琉球大学学術リポジトリ

SOUTH MANCHURIA RAILWAY COMPANY「CONTEMPORARY MANCHURIA A BI-MONTHLY MAGAZINE」

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to leave Manchoukuo; (7) that the payment of retirement allowances shall be completed in four installments within two years; (8) that the Manchoukuo Government shall assume responsibility only for the assets and liabilities mentioned in the balance sheet, all others being assumed by the Soviet Government; (9) that the Soviet Government shall retain the railway property at Manchouli and Pogranichnaya, the Soviet Consulate General and its dormitory at Harbin, a certain portion of the books in the Railway Library, and the Second Primary School in Harbin; (10) that an agreement shall be made for the establishment of through traffic between the North Manchuria Railway and the Ussuri and Trans-Baikal Railways; and (11) that the Japanese Government shall guarantee Manchoukuo's payments by delivering a formal note to that effect to the Soviet Government.

In a Note addressed to Ambassador Yurenev, Foreign Minister Hirota assured that the Japanese Government undertakes to guarantee the exact fulfilment by the Government of Manchoukuo of "all the obligations of payment, in money as well as in goods." In a similar note addressed to Minister Tinge, the Japanese Foreign Minister explained that such a guarantee was given in compliance with the wishes of the Soviet Union "in view of the close and special relations existing between Manchoukuo and Japan."

FINANCIAL CONDITION OF THE AGRICULTURAL POPULATION OF NORTH MANCHURIA IN 1935

I. GENERAL REMARKS

Making use of its spare time during the investigation of the 1933 crop output in North Manchuria, conducted for about a month beginning from the early part of February, 1935, the North Manchuria Economic Research Institute of the South Manchuria Railway Company, in order to study the financial condition of the agricultural population of North Manchuria, made a survey of twenty-four representative farms in the principal districts where cultivation is carried on on a comparatively large scale. Inasmuch as the survey covered only twenty-four farms and moreover as it could not be carried out thoroughly owing to a lack of time, it is premature to consider the results of the survey as indicating the general financial condition of farmers in North Manchuria. Nevertheless they do show that the financial condition of the agrarian population for the period under review was somewhat better than the preceding year.

II. FACTS ABOUT THE FARMS COVERED BY THE SURVEY

(a) *Ages of the farms*

Under ten years	6 farms
Between 10 and 30 years	11 „
Between 30 and 50 years	3 „
Over 50 years	4 „

(b) *Farms classified according to the area under crop*

Large farms (over 100 shang[1]) ...	4 farms

[1] 1 shang equals 0.737 hectare.

Medium farms (between 30 and 100 shang)..... 11 farms
Small farms (under 30 shang)..... 9 „

(c) *Farms classified according to ownership*
Independent farms ..... 12 farms
Independent and tenant farms combined ..... 5 „
Tenant farms ..... 7 „

(d) *Location of the farms*
Hsinking-Harbin railway district (Shuancheng and Yushu) ..... 4 farms
Harbin-Peianchen railway district (Suihua, Hailun and Wangkuei). 4 „
Tsitsihar-Peianchan railway district (Paichuan, Noho, Ian and Koshan) ..... 7 „
Harbin-Manchouli railway district (Mingshui) ..... 3 „
Harbin-Suifenho railway district (Ningan and Yenshou) ..... 2 „
District in the lower reaches of the Sungari (Paoching and Fuchin) ..... 3 „
Tailai ..... 1 farm

The average size of the farms under cultivation was 50.7 shang, the number of persons per household 18, the number of labourers per farm 5.6, the area tilled by each cultivator 6.7 shang, and the number of carts per farm 1.5. The domestic animals kept by the 24 farms averaged 11.5 head of cattle, 9.3 hogs, and 18.2 fowl. The average number of domestic animals to one shang under cultivation was 0.2 cattle, 0.2 hog, and 0.3 fowl, while the area under cultivation per head of cattle was 4.4 shang.

