat-bite fever is known in Japan where in 1915 Drs. Futaki and Ishiwara of the Tokyo University reported that the causative agent of the disease is a species of spirochaete.

## RELAPSING FEVER.

Relapsing fever occurs. The mode of infection and the identification of the causative organism are now being studied at the Kitasato Institute, Tokyo.

## AMOEBIC DYSENTERY.

Dysentery is a fairly common disease in Japan but how much is caused by amoebae and how much by bacilli is not shown in the statistics published by the Sanitary Bureau.

## MALARIA.

Benign tertian malaria is scattered through the country and occurs principally in low-lying damp districts where the conditions favour the propagation of anopheles sinensis the carrier in this country. It occurs in the summer.

Quartan malaria is found in the Okwawa Prefecture.

Subtertian malaria is very rare.

## PROMULGATION OF KNOWLEDGE OF HYGIENE.

The Central Sanitary Bureau with the advice and assistance of the "Board for the Investigation of National Hygiene" has devoted much attention to hygiene propaganda.

The means for the promulgation of knowledge include—exhibitions, lectures, cinematograph shows, the distribution of pamphlets, the compilation of a simple hygiene reader and the posting of bills and placards in public places.

In certain cities the Municipal Health Departments have established permanent museums which are open to the public and where pictures, models, wax figures, etc., etc., are arranged in such fashion that the most ignorant can understand the lessons intended to be conveyed.

The authorities are assisted in their efforts by such voluntary bodies as the "Japanese Public Health Association" and many local societies. The former which has a membership of 100,000 publishes a monthly journal and arranges for lectures and demonstrations.

Over two million copies of pamphlets in simple languages have been distributed. Cinematograph films on 17 subjects of public health interest have been prepared by Government and these are lent to district, town and village authorities for public exhibition.

As every Japanese adult can read, the power of the press in spreading knowledge among the masses is as great as it is in western countries and the authorities make full use of this medium in their propaganda campaign.

PART III.

CHOSEN (KOREA).

- Chapter I.—Programme and itinerary.
- .. II.—Position and climate.
- .. III.—Political development under Japanese influence.
- .. IV.—Development of education, of communications, of agriculture and of industries.
- .. V.—Measures taken for the promotion of hygiene:
- (a) Organisation, central and prefectural.
  - (b) Medical institutions and arrangements for the cure of disease.
  - (c) Medical education.
- .. VI.—Towns, town sanitation and town improvement. Water supplies, scavenging and night-soil collection, control of markets and slaughter houses.
- .. VII.—The cattle raising industry, cattle quarantine and the Government Institute for Research in Animal Diseases.
- .. VIII.—Infectious disease and its prevention.
- .. IX.—Leprosy and the effort made for its eradication.



## CHAPTER I.

## PROGRAMME AND ITINERARY IN CHOSEN.

## Sunday, November 22.—

- 9.00 a.m. ... Arrive in Fusan.  
 9.30 .. ... Visit the Institute for the Study of Cattle Diseases.  
 10.30 .. ... Visit typical native houses where the system of central heating called "indolm" can be seen.  
 11.00 .. ... Visit the commercial museum.  
 12.30 p.m. ... Lunch given by Mr. Hashii, President of the Chamber of Commerce.  
 2.00 .. ... Visit the cattle quarantine station.  
 3.00 .. ... Visit the Leper Settlement of the Australian Methodist Mission.  
 6.00 .. ... Dinner by Governor Wada.  
 8.00 .. ... Leave Fusan by train.

## Monday 23rd.—

- 7.45 a.m. ... Arrive at Keijo (Seoul).  
 Forenoon free.  
 1.45 p.m. ... Nanzan Park.  
 2.00 .. ... Shokei-in Garden, and East Palace.  
 2.30 .. ... Keifukukyu Museum and North Palace.  
 3.30 .. ... Saisei-in Hospital and Charity Asylum.  
 7.00 .. ... Dinner at the Residence of the Governor-General.

## Tuesday 24th—

- 9.00 a.m. ... Medical College (Imperial University of Keijo).  
 9.30 .. ... Higher Technical College and Industrial Central Laboratory.  
 10.00 .. ... Government Hospital.  
 12.00 noon ... Lunch given by Professor Shiga.  
 3 30 .. ... Severance Hospital and Medical School (American Mission).  
 2.00 p.m. ... Jusodo Public School and in contrast a Korean private school.  
 6.30 .. ... Dinner by the Mayor of Keijo.  
 7.30 .. ... Moving pictures showing scenes portraying the industries of the country.

## Wednesday 25th—

- 9.00 a.m. ... Bacteriological Institute.  
 10.00 .. ... Lecture on the Health Conditions of Korea. Meeting for comment and exchange of views.  
 3.30 p.m. ... Tea given by the International Friendly Association.  
 10.55 .. ... Leave for Heijo.

## Thursday 26th—

- 6.00 a.m. ... Arrive at Heijo.  
 9.30 .. ... Government Provincial Hospital.  
 5.55 .. ... Arrive Heijo.  
 9.30 .. ... Government Provincial Hospital (Ping Yang Hospital).  
 10.00 .. ... Heijo middle school.  
 12.30 p.m. ... Tiffin by the Governor of Heison Nando Province.  
 2.30 .. ... Leave by train for Antung (Manchuria).

## CHAPTER II.

## POSITION AND CLIMATE.

Chosen is a peninsula which projects almost directly south from Manchuria towards the western extremity of Japan. It separates the Yellow Sea from the Sea of Japan and has a latitude extending between  $33^{\circ} 6'$  and  $43^{\circ} 36'$  N.

The climate, generally speaking, runs to extremes, spring and autumn are very short seasons—the difference between the night temperature and the day temperature are often very great sometimes reaching 25 degrees in places near the Manchurian frontier.

The rainfall varies from 40 inches in the south to 30 inches in the north. During July and August local downpours are sometimes met with along the western coast when the fall may reach 8" in the 24 hours but such occurrences are exceptional. The seas surrounding Chosen are notorious for their dense fogs especially in June and July, and these fogs extend to the coastal regions—at other seasons of the year the air is dry and the amount of sunshine approaches the maximum.

The area of Chosen is 85,156 square miles or a little less than that of the main island of Japan from which it is distant 12 hours by steamer. Its population is 17,885,000 of which 403,000 are Japanese and 35,000 foreigners, the majority being Chinese.

## CHAPTER III.

## POLITICAL DEVELOPMENT UNDER JAPANESE INFLUENCE.

In 1905 Japan established a protectorate over Korea. A Japanese Resident-General was appointed, a military police force was established and a strict distinction was made between court and Government.

In 1910 the "Treaty of Union peacefully united Japan and Korea." A Government-General was formed and military officer appointed Governor-General. The Korean Royal Family was accorded the treatment due to the Japanese Imperial Family.

