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FEDERATED MALAY STATES

ANNUAL REPORT

OF THE

MEDICAL DEPARTMENT

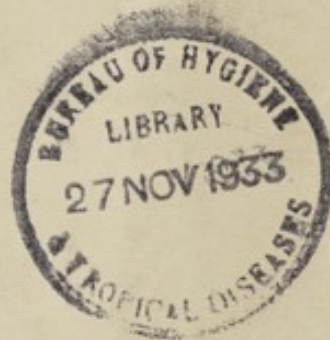
FOR THE YEAR

1932

BY

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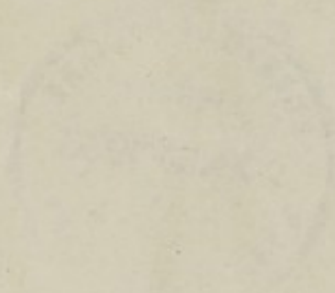
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UNIVERSITY OF CALIFORNIA

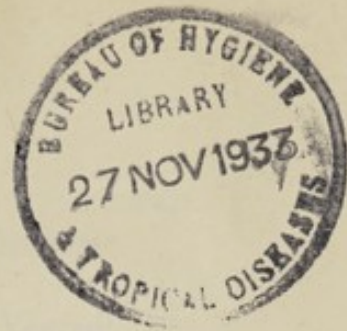
ANNUAL REPORT

MEDICAL DEPARTMENT



U. S. DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C.



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FEDERATED MALAY STATES.

ANNUAL REPORT OF THE MEDICAL DEPARTMENT FOR 1932.

INTRODUCTION.

The Annual Report of the Medical Department of the Federated Malay States for the year 1932 has been compiled under unusual conditions, and is concerned with an abnormal period.

In the first place the policy of decentralization of Government generally, and of the Medical Department particularly, has radically altered the organization of medical and health services in the Federation. The Principal Medical Officer has relinquished most of his executive functions; the title is retained for the sake of certain statutory duties, but the officer holding this appointment has assumed the executive control of the Medical Department of the Straits Settlements, and consequently is no longer in close contact with the services in the States.

Simultaneously with the virtual abolition of the Principal Medical Officer, and as a further consequence of decentralization, the post of Chief Health Officer was abolished.

The disappearance of the Principal Medical Officer does not imply so great a change in policy as might at first sight appear; for the executive functions of the Principal Medical Officer in the four States were strictly limited, constitutionally, and his control over the Senior Medical Officers of the States was, in theory, little more than advisory. The Chief Health Officer, on the other hand, was in a position of executive authority over the Senior Health Officers of the States, while being himself under the authority of the Principal Medical Officer; so that, anomalous though it may seem, the Principal Medical Officer could exercise more authority in the States through the agency of the Chief Health Officer and the Senior Health Officers than through the Senior Medical Officers.

In place of this dual system of restricted federal control there has been instituted a system of single control of the medical and health services in each State. The senior officer, for whom the title of State Medical and Health Officer was proposed, has been placed in executive control of all the medical and health services of the State. In this way the necessary association of preventive and curative services will be secured, and there will be nothing to prevent the development of a proper medical department, in which health services are pre-eminent and curative services are a secondary, though essential, responsibility.

for the improvement of medical and health services to estate labourers, and had survived so much criticism and opposition from every direction, at last found itself impotent in face of the complete financial collapse of the rubber planting industry. The many schemes which had been formulated and put into operation, for the provision of medical services by visiting practitioners and for the organisation of estate hospitals, together with the preliminary work for the organisation of preventive measures, had only been possible with the aid of a loan from Government. When it became clearly apparent that the state of the rubber planters was such that the Board could only carry on by borrowing more money, and there was obviously only a remote possibility that the increasing loan would ever be repaid, there was no alternative but to dissolve the Central Health Board, Government accepting the financial loss.

It is to be hoped that a great part of the ground gained by the efforts of the Central Health Board and the Local Health Boards will be retained. It will not be possible, in present circumstances, to maintain preventive and medical services on the lines proposed in the Health Board schemes, nor with such reduced labour force are services on such a scale necessary. But the lines have been laid down for future guidance, and with improved conditions in the rubber industry and the country generally the work done by the Central Health Board during its stormy existence will yet bear fruit.

Other Enactments passed during the year were :

(a).—*Sale of Food and Drugs Enactment No. 32 of 1932.*

This Enactment repealed and re-enacted with amendments the Sale of Food and Drugs Enactment, 1913. This was necessary to bring the law concerning food and drugs up to date.

(b).—*The Prevention of Disease Enactment, 1932.*

By this Enactment the revision of the law relating to quarantine and the prevention of disease was completed. The previous law was contained in the Quarantine and Prevention of Disease Enactment: in the process of revision this was divided into sections, each of which now constitutes a separate Enactment; the first two sections, viz., the Vaccination Enactment and the Quarantine Enactment were passed in 1930 and 1931 respectively.

C.—FINANCE.

The total expenditure on the Medical Department for the year was \$4,760,632 (£555,407 1s. 4d.). Of this sum, \$2,731,826 (£318,713 8d.) was incurred under the heading of "Personal Emoluments"; \$2,006,651 (£234,109 5s. 8d.) under "Other Charges", Annually Recurrent, and \$22,155 (£2,584 15s.) was Special Expenditure.

In addition to the amount directly expended by the department, the Public Works Department expended \$80,517 (£9,393 13s.) on new buildings for hospitals and other institutions, and \$79,059 (£9,223 11s.) on upkeep, repairs, etc.; while a sum of \$401,449 (£46,835 14s. 4d.) was expended on anti-malarial measures from Sanitary Boards and other Government funds.

The revenue of the department was \$309,178 (£36,070 15s. 4d.). The total revenue of the Federated Malay States for 1932 was \$43,817,151 (£5,112,000 19s.) and the total expenditure was \$53,740,140 (£6,269,683).

II.—PUBLIC HEALTH.

An estimation of the state of the public health is dependent upon a numerical estimate of the total population and of the different sections of the population. It is unfortunate that a correct estimate of the population of the Federated Malay States for any year except the census year is very difficult. In a country subject to alternating periods of commercial prosperity and depression, during which immigration and emigration of labourers and their dependants exercise a preponderating effect on the numerical strength of the population, it is impossible to devise any hard and fast mathematical process which will correctly supply the figures for the population from year to year.

It has been the practice in the past to estimate the population during intercensal periods by a method of arithmetical or geometrical progression based on the last two census figures.

There is no doubt that birth-rates and death-rates so estimated have been liable to serious fallacy. In order to arrive at a closer estimate for the year 1932, vital statistics in this report are based on an estimate of population which takes into account immigration and emigration figures.

The difference between the figures obtained by the two methods of calculation are shown in the tables below. Table I shows the estimated population by race and by State, calculated by a process of geometrical progression from the census year, for the middle of 1932.

TABLE I.

State.	Malaysians.	Chinese.	Indians.	Non-Asiatics.	Others.	Total.
Perak	277,015	340,105	163,503	2,578	6,930	790,131
Selangor	127,430	252,030	159,123	2,756	11,818	553,157
Negri Sembilan	88,468	96,487	52,654	876	3,620	242,105
Pahang	112,283	54,832	15,844	412	1,722	185,093
F.M.S.	605,196	743,454	391,124	6,622	24,090	1,770,486

Table I-A shows the estimated population derived from the census figures of 1931 by a calculation which includes the excess of births over deaths and the difference between the numbers of immigrants and emigrants. State migration has been calculated from the Malayan migration in the ratio, by nationalities, which the State population bore to Malayan population at the last census.

TABLE I-A.

State.	Malays.	Chinese.	Indians.	Non-Asiatics.	Others.	Total.
Perak... ..	277,952	302,957	135,718	2,208	6,380	725,215
Selangor	125,679	227,047	134,131	2,577	10,348	499,782
Negri Sembilan	89,096	86,255	42,442	814	3,231	221,838
Pahang	112,794	48,947	12,505	360	1,462	176,068
Total	605,521	665,206	324,796	5,959	21,431	1,622,903

The figure 1,622,903 will be taken as the nearest possible estimate of the total population of the Federated Malay States at midyear, 1932.

The total number of births during the year was 55,171; the estimated birth-rate was 340. As an index of fertility birth-rates as calculated for the Federated Malay States are of little value, since the ratio of males to females differs among the various races and from year to year. Figures for the Malay race may be taken as a fair measure of fertility comparable with other countries; but those for Indians and Chinese are neither comparable between themselves nor from year to year. The estimated birth-rate among Malays was 36.6.

The total number of deaths was 29,997, a decrease of 2,874 from the 1931 total. The estimated death-rate was 18.5, if calculated on a total of 1,622,903: the death-rate derived from a population estimated at 1,770,486 would be 16.9.

The death-rate for 1932 is the lowest ever recorded; the previous year's rate was 19.1, which again was better than any previous figure. The rate for the year 1921 (a census year) was 28.5.

The low death-rate is a definite indication of a continued improvement in the state of the public health. It must be remembered, however, that during 1931 and 1932 repatriation of Indians and Chinese occurred to an abnormal extent, and large numbers of weakly or decrepit persons were leaving the country.

Vital statistics are set out in full in the report of the Registrar-General of Births and Deaths, which is now published separately from the annual report of the Medical Department, and reference should be made to that report for details of the several States, races and age groups. From the figures there set out it will be seen how heavy is the mortality during the early years of life. About 40 per cent. of the total deaths are recorded as occurring under the age of five years, and about a quarter of the total deaths is found among infants.

The figures for infant mortality are always instructive, as they are independent of estimates of the total population, and therefore comparatively trustworthy. The ratio of the number of deaths under one year of age to every thousand live births in 1932 was 137, compared with 139 in the previous year.