III. INCOME OF THE FARMS

Although every care was taken to estimate as rationally as possible the income of each farm, the greater portion of which consists of receipts from the sale of crops, rentals paid by tenant farmers and income from subsidiary occupations, certain receipts which were difficult to estimate, such as those accruing from a natural increase in live-stock and from poultry and vegetables, were not included in the income under study. The average income from one shang for the year under review amounted to M¥ 54.66, as compared with M¥ 37.90 for the previous year. The gain was chiefly due to a bumper wheat crop and the higher prices of various products. Details of the average income from one shang follow (in M¥):

(a) *Income of the farms classified according to their size:*

	Crop	Farm rent	Subsidiary Occupations	Total	Total for previous year	Increase or decrease compared with previous year
Large farms	46.03	12.21	3.28	61.52	34.12	27.40
Medium farms...	33.80	10.86	4.47	49.13	48.20	0.93
Small farms	33.02	16.85	8.58	58.45	31.11	27.34
Average	35.55	13.30	5.81	54.66	37.90	16.76

(b) *Income of the farms classified according to their ownership:*

	Crops	Farm rent	Subsidiary Occupations	Total
Independent farms	38.87	13.30	4.70	56.87
Independent and tenant farms combined.....	33.60	—	4.94	38.54
Tenant farms	31.24	—	8.35	39.59
Average	35.55	13.30	5.81	54.66

(c) *Income of the farms classified according to their location:*

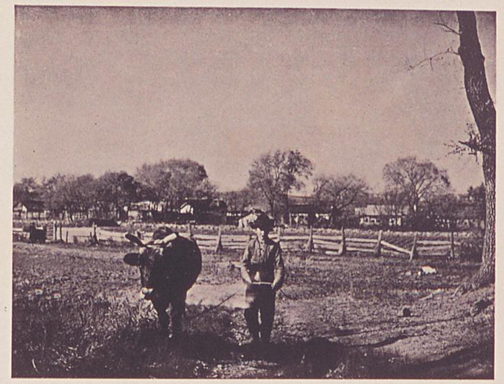
	Crops	Farm rent	Subsidiary Occupations	Total
Hsinking-Harbin railway district.....	41.43	—	5.09	46.52
Harbin-Peianchen railway district ...	48.90	18.00	3.91	70.81
Tsitsihar-Peianchen railway district...	28.99	15.76	4.50	49.25
Harbin-Manchouli railway district ...	25.25	6.18	3.46	34.89
Harbin-Suifenho railway district.....	25.09	—	15.69	40.78
District in the lower reaches of the Sungari	45.75	16.85	9.36	71.96
Other districts	25.63	—	2.22	27.85
Average	35.55	13.30	5.81	54.66

(d) *In the accompanying table is given the 1935 average prices of agricultural products per "tang" (100 cubic meters) in North Manchuria as compared with that of 1934 (in M$):*

Products	1935	1934	Increase or decrease
Soya beans	12.98	9.09	3.89
Wheat	16.46	13.20	1.26
Kaoliang	9.42	7.99	1.43
Millet	9.42	7.60	1.82
Maize	8.27	6.64	1.63
"Mitzu" (Mongolian millet) ...	11.33	10.25	1.08
Red beans	12.00	9.27	2.73
Green beans	20.00	12.50	7.50
Upland rice	13.00	10.64	2.36
Barnyard-grass	3.80	3.96	−0.16
Red millet	6.50	—	—
Small hemp seed	7.63	7.63	—
Perilla seed	13.82	11.27	2.55
Buckwheat	7.00	—	—
Barley	—	4.54	—
Oats	—	3.92	—

(e) *Income from the sale of agricultural products*

Soya bean, wheat, and perilla and hemp seed plantings occupied 52 per cent of the total area under cultivation, while the income from the sale of these crops represented about 60 per cent of the total sale of agricultural produce. The area cultivated with millet, kaoliang, and maize, which constitute the staple food of the farmers, occupied 48 per cent of the total crop



Country life in Manchuria

Manchu farmers threshing beans

area. The receipts from these crops amounted to 40 per cent of the total sales.

The income from crops per shang for the year under review in comparison with that of 1934 was (in M¥):

Crops	1935	1934	Increase or decrease
Soya beans	37.20	27.31	9.89
Wheat	55.19	35.52	19.67
Perilla seed	41.05	44.09	−3.04
Hemp seed	26.02	15.49	10.53

The gross average income from all crops per shang for 1935 amounted to M¥ 35.55 as compared with M¥ 24.79 for the preceding year.