In 1919 certain reforms in administration took place and the reins of Government passed from the military to the civil. A system similar to that in vogue in Japan was adopted. A Civilian was appointed Governor-General and the higher administrative posts were mostly filled by members of the Japanese Civil Service. The military police system disappeared and was replaced by the ordinary civil police system. All discriminatory treatment between Japanese and Korean officials was abolished and equal opportunities were accorded to Japanese and Koreans for official appointments. Freedom of meeting, freedom of speech and freedom of publication were granted. The Japanese Civil Service, both higher and lower grades were thrown open to Koreans.

The peninsula was divided into 13 provinces or prefectures and a civil servant (Governor) placed in administrative charge of each. Prefectural councils (18-37 members according to the size of the province) were established as advisory bodies, one-third of the members being appointed by Government the remainder elected by the people.

Advisory Councils were also established for municipalities and villages—municipal councillors being elected, village councillors appointed by the district magistrates.

The Japanese and Korean Civil Services form one body and an officer is liable to be transferred from one to the other. As mentioned above Koreans can and do compete on equal terms in the entrance examinations.

The Court system is much the same as that in Japan there being Courts of Summary Jurisdiction, Appeal Courts and Supreme Courts.

## CHAPTER IV.

## DEVELOPMENT OF EDUCATION, OF COMMUNICATIONS, OF AGRICULTURE, AND OF INDUSTRIES.

*Education.*—Soon after the establishment of the protectorate, the Japanese system of education was adopted and primary schools, middle schools, higher schools, technical schools and medical schools were established. Because of the difference in language it was necessary in the lower grade to have separate schools for Japanese and Koreans. In the higher schools, the technical schools and the medical schools, however, Japanese and Koreans sit side by side under absolutely equal conditions.

The Koreans generally have a gift for languages and many speak Japanese with no trace of accent. When similarly attired it is often almost impossible to distinguish a Japanese from Korean. As a race they are fine in physique and have capable brains but they are indolent people and require rousing to action. This rousing they are getting from the Japanese who are not using physical force but the power of education and example. At first the Koreans kept aloof and refused to accept the advantages offered them by an alien race but that feeling seems to have passed away and to-day they are flocking to the schools and colleges.

There are primary schools 1,585, secondary schools 60, technical schools for industrial education 65, schools for professional education 8, schools for normal education 14 and lastly the Keijo Imperial University.

All these centres for learning are in western style, well-built, well-equipped, well-staffed and what is most important well-attended. The system is the same as that in Japan and equally high in standard. There can be no doubt that in the near future this spread of education will have a powerful influence on the Korean people and through them on the development of the country.

#### DEVELOPMENT OF COMMUNICATION.

As the opening up and development of a country depends primarily on the establishment of lines of and facilities for communication the Japanese have paid special attention to this subject. The following table shows what progress has been made:

	No. of miles existing in 1910 at date of union.	No. of miles existence at end of 1923.	Increase.
Government Railways ...	170	1,187	12 times
Private Railways ...	6	334	53 ..
Roads ... ..	690	9,650	14 ..

The Chosen Government Railway at present being operated by the South Manchurian Railway Company forms an important link in the Trans-continental route between Japan and Europe. The rails, the locomotives and the carriages are all American and, except for the Japanese lettering, are indistinguishable from those crossing Canada or America. Fares are cheap and the trains are well-patronised.

Ports have also been greatly improved, the harbour works at Fusan being especially worthy of notice.

#### DEVELOPMENT OF AGRICULTURE AND OTHER INDUSTRIES.

Agriculture is the most important industry in Chosen, about 80 per cent. of the population being engaged in it. In the old days under the Korean Government agriculture was in a very backward condition. After the union it rapidly developed and in 12 years it had increased five-fold in value of products. The area under cultivation in 1910 was 6,000,000 acres, in 1923 it was 10,500,000 acres. There is still much arable land awaiting development.

The Japanese are doing all that is possible to encourage scientific farming and to a certain extent the Koreans are responding. They will respond much more rapidly when the young men now at the agricultural schools graduate and carry the knowledge they will have accumulated to their own homes there to put it into practice. The principal agricultural products are rice, barley and soya bean.

The chief manures used are human night-soil and bean cake. Because of the risk of spreading human disease experiments are being made to find a cheap way of sterilizing faeces. So far the results have not been encouraging.

The country has been greatly denuded of forest by the people cutting down the trees for winter fuel and never dreaming of engaging in replanting. As far as the eye can see as the train passes through the country there is no sign of old forest but there are plenty of signs of new forest, for the Japanese have been very active in their campaign for afforestation.

The growing of gin seng, a plant reputed to have medicinal properties of high value, is a Government monopoly as also is the manufacture of its extract.

The other industries fishing, mining, and manufacturing are showing signs of increase. The only hope for manufactures in this country is the establishment of cheap power such as hydro-electric.

## CHAPTER V.

## MEASURES FOR THE PROMOTION OF HYGIENE.

Sanitary administration in Chosen is in principle the same as that in Japan. At the Police Bureau of the Government-General there is a sanitary section staffed with secretaries, technical experts, assistants and clerks—and attached to it are hygienic and bacteriological laboratories. For the conduct of local sanitation each provincial Police Department has a sanitary section with similar laboratories attached to it. Under the supervision of the provincial office, police stations, municipalities and rural districts manage sanitary affairs within their respective spheres of jurisdiction.

In all the important seaports are quarantine stations each with an adequate staff of medical officers and assistants. These are in close connection with the police stations in these ports.

Until the country came under Japanese influence there was practically no sanitation, and the only medical relief was from the few Japanese and missionary doctors then in the country. The death-rate was high. The only hospital in existence was the Taikan Hospital at Keijo which was established in 1900. This hospital under Japanese protection was greatly enlarged, and charity hospitals were established in a few other towns.

Soon after the union the Keijo Hospital was further enlarged and hospitals were erected in each province. The Keijo Hospital has received further extension until to-day it has 350 beds and a large out-patient department. This hospital caters for both paying and charity patients. Out-patients, paying and free, number 400 to 800 per day.

There are departments for ordinary medicine and surgery, for ophthalmology, lunatology, physchology, gynaecology and obstetrics, for radiology and electrical treatment, rhinology and langugology and otology and for dentistry. There are also laboratories well-equipped for bacteriology and bio-chemistry.

There are over 140 nurses in the hospital and there are 140 nurses and midwives undergoing training. At present there are 27 Government Hospitals in Chosen and by the end of next year there will be 40.

Two hundred and twenty-eight Government doctors are engaged in preventive and curative medicine, in teaching and in research. There are travelling doctors in charge of travelling dispensaries who visit the remote districts periodically administering both advice and relief.

Schools have been established for nurses and midwives.

In addition to the Government doctors there are a number of foreign missionaries engaged in medical relief and some of these receive subsidies from Government. In Keijo the Severance Hospital and Medical School is a large American missionary institution which is well-staffed, well-equipped and thoroughly up to date.

The following table shows the number of practitioners and others connected with medicine, dentistry and pharmacy in Chosen.