The highest rate recorded in the previous ten years was 203 in 1927. Since then there has been a progressive fall to the present figure, a reduction during five years of very nearly one-third. This is very satisfactory so far as it goes, but the rate is still high; it is more than double the rate in England. The greater number of these infant deaths (about two-thirds of the total) are attributed, as in the past, to "fever" and "convulsions".

III.—HYGIENE AND SANITATION.

1.—SPECIAL DISEASES.

(i)—Malaria.

Deaths recorded under the general heading of malaria and fever of undefined origin, and deaths recorded as due to diagnosed malaria are shown in the following table:

Disease.	Perak.	Selangor.	Negri Sembilan.	Pahang.	Total.
Malaria... ..	483	346	210	120	1,159
Fevers of undefined origin ...	5,475	2,392	1,325	1,728	10,920
All causes	13,348	8,789	4,144	3,716	29,997
Percentage ratio of deaths from malaria to deaths from all causes	3.6	3.9	5.06	3.2	3.8
Percentage ratio of deaths from malaria and deaths from fevers of undefined origin to all causes	44.6	31.2	37.04	49.7	40.2

It is impossible to assess accurately the total number of deaths directly due to malaria. It can be said, however, that in comparison with previous years the incidence of malaria in 1932 was relatively light, although it remains the principal cause of sickness.

Preventive measures were carried out throughout the Federation along the lines which have now been well established in Malaya. Financial considerations made it necessary to curtail permanent anti-malarial drainage works, and expenditure on oiling was reduced to a minimum. The fact that so many rubber estates had been compelled to reduce their expenditure to such an extent that anti-malarial measures for the protection of their labour force were in danger of being neglected had given reason to fear that malaria might increase. It is satisfactory to record that, generally speaking, there has been no such increase.

Research was continued throughout the year on the use of plasmoquine as a prophylactic measure among estate coolies. Investigation was also made into the use of atabrin for prophylactic purposes; the value of this new remedy for curative purposes would seem to have been already established, and its use in Government hospitals is now general. The efficacy of various mixtures of oils for anti-larval oiling was tested by laboratory and field experiments, and the investigation is still proceeding. The question of limiting anti-larval oiling operations to certain seasons of the year was another matter for investigation. Experiments are to be instituted to ascertain whether there are certain seasons of the year when anti-larval measures may be discontinued without danger of malarial infection: if conclusive results can be obtained they will clearly be of great economic importance.

The report of the Institute for Medical Research contains a detailed account of the malarial research work of the year.

(ii)—**Plague.**

No case of plague occurred; the country has been free from this disease since 1927. Vaccine was prepared and stored at the Institute for Medical Research in case of the disease appearing.

(iii)—**Cholera.**

No case of cholera occurred; the country has been free from this disease since 1927. Vaccine was prepared and stored at the Institute for Medical Research in case of the disease appearing.

(iv)—**Smallpox.**

One case of smallpox was detected in the railway reserve at Gemas on the Johore border. During the previous ten years there had been a few cases in Perak, consequent on the presence of the disease in the neighbouring areas of Province Wellesley and Kedah; but detection and isolation of all cases, together with extensive vaccination of the population, succeeded in suppressing the disease. The following is a summary of vaccinations performed during the year:

	Total vaccinations.	Number of recorded results.	Percentage successful.
Perak	33,700	19,276	57.20
Selangor	22,716	14,990	66.99
Negri Sembilan	11,460	6,949	60.63
Pahang	5,523	4,460	81.00

All vaccine lymph employed was prepared at the Institute for Medical Research.

It is satisfactory to be able to record that the Federated Malay States have been kept free from the three major epidemic diseases, particularly in view of their prevalence in neighbouring countries.

(v)—Typhus.

The typhus which occurs in Malaya is the form described as tropical typhus. During recent years the disease has shown a tendency to spread over a wider geographical area, and the number of cases has shown a disquieting increase. In part the increase may be ascribed to more careful search for the disease, resulting in the diagnosis of cases which otherwise might have been mistaken for other tropical fevers. During 1932 there was a reduction in the total number of cases diagnosed, from 220 in the previous year to 206; but this reduction was due to a decrease in the cases reported from Selangor, there being an increase in each of the other States. The disease appears to be endemic on certain estates, particularly oil-palm plantations; the majority of the cases were coolies from these estates.

Experimental research on tropical typhus was continued at the Institute for Medical Research throughout the year; it is of interest to note that the laboratory experiments indicate a close relationship between tropical typhus and Japanese river fever.

(vi)—Enteric Fever.

The number of recorded cases of fever of the enteric group was 228, with 59 deaths. These figures compare with 288 and 87 for the previous year. There was no outbreak which could be ascribed to a contaminated water supply. The food sold by street hawkers remains under suspicion as one of the chief sources of infection.

(vii)—Dysentery and Diarrhœa.

The number of deaths reported as due to dysentery, diarrhœa or enteritis was 1,300, a figure which compares favourably with 1,606 reported in 1931. Taken in conjunction with the diminished incidence of enteric fever, the decrease in the number of deaths from dysentery and diarrhœa indicates an improvement in the sanitary condition of the people; although the figures have no doubt been affected by repatriation of many persons from those classes of the community most liable to suffer from such diseases.

(viii)—Cerebro-spinal Meningitis.

The number of cases reported was 11, all of which terminated fatally. The disease occurred only as sporadic cases, and there was no epidemic.

(ix)—Diphtheria.

The number of cases of diphtheria annually reported continues to increase. The numbers of reported cases and deaths during the last five years are shown hereunder:

Year.	Cases.	Deaths.
1928	57	8
1929	88	27
1930	112	31
1931	143	29
1932	170	46

The disease occurred principally in the towns, and children formed the majority of the patients.

It is perhaps significant that many cases, diagnosed by bacteriological examination, showed few of the signs and symptoms of clinical diphtheria: this suggests that the increase in the number of cases reported may be due rather to greater reliance on laboratory examination than to any actual increase in the disease.

There is good reason to urge the general adoption of a system of pasteurisation of milk as a preventive measure.

(x)—Leprosy.

The number of fresh cases which were admitted to the leper settlements during the year was 293. This supports the estimate which has been previously made to the effect that the number of lepers which are discovered annually in the Federated Malay States is in the neighbourhood of 300. Nearly all of these are among the Chinese and Indians, and it may be suggested that most of them have contracted the disease before entering Malaya. Improved conditions of segregation and treatment in the Sungei Buloh Settlement have resulted in the admission of more cases at an early stage of the disease, and to an increase in the number of cases discharged as non-infective. It has not been possible as yet to introduce any system of treatment without segregation.

(xi)—Tuberculosis.

Pulmonary tuberculosis remains one of the gravest causes of sickness and death in the Federated Malay States, especially in the towns. It is impossible to estimate the total number of cases, and it is probable that many fatal cases are registered under other headings. But the statement made in previous reports still holds good, that a study of the figures over a period of years does not show that the incidence of the disease is increasing. The records of deaths occurring in Government hospitals are likely to be more accurate than records of deaths occurring elsewhere, so that a fair indication of the prevalence of the disease during the last ten years may be gained from a table showing the yearly number of deaths in Government hospitals reported as due to pulmonary tuberculosis, and the ratio of that figure to the estimated population for the year, as under:

Year.	Deaths in Government hospitals.	Ratio per 100,000 population.
1923	1,006	72.3
1924	1,037	73.1
1925	1,051	72.6
1926	995	67.4
1927	1,118	74.2
1928	1,074	70.0
1929	1,078	64.4
1930	1,061	61.5
1931	975	56.6
1932	919	56.6

The total number of deaths reported as due to tuberculosis was 1,627, of which 1,513 were pulmonary tuberculosis. The corresponding figures for 1931 were 1,624 and 1,524.

2.—GENERAL MEASURES OF SANITATION.

(i)—Sewage Disposal.

The country is still backward as regards the disposal of night-soil, for the bucket system is in use even in the principal towns. Septic tank installations are being increasingly introduced, particularly in Kuala Lumpur and Ipoh, but the proposed general sewage system for Kuala Lumpur has not yet eventuated.

In Negri Sembilan a great improvement has been effected by the construction of a septic tank at each of the principal bucket-washing stations, the washing tank being placed immediately above the septic tank. The whole installation can be constructed at little expense, and the advantages of such a system are out of all proportion to the cost. This is undoubtedly a system which should be more generally adopted.

The Kinta Sanitary Board has been experimenting with rubber buckets. Hitherto the results give every promise of this material showing great advantage over metal in both length of use and in suitability. One unexpected advantage is the entire absence of smell from these buckets after they have been washed in the same manner as iron buckets. At the close of the year a large number of these buckets had been in use in Ipoh for almost a year, and it was anticipated that they would soon replace metal buckets entirely.

In the rural districts, and particularly on rubber estates, continual attention is required to keep the pit latrines up to a satisfactory standard. The type of latrine known as a bore-hole latrine has been adopted wherever soil conditions permit, and has proved satisfactory. Conditions of night-soil disposal for mining coolies have received attention, but are generally speaking primitive and unsatisfactory.

(ii)—Refuse Disposal.

Refuse disposal in the larger townships is effected by the removal of all rubbish from house and street refuse bins in covered lorries to an incinerator. In the larger centres of population a daily collection of refuse is carried out. New types of refuse bins have been introduced in Kuala Lumpur and elsewhere, and have proved satisfactory.

(iii)—Drainage.

The problem of drainage is closely associated with anti-malarial measures, and for this reason has always received special attention in Malaya. Generally speaking the drainage system throughout the Federated Malay States is of a high standard, as indeed it must be in order to cope with the heavy rainfall. The river deviation works in Kuala Lumpur have effected a very great improvement, and the town was saved from serious flooding during the exceptional rainfall towards the end of the year.