(f) *Income from rentals of tenant farms*

The receipts from farm rents in 1935 were very satisfactory, averaging M¥ 13.30 per shang, which was M¥ 7.23 more than those of the previous year. However, as this survey was limited to a small number of comparatively better class farms, the findings, as far as rentals are concerned, many not apply to the farms in general.

(g) *Income from subsidiary occupations*

The receipts from subsidiary occupations amounted to only 10 per cent of the income from all sources. The income of the large farms per shang under cultivation was M¥ 3.28, medium farms M¥ 4.47, small farms M¥ 5.44, independent farms M¥ 4.70, independent and tenant farms M¥ 4.94, and tenant farms M¥ 8.35. The average income of all farms per shang was M¥ 5.81, representing a decrease of M¥ 1.23 in comparison with that of the year before.

IV. EXPENDITURES OF THE FARMS

Comprising about 36 per cent of the total expenditure, living expenses led the expenditure list, followed

by wages with 16 per cent, expenses for feeding livestock 12 per cent, miscellaneous expenditure 8 per cent, taxes 7 per cent, and purchase of seeds 5 per cent. The average expenditure per shang amounted to M¥ 40.55, compared with M¥ 30.05 for the previous year, the rise of M¥ 10.50 being due to increased living expenses and other expenditures, particularly farm rents.

Details of the average expenditure per shang are given in the following tables (in M¥):

(a) *Expenditures of the farms classified according to their size:*

Classifications	Taxes	Seeds	Wages	Other expenses	Principal food	Secondary food	Fodder	Miscellaneous	Total
Large farms	3.76	2.03	8.32	6.06	8.50	5.54	5.47	3.74	43.42
Medium farms	2.34	1.86	5.96	6.76	7.41	4.61	4.05	2.96	35.86
Small farms	2.02	2.08	5.72	7.17	12.01	7.25	5.03	3.64	44.92
Average	2.45	1.97	6.26	6.78	9.32	5.75	4.66	3.35	40.55
Average for previous year	1.94	1.13	6.99	3.40	3.49	4.17	4.27	4.66	30.05
Increase or decrease	0.52	0.84	−0.73	3.38	5.83	1.58	0.39	−1.31	10.50

(b) *Expenditures of the farms classified according to their ownership:*

Classifications	Taxes	Seeds	Wages	Other expenses	Principal food	Secondary food	Fodder	Miscellaneous	Total
Independent farms	3.35	1.59	7.36	9.96	10.45	6.35	4.59	3.33	47.38
Independent and tenant farms combined	2.45	1.44	6.73	2.66	7.39	4.78	2.69	3.18	31.32
Tenant farms	0.93	2.30	4.06	9.66	8.76	5.43	5.45	3.49	40.10
Average	2.46	1.97	6.26	6.78	9.32	5.75	4.66	3.35	40.55

(c) *Expenditures of the farms classified according to their location:*

Districts	Taxes	Seeds	Wages	Other expenses	Principal food	Secondary food	Fodder	Miscellaneous	Total
Hsinking-Harbin rly. district	3.13	1.78	7.44	4.55	8.15	5.36	4.25	3.94	38.60
Harbin-Peianchen rly. district	2.34	2.83	6.34	14.57	10.13	6.19	5.91	3.09	51.40

Districts	Taxes	Seeds	Wages	Other expenses	Principal food	Secondary food	Fodder	Miscellaneous	Total
Tsitsihar-Peianchen rly. district	2.06	1.43	5.18	3.29	8.32	4.36	4.53	3.46	32.63
Harbin-Manchouli rly. district	2.48	0.83	5.85	—	5.73	3.58	3.46	2.38	24.31
Harbin-Suifenho rly. district	1.10	2.05	2.75	4.97	11.19	6.53	5.96	4.29	38.84
District in lower reaches of Sungari	4.10	2.60	11.21	—	15.10	11.61	5.10	3.70	53.42
Other districts	0.63	4.39	0.29	5.44	7.35	2.72	1.85	1.13	23.80
Average	2.46	1.97	6.26	6.78	9.32	5.75	4.66	3.35	40.55

(d) *Living Expenses*

An examination of the cost of living of the farmers, the greater part of which consists of food expenses, showed that millet, maize, and kaoliang comprise their staple food. Millet, moreover, constituted 40 per cent of their staple food.