	Japanese.	Koreans (Chosenese.)	Foreigners.	Total.
Doctors fully-qualified	679	595	35	1,309
Doctors with local licence	66	7	8	81
Doctors (Chinese method)	—	4,928	—	4,928
Dentists	127	11	3	141
Dentists licensed to make false teeth	109	58	—	167
Vaccinators	133	1,521	—	1,654
Midwives	813	52	—	865
Nurses	622	101	19	742
Pharmaceutists	134	6	2	142
Medicine manufacturers	39	8	—	47
Medicine—patent medicine sellers	541	10,461	26	11,028

## MEDICAL EDUCATION.

A medical school for the education of Korean boys alone was started by the Japanese at Keijo as early as 1899. At first all instruction was given by Japanese teachers through interpreters. At that time the students were allowed all expenses. The graduations were few. After the annexation a four years' course was adopted and all instruction was given in Japanese and Japanese students (limited to one-third

of the total number) were admitted. In 1916 the name of Keijo Medical School was changed to Keijo Medical College. The school has increased in size and in equipment until now it is equal to any corresponding college in Japan. Regarding the clinical training this is conducted at the Keijo Government Hospital by the senior physicians and surgeons. The college will form the medical branch of the Keijo Imperial University which is to be opened early in 1926.

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CHAPTER VI.

TOWNS, TOWN SANITATION AND TOWN IMPROVEMENT, WATER SUPPLIES, ARRANGEMENTS FOR SCAVENGING AND NIGHT-SOIL, CONTROL OF MARKETS AND SLAUGHTER HOUSES.

*Towns and Town Improvement.*—Under Korean administration there was no legislation for either town planning or town improvement, a village grew into a town and a town into a city simply by the irregular addition of buildings at the periphery and the roofing over of these open spaces which originally existed between the houses. Streets wide enough where there were only two or three houses extended in length but not in breadth as more houses were built. Drainage in the first instance was provided by the natural stream or river beside which the first houses were built. As streets formed rough channels paved with unshaped stones were made along them to carry away storm water and sullage from houses. Drainage from houses which faced on no street either stagnated or made its way through neighbours compounds until it found outlet in some street, drain or natural water channel.

Night-soil disposal was simple. The excrement was of value as manure, and all that was necessary was to have a cesspool which the night-soil merchant cleaned periodically. Sometimes the privy was in the yard, sometimes under the house. As the town grew and the people got further and further away from the fields the need for conservancy became less apparent, privies became fewer and night-soil was passed anywhere. Water was obtained from shallow wells which except in the dry season provided an adequate quantity of liquid of questionable quality.

The houses were practically all one storied with mud-walls and tiled or thatched roofs. Windows because of the cold winters were not expansive and their frames were filled with translucent paper. As in most cold countries, house ventilation was conspicuous by its absence. Because of the need for artificial heating in winter the floors of the houses were raised some two feet from the ground. Through the interspace ran pipes from the cooking place situated on one side of the house to the chimney situated outside or in the wall on the opposite side. The pipes heated the ground around them and the floor above. Once raised to the required temperature heat continued to be given off evenly and gradually for 12 hours. The poorest houses in Chosen thus have a system of central heating which could with advantage be adopted by occidental nations.

Soon after the union the question of town planning and town improvement was taken up by the Japanese. The system which found favour was the simple rectangular layout with sufficient diagonals to provide for direct access from periphery to centre.

In improving old towns attention was first concentrated on establishing wide arterial roads as a means of better communication, and when a sufficient number of these had been constructed, the question of secondary streets and systematic layout of property came under consideration.

The large towns of Chosen may be said to have just finished the first stage and to be entering on the second. Wide arterial roads have been provided, and along them are to be seen large modern buildings of occidental architecture. Immediately behind one finds houses packed together the same as they were before the Union. A great deal has been done but a great deal remains to be done.

*Water supplies.*—Recognising the pressing need for the introduction of many sanitary improvements the Government first took in hand the matter of drinking water. It began by purchasing and enlarging the water works at Keijo and constructing new ones at Jinsen, Heijo and Chinnampo, while Fuzan, Moppo, Gunzan and a number of other towns were assisted in the setting up their own systems by the grant of half or more of actual cost. Financial aid too was given for the digging of public wells throughout the country (extract from pamphlet issued by Government-General).

## SCAVENGING AND NIGHT-SOIL COLLECTION.

A pamphlet issued by the Government-General states: "There has been and still is a strong custom among Koreans not to provide their dwellings with privies and in pre-annexation days even in the principal cities the streets were full of filth and dirt, and this being aggravated by the quite imperfect sewerage remained a public anathema, emitting an offensive smell."

Conditions have changed now and each prefectural authority is making arrangements for the collection and disposal of garbage and night-soil. Night-soil removal from inns and places of public resort takes place daily, from ordinary houses it takes place once in ten days. The night-soil is handed over to the farmers for manure.

The conditions are far better than they were but there still remains plenty of facilities for fly breeding and for the dissemination of intestinal disease through flies, contaminated water and contaminated food.

## MARKETS AND SLAUGHTER-HOUSES.

Markets have been established and arrangements have been made for the control of the sale of food stuffs and beverages.

The Koreans are very fond of meat and purchase it whenever they can afford it. Slaughter-houses are under strict control and all carcasses are inspected. At the end of 1924 there were 1,321 licensed slaughter-houses in the country. In that year the number of animals killed for food included 277,090 cattle and 210,773 pigs.

## CHAPTER VII.

## THE ORGANISATION FOR THE CONTROL OF ANIMAL DISEASES.

To prevent the introduction and spread of animal diseases and generally to assist in the promotion of stock raising the Government has organised a veterinary service which includes 19 fully-qualified veterinary surgeons.

For the study of animal diseases and for the manufacture of vaccines and sera there has been established at Fusan the Government Institute for Research in Animal Diseases. The institute is concerned with matters relating to

- (a) the manufacture and examination of prophylactic vaccines and serums for infectious diseases of animals;
- (b) the investigation of infectious diseases;
- (c) manufacture and examination of small-pox vaccine.

The staff consists of a Director, six experts, eight assistant experts and clerks. The institute has the following departments:

- (a) The department of filtrable virus which is engaged in the study of diseases due to filter passers and in the manufacture of rinderpest serum;
- (b) The bacteriological department which is engaged in general bacteriological work and in the manufacture of vaccine and serum for gangrenous emphysematosus;
- (c) The pathological department for the investigation of animal diseases generally, for the manufacture of vaccine and serum for anthrax and for the manufacture of mallein;
- (d) The department for the study of animal parasites;
- (e) The bio-chemical department for the investigation of protein chemistry;
- (f) The department of lymph vaccine for the manufacture of small-pox vaccine.