(iv)—Water Supplies.

Existing water supply systems in the larger towns were kept under observation, repeated chemical and bacteriological examinations of the water being carried out at the Institute for Medical Research. It was not possible to carry out all the proposed works on water supplies owing to the financial position, but many improvements were effected, as will be seen from the reports from the four States, summarized below.

PERAK.

New Kinta Water Supply.—This water supply generally speaking may be said to be now satisfactory.

Taiping.—Chlorinating plant was added to this supply, and certain alterations were made at the head works, including the conversion of a filter bed into a precipitating tank. This has resulted in a great improvement in the quality of the water delivered to Taiping.

Lower Perak.—The water delivered to Teluk Anson is excellent and is now the purest supply in Perak.

Further experiments of an encouraging nature were carried out in respect of water supplies in the riverine kampongs along the Perak River.

SELANGOR.

The chlorination of the Kuala Lumpur supply as an end process assumed stability and a good water was ensured. About five million gallons are supplied to the town daily, allowing over 40 gallons per head of population per day. During the year the town supply was extended to cover the Pudu Ulu and Segambut villages areas.

Improvements were made to the piped water supply to Kepong and Sungei Besi towns.

It was proposed to construct new deep and protected wells at seven small villages within a radius of about fifteen miles of Kuala Lumpur or to reconstruct existing wells. Actually two new wells were constructed and several existing wells repaired during the year.

NEGRI SEMBILAN.

Seremban.—Sedimentation tanks at the intake at Pantai were nearly completed for this supply.

Port Dickson.—The dam at Ulu Beringen to supply Port Dickson was completed, and water is now available for that town and the villages and estates en route; work is still in progress on the filtration and chlorination plant, and on the service reservoir at Si Rusa. This water supply system, when completed, promises to be one of the best in the Federated Malay States.

Tampin and Kuala Pilah.—These towns obtain their water from jungle streams. Chlorinating apparatus were installed during the year and are working satisfactorily.

Gemas and Bahau.—The supplies of these towns, which are from polluted rivers, are treated with alum, sedimentation, mechanical filtration, lime and chlorine. Results at both these places are very satisfactory.

The extension of a pipe line from Ulu Beringen to Pedas and Rembau is in progress.

PAHANG.

Pahang West.—Kuala Lipis, Raub and Bentong are supplied from impounding reservoirs served from hill streams. At Kuala Lipis the water is treated with alum and lime, allowed to settle in a settling tank and passed through a Bell's filter. During the year the water schemes for Temerloh and Mentakab were completed. The schemes are identical. Mentakab draws its supply from the Sungei Semantan, and Temerloh from the Pahang river. The raw water in both cases is treated with alum and lime, filtered by means of mechanical Bell's filters, and chlorinated. The chemical and bacteriological reports on these supplies are now very satisfactory.

Pahang East.—Kuantan is supplied from jungle streams, the water being collected in impounding reservoirs. Pekan is supplied from wells, the water is treated with alum, and after mechanical filtration is pumped into water towers, from which it flows by gravity to the town.

(v)—Offensive Trades.

The efforts to confine offensive trades to definite districts were continued in the larger towns.

(vi)—House Inspections.

House to house inspections were carried out in all Sanitary Board areas. The question of cubicles was taken up in the Kinta Sanitary Board by the Health Officer with a view to bringing this problem under proper control. In Taiping the demolition of insanitary houses continued. In Kuala Lumpur 6,854 notices were served for the abatement of various nuisances and 1,894 prosecutions were instituted, resulting in 1,605 convictions.

(vii)—Estate Visiting.

The number of visits to estates carried out during the year by officers of the Health Branch was 4,224.

The number of visits on account of anti-malaria measures is steadily decreasing owing to the fact that Visiting Medical Practitioners are employing their own technical Asiatic assistants, and dressers on estates are becoming more practised in this respect.

Owing to the critical financial condition of many estates, recommendations other than those which required really urgent attention were made with a proviso that appropriate action should be taken when funds become available.

The following table gives the estate population for the years 1931 and 1932. It will be noticed that a further large decrease took place during the year.

State.	1931.		1932.	
	Labourers.	Total estate population.	Labourers.	Total estate population.
Perak	52,721	79,681	44,972	69,213
Selangor	57,476	88,025	47,089	73,964
Negri Sembilan	43,727	52,577	35,088	42,902
Pahang	10,773	13,120	7,672	9,435
Total	164,697	233,403	134,821	195,514

The number of private and group hospitals in use at the end of the year was 133 as compared with 146 in 1931.

The distribution of these hospitals by State was as follows:

Perak	46
Selangor	42
Negri Sembilan	33
Pahang	12
Total	133

The repeal of the Health Boards Enactment might have been followed by disorganisation of the system of group hospitals had not definite action been taken in time by the Medical and Labour Departments to prevent this. In only a few cases have estates seceded from the group hospitals, and these only with the acquiescence of the Health Officer.

In May of 1932 the Controller of Labour consulted the State Medical and Health Officers regarding the measures which should be adopted to retain as far as possible the existing arrangements as to group hospitals and the standard of sanitation on estates. The Controller promised his support in all cases in which estates did not comply with standards as laid down.

(viii)—Mine Sanitation.

Returns from the Mines Department show that 42,575 Chinese were employed as mining labourers at the end of 1932, compared with 57,403 at the end of 1931.

During the year 10,077 mining coolies, all Chinese, were repatriated from Perak alone. The total number of Chinese immigrants in 1932 was 6,092.

Sixty-four visits were paid to mines by officers of the Health Branch.

No health returns are received from mines; no deterioration in the health of the Chinese miners has been reported.

(ix)—Railway Sanitation.

Health conditions on the Federated Malay States Railways, with the extensions into the Unfederated Malay States and the Colony, were under the control of the Railway Health Officer, with his staff of Health Inspectors, Anti-Malarial Inspectors and Dressers.

Permanent anti-malarial works were carried out in certain places, including Teluk Anson, Taiping, Kuala Lumpur and Ipoh. Economies were effected in oiling, as for example by the introduction of the "brush" method of oiling.

The passenger coaches of the night-mail trains were sprayed with an anti-mosquito mixture at the points of departure (Prai, Kuala Lumpur and Singapore) and en route at Parit Buntar.

There was no epidemic of disease among the Railway staff. One case of smallpox was detected at Gemas, but prompt isolation, disinfection and vaccination prevented further cases. There was a general improvement in the health of the staff, and a reduction in the number of cases of malaria reported.

(x)—School Hygiene.

Since the abolition of the two posts of Lady Medical Inspector of Schools and of the Assistant Health Officers specially detailed for school inspection, the hygienic supervision of schools has been carried out by other members of the Medical Department as part of their routine duties.

1. Number of schools inspected	...	...	896
2. ,, visits to schools	...	...	1,511
3. ,, scholars examined	...	...	58,235

The table below gives a summary of conditions found at all schools visited:

PERCENTAGE OF DEFECTS SEEN AT VISITS.

	Perak.	Selangor.	Negri Sembilan.	Pahang.
Dental disease ...	31.7	32.3	26.36	38.85
Skin disease ...	3.5	5.9	3.21	11.53
Eye defects ...	0.3	1.2	.66	1.23
Spleen enlargements ...	5.8	3.4	14.38	17.51
Pediculosis ...	7.6	5.9	.99	.97

It was fortunately found possible to retain the Dental Surgeon for service in the schools of Selangor and certain schools in Perak and Negri Sembilan. The appointment of Dental Surgeon was made in 1929, as the first step in the formation of a dental service for school children throughout the Federated Malay

States. It immediately became apparent how great was the need for such a service, for the percentage of dental defects among school children was found to be excessively high. Financial consideration, however, did not allow the extension of dental services beyond the schools of Selangor and those within comparatively easy reach in the neighbouring States of Perak and Negri Sembilan.

With the reorganisation consequent upon decentralization proposals it was no longer practicable to employ the Dental Surgeon as a Federal Officer; but, as stated, he is retained in the State of Selangor.

SUMMARY OF WORK DONE BY THE DENTAL SURGEON.

Patients	...	...	...	...	...	2,933
Attendances	...	...	...	...	...	4,045
Fillings	...	...	...	...	...	636
Extractions	...	...	...	...	...	5,329
Scalings	...	...	...	...	...	122
Dressings	...	...	...	...	...	272
Gas cases	...	...	...	...	...	635

The Dental Surgeon proceeded on leave in July. For part of the period thereafter fortnightly visits were made by a Government Dental Surgeon from Singapore.

It is sincerely to be hoped that before long it may be possible to initiate school dental services in the other States.

(xi)—Labour Conditions.

A.—ON ESTATES.

The year was noteworthy for a further great reduction in the labour force. The total estate population (excluding estates under twenty-five acres) reckoned as the average of the monthly totals, in 1931 was 233,353: the corresponding figure for 1932 was 195,514, a decrease of 37,839. The figure for 1931 was itself 47,368 less than for 1930.

Of the average total estate population, the number of labourers was 134,821, a decrease of 29,876 from the 1931 figure of 164,697.

The death-rate for the total estate population was 13.1 per mille, as compared with 20.6 in 1930 and 15.8 in 1931. The death-rate for labourers was 5.4 per mille, as compared with 10.6 in 1930 and 7.8 in 1931.

It must again be emphasized, as in last year's report, that the reduction in the labour force has been effected largely by repatriation of the unhealthy and sickly employees, and therefore the low death-rate recorded cannot be regarded as a normal figure or one which is likely to be attained except under abnormal conditions of repatriation.