The average quantity of principal food consumed by each person per day was 4.8 ho (one ho equals .1 cubic meter) in the large farms, 4.4 ho in the medium farms, 3.5 ho in the small farms, 4.3 ho in the independent farms, 3.6 ho in the independent and tenant farms combined, and 4.1 ho in the tenant farms, giving an average of 4.1 ho as compared with 4.8 ho in the preceding year. The average quantity consumed by each household per year was 148 tou 8 sheng (1 tou is equivalent to 10 cubic meters, and 1 sheng is equivalent to 1 cubic meter) valued at M¥ 231.19, 135 tou of kaoliang valued at M¥ 118.10, 112 tou 5 sheng of maize valued at M¥ 94.59, and 79 tou 7 sheng of other commodities valued at M¥ 143.46.

Food bill classified according to principal and secondary food, and with the regular and temporary labourers counted as members of the families, was as follows. The cost of principal food per person per day in the large

farms was 5.6 fen; in the medium farms, 4.8 fen; in the small farms, 5.5 fen; in the independent farms, 5.7 fen; in the independent and tenant farms combined, 4.7 fen, and in the tenant farms, 4.5 fen, giving an average of 5.2 fen; an increase of 2.8 fen over the year before. The cost of secondary food per person per day was 5.8 fen in the large farms, 3.2 fen in the medium farms, 3 fen in the small farms, 4 fen in the independent farms, 2.4 fen in the independent and tenant farms combined, and 2.6 fen in the tenant farms, giving an average of 3.6 fen as compared with 3.1 fen for the preceding year.

Representing 59 per cent of the expenses for secondary food, wheat flour headed the list, followed by meat with 16 per cent, salt 13 per cent, and bean oil 7 per cent. The average quantity of secondary food consumed by each household per year was 2,693.3 chin (one chin equals .5 kilogram) valued at M¥ 248.71, consisting of 1,586.3 chin of wheat flour (M¥ 44.40), 359.8 chin of salt (M¥ 39.92), 433.3 chin of meat (M¥ 85.61), 185 chin of bean-oil (M¥ 33.52), 118 chin of alcoholic drinks (M¥ 24.06), 11.5 chin of sugar (M¥ 2.87), and M¥ 18.33 worth of other commodities.

The average clothing expenses of each person per year amounted to M¥ 4.96 in the case of large farms, M¥ 3.74 in medium farms, M¥ 4.19 in small farms, M¥ 4.52 in independent farms, M¥ 4.25 in independent and tenant farms combined, and M¥ 3.32 in tenant farms, giving an average of M¥ 4.30 as compared with M¥ 3.33 for the preceding year.

For social intercourse, each person spent an average of M¥ 2.32 during the period under review, 32 fen more than the year before. The average expenses per person per year came to M¥ 4.68 in the case of large farms,

M¥ 1.99 in medium farms, M¥ 1.68 in small farms, M¥ 2.59 in independent farms, M¥ 3.43 in independent and tenant farms combined, and M¥ 1.07 in tenant farms.

(e) *Expenses for feeding live-stock*

Comprising 12 per cent of the total expenditure, the average expenses of each farm for feeding live-stock per year amounted to M¥ 359.96, or M¥ 31.30 per head. The domestic animals kept by each farm averaged, as has been previously mentioned, 11.5 heads of cattle, 9.3 hogs, and 18.2 fowl, and the amount of fodder consumed by them per year consisted of 4 tang 1 tou (one tang equals 100 cubic meters, and 1 tou equals 10 cubic meters) of soya beans valued at M¥ 41.21, 141 pieces of bean-cakes valued at M¥ 47.58, 18 tang 5 tou of kaoliang valued at M¥ 155.16, 17,252 chin of millet valued at M¥ 40.62, and 16 tang 2 tou of cereals valued at M¥ 5.39. Fodder expenses per shang per year came to M¥ 5.47 in the large farms, M¥ 4.05 in the medium farms, M¥ 5.03 in the small farms, M¥ 4.59 in the independent farms, M¥ 2.69 in the independent and tenant farms combined, and M¥ 5.44 in the tenant farms—the gross average coming to M¥ 4.66 per shang as compared with M¥ 4.27 for the year before.