The out-turn of products in 1925 was as follows:

Rinderpest serum	...	...	...	...	3,050,000	grammes
Anthrax serum	...	...	...	...	10,000	..
Gangrene emphysematrusus serum	...	...	...	...	2,000	..
Rinderpest vaccine	...	...	...	...	400,000	..
Anthrax vaccine	...	...	...	...	19,000	..
Gangrene emphysematrusus vaccine	...	...	...	...	350,000	..
Mallein	...	...	...	...	4,000	..
Small-pox vaccine	...	...	...	...	1,000,000	tubes

According to the pamphlet issued by the Government-General there are several kinds of animal diseases in Chosen, some of which are endemic, some imported from Chinese territory.

Rinderpest, a prominent form of cattle disease, has its permanent cradle on the Chinese side of the rivers Yalu and Tumen. The risk of invasion is especially great during the winter season when the great rivers are frozen over and there is greater frequency of intercourse. To control this disease and prevent its spread the following measures have been adopted. Compulsory serum inoculation of cattle in the infected area, the control of cattle movements and the compulsory reporting of cases. To prevent the introduction from Manchuria six examination stations have been established on the frontier.

The rearing of cattle for export to Japan for slaughter has become an important industry. Last year 61,225 were exported. The ports of export are Fusan, Gengan, Joshin, Mokppo and Jinsen.

At Fusan there is a large cattle quarantine station where the beasts are under observation for a definite period before shipment. This station is well-built and thoroughly up to date. Altogether there are 40 sheds with accommodation for 2,500 head of cattle. The staff includes a veterinary expert, two assistant experts and four veterinary surgeons.

In front of the station has been erected a statue of a bull and underneath is an inscription saying that it has been erected to the soul of the animals which have been exported for the food of men.

Cattle which have been quarantined in Fusan and which have been certified by the Veterinary Inspectors as free from disease are allowed to land in Japanese ports without restriction. Cattle from other ports in Chosen have to undergo quarantine at the port of entry.

#### CHAPTER VIII.

#### INFECTIOUS DISEASES AND ITS PREVENTION.

The following shows the infectious disease cases reported during the years 1919 to 1924:

Year.	Plague.	Smallpox.	Cholera.	Typhoid.	Para-typhoid.	Dysentery.	Typhus.	Scarlet-fever.	Diph-theria.
1919 ...	...	2,179	16,991	3,239	650	1,521	841	125	276
1920 ...	...	4,180	24,213	2,132	222	979	76	369	263
1921 ...	...	8,316	...	2,555	300	978	73	717	238
1922 ...	...	3,676	...	3,801	473	1,932	63	585	265
1923 ...	...	3,722	...	2,839	314	1,195	27	1,008	420
1924 ...	...	439	...	327	301	1,443	540	1,361	523

The people of Chosen in spite of all the teaching and propaganda work of the Japanese still hold very primitive ideas on the question of disease causation inclining to ascribe all ill's to the will of the gods or the machinations of the devil and to refuse or oppose any preventive action directed against the real causes of disease. Knowledge however is surely though slowly spreading throughout the land and the people are becoming more and more ready to accept sanitary teachings and to act accordingly.

Plague, despite the fact that Chosen borders on Manchuria and is quite close by train to Russia, has never made its appearance in the land.

Cholera appears in epidemic from time to time and typhoid and dysentery are endemic. Facilities for the spread of bowel diseases either by flies, by water contamination or vegetable contamination are ever present.

Preventive inoculations are offered free and the number availing themselves of the offer is becoming larger and larger.

Small-pox incidence is still high in spite of the efforts of Government to push vaccination. The Koreans look upon small-pox as a "disease which must be accepted as a natural event". Vaccination is done free and there are both male and female operators. Since 1911 the number of vaccinations per year has ranged between one million and two million.

Cases of malaria and hookworm are common. Lung distoma or fluke disease of the lung caused by eating raw crabs is very prevalent and in 1924 there were 40,000 cases reported. A special ordinance was issued prohibiting the catching or eating of river crabs.

As in Japan the organisation for the prevention of disease forms part of the police department.

## CHAPTER IX.

## LEPROSY IN CHOSEN AND THE EFFORTS MADE FOR ITS ERADICATION.

In Chosen there are 20,000 lepers or nearly one per 1,000 population. Near Fusan on the southern extremity of the peninsula, there are four leper colonies with a total accommodation for 1,500 people, but nowhere else have leproseria been established. Of the four colonies three are run by foreign missionaries and one by Government. The mission institutions receive subsidies from Government.

The policy adopted is segregation by persuasion not segregation by compulsion. Medical men both Government and missionary are unanimously of opinion that persuasion offers the only chance of solution of this most difficult problem. The lepers will not enter a locked asylum unless forced in by the police or compelled to enter through lack of means of support or physical infirmity. In the meantime they mix with the population concealing as far as is possible the fact that they are lepers and acting as foci for the spread of infection. As in tuberculosis the hope for cure lies in the treatment of early cases but these cases will not submit themselves for treatment if by doing so they run the risk of life long imprisonment.

The idea underlying the persuasive policy is the provision of real homes where the lepers can live in peace and comfort, enjoying the ordinary amenities of life while receiving that care and treatment which offers the best chances of relief or even cure. The cases which have returned to their homes after relief or cure have advertised the institutions and have been instrumental in persuading others to undergo the experiment. So popular have the institutions become that there is now no difficulty in keeping them full; in fact, there is a big waiting-list of would-be inmates.

As the Koreans become educated to the advantages of treatment more and more centres will be established until there are sufficient for all. When this happens the leprosy problem will be nearing solution.

The leper colony of the Australian Methodist Mission is situated on the shore of the harbour opposite the town of Fusan. With a bracing and almost ideal climate amid beautiful surroundings the chances of relief and cure are the best.

There are 400 lepers occupying simple houses on the shore of the bay. The houses which were all built by the lepers from material supplied them are similar in design to the native houses of the country. The rooms are 20' x 30' and contain little or no furniture. The inmates sleep on the floor and during the day the bedding is rolled up and piled against the wall.

The sexes are separated and even man and wife are not allowed to occupy the same room. No person who is not a leper is allowed to live in the settlement.

There are no fences or walls and no police. The difficulty is not to keep the people in but to keep them out. This year 500 had to be turned away as there was no accommodation for them.

Cases are admitted irrespective of creed, but once in, the Christian patients themselves try to persuade the others to turn to Christianity.

There is an extensive area adjacent which the lepers can cultivate if they so desire. They rear fowls and rabbits.

The lepers really run the place themselves under the general supervision of the missionary who lives on the other side of the bay. They elect their own deacons or headmen.

The treatment used is intramuscular injections of camphorated chaulmoogra oil up to 6 cc once a week. Ethyl esters were tried but it was found that they did not give as good results as the plain camphorated oil. Before the treatment by chaulmoogra oil the death-rate was 250 per mille per year—now the rate is under 25 per mille.

The cost of a leper is 16 shillings per month.

The Government institution which is situated on Storokuts Island near Fusan has since the winter of 1921 been using ethyl esters of chaulmoogra oil prepared under the direction of Professor Shiga. Of 300 lepers so treated 22 are said to have been completely cured and 17 discharged from the hospital as convalescent.