The following table shows the distribution by districts of the labour force, and the death-rate in each district.

District.	Average labour force.	No. of deaths.	Death-rate per mille.
Perak—			
Krian	6,460	18	2.8
Selama	1,717	16	9.3
Larut and Matang	4,731	18	3.8
Upper Perak	300	1	3.3
Kuala Kangsar	6,464	47	7.3
Kinta	6,052	34	5.6
Batang Padang	6,948	24	3.4
Lower Perak	9,657	50	5.2
Sitiawan	2,643	7	2.6
Selangor—			
Kuala Lumpur	5,625	34	6.0
Ulu Selangor	8,009	56	6.9
Ulu Langat	5,572	18	3.2
Klang	10,306	48	4.7
Kuala Selangor	9,321	70	7.5
Sabak Bernam	1,329	5	3.8
Kuala Langat	6,927	30	4.3
Negri Sembilan—			
Seremban	11,053	54	4.89
Tampin	6,377	43	6.74
Kuala Pilah	9,592	65	6.78
Port Dickson	7,256	42	5.79
Jelebu	810	4	4.94
Pahang—			
Kuala Lipis	1,824	14	7.68
Raub	956	4	4.18
Bentong	1,904	11	5.78
Temerloh	1,409	3	2.13
Kuantan	1,548	14	9.04
Pekan	31	—	—
Total	134,821	730	5.4

The table hereunder gives the number of hospital admissions and deaths, for all cases of sickness and for malaria cases particularly, for the total estate population and for labourers only, for all nationalities and for Indians particularly.

	1931.	1932.	Decrease.
1. Labour force, all nationalities...	164,697	134,821	29,876
Hospital admissions ...	39,089	26,271	12,818
Deaths, all causes ...	1,288	730	558
Death-rate per mille ...	7.8	5.4	2.4
Hospital admissions, malaria only	8,015	6,475	1,540
Deaths, malaria only ...	177	122	55
Death-rate, malaria only ...	1.1	0.9	0.4
2. Estate population, all nationalities including dependants ...	233,353	195,514	37,839
Hospital admissions ...	54,683	39,517	15,116
Deaths, all causes ...	3,676	2,560	1,116
Death-rate per mille ...	15.8	13.1	2.7
Hospital admissions, malaria only	10,358	8,875	1,483
Deaths, malaria only ...	326	245	81
Death-rate, malaria only ...	1.4	1.3	0.1
3. Labour force, Indians only ...	119,173	93,651	25,522
Hospital admissions ...	34,704	24,271	10,433
Deaths, all causes ...	1,109	630	479
Death-rate per mille ...	9.3	6.7	2.6
Hospital admissions, malaria only	7,116	6,063	1,053
Deaths, malaria only ...	158	106	52
Death-rate, malaria only ...	1.3	1.0	0.3
4. Estate population, Indians only including dependants ...	180,789	148,646	32,143
Hospital admissions ...	49,206	37,289	11,717
Deaths, all causes ...	3,354	2,366	988
Death-rate per mille ...	18.6	15.9	2.7
Hospital admissions, malaria only	9,343	8,523	820
Deaths, malaria only ...	301	223	78
Death-rate, malaria only ...	1.7	1.5	0.2

Below is a comparison of death-rates in the four States for 1930, 1931 and 1932.

	Average death-rate among labourers.		
	1930.	1931.	1932.
Perak ...	8.1	6.2	4.8
Selangor ...	9.1	6.9	5.2
Negri Sembilan ...	14.9	10.1	5.8
Pahang ...	14.5	12.7	8.7

Further details of vital statistics of estate labourers will be found in the report of the Registrar-General of Births and Deaths.

B.—ON MINES.

The following table shows the number of mining coolies recorded for 1930, 1931 and 1932.

State.	Labour force, all nationalities.		
	1930.	1931.	1932.
Perak	50,876	33,486	22,777
Selangor	23,288	18,990	16,275
Negri Sembilan	1,523	1,252	891
Pahang	4,841	3,433	3,201
Total	80,528	57,161	43,144

It will be seen that there was a reduction of 14,017 from the 1931 figure.

No statistics are available to indicate health conditions among mining coolies, as health returns are not submitted by mine managers. The only indication is to be found in the returns from Government hospitals in mining districts.

C.—IN GOVERNMENT DEPARTMENTS.

Labourers employed by Government departments, and the quarters in which they live, are kept under inspection. Labourers' quarters are protected wherever possible by anti-malarial measures, and out-patients treatment is afforded by the travelling dispensaries.

(xii)—Housing and Town Planning.

Meetings of the Town Planning Committees of the Sanitary Boards were held regularly throughout the year and steady progress was made in this branch of municipal activity. There was no evidence of overcrowding, the position being relieved in this respect by the continued reduction in population.

Endeavours are being made to reduce the numbers of temporary houses; applications to erect these are now rarely approved.

(xiii)—Food in Relation to Health and Disease.

(1)—BAKERIES.

All persons employed in bakeries are medically examined, and premises are inspected regularly.

The Health Officer, Kuala Lumpur, reports that conditions in bakeries have undoubtedly improved since the new by-laws were introduced in 1931, but there is still considerable room for improvement particularly in regard to premises.

(2)—MILK.

Improvement is gradually being effected in the milk supplies to the towns. In Kuala Lumpur a scheme is now under contemplation whereby it is proposed to license all dairymen, and, by examination of these, to eliminate typhoid and diphtheria carriers.

(3)—AERATED WATER FACTORIES.

These are all inspected during the year and are kept under supervision.

(4)—MARKETS.

Markets are regularly inspected.

No new markets were constructed during the year. The fly-proofing at the Kuala Kubu Bharu market has proved a success.

(5)—FOOD FACTORIES.

In as far as possible every food factory was inspected and licensed, a few being closed for failing to comply with the regulations.

(6)—RESTAURANTS AND EATING SHOPS.

There is a definite improvement in these establishments in Sanitary Board areas, but in the smaller places it is often impossible to obtain other than slight improvements.

(7)—PIGGERIES.

These are banned as far as possible from Sanitary Board areas; there are none now within the limits of the Kuala Lumpur Sanitary Board.

(8)—SAMPLES UNDER THE SALE OF FOOD AND DRUGS ENACTMENT.

In the larger towns vendors of tinned and other foodstuffs are showing greater readiness to ask for authority to destroy that which is unfit for consumption.

In Perak alone over 62,000 tins of milk and nearly 2,000 tins of other foodstuffs were destroyed.

Samples of "face powders" were analysed, and as a result a number of packets were seized and destroyed.

(9)—DEFICIENCY DISEASES.

BERI-BERI.

The number of deaths reported in 1932 as due to the disease was 264 as against 352 in 1931 and 497 in 1930.

State.	Deaths.		
	1930.	1931.	1932.
Perak	117	62	32
Selangor	165	110	97
Negri Sembilan	118	102	60
Pahang	97	78	75
Total	497	352	264

The majority of these were from among the Chinese.

(xiv)—Measures taken to Spread Knowledge of Hygiene and Sanitation.

During the year propaganda lectures on elementary hygiene continued to be given in villages and kampongs in Perak and Selangor. These lectures are only of about a quarter of an hour's duration, and are followed by a walk around the kampongs, when recommendations are made for such improvements as would entail no outlay but only care and attention.

In Selangor the working of the travelling and fixed dispensaries was altered to make these institutions act as propaganda agencies and thereby secure a much wider radius of influence. The co-operation of Penghulus was more largely sought and the work correlated to other activities in a greater degree.

The lecture van of the Committee for Public Health Education continued its activities throughout the year and toured the whole of the Federated Malay States. One hundred and seventy-four shows of the film "Aminah" (Infant Welfare) and the "Rescue of Swee Kim" (Tuberculosis) were given, and approximately 101,500 persons attended.

During the year a new film dealing with malaria and mosquitos was completed; this will be released early in 1933.

At the Malayan Agri-Horticultural Exhibition held in Kuala Lumpur at the end of July, the Public Health and Infant Welfare Sections were very well attended, over 24,000 attendances being recorded; of these, 5,100 were Malays. Continuous lectures and demonstrations were arranged throughout the period of the Exhibition, and the propaganda films were also shown.

(xv)—Training of Sanitary Personnel.

Constant training of the health staff is carried out.

Five Health and Sanitary Inspectors obtained the certificate of the Royal Sanitary Institute during the year, and 8 passed the probationer's test examination.

Ten Dressers, 13 Mosquito Destruction Committee Volunteers and one Overseer were given instructions and training at Health Offices.

IV.—PORT HEALTH AND ADMINISTRATION.

During the year under review 657 (comprising 2,625,065 tons) ocean-going, and 641 (comprising 337,803 tons) local vessels passed through Port Swettenham. Of these, 167 arriving from infected ports were boarded by officers of the Health Branch. A statement showing the nature of work done is given below.

Total ships.	Total tons nett.	Total crew.	Total passengers.		Total examined.		Passengers.		
			Cabin.	Deck.	Crew.	Passengers.	U.	Q.	R.
167	697,887	22,554	2,287	36,121	13,881	17,994	284	714	36,653

U.=Granted Undertaking. Q.=Quarantined. R.=Remaining on ship.

Six pilgrim ships passed through the port. No pilgrims embarked and only nine disembarked. Some 24,971 persons for repatriation from the Federated Malay States required medical examination by the qualified staff. Many of the repatriates passed through the Labour Dépôt, but an overflow total of some 15,000 was accommodated at the Quarantine Camp.

From July vessels coming from infected ports which had been granted an exemption certificate at either Penang or Singapore obtained exemption from quarantine at Port Swettenham provided they were free from infectious disease on arrival.