(f) *Wages*

An average of 5.6 labourers were regularly employed by each farm and the average wages paid to each labourer per year were M¥ 59.61 as against M¥ 61.97 for the preceding year. For the decrease of M¥ 2.36 there is no cause worthy of special mention. The large farms employed an average of 16 regular labourers, the medium farms an average of 4 labourers, the small farms 1.2 labourers, the independent farms 2.6 labourers, the independent and tenant farms combined 4.7 labourers,

and the tenant farms 1.8 labourers. The average area tilled by each cultivator was 6.4 shang in the large farms, 6.8 shang in the medium farms, 6.6 shang in the independent and tenant farms combined, and 5.8 shang in the tenant farms, giving an average of 6.7 shang as compared with 7.8 shang the year before.

(g) *Taxes*

The average amount of tax, including national and local taxes, paid by the large farms per shang came to M¥ 3.76, by the medium farms M¥ 2.34, and by the small farms M¥ 2.02, giving an average of M¥ 2.46 as against M¥ 1.94 for the previous year, the rise of 52 fen being due to an increase in local tax owing to a readjustment of local administrative facilities.

(h) *Seeds*

The average amount of seeds purchased by each farm per shang was M¥ 1.97 as against M¥ 1.13 for the preceding year. As causes of the increases are given changes in crop plantings and the higher seed prices. The average seed purchase by the large farms was M¥ 2.03 per shang, by the medium farms M¥ 1.86, and by the small farms M¥ 2.08.

(i) The expenses (chiefly farm rent) other than those mentioned above averaged M¥ 6.06 per shang in the large farms, M¥ 6.67 in the medium farms, and M¥ 7.17 in the small farms. The average per shang of all the farms was M¥ 6.78, representing an increase of M¥ 3.38 over the year before. It would not be a mistake to regard this rise as being due chiefly to the higher prices of cereals which the tenant farmers used in the payment of their rentals to the landlords in lieu of cash.

V. A COMPARISON BETWEEN THE INCOME AND EXPENDITURE OF THE FARMS PER SHANG IS GIVEN IN THE THREE TABLES

(a) *Income and expenditure of the farms classified according to their size :*

Classifications	Income	Expenditure	Balance	Balance for previous year	Increase or decrease
Large farms	61.52	43.42	18.10	9.09	9.01
Medium farms	49.13	35.86	13.27	7.30	5.97
Small farms	58.45	44.92	13.53	5.23	8.30
Average	54.66	40.55	14.11	7.85	6.26

(b) *Income and expenditure of the farms classified according to their ownership :*

Classifications	Income	Expenditure	Balance
Independent farms	56.87	47.38	9.49
Independent and tenant farms combined.	38.54	31.32	7.22
Tenant farms	39.59	40.10	−0.51
Average	54.66	40.55	14.11

(c) *Income and expenditure of the farms classified according to their location :*

Districts	Income	Expenditure	Balance
Hsinking-Harbin rly. district	46.52	38.60	7.92
Harbin-Peianchen rly. district	70.81	51.40	19.41
Tsitsihar-Peianchen rly. district	49.25	32.63	16.62
Harbin-Manchouli rly. district	34.89	24.31	10.58
Harbin-Suifenho rly. district	40.78	38.84	1.94
District in the lower reaches of the Sungari	71.96	53.42	18.54
Other districts	27.85	23.80	4.05
Average	54.66	40.55	14.11