Professor Shiga states: "Isolation of lepers for life hitherto resorted to in Europe and America is no doubt practical where lepers number a few tens or a few hundreds but where they count by thousands or tens of thousands the adoption of this method is not only impracticable but becomes revolting to humanity since isolation of lepers for life means nothing less than prison life, pure and simple, for these unfortunates.

"It is good to give lepers the hope and comfort afforded by religion, but it is still better to make them hopeful of themselves by the visible proof that 'leprosy can be cured.'"

PART IV.

MANCHURIA, THE KWANTUNG LEASED TERRITORY AND THE  
SOUTH MANCHURIAN RAILWAY.

Chapter I.—Programme and Itinerary.

Chapter II.—Political history of the Leased Territory—viz., Kwantung and the railway zone.

Chapter III.—The Kwantung Leased Territory :

- (a) Administration.
- (b) Hygiene administration: port health work and quarantine, hospitals, town planning and housing.

Chapter IV.—The South Manchurian Railway :

- (a) The railway, what it is and the scope of its activities.
- (b) The rolling stock.
- (c) Protection of life and property.
- (d) Town planning.
- (e) Education.
- (f) Medical education.
- (g) Promotion of hygiene.
- (h) Hospitals and medical treatment.
- (i) Infectious diseases: plague, cholera, small-pox, typhus fever, tuberculosis, hydrophobia.
- (j) School hygiene.
- (k) Cleansing, scavenging and the removal of filth.
- (l) Water supplies.
- (m) The encouragement and promotion of industries.
- (n) The industrial operations of the railway.

MANCHURIA THE RAILWAY TERRITORY AND THE  
SOUTH MANCHURIAN RAILWAY  
Chapter I—Development and History  
Chapter II—Political History of the Manchurian Railway  
Chapter III—The Manchurian Railway  
Chapter IV—The South Manchurian Railway  
(a) The railway and its development  
(b) The rolling stock  
(c) Personnel of the railway  
(d) Town planning  
(e) Education  
(f) Industrial development  
(g) Municipal hygiene  
(h) Hospitals and medical institutions  
(i) Infectious diseases: plague, cholera, typhoid, typhus, tuberculosis, leishmaniasis  
(j) Public health  
(k) Quarantine, sewerage and the removal of refuse  
(l) Water supply  
(m) The railway and the economy of Manchuria  
(n) The industrial development of the railway

## CHAPTER I.

## THE TOUR THROUGH MANCHURIA.

On arriving at the Manchurian border the party was taken in charge by representatives of the South Manchurian Railway. The programme mapped out was as follows:

Date.	Hours.	
November 27	... 6.35 a.m.	... Arrive Mukden.
	... 10.00 "	... Visit to S.M.R., Medical College and Hospital situated in the Railway Town.
	... 2.00 p.m.	... Visit the Chinese North-East Hospital and afterwards the Chinese city.
	... 7.00 "	... Dine with Marshal Chan Tso Lin.
November 28	... 9.40 a.m.	... Depart Mukden for the Fushun Collieries.
	... 11.05 "	... Arrive Fushun and inspect collieries.
	... 3.45 p.m.	... Department Fushun.
	... 5.20 "	... Arrive Mukden.
	... 7.00 "	... Dine with members of local Medical Association.
November 29	... 7.45 a.m.	... Depart Mukden.
(Sunday)	... 10.25 "	... Arrive Tangkangtsu—Rest.
November 30	... 10.27 "	... Depart Tangkangtsu.
	... 6.00 p.m.	... Arrive Dairen.
December 1	... 10.00 a.m.	... Inspect quarantine station, Dairen. Inspection of Dairen Central Laboratory. Lunch at Hoshigaura (Star Beach), Reception by President, South Manchurian Railway Company.
December 2		... Inspect the South Manchurian Railway Hospital.
December 3	... 10.00 a.m.	... Depart for Port Arthur.
	... 11.00 "	... Arrive Port Arthur. Reception by H.E. the Governor. Visit Battlefields, Reservoir.
	... 6.55 p.m.	... Depart Port Arthur.
	... 8.15 "	... Arrive Dairen.
December 4		... Inspection of the Town.
The official programme finishes.		

## CHAPTER II.

## THE KWANTUNG LEASED TERRITORY AND THE SOUTH MANCHURIAN RAILWAY.

## HISTORY.

In 1905 by the treaty of Portsmouth, Japan, took over from Russia the latter's interests in Manchuria. These included

- (1) the lease of the Port Arthur and Dalny (Dairen) and the hinterland thereto the whole being called Kwantang Leased Territory;
- (2) that portion of the South Manchurian Railway running from Port Arthur and Dairen northwards to Chan Chew and that portion connecting Mukden with Korea;
- (3) the coal mines of Fushun.

The Japanese ordinance establishing a Government-General of the Leased Territory stipulated that the Governor-General should be a general of the Imperial Japanese Army.

In 1906 a Japanese Imperial Ordinance established "The South Manchurian Railway Joint Stock Company"—the shares to be held only by Japanese or Chinese. The Government reserved the right to appoint the President, the Vice-President and the Directors. The activities of the company were made to include railway operations, mining, electrical enterprise, sale on commission of goods carried by the railway, business relating to lands and buildings and any other business sanctioned by the Government. A clause in the ordinance stated, "It is the duty of the company to make the necessary arrangements for engineering, education, sanitation, etc." The Japanese Government took over half the shares and they still hold that proportion.

In 1919 civil administration was substituted for military administration in both the Kwantung Leased Territory and the railway zone. A Civil Governor was appointed and civil police replaced the military police.

### CHAPTER III.

#### THE KWANTUNG LEASED TERRITORY AND ITS ADMINISTRATION.

The Kwantung Leased Territory which occupies the extreme southern end of the Laistung Peninsula is about 60 miles long, twenty miles broad and with the adjacent islands has an area of 1,300 square miles. The population in 1919 was 596,233 of which 532,075 were Chinese, 64,040 Japanese and 118 were foreigners.

The Governor-General stands at the head of all the civil administration of the territory and at the same time supervises the affairs of the South Manchurian Railway zone. All the police in the territory and on the railway zone are under his control. Japanese Consuls exercise consular judicial jurisdiction at the open marts in the interior of Manchuria and in the railway area and are invested with police authority. In order to maintain unification of police administration each Consul holds additionally the title of Secretary to the Kwantung Government.

For convenience of administration the leased territory is divided into three districts with head-quarters at Dairen, Port Arthur, and Chin Chow. The Governor-General's residence and his office are at Port Arthur.

All the senior administrative officers are members of the Japanese Civil Service and the system in vogue is very similar to the prefectural system of Japan proper.

The cities of Dairen and Port Arthur having been raised to the rank of municipalities with Mayors and Town Councillors are partly self-governed.

The General Post Office of the Kwantung Government is at Dairen. It controls the postal, telegraph and telephone system in the leased territory and in the South Manchurian Railway area.