The number of vaccinations carried out on board ships during the year was 155.

Partly as a measure of economy the Camp Hospital was kept empty throughout the year. Minor ailments were treated in the camp huts and other cases transferred to Klang Hospital. No cases of any minor infectious disease were seen.

The permanent staff was maintained at the minimum strength to deal with routine work and when not otherwise engaged the staff carried out much useful work within the boundaries of the camp. The number of days on which the camp was unoccupied during the year was 193.

A comparative statement showing the amount of vaccination done during the last three years is given below :

	1930.	1931.	1932.
State Aided Immigrants ...	25,899	57	8
Ordinary Immigrants ...	4,257	1,613	492
Camp Staff ...	64	—	—
Others ...	48	—	—
Total ...	30,268	1,670	500

Pahang.—The port of Kuantan had a clean bill of health during the year. There were 70 calls by steamers, none of which was infected. As the port of Trengganu had been reported as infected with smallpox all motor launches and sailing vessels arriving in Kuantan and Pekan from Trengganu were examined. Altogether 17 vessels were inspected, and all crews and passengers were vaccinated.

Perak.—No case of suspected infectious disease was reported during the year at either Port Weld or Teluk Anson.

V.—MATERNITY AND CHILD WELFARE.

Six Infant Welfare Centres were maintained during the year at Ipoh, Taiping, Kuala Lumpur, Klang, Seremban and Teluk Anson.

The following table gives the number of attendances during 1931 and 1932 :

Centres.	Number of attendances.	
	1931.	1932.
Kuala Lumpur ...	32,412	35,870
Klang ...	22,266	28,868
Taiping ...	22,971	22,097
Ipoh ...	30,772	37,322
Seremban ...	39,071	29,118
Teluk Anson ...	18,500	17,968
Total ...	169,992	171,243

The motor buses attached to the Centres conveyed 58,083 mothers, babies and children to and from the Centres, and the total mileage travelling in this service was 41,702 miles.

Sixty-nine thousand and six hundred and ninety-two visits to houses were paid by Sisters and Health Visitors during the year.

The committee of voluntary workers continued their good work during the year.

A very successful baby show was held in the Women's Hospital at Pekan, and included in the large number of visitors was His Highness the Sultan of Pahang.

VI.—HOSPITALS, DISPENSARIES AND SPECIAL CLINICS.

(1)—HOSPITAL IN-PATIENTS.

The following table shows the hospitals maintained by the Medical Department, the average daily number of patients in each, the total number of patients admitted during the year, the total number of deaths, and the death-rate per hundred admissions :

Hospitals.	Average daily No. of patients.	Total No. of patients admitted.	Deaths.	Deaths per 100 admissions.
I.—PERAK.				
Ipoh, District	368	7,865	720	9.15
Taiping, General	107	2,277	187	8.21
„ District	162	2,964	257	8.67
Batu Gajah	118	2,236	178	7.96
Kuala Kangsar, District	116	1,647	110	6.68
„ „ Women's	74	1,546	95	6.14
„ „ Malay	29	694	13	1.87
Teluk Anson, General	114	3,522	318	9.03
Kampar, District	182	2,111	308	14.59*
Tapah, District	119	2,026	170	8.39
Parit Buntar, District	48	1,099	96	8.73
Tanjong Malim, District	37	1,270	87	6.85
Sitiawan, District	55	1,787	116	6.49
Sungkai, District	10	414	22	5.31
Grik, District	13	358	16	4.47
Klian Intan, District	15	355	22	6.17
II.—SELANGOR.				
Kuala Lumpur, Bungsar	16	480	6	1.23
„ „ Tanglin	103	3,211	198	6.17
„ „ District	446	7,163	863	12.05
„ „ Malay	54	1,422	40	2.81
Klang, District	193	4,196	383	9.13
Kajang, District	93	1,873	151	8.06
Kuala Kubu, District	51	960	78	8.13
Serendah, District	42	971	81	8.34
Kuala Selangor, District	15	297	23	7.74
III.—NEGRI SEMBILAN.				
Seremban, 1st Class A Wards	38	134	—	—
„ General	299	6,005	489	8.14
Kuala Pilah, District	59	1,112	119	10.7
„ Women's	143	2,187	130	5.94
Tampin, District	68	1,377	102	7.4
Port Dickson, District	60	676	66	9.76*
Jelebu, District	30	619	44	7.11
IV.—PAHANG.				
Kuala Lipis, General	85	2,236	147	6.57
Kuantan, General	104	1,806	118	6.54
Bentong, District	92	1,711	165	9.64
Raub, District	60	1,292	88	6.81
Mentakab, District	37	1,075	50	4.65
Pekan, District	19	421	14	3.33
Kuala Rompin	1	35	1	2.86

*NOTE.—Tuberculosis cases are transferred to this hospital.

The preceding table excludes the cases in gaol hospitals and criminal vagrant wards (*vide* section VIII), which are, however, included in the return of diseases, Tables III and IV, page 52 and page 63.

Many patients were transferred from one hospital to another for special treatment; each patient transferred has been recorded as one case only in Table III, which is an exact return of the total number of in-patients in Government hospitals.

The total number of in-patients admitted during 1932 was 74,177 with 6,085 deaths. The corresponding figures for 1931 were 92,806 patients, with 7,452 deaths.

The distribution in the four States was as under:

	Admissions.	Deaths.
Perak	32,582	2,723
Selangor	20,694	1,825
Negri Sembilan	12,279	954
Pahang	8,622	583

The existing hospital accommodation at the end of the year, and the average daily number of in-patients during the year, in the four States is shown hereunder:

	Total number of beds.		Average daily number of patients.	
	1931.	1932.	1931.	1932.
Perak	3,145	3,107	2,105	1,582
Selangor	1,729	1,519	1,280	1,023
Negri Sembilan	1,151	1,139	814	670
Pahang	628	678	472	400

The falling off in the number of patients under treatment in Government hospitals mentioned in the last report continued during the year.

Table III (page 52) sets out the full return of all cases treated as in-patients. As a ready indication of the comparative incidence of those diseases or groups of diseases which were responsible for a large number of admissions, the following summary is here included:

PREVAILING DISEASES AMONG HOSPITAL PATIENTS.

Diseases.	Admissions.	Deaths.	Mortality.
Malaria	16,463	694	4.22
Venereal disease	3,712	98	2.64
Influenza	3,237	12	.37
Chest Affections—			
Bronchitis	2,138	52	2.43
Pneumonia and broncho-pneumonia	1,789	783	43.77
Pulmonary tuberculosis	1,829	919	50.25
Intestinal Affections—			
Dysentery	1,447	255	17.62
Diarrhoea and enteritis	1,328	221	16.64

Diseases.	Admissions.	Deaths.	Mortality.
Other Affections—			
Helminthic diseases ...	1,294 ...	7 ...	.84
Beri-beri ...	574 ...	47 ...	8.19
Anaemia ...	1,086 ...	244 ...	22.47
Surgical Conditions—			
Chronic ulcers ...	3,223 ...	7 ...	.22
Wounds ...	3,212 ...	49 ...	1.53
Fractures, etc. ...	2,418 ...	87 ...	3.56
Abscesses, etc. ...	2,242 ...	67 ...	2.98

NOTES ON PREVAILING DISEASES AMONG HOSPITAL PATIENTS.

(i) *Malaria*.—This, of course, heads the list of prevailing diseases, both as regards the number of cases admitted and the number of deaths.

The figures of admissions for the last five years are as under :

1928	...	...	...	...	49,553
1929	...	...	...	...	35,306
1930	...	...	...	...	36,647
1931	...	...	...	...	22,901
1932	...	...	...	...	16,463

Out of the total of 16,463 patients diagnosed as suffering from malaria, the diagnosis was confirmed by microscopic examination in 11,787 and the specific infections were as follows :

Sub-tertian infection	...	7,721	or 65.50 per cent.
Tertian infection	...	3,192	„ 27.08 „
Quartan infection	...	371	„ 3.14 „
Mixed infection	...	503	„ 4.26 „

There were 14 cases of blackwater fever admitted to hospital with three deaths.

Malaria admissions for each of the twelve months of the year in the hospitals of the four States are shown in the following table :

Months.	Perak.	Selangor.	Negri Sembilan.	Pahang.	Total.
January	673	235	154	149	1,211
February	542	212	173	180	1,027
March	581	258	219	197	1,255
April	675	357	301	172	1,505
May	837	478	458	258	2,031
June	788	426	342	281	1,837
July	600	307	294	245	1,446
August	501	204	285	231	1,221
September	472	176	244	224	1,016
October	532	215	235	241	1,223
November	505	247	245	285	1,282
December	581	223	186	226	1,216

Racial incidence among hospital patients is shown in the table on page 28.

(ii) *Veneral Disease*.—The total number of cases treated in hospitals during the year was 3,712 with 98 deaths. This subject is further dealt with under "Social Hygiene Clinics".

(iii) *Pneumonia*.—The number of cases diagnosed as pneumonia or broncho-pneumonia was 1,789, of which 783 were fatal; the case-mortality was therefore 43.76 per cent.

(iv) *Pulmonary Tuberculosis*.—The number of admissions to hospital was 1,829, compared with 2,179 during the previous year. The case mortality was 50.25 per cent.

(v) *Dysentery*.—The number of patients recorded under "dysentery" was 1,447, and the number of deaths was 255. In addition to cases recorded as dysentery, there were 1,328 recorded as diarrhoea or colitis, with 221 deaths. If the records under the different, though related, headings are combined, the figures for the year are 2,775 admissions with 476 deaths, compared with 3,696 admissions and 650 deaths in 1931.