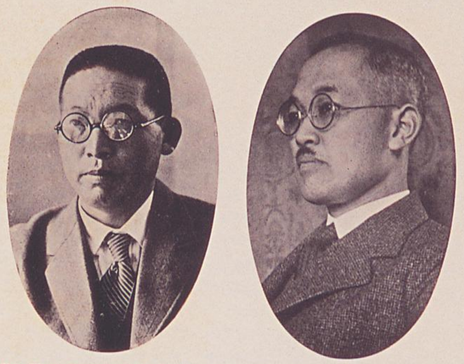
THE S. M. R. HYGIENIC INSTITUTE

Medical science has progressed from therapeutics to preventive medicine in which marked development has been made in various countries of the world in recent years. In Manchuria preventive work is largely promoted and carried out through the medium of the Hygienic Institute in Dairen, founded in 1925 by the South Manchuria Railway Company, whose multifarious activities cover every form of business in addition to the management of schools, hospitals and scientific institutes.

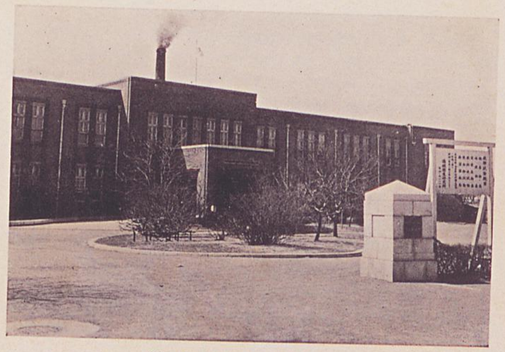
The establishment of the Hygienic Institute represented the first important step to be taken in Manchuria to conquer the dreaded epidemics rampant almost all the year round, due chiefly to the peculiar climate and social conditions in the country. Despite the crying need for some such specific establishment to discover effective means for checking and exterminating the diseases, the former northeastern militarist Government had paid practically no consideration to the promotion of public health.

The first director of the Hygienic Institute was Dr. Shoji Kanai, at present Governor of Chientao Province, who ably fulfilled the difficult task of laying the foundation for the development of the institution. The present director is Dr. Khoji Ando, who was chief of the Bacteriological Section at the time the Institute was founded.

With the years that have passed since its establishment, the Institute's work has been greatly expanded and has contributed much to the advancement of public health and sanitation in Manchuria and Mongolia. Especially since the birth of the New State of Manchou-



Dr. Shoji Kanai (left), the first director, and Dr. Khoji Ando (right), the present director, of the S.M.R. Hygienic Institute



The Hygienic Institute, Dairen

kuo in 1932, the Institute's sphere of investigation and research has undergone a marked expansion and the demand for its manufactures has doubled.

The Hygienic Institute is divided into seven Sections —namely Bacteriological, Serological, Vaccine, Pathological, Chemical, Hygienic, and General Affairs—but actually, the work of these sections is closely correlated. Besides conducting research and investigation, the Institute manufactures some fifty different kinds of sera, vaccines, medicines and diagnostic preparations. It is also actively engaged in the spread of hygiene among the masses. The institute at present employs 107 persons. Its assets, as in March 1936, were estimated at 400,000 yen. Its total expenditures (excluding special allowances for the employees) last year were calculated at 230,000 yen, while its income from the sale of its manufactures amounted to 170,000 yen.

The sphere of the Institute's research and investigation embraces (1) contagious diseases especially prevalent in Manchuria, such as the plague, endemic and epidemic typhus, scarlet fever, glanders and typhoid fever, (2) nutrition and (3) environmental hygiene. A more detailed description of the above three categories of research follows:

I. RESEARCH ON CONTAGIOUS DISEASES

1. *The Plague.* Manchuria is one of the worst plague-infested countries of the world and no less than 2,000,000 yen has been spent by the S. M. R. Company alone for the prevention of this dreaded epidemic. The first outbreak of the plague occurred in 1910–11 and, since then, the country has been visited by it ten times, with the loss of tens of thousands of lives.

Through the self-sacrificing efforts of the Hygienic Institute's research workers, it was discovered in 1928 that the western part of Manchuria near Taonan, Chengchiatun and Tungliao and adjoining Mongolia was the plague endemic area. This significant discovery was followed by the further revelation that the strange, acute contagious disease greatly feared by Manchurians and Mongols was in reality the plague.