With regard to the customs, Kwantung is a free zone, no import duties being levied on goods intended for consumption inside it. The customs outside the zone are of course in the hands of the Chinese who for convenience of administration maintain an office at the Port of Dairen.

#### EDUCATION.

The education system maintained in the leased territory is much the same as that in Japan. There are primary schools, middle schools, high schools and technical schools and all are open to Chinese subjects. The schools are large modern brick-buildings of western style and architecture and equipped with western style furniture.

#### HYGIENE ADMINISTRATION.

As in Japan the police are responsible for the administration and control of matters relating to hygiene and sanitation. The Commissioner of Police is a member of the Senior Civil Service. Sanitary officers, experts and others are attached to the various police bureaus and police stations.

Port health work and quarantine matters are controlled by the marine department which has a staff of medical officers attached to it.

As is usual in Japanese practice no distinction is made between first, second and third class passengers as regards segregation. The accommodation provided for first and second class passengers is more elaborate than that provided for third class passengers or for coolies but all must undergo segregation for the period laid down by law.

At the port of Dairen there is a large quarantine station with accommodation for 100 first and second class passengers and 400 third class. If at any time the number of contacts exceed that for which accommodation has been provided, temporary barracks are erected or segregation takes place on board the ship.

The station is thoroughly up to date both as regards house accommodation, bathing facilities, disinfecting machinery and hospital accommodation.

Disinfection is carried out by steam or by steam and formaline. By a method in which a vacuum is produced prior to action by steam and formaline articles such as leather, books and silks can be disinfected without damage to material.

#### HOSPITALS.

The hospitals maintained by Government include:

- (a) At Port Arthur—the General Hospital, the Women's Hospital and the Infectious Diseases Hospital.
- (b) At Dairen—the Women's Hospital and the Infectious Disease Hospital.

#### TOWN PLANNING AND HOUSING.

Port Arthur and Dairen are in appearance occidental cities. They are laid out on the rectangular system—with diagonal roads for convenience of communication. There is a sufficiency of open squares and parks.

The electric tramway system is the same as that of modern American towns and the cars are identical in design with those used in the United States and Canada.

The houses are mostly of brick and similar in design to European and American houses. Except for the dress of the people and the Chinese sign boards it is difficult to realize that one is in China.

### CHAPTER IV.

#### THE SOUTH MANCHURIAN RAILWAY.

The South Manchurian Railway Company is a title which very inadequately describes the scope of operations of this semi-Government Manchurian Development Agency for railway transport is only one of its many activities which include:

- (1) protection of life and property for those living in its zone;
- (2) town planning and town development;
- (3) education, primary, secondary and technical and general;
- (4) the promotion of hygiene including facilities for both the prevention and cure of disease;
- (5) the encouragement and promotion of industries including the chemical and physical examination of natural products, experimentation for their better exploitation and the actual conduct of mining operations and industrial manufactures.

#### EXTENT OF LINE, ROLLING STOCK, ETC.

Apart from the Chosen Railway which is operated by the company the total extent of the lines controlled by the South Manchurian Railway is 684 miles of which 437 miles is taken up by the main line running from Dairen on the south to Chanchun on the north.

The rails, locomotives and the cars are all American and except for the lettering on the carriages the trains do not differ from those crossing the American continent. Except at the stations where it widens out into townships the railway zone consists of a narrow strip not exceeding 100 yards in width. The stations are very like those of an English railway. They vary in size and design according to the size and importance of the town or village served. At Mukden the station building which includes both station and hotel is a large and imposing building.

#### PROTECTION OF LIFE AND PROPERTY.

When Japan took over from Russia her interests in Manchuria, the country including the railway zone was in a very unsettled state and contained many bad characters who had little respect for the lives and properties of others. Under the military administration the zone was cleared of the dangerous elements and law and order was established.

In April, 1907, there were less than 12,000 Chinese living in the railway area; in 1920 their number exceeded 103,000.

It speaks much for the respect in which Japanese administration is held that during the recent and present unrest in Manchuria the railway zone has not been affected. The trains are running to scheduled times and a number of Chinese of the wealthy class have moved temporarily into the area.

## TOWN PLANNING.

All the towns in the zone are planned on modern occidental lines, there being a decided tendency to conform to the simple rectangular system so popular in America. Houses for the most part are built of brick and their architectural features are occidental not oriental.

The railway town of Mukden is well-laid out on the rectangular system. The streets are wide, well-paved and well-lighted. The houses are built of red brick in occidental style. There is a good water system. Part of the town is sewered, the remainder will be done shortly.

The traffic which moves to the left and which is controlled by the traffic police includes electric tramcars of American design, motor cars, Russian drowskies, Manchurian horse gharies and Manchurian carts drawn by horses, mules, and bullocks.

The city of Dairen owes its growth and prosperity to the South Manchurian Railway which developed its fine natural harbour (the only ice free one in Manchuria) and made it the principal gateway for imports and exports.

In 1907 Dairen ranked 42nd among the towns under the Chinese Maritime Customs; in 1923 it had risen to third place and to-day it is second only to Shanghai.

In 1923 its population was 110,000, its imports valued £33,000,000, its exports £54,000,000 and the tonnage of vessels using the port was 7,290,000.

## EDUCATION.

The South Manchurian Railway has provided facilities for the education of both Japanese and Chinese. The following is a list of the institutions it has established:

<i>(a).—For Japanese.</i>		<i>For Chinese.</i>	
Elementary schools	26	Elementary schools	13
Middle schools	3	Middle school	1
Higher girls' schools	4	Commercial schools	3
Girls schools for domestic science	10		
Commercial college	1		

*(b).—For advanced students of either race.*

The College of Industry at Dairen.

The Medical School at Mukden.

The Mining School at Fushan.

In country districts where schools are some distance apart the company provides free passes on the railway for school children.

The total number of school children is 94,000 and the number of teachers is 263.

The standard of education is much the same as that in Japan.

Primary education is compulsory for Japanese children, but not for Chinese. However such are the attractions offered that most of the Chinese children are attending.

All classes receive equal treatment and no distinction is made between employees and non-employees of the railway.

## MEDICAL EDUCATION.

The dissemination of medical science and skill in Manchuria is held to be an integral part of the mission of the South Manchurian Railway Company.

At Mukden has been established a Medical College which ranks with the best in Japan and which has recently been raised to the status of a Japanese University.

The college is a large and imposing block of brick-buildings well-designed, well-constructed and well-equipped. The buildings and their contents are valued at Y2,000,000. The teaching staff includes 13 professors, two assistant professors, two lecturers and nine assistants.

The medical curriculum is the same as that in Japan, with this difference that Japanese students have to learn Chinese and Chinese students have to learn Japanese. "By the linguistic bridge the young students of the different nationalities are brought into mutual contact personally and spiritually."