(vi) *Beri-beri*.—The number of cases recorded as beri-beri was 574, compared with 1,036 in 1931: 556 of these cases occurred amongst Chinese. It is gratifying to note the very considerable decrease in the number of cases of this disease. It is possible that the lack of urban employment has caused the population to depend more on its own production of foodstuffs.

(vii) *Anaemia*.—There were 1,086 cases recorded as suffering from "anaemia" with no indication of other pathological condition. As previously noted many cases so recorded may be suffering from malaria, syphilis or ankylostomiasis. In addition there were recorded 77 cases of anaemia of pregnancy, with 39 deaths.

(viii) *Chronic Ulcer*.—The number of cases of chronic ulcer reported was 3,223 as against 4,438 in 1931 and 6,550 in 1930.

NOTES ON OTHER DISEASES.

(i) *Leprosy*.—The recorded number of new cases of leprosy detected and segregated during the year was 293. The number reported for 1931 was 277. Leper settlements are dealt with in section VII (B), page 41.

(ii) *Enteric Fever*.—The number of diagnosed cases was 233 with 57 deaths, compared with 315 and 91 deaths in 1931.

(iii) *Tropical Typhus*.—The number of cases during the year was 200 with 19 deaths.

(iv) *Leptospirosis*.—There were 19 cases diagnosed, with seven deaths.

(v) *Japanese River Fever*.—There were three cases with one death; the fatal case was a European.

(vi) *Cancer*.—The number of patients in Government hospitals recorded as suffering from malignant tumour was 376 with 163 deaths. These figures are slightly higher than those of last year. A statement of the nature of the tumours examined microscopically will be found in the Report of the Institute for Medical Research.

(vii) *Cirrhosis of the Liver*.—This was recorded as the diagnosis in 303 cases; the deaths number 125. The condition occurs chiefly among Chinese.

RACIAL INCIDENCE OF CERTAIN DISEASES AMONG
HOSPITAL IN-PATIENTS.

Diseases.	Chinese.		Indians.		Malays.		Others.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Malaria	5,049	387	10,216	281	1,180	20	209	4
Dysentery	576	136	1,503	239	130	9	45	1
Pneumonia and broncho- pneumonia	492	202	1,203	452	67	20	25	10
Pulmonary tuberculosis ...	1,009	577	656	304	127	27	37	11
Cirrhosis of liver	200	92	70	30	31	2	2	1
Chronic ulcer	1,678	6	971	1	500	—	74	—
Beri-beri	556	46	4	1	14	—	—	—
Appendicitis	53	7	117	4	22	—	56	3

HOSPITAL ADMISSIONS AND DEATHS, BY RACES FOR ALL DISEASES.

Race.	Admissions.	Deaths.	Case mortality per cent.	Admission rate per cent.
Chinese	25,597	3,230	12.61	34.52
Indians	39,616	2,616	6.6	53.41
Malays	6,724	156	2.3	9.06
Others	2,240	83	3.7	3.01
Total	74,177	6,085	8.20	100.0

The explanation of the higher mortality among Chinese patients, as shown above, is to be found in the comparative reluctance of the Chinese to enter hospital until disease is far advanced.

(2)—OUT-PATIENTS.

The total number of out-patients treated during the year is recorded as 632,223. This comprises those treated at all Government hospitals and dispensaries, including travelling

dispensaries, as well as patients visited in their own homes: it does not include those treated at Infant Welfare Centres, or at school inspections, nor does it include attendances at special clinics, e.g., social hygiene and ophthalmic clinics, all of which are recorded elsewhere in this report.

These out-patients can be classified under three headings:

	Male.	Female.	Total.
I.—At Hospitals	186,659	55,854	242,513
II.—At Stationary Dispensaries ...	155,200	48,393	203,593
III.—By Travelling Dispensaries ...	137,038	49,079	186,117
	<u>518,897</u>	<u>143,326</u>	<u>632,223</u>

The figures for the four States are shown below:

	Male.	Female.	Total.
(1)—PERAK.			
I.—At Hospitals	62,621	17,854	80,475
II.—At Stationary Dispensaries ...	70,890	25,411	96,301
III.—By Travelling Dispensaries ...	44,924	13,223	58,147
	<u>178,435</u>	<u>56,488</u>	<u>234,923</u>

	Male.	Female.	Total.
(2)—SELANGOR.			
I.—At Hospitals	57,589	14,147	71,736
II.—At Stationary Dispensaries ...	54,803	14,886	69,689
III.—By Travelling Dispensaries ...	47,320	16,840	64,160
	<u>159,712</u>	<u>45,873</u>	<u>205,585</u>

	Male.	Female.	Total.
(3)—NEGRI SEMBILAN.			
I.—At Hospitals	26,245	7,889	34,134
II.—At Stationary Dispensaries ...	22,686	5,412	28,098
III.—By Travelling Dispensaries ...	14,217	5,809	20,026
	<u>63,148</u>	<u>19,110</u>	<u>82,258</u>

	Male.	Female.	Total.
(4)—PAHANG.			
I.—At Hospitals	40,204	15,964	56,168
II.—At Stationary Dispensaries ...	6,821	2,684	9,505
III.—By Travelling Dispensaries :			
(a) Road	19,835	9,047	28,882
(b) River	10,742	4,160	14,902
	<u>77,602</u>	<u>31,855</u>	<u>109,457</u>

A return of the diseases among out-patients is given in Table IV under the same main headings as those employed in the return of diseases for in-patients.

(3)—LABORATORY AND POST-MORTEM EXAMINATIONS
IN HOSPITALS.

1.—Laboratory.

(a).—BLOOD FILM EXAMINATIONS.

States.	Number of patients examined.	Number positive for malarial parasites.				Total number of examinations of blood films.
		Sub-tertian.	Benign tertian.	Quartan.	Mixed infection.	
Perak	48,492	5,419	3,768	154	403	85,819
Selangor	28,342	3,688	1,864	192	106	52,685
Negri Sembilan	20,224	2,823	1,350	254	176	40,778
Pahang	13,337	2,171	1,253	138	326	32,844
Total	110,395	14,101	8,235	738	1,011	212,126

In this table cases of mixed infection have been included also under the specific headings.

Sub-tertian malaria was again the commonest form of infection in all four States.

(b).—MICROSCOPICAL EXAMINATION OF FAECES.

State.	Number of patients examined.	Positive for Entamoeba histolytica.	Positive for ova.			Total number of examinations.
			Ascaris.	Ankylostome.	Mixed infection.	
Perak	39,298	452	10,415	3,701	1,451	56,297
Selangor	18,903	128	4,488	2,632	796	29,885
Negri Sembilan	13,826	91	3,538	1,722	535	26,851
Pahang	10,961	50	1,728	902	611	26,658
Total	82,988	721	20,169	8,957	3,393	139,691

(c).—POST-MORTEM EXAMINATIONS.

	Medico-Legal.	Clinical.
Perak	432	587
Selangor	323	166
Negri Sembilan	125	57
Pahang	78	38
Total	958	848

(4)—DISEASES AMONG EUROPEANS.

The figures for in-patients which follow may be taken as indicative of the incidence of serious disease among the general European population, since Government hospitals are open alike for Government servants and the general public, and no other hospitals or nursing homes are available.

In-patients.—The total number of admissions, exclusive of 80 cases of normal labour, was 920, and there were 12 deaths. The causes of deaths not recorded below were returned as arterio-sclerosis, hernia, diseases of the heart, nephritis and suicide.

Prevailing Diseases.—

	Admissions.	Deaths.
Malaria—acute	92	1
Malaria—chronic	1	—
Tonsillitis, pharyngitis, etc. ...	76	—
Admissions for the puerperal state other than normal labour ...	34	—
Dysentery, etc.	35	—
Appendicitis	32	—
Influenza	28	1
Wounds	18	—
Fractures, etc.	37	2

Of the malaria cases, benign tertian infection was definitely diagnosed in 44, and sub-tertian in 34. There were five cases of mixed infection, and only nine acute cases in which diagnosis was not confirmed microscopically.

Other Diseases.—

	Admissions.	Deaths.
Enteric fever	5	—
Tropical typhus	8	1
Dengue	13	—
Pulmonary tuberculosis	3	—
Bronchitis	12	—
Diseases of the ear	11	—
Diseases of the nose	8	—
Cancer	3	2
Leptospirosis	4	—
Japanese river fever	3	1
Diabetes mellitus	2	—
Diseases of the liver	8	—

European Out-patients.—

States.	Male.	Female.	Total.
Perak	670	329	999
Selangor	1,204	534	2,507
Negri Sembilan	524	201	725
Pahang	654	519	1,173

The figures for out-patients refer mainly to Government servants and their families, since other European patients are usually treated by private practitioners. The large increase in the number of European out-patients shown under Pahang is due to the inclusion of the Gap and Fraser's Hill dispensaries in the figures of that State. Six hundred and ninety-two were treated as out-patients at these dispensaries.

(5)—**SURGERY.**

The following are the figures returned for surgical operations, excluding ophthalmic surgery, in all the hospitals in the four States:

	Major operations.	Minor operations.
Perak	688	4,419
Selangor	771	2,461
Negri Sembilan	288	2,018
Pahang	24	1,134
	<hr/>	<hr/>
Total ...	1,771	10,032
	<hr/>	<hr/>

The number of major operations in the larger hospitals was as follows:

PERAK.

District Hospital, Ipoh	378
General Hospital, Taiping	36
District Hospital, Taiping	112
	<hr/>
	148
District Hospital, Teluk Anson	18
European Hospital, Batu Gajah	26
European Wards, Taiping	4
	<hr/>
	30

SELANGOR.

Tanglin Hospital, Kuala Lumpur	296
District Hospital, Kuala Lumpur	226
Bungsar Hospital, Kuala Lumpur	120

NEGRI SEMBILAN.