Encouraged by the above discovery, the Hygienic Institute commenced a basic investigation of the plague in 1928. It collected some 50,000 Inner Mongolian rodents, classified them into groups, carefully examined them and succeeded in clarifying the relation between animal plague and human plague, the epidemiology of the plague peculiar to Manchuria and Mongolia, and its route of infection. For the prevention and cure of the plague, the Institute invented an efficient vaccine made from the residue of the plague bacillus after the bacterial cell substance had been extracted from it. This new vaccine is being supplied to the public under the name of pest-immunogen. Last year some 300,000 persons in the plague-infested districts in Manchuria were inoculated with this vaccine, and thus many lives, which would otherwise have been lost, were saved. The Institute further succeeded in greatly facilitating preventive work by perfecting such methods of diagnosis as the identification of plague patients by the precipitation of their urine and the thermoprecipitation of plague cadaver.

With the establishment of new plague investigation offices in Tungliao and Halahai in 1934, practical use was made of the new discoveries of the Institute in the plague-infested districts, with gratifying results. Whereas in 1933 the known deaths from the plague alone had

numbered two thousand several hundred in some 90 villages, the figures three years after dropped to 169 deaths in 21 villages despite the growth of the number of cases of plague discovered.

2. *Endemic and Epidemic Typhus.* Epidemic typhus has frequently broken out in all parts of the country and is one of the most-dreaded contagious diseases in Manchuria. An eruptive fever somewhat similar to epidemic typhus has also since early times been known in the country. This disease is endemic and is popularly known as Manchurian fever or typhoid. The Hygienic Institute has devoted much time to the study of both of these diseases, but it was not until 1929 after exhaustive effort that the causative agent of the latter was finally discovered and named *Rickettsia manchuriae.* It also found out that Manchurian fever was the same disease as the endemic typhus in the United States, the causative agent of which was also discovered almost simultaneously as that of the former.

Following the discovery of *Rickettsia manchuriae,* the Hygienic Institute examined a number of rats in the districts, where Manchurian fever had broken out, and found within their bodies the same *Rickettsia manchuriae* in large amounts, thereby establishing that rats were the vectors of *Rickettsia manchuriae.* It also became evident that blood-sucking insects parasitic on rats, especially fleas (*Xenopsilla cheopsis*), were the carriers of *Rickettsia manchuriae* to human beings. Having thus discovered the route of infection of Manchurian fever, the Hygienic Institute was able to take fundamental measures for checking the disease.

Furthermore, the Hygienic Institute experimentally demonstrated that pathogenic rickettsia found in fæces

excreted by vermin and fleas not only infect human beings by entering through the skin when scratched, but are also capable of penetrating through the conjunctiva and the nasal mucous membrane. Thus it was able to clear up the cause of the deaths of so many scientists who had died from laboratory infection while engaged in the study of typhus, despite every care taken by them against contracting the disease. Up to last year eight persons of the Hygienic Institute had contracted typhus, one of them dying. However, as it has succeeded in manufacturing an efficacious vaccine out of *Rickettsia manchuriae* cultivated in the bodies of vermin, the danger of fatality from typhus has been greatly lessened.

3. *Scarlet Fever.* In Manchuria scarlet fever is regarded as an endemic disease and is one of the five principal contagious diseases attacking children. In 1925 both the morbidity and mortality among the Japanese in Manchuria from this disease were found to be the highest in the world. In view of the urgent necessity of checking and exterminating this malignant epidemic, the authorities concerned in 1926 organized a scarlet fever prevention committee, on which the research agencies throughout the country were represented, and entrusted to it the study of scarlet fever. Research which proved highly fruitful, was carried out at various places, the Hygienic Institute also participating and producing numerous results.

By the application of the Dick test, the Hygienic Institute discovered that the Japanese in Manchuria were far more susceptible to scarlet fever than the Manchurians, which fact explained the high morbidity of the Japanese. The Institute also made a comparative study of many strains of hemolytic streptococcus from

which it selected a strain producing the most potent toxin, and manufactured from this toxin an efficient, purified scarlet fever toxoid and a potent antitoxin. Both are extensively used by the Institute, the former for inoculation and the latter for cure. For the past several years children attending kindergartens and schools along the S. M. R. lines have been inoculated with scarlet fever toxoid, with remarkable results. Scarlet fever which was dreaded as the scourage of children ten years ago, is thus to-day no longer feared by the public.