The main aim of this college is dual—firstly to turn out good doctors of fine character who will be capable of contributing to the advance of medical relief and public hygiene in the Chinese Republic; secondly to prosecute the study of medical science to keep abreast with the western elders and to elevate this college to a place of high repute among its kind in China. The primary object of founding the college consists in laying the foundation of Sino-Japanese co-existence and co-prosperity.

So far the graduates are employed either at the *alma mater* or at the hospitals along the South Manchurian Railway lines. As an understanding is established with the Chinese authorities concerned and the graduates increase in number, some of the latter will be sent to different parts of China to render services to the Chinese authorities by looking after the public hygiene, and by ministering to the needs of the inhabitants in the remotest districts.

The school was started in 1911. At the end of 1921 the number of graduates were Japanese 130 and Chinese 55 making a total of 185.

The Mukden Railway hospital of 370 beds which is attached to the medical college has a training school for nurses. Up to date over 100 nurses have passed the qualifying examinations.

#### THE PROMOTION OF HYGIENE.

Strictly speaking all matters concerning the administration of hygiene in the leased territory and in the railway zone come under the supreme authority of the Governor-General of Kwantung, but very early for convenience of administration, it was decided to entrust the railway company with its control in the railway zone north of Pulantien, the station on the border.

On the recommendation of the local administration and investigation commission of the Kwantung Government, whose duty it is to investigate and study administrative affairs in South Manchuria, definite regulations were drawn up for the railway area and advisory boards consisting of railway officials and police officers were formed for each of the districts into which the railway is divided.

The sanitary department which is considered a very important unit of the company has its head-quarters at Dairen where there is a Medical Director of Hygiene. His duties are to direct and control the sanitary affairs of the railway area including matters connected both with the prevention and cure of disease.

Health officers are stationed at head-quarters and at each of the principal centres along the line such as Yinkow, Mukden, Changchun, Fushun and Antung. Their duties which are both sanitary and medical include:

(a) Epidemic prevention:

- (1) prevention of specified infectious diseases;
- (2) vaccination and preventive inoculation;
- (3) bacteriological examination;
- (4) prevention of tuberculosis;
- (5) prevention of trachoma;
- (6) prevention of rabies.

(b) Preservation of the public health:

- (1) matters concerning the removal of refuse and night-soil;
- (2) matters connected with the water works and sewerage;
- (3) investigation of endemic diseases;
- (4) propagation of sanitary ideas;
- (5) training of home visiting nurses;
- (6) periodical medical examination of the company's servants;
- (7) matters concerning health colonies at hot springs and sanatoria.

(c) School hygiene:

- (1) matters concerning equipment;
- (2) promotion of children's health and prevention of disease;
- (3) special schools at the seaside and at the hot springs.

(d) Labour hygiene:

- (1) matters concerning railway men;
- (2) matters concerning workshop hands;
- (3) matters concerning mining gangs;
- (4) matters concerning first aid treatment.

## HOSPITALS AND MEDICAL TREATMENT

The railway maintains 21 hospitals, with a total of 2,289 beds, employs 191 medical men, 45 chemists, 77 clerks, 47 technicians, and 487 nurses and midwives. The hospital expenses in 1924 amounted to 3,111,338.30 Yen.

The amount invested for hospitals up to March, 1925, was:

Buildings	...	...	...	...	...	Y 11,465,302.52
Appliances and books	...	...	...	...	...	933,277.84
						<hr/>
Total	...	...	...	...	...	Y 12,398,580.36

All classes are admitted to the hospitals and no distinction is made between employees and non-employees of the railway.

## THE NEW DAIREN HOSPITAL.

The new hospital at Dairen which is American planned and American built and which is just nearing completion is a five storied concrete building having a floor space of 320,000 square feet. To provide for proper heating and ventilation in this land of extremes, arrangements have been made whereby all air enters at the basement and after being washed is cooled or heated according to the season by passing over cold or hot pipes and is delivered near the ceilings of the wards at the temperature required. Foul air is removed at floor level.

In winter the place is heated by steam coils controlled by a heat regulating apparatus which automatically opens or closes the valves according as the temperature falls below or rises above that deemed best for the patients.

Attached to every ward is a refrigerating plant cooled by a brine circulating system which extends all over the building. Each refrigerator can be regulated to preserve a temperature of freezing if necessary.

The corridors are so wide that they could in a case of emergency be used as wards for a single row of beds.

This hospital, which is probably as good as any in the world, is the show one of the railway company. All the hospitals are however well-built, well-equipped and thoroughly up to date.

Villages which are too small for hospitals are visited by the company's nurses once a month when consultations are held and medicines dispensed.

## ACUTE INFECTIOUS DISEASES.

With regard to the question of the prevention of plague, cholera, small-pox, typhus, typhoid and dysentery the methods adopted are the same as those in most civilized countries, viz., investigation, segregation, treatment and disinfection. Arrangements have been made with the Chinese authorities, the Chosen authorities and the Kwantung authorities for mutual co-operation in the prevention of epidemic diseases. When circumstance demands it inspections are made at various stations and while the train is *en route*. Sick passengers are removed from the train and conveyed to one of the hospitals or camps where they are taken care of.

The amount of money expended by the railway company in its efforts to prevent the spread of the plague epidemics of 1910 was Y860,000, the cholera epidemic of 1919, Y736,000, the plague epidemic of 1920, Y136,000, making a total of Y1,726,000.

## PLAGUE.

With regard to plague which as a rule outbreaks first in Mongolia or North Manchuria the railway authorities and the Chinese authorities have complete agreement as to mutual co-operation. Every effort is made to limit the spread by the prevention of migration. It is not sufficient to establish barriers at the frontier station for the Chinese cross the frontier on foot and attempt to board the trains at stations in the railway zone. It is necessary in addition to have "watcher's posts" at different places to prevent vehicles and foot passengers from entering the area. In 1910 there were 40,000 deaths in South Manchuria of which only 200 occurred in Kwantung territory and the railway zone. The railway company donated the sum of Y50,000 to the Viceregal Officer of Manchuria (Chinese) to help meet the cost of the preventive campaign.

The preventive organisation created at the beginning of the outbreak improved as further knowledge became available.

In August, 1920, bubonic plague made its appearance on the Siberian border and commenced to spread. As the weather became colder necessitating the more constant use of houses artificially heated the type changed from bubonic to pneumonic and the spread became rapid.

The preventive organisation was put in operation. The Chinese and Japanese co-operated thoroughly. The Chinese erected commodious detaining stations at various points in Chinese territory, the Japanese did the same on the railway zone. Japanese and Chinese medical experts boarded each train from Harbin to detect cases and to isolate the sick. At several stations special sidings were laid and covered goods cars kept for the accommodation of the sick and contacts. The combined efforts of the Chinese and Japanese quelled the outbreak after a loss of 8,000 lives. The railway company contributed ¥20,000 towards the prevention expenses incurred by the Chinese.