General Hospital, Seremban	254
European Hospital, Seremban	26

The surgical reports from the three States where a surgical specialist is stationed are summarized in the following paragraphs:

(1) *Perak*.—Dr. T. W. H. Burne, Senior Surgeon, was in charge until 19th July when he was relieved by Dr. C. S. Wilson, Surgeon, from Negri Sembilan.

Comparative figures of the major operations performed in 1931 and 1932 are shown below :

	1931.	1932.
District Hospital, Ipoh	310	378
European Hospital, Batu Gajah ...	16	26
European Wards, Taiping	6	4
	<hr/>	<hr/>
	332	408
	<hr/>	<hr/>

(2) *Selangor*.—Mr. R. M. Dannatt was in charge at Kuala Lumpur during the whole of the year.

The figures shown below record the number of major operations performed in the three hospitals in Kuala Lumpur in 1931 and 1932. Emergency surgical work at the District Hospital is carried out by the Medical Officer in charge of that hospital.

	1931.	1932.
Tanglin Hospital	347	296
Bungsar Hospital	125	120
District Hospital	169	226
	<hr/>	<hr/>
	641	642
	<hr/>	<hr/>

(3) *Negri Sembilan*.—Dr. C. S. Wilson was in charge until 17th July, 1932, when he proceeded to Ipoh. After his departure the surgical work was carried out by Dr. E. S. Lawrie, Medical Officer.

The figures below give the return of major operations performed in Seremban.

	1931.	1932.
General Hospital, Seremban ...	318	254
European Hospital, Seremban ...	33	26
	<hr/>	<hr/>
	351	280
	<hr/>	<hr/>

(6)—RADIOLOGY.

Kuala Lumpur.—Dr. C. F. Constant, Radiologist, was in charge until he proceeded on leave on 14th April, 1932, when Dr. E. C. Vardy took over his duties. Mrs. E. St. G. Johnston continued to act as Lady Assistant in Electro-therapy.

Ipoh.—Dr. J. J. O'Grady, Medical Officer, was in charge during the year.

COMPARATIVE TABLE OF WORK DONE DURING THE
LAST TWO YEARS.

	X-Ray examinations.		Treatments.	
	1931.	1932.	1931.	1932.
Kuala Lumpur ...	1,721	1,541	2,619	1,134
Ipoh ...	1,394	1,614	741	406
Total ...	3,115	3,155	3,360	1,540

In this table the X-Ray examinations represent the number of patients examined (repetitions being excluded), but the treatments refer to the total number of attendances for treatment.

In addition, a number of X-Ray examinations were made with the two portable sets in use in Perak and Selangor.

The new X-Ray installation purchased for Seremban was in use from 10th June, 1932, and is doing very valuable work.

(7)—OPHTHALMOLOGY.

Special clinics for diseases of the eyes were in operation at the following centres :

I.—PERAK—

(a) *Ipoh Hospital*.—Dr. P. H. Hennessy, Ophthalmologist, was in charge until 26th May, 1932, when he proceeded on leave prior to retirement. He was relieved by Dr. G. D. Gordon.

(b) *Taiping Hospital*.—Dr. G. D. Gordon, Medical Officer, was in charge until he proceeded to Ipoh; he was succeeded by Dr. J. V. Thambar, Assistant Medical Officer.

II.—SELANGOR—

Kuala Lumpur Tanglin (late General) Hospital.—Dr. A. Viswalingam, Deputy Medical Officer, was in charge throughout the year.

III.—NEGRI SEMBILAN—

Seremban Hospital.—The new clinic, organised in 1930, continued to do good work under the charge of Dr. Tara Singh, Assistant Medical Officer.

IV.—PAHANG—

Kuala Lipis Hospital.—A new dark room was made available at the end of the year, and the Medical Officer has arranged a regular weekly clinic, refraction work being done in addition to treatment of eye diseases. It is hoped to develop this clinic into a centre for treatment of the more serious eye cases throughout the State.

The total number of patients treated in the four States was 8,823, of which 1,200 were in-patients and 7,623 out-patients (the figure records new cases, excluding repetitions and routine examinations).

TABULATED RETURNS.

	Eye diseases proper.	Eye injuries.	Refraction.	General diseases affecting eyes.	Disorganised eyes.	Total.
PERAK.						
(1) Ipoh, In-patients	334	28	2	5	8	377
" Out-patients	2,084	184	356	25	31	2,680
(2) Taiping, In-patients	77	10	4	8	6	105
" Out-patients	730	94	92	6	3	925
SELANGOR.						
(1) Kuala Lumpur, In-patients ...	254	82	6	8	34	384
" Out-patients	1,293	316	538	192	14	2,353
NEGRI SEMBILAN.						
Seremban, In-patients	148	8	3	6	8	173
" Out-patients	487	38	157	14	1	697
PAHANG.						
In-patients	157	3	1	...	...	161
Out-patients	928	29	11	...	...	968
Total In-patients	970	131	16	27	56	1,200
" Out-patients	5,522	661	1,154	237	49	7,623
GRAND TOTAL	6,492	792	1,170	264	105	8,823

	Major operations.	Minor operations.	Sub-conjunctival injections.
Ipoh	130	248	—
Taiping	14	63	—
Kuala Lumpur	112	268	20
Seremban	36	59	45
Total	292	638	65

Amongst nationalities the Chinese again preponderated to an extent of over 50 per cent.

A comparison between the work done in 1931 and 1932 is set out below:

	1931.	1932.
Ipoh—		
In-patients	440	377
Out-patients	3,054	2,680
Taiping—		
In-patients	146	105
Out-patients	1,162	925

(9)—WOMEN'S HOSPITALS.

The admissions to the three hospitals, at Kuala Lumpur, Kuala Pilah and Pekan, were slightly fewer than in 1931.

In addition to the treatment of in-patients, these hospitals serve as centres for medical work among women in the kampongs in the district.

The training of "bidans" (native midwives) by the Lady Medical Officer and European Sisters at Kuala Kangsar Women's Hospital, for work in the kampongs, continued during the year. The number of cases treated in the Kuala Kangsar and Lower Perak districts by these midwives were 953 ante-natal and 945 post-natal cases.

The European Sister engaged in itinerant work in the kampongs in the Kuala Kangsar district continued in this work throughout the year.

(10)—NEW BUILDINGS.

Kuala Lipis.—The following buildings were completed at the reconstructed Kuala Lipis Hospital:

Administration block.—The ground floor, providing accommodation for the offices and consulting rooms, store, laboratory, dispensary, and out-patient departments.

First floor.—Matron's office, labour room, second and third class maternity wards, isolation room, first and second class cubicles for females and third class female wards. The central kitchen was also completed.

STATE OF PERAK.

No new buildings were erected during the year under review.

STATE OF SELANGOR.

Kuala Lumpur.—Bungsar Hospital: a modern sanitary system has been installed, as also wash basins with running water, in all wards.

Klang.—District Hospital: extensive repairs to the hospital buildings were carried out.

STATE OF NEGRI SEMBILAN.

Kuala Pilah.—Women's Hospital: a laboratory was converted into a ward for the ladies of the household of H.H. the Yang Di-Pertuan Besar of Negri Sembilan.

STATE OF PAHANG.

Pekan.—Women's Hospital: Two-storied forty-bed ward completed.

The quarters formerly occupied by the Nursing Sister were converted into a ward for members of the Royal Family.

VII.—INSTITUTIONS FOR MENTAL DISEASES AND FOR LEPROSY.

A.—CENTRAL MENTAL HOSPITAL.

The number of patients under treatment in the hospital at the end of the year was 66 more than at the beginning of the year, the figures being 2,572 and 2,506 respectively. In 1931 a decrease of 82 was reported; but the two years cannot be directly compared, as it was in 1931 that the practice of discharging patients as relieved, to the care of their friends, was first instituted as a definite means of reducing the large number of patients in the hospital. As a result, in 1931, it was possible to effect the discharge of a large number of patients who were relieved of their acute mental symptoms and who had been inmates of the Mental Hospital for several years. The majority of these patients having been discharged in 1931, very few of the same type remained to be discharged. In 1932 those discharged as relieved were mainly those admitted during the year. Figures for the last three years are shown in the following table:

	Remaining at end of 1930.			Remaining at end of 1931.			Remaining at end of 1932.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
FEDERATED MALAY STATES	1,602	530	2,132	1,544	571	2,115	1,597	612	2,209
UNFEDERATED MALAY STATES.—									
Kedah	192	55	247	162	59	221	154	55	209
Kelantan	9	3	12	6	4	10	6	3	9
Perlis	13	6	19	11	5	16	11	5	16
1ST CLASS PATIENTS	1	3	4	...	...	...	...	...	...
CRIMINALS	170	4	174	139	5	144	126	3	129
Total ...	1,987	601	2,588	1,862	644	2,506	1,894	678	2,572

ADMISSIONS.

	1930.			1931.			1932.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
FEDERATED MALAY STATES	658	193	851	553	216	769	500	211	711
UNFEDERATED MALAY STATES.—									
Kedah	54	24	78	49	21	70	46	8	54
Kelantan ... ..	...	...	...	...	1	1	1	...	1
Perlis ... ..	...	...	...	...	...	...	1	...	1
1ST CLASS PATIENTS	3	2	5	...	...	...	...	...	...
CRIMINALS	34	4	38	38	2	40	39	1	40
Total ...	749	223	972	640	240	880	587	220	807

Admissions by nationality are shown hereunder:

	1930.		1931.		1932.	
	Males.	Females.	Males.	Females.	Males.	Females.
Europeans	3	—	—	—	—	—
Eurasians	3	2	1	—	2	1
Chinese	339	84	309	102	267	91
Indians	237	78	201	90	198	86
Malays	104	41	116	32	113	33
Javanese	14	2	8	10	6	7
Others	16	12	5	6	1	2

The number of admissions during the year was 73 less than during 1931. This decrease is probably due to the smaller population now in the country, and not due to any decrease in the incidence of insanity.