4. *Glanders.* This epidemic is prevalent throughout the country and it is estimated that as many as 30 per cent of the horses in North Manchuria and 15 per cent in South Manchuria are infected with this disease. Although it generally attacks only members of the equine family, there have also been many cases of human beings contracting the disease. The extermination of this malady is consequently a matter of grave importance to man as well as to animal.

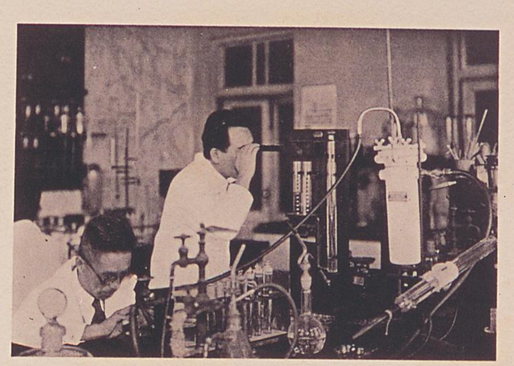
Fortunately there has been a marked decrease in the number of cases of glanders, especially in the Kwantung Leased Territory, in recent years due to active preventive work. For instance, whereas in 1927 when the Hygienic Institute examined 1,300 carriage-horses in Dairen, 1.3 per cent of them were found to be suffering from glanders, eight years later, in 1935, out of the 4,700 horses examined in the Kwantung Leased Territory, the percentage had fallen to 0.17.

The number of cases of glanders in the principal cities along the S. M. R. lines is also markedly falling year after year, but it constitutes only a fraction of the total number throughout Manchuria. Thanks, however, to the preventive work being carried out by the S. M. R.

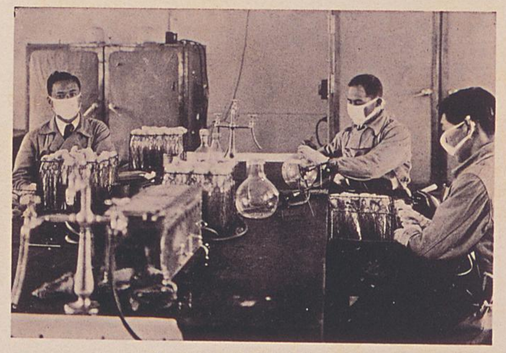
Veterinary Institute in cooperation with the Glanders Investigation Institute recently founded by the Manchoukuo Government, it is believed that it will not be long before this terrible form of animal epidemic will be wiped out from Manchuria.

5. *Smallpox.* Unlike smallpox in Japan, this epidemic in Manchuria is practically prevalent all the year round. Its prevention is therefore a matter of vital importance to the promotion of public health. Up till the Manchurian Incident, the demand for smallpox vaccine was very small, only about 100,000 persons being vaccinated yearly, but since then it has markedly increased, and the Hygienic Institute at present supplies enough vaccine for inoculating 4,000,000 persons. The Institute has invented an efficacious, refined smallpox vaccine for hypodermic injection, which method is widely used in the inoculation of large numbers of coolies. The Hygienic Technical Institute, founded last year by the Manchoukuo Government, is also actively engaged in smallpox preventive work, vaccinating over several million persons annually. Through the active cooperation of these two institutions, it is hoped to rid Manchuria of smallpox before long.

6. *Rabies or Hydrophobia.* Though almost exterminated in Japan, rabies is still rampant in Manchuria and has taken a heavy toll of lives. In the cities along the S. M. R. lines alone, over 1,000 persons are inoculated annually with rabies vaccine, but the figure represents only a fraction of the total number of similarly treated throughout Manchuria. As in Japan, the spread of the disease, however, is being now checked principally by the inoculation of dogs since nearly all cases of hydrophobia are due to the bite of rabid dogs. The Hygienic



Research workers of the Hygienic Institute examining water



Plague Investigation Laboratory