*When Cholera outbreaks* the preventive organisation is immediately brought into use. Quarantine stations are established and segregation of cases and contacts effected. Disinfection apparatus is carried on passenger trains. House inspection is carried out. Preventive inoculation is extensively practised. There is no compulsion but such is the confidence of the people in this measure that they flock to the stations asking to be done.

*With regard to small-pox*—vaccination is done free. It is estimated that 94 per cent. of the Japanese and 90 per cent. of the Chinese in the zone have been vaccinated. Two decades ago small-pox was considered a disease from which there was no escape—now there are very few cases and these are sporadic.

*Typhus fever* occurs sporadically.

*Typhoid fever* appears yearly in sporadic or epidemic form—The measures taken against it are preventive vaccination, attention to scavenging and food and drink control.

*Dysentery* appears sporadically and epidemically.

*Tuberculosis* appears to be on the increase. At present the anti-tuberculous measures in use are:

- (a) education and propaganda by the dissemination of pamphlets explaining the cause, the prevention and cure of disease;
- (b) the periodical examination of school children and the treatment of those who have the disease or show predisposition. Health centres at the hot springs or sea-side have been established;
- (c) the periodical examination of employees;
- (d) house hygiene;
- (e) the disinfection of premises.

In the near future it proposed to open medical consultation offices at different centres for the purpose of detecting early cases and for the promotion of domiciliary treatment.

#### THE PREVENTION OF HYDROPHOBIA.

*Hydrophobia among dogs* is not rare. Twice a year, in spring and autumn and whenever deemed necessary, a campaign against homeless dogs is carried out.

Any person bitten by a dog suspected of having rabies is given pasteur treatment at the company's expense. Though there have been a number of persons bitten by infected dogs there have only been 20 cases of human hydrophobia since 1908.

#### SCHOOL HYGIENE.

In 1908, arrangements were made for a physician to attend each of the primary schools in the railway zone. In substance the regulations laid down by the Minister of Education are followed.

The total number of physicians employed by the company for school purposes is 56 of which 38 are attached to the primary schools. The total number of children attending school in 1924 was 10,427 and the average number of school children to each physician was 186.

Eight schools matrons have been appointed for the primary schools whose duties are:

- (1) inspection of hygiene equipment and conditions in and about school houses;
- (2) the maintenance of cleanliness in body and clothing;
- (3) investigation of the physical conditions of the scholars;
- (4) ministrations of relief to those in need of treatment.

Periodical reports are furnished to the school physician and the principal, who, in turn, report to the Director of Sanitary and Medical Services.

Health colonies have been established at the sea-side and at the hot-springs, where each year numbers of children enjoy summer outings. The hot-spring colonies are specially intended for those "inflicted with innutrition, defective development, anaemia, scrofula, etc., etc."

#### MATERNITY, INFANT WELFARE AND HOME HYGIENE.

There are six home-visiting nurses who make monthly visits to stations along the line, visiting the houses, offering advice and administering treatment.

#### MEDICAL EXAMINATION OF THE COMPANY'S SERVANTS.

All servants of the company are examined periodically and classified as A, B, C and D.

#### CLEANSING, SCAVENGING AND THE REMOVAL OF FILTH.

In the spring and autumn wholesale cleansing campaigns are conducted over the whole of the railway zone. The severity of the Manchurian winter while it prevents organic decomposition and the multiplication of microbic life, interferes greatly with cleansing operations. Each spring large quantities of filth, accumulated through the winter, have to be removed before the warm weather brings about decomposition.

In the hot summer, decomposition takes place rapidly. The insanitary habits of the Chinese, whose ideas of hygiene are very rudimentary, result in the prolific propagation of flies, which act as media for the spread of disease. In the larger towns scavenging and night-soil removal is done daily, but in the smaller villages this is impracticable. The Chinese conserve their night-soil in pits, finally mixing it with earth to form a kind of poudrette fertilizer. The facilities for fly propagation are great. The cleansing operations cost the company 40 million yen annually.

#### WATER SUPPLIES.

In twelve of the towns in the zone water works have been established. Once a month chemical and bacteriological examinations are made by experts sent for the purpose. Wells are examined twice a year, once after the rainy season and once during the thawing season by the district chemists.

#### THE ENCOURAGEMENT AND PROMOTION OF INDUSTRIES AND THE EXPLOITATION OF NATURAL ASSETS.

The company maintains at Dairen a Central Laboratory where industrial and sanitary investigations are conducted for the whole of South Manchuria and where all kinds of indigenous products are put through exhaustive scientific experiments to ascertain their potential value and utility.

The laboratory was originally established by the Kwantung Government in 1908 and was taken over by the railway company in 1910. It is a large brick-building employing 30 fully qualified chemists and a trained staff of over 100.

While scientific researches are prosecuted on the volition of the laboratory authorities, analytical testings, estimations, etc., are undertaken on application from the Government, the railway company and the public.

A peculiar feature of this institution is that it undertakes research on any matter of promising commercial interest, establishing workshops for conducting processes on practical lines, and when such process has proved its worth it is handed over to a company for prosecution on a commercial basis.

It has been laid down that the interests of the general public and not those of the railway company shall take precedence, the primary aim of the laboratory being the improvement of industry and public sanitation in Manchuria.

The work done at the laboratory is divided into two classes—(a) examination or testing, (b) research. Under the first heading (examinations) is included the testing of:

- (1) Drugs to see if they conform to the conditions laid down in the Japanese Pharmacopoeia.
- (2) Food stuffs, beverages to ensure wholesomeness.
- (3) Water samples from the various public supplies.
- (4) Cements.
- (5) Oils, mineral, vegetable and animal.
- (6) Minerals and soils.
- (7) Agricultural products.

Under research are included studies concerning:

- (1) Vegetable oils and fatty matters.
- (2) Soya bean cake constituents.
- (3) Textile fibres.
- (4) Glue from waste animal products.
- (5) Fermentative processes and the production of alcohol, wines and vinegars.
- (6) Composition of plants and drugs.
- (7) Coal and its distillation products.
- (8) Oil shale and its derivatives.
- (9) Sea salt and its bi-products, beomine, etc.
- (10) Minerals in general.

#### INDUSTRIAL OPERATIONS OF THE RAILWAY.

The industrial operations of the railway include the coal mines of Fushun, the iron works Anshan, oil shale works, electric light and power plants, electric tramways, and of course transport by land and sea.

The coal field at Fushun situated some twenty miles from Mukden is stated to be the most extensive coal deposit yet discovered. The quantity present is estimated at 1,200,000,000 tons. Worked by the most modern machinery the daily output is over 10,000 tons.

At Anshan where there is a large deposit of iron ore, the company has established iron and steel works. In 1923, these works produced 74,528 tons of pig iron.

Oil shale to the extent of 5,500 million tons exists at Fushun. It is estimated that the amount of oil which can be obtained is sufficient for the needs of Japan for 300 years.

The railway runs the electric light and power stations at Dairen, Mukden and several other towns. It also runs the electric street cars.

Since its formation in 1906, the company has invested more than 536,000,000 yen on its various properties.