Confusional insanity, primary dementia (*dementia praecox*) and melancholia head the diagnosis list as in former years, and the opinion expressed in the report on the Central Mental Hospital for the year 1931 regarding the incidence of toxic factors in the aetiology still holds good.

An investigation was made into the incidence of hookworm infection in the patients, and the results of careful examination showed a high percentage of infection among the cases examined. The Medical Superintendent considers this to be an indication of the significance of ankylostomiasis as an aetiological factor of insanity, demonstrated for the first time by direct evidence in Malaya, though of course previously recognized in other countries. As a result of this investigation, and aided by the new technique instituted, an attempt is being made, by treating all new admissions who are found to be suffering from hookworm, to get an earlier recovery and consequent earlier discharge.

The total number of patients discharged from the hospital during the year was 534. This is 213 less than in the year 1931.

The Medical Superintendent reports:

"The recovery rate is 52.34 per cent. on the admissions. This compares unfavourably with the rate of 43.86 per cent. for 1931 which was the highest for several years. The reason for this smaller rate is in my opinion due to the operation of the principle that it is more desirable to discharge a patient to the care of his friends when relieved of his acute mental symptoms (and is thus not accounted for in the above recovery rate) than to wait for several weeks, or even months, until he is cured."

"It may be said that the risk of relapse is greater when a patient is discharged before complete cure is established. I have not been able to collect figures to show the number of these patients readmitted within a short period of their discharge, but I have gained the impression that the number is not appreciably greater than in years when this principle was not in force."

"This principle of early discharge has now been in operation for nearly two years, and I have formed the opinion that it is working successfully. The success is due, to a great extent, to the fact that most of the patients are of the peasant or cooly class and are consequently able the more readily to re-adapt themselves to life though showing a certain amount of mental deterioration. A higher class of patient would find it more difficult to adjust himself and the practice would not therefore be so successful."

"There were fewer deaths during the year than last year, the numbers being 181 in 1932 and 188 in 1931. The rate is 5.46 per cent. on the total treated, and 7.0 per cent. on the daily average."

The total expenditure on the hospital during the year was \$345,310.54, a decrease of \$14,762.14 on the previous year.

The Medical Superintendent reports an increase in the number of Malays employed as attendants, from five at the beginning of 1931 to 67 at the end of the year under review.

Appended is a table showing the classification of patients treated during the year.

	Remaining at end of 1931.			Admitted.			Discharges.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.
A.—CONGENITAL.									
1. Intellectual—									
(a) With epilepsy ...	1	17	18	3	5	8	3	...	3
(b) Without epilepsy ...	56	18	74	14	11	25	8	5	13
2. Moral ...	...	...	...	1	...	1	...	...	...
B.—INSANITY OCCURRING LATER IN LIFE.									
1. Insanity with epilepsy ...	66	18	84	5	1	6	4	1	5
2. General paralysis of the insane ...	63	5	68	13	5	18	4	...	4
3. Insanity with gross brain lesion ...	1	...	1	...	2	2	...	1	1
4. Confusional insanity ...	251	58	309	244	20	264	189	10	199
5. Primary dementia ...	605	203	808	80	55	135	56	27	83
6. Manic depressive—									
(a) Simple ...	...	...	...	25	30	55	14	21	35
(b) Mania ...	112	81	193	17	10	27	22	4	26
(c) Melancholia ...	262	130	392	50	46	96	28	46	74
(d) Alternating insanity ...	17	9	26	...	...	...	2	2	4
7. Delusional insanity—									
(a) Systematised (paranoia) ...	18	6	24	32	2	34	3	...	3
(b) Non-systematised ...	48	7	55	7	1	8	10	3	...
8. Post encephalitis lethargica ...	5	...	5	...	...	...	...	...	...
9. Dementia—									
(a) Senile ...	142	42	184	50	18	68	22	10	32
(b) Secondary ...	215	50	265	25	11	36	30	4	34
10. Not insane ...	...	...	...	5	2	7	3	2	5
11. Under observation ...	...	...	...	16	1	17	...	...	...
Total ...	1,862	644	2,506	587	220	807	398	136	534
	Absconded.			Died.			Remaining at end of 1932.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.
A.—CONGENITAL.									
1. Intellectual—									
(a) With epilepsy ...	...	...	...	1	1	2	...	21	21
(b) Without epilepsy ...	...	...	...	6	2	8	56	22	78
2. Moral ...	...	...	...	...	...	...	1	...	1
B.—INSANITY OCCURRING LATER IN LIFE.									
1. Insanity with epilepsy ...	...	...	...	3	3	6	64	15	79
2. General paralysis of the insane ...	...	...	...	15	5	20	57	6	62
3. Insanity with gross brain lesion ...	...	...	...	...	1	1	1	...	1
4. Confusional insanity ...	11	...	11	19	5	24	274	65	339
5. Primary dementia ...	5	...	5	22	9	31	602	222	824
6. Manic depressive—									
(a) Simple ...	1	1	2	9	6	15	1	2	3
(b) Mania ...	2	...	2	12	2	14	93	85	178
(c) Melancholia ...	4	...	4	6	5	11	274	125	399
(d) Alternating insanity ...	...	...	...	...	1	1	15	6	21
7. Delusional insanity—									
(a) Systematised (paranoia) ...	...	...	...	2	1	3	45	7	52
(b) Non-systematised ...	1	...	1	3	...	3	41	5	46
8. Post encephalitis lethargica ...	...	...	...	...	...	...	5	...	5
9. Dementia—									
(a) Senile ...	...	...	...	18	9	27	152	41	193
(b) Secondary ...	1	...	1	13	1	14	196	56	252
10. Not insane ...	...	...	...	1	...	1	1	...	1
11. Under observation ...	...	...	...	...	...	...	16	1	17
Total ...	25	1	26	130	51	181	1,894	678	2,572

M = Males. F = Females. T = Total.

B.—LEPER SETTLEMENTS.

1.—Federal Leper Settlement, Sungei Buloh.

The Leper Settlement at Sungei Buloh consists mainly of a number of small detached houses designed to accommodate two, four or six people, arranged in groups, the whole assemblage constituting a large village. Each group has its own communal bathing and sanitary building, but each house is provided with a separate kitchen, and has its own garden. The "village" is divided into four sections, allowing for four separate communities, viz., married couples, single men, single women, and Indians.

In addition to these small houses there are twelve large buildings in the form of hospital wards, each containing about twenty beds. There are many other buildings, including the administration offices, dispensary and treatment centre, and so forth. There is a school for the children, and there are two clubs.

The Settlement is lit throughout with electric light. A piped water supply is carried to every part, and there is a complete system of water flushed latrines and sewerage, with septic tank installations.

The buildings are pleasantly situated on the slopes of a hill, and the surrounding area is utilised for vegetable gardens and pig farms. The valleys and ravines around the Settlement have all been dealt with by a complete system of permanent anti-malarial drainage.

Dr. A. G. Badenoch was in charge until 27th of April when Dr. G. A. Ryrie returned from leave. In August Miss Goulding was appointed Matron.

STATISTICAL TABLE OF THE PATIENTS.

Nationality.	Patients remained on 31st Dec., 1931.	New cases admitted during 1932.	Readmissions during 1932, i.e., patients return from absconding, etc.	Total cases treated.	Discharged.	Transferred.	Absconded.	Died.	Patients remaining on 31st Dec., 1932.
Chinese	789	219	37	1,045	44	35	43	51	872
Indians	187	64	20	271	43	3	31	9	185
Javanese	7	1	...	8	...	...	...	...	8
Malays	6	7	2	15	1	2	...	...	12
Eurasians	5	1	1	7	1	1	...	1	4
Japanese	1	...	...	1	1	...	...	...	...
European ... ..	...	1	...	1	...	...	...	...	1
Others	1	...	...	1	...	...	...	...	...
	996	293	60	1,349	91	41	74	61	1,082

Discharges.—Ninety-one cases were discharged during the year as being free from danger to the public.

The following is an extract from the Medical Superintendent's report :

SPECIFIC TREATMENT.

(a) *Alepol*.—Seventy-nine cases were given courses of Alepol throughout the year. The average number of injections was 35 per patient, given intravenously in doses up to 5 c.c. twice weekly. None of the cases seemed to get a great deal of benefit, and 62 per cent. showed either no change or were worse. Intravenous injections of Alepol are therefore not being continued.

(b) *Tai Foong Chee*.—Much of the popularity of this drug is due to the fact that it is not an injection. It appears to act by the induction of a mild reaction. About 350 patients have received courses of Tai Foong Chee throughout the year. Forty per cent. of cases either show no improvement or are worse, 60 per cent. either claim that they are better or are observed to have improved. Tai Foong Chee does not appear to be a safe drug to administer in early cases as there is a definite risk of inducing a more rapid spread of leprosy. Later and more indurated cases appear to be prevented from getting worse as a rule.

(c) *Esters*.—The number of cases on esters was increased from 26 in the first half of the year to 225 in the second half. This still represents a lower percentage of patients on esters than is desirable. 62 per cent. show improvement on six months treatment. Seventy-eight cases received intradermal esters. This number again could be greatly increased with benefit. Eighty-nine per cent. of these cases show at least local improvement and a greater extension of this treatment combined with intramuscular esters is indicated.

Treatment in all these cases has been given for five months per half year, with one month's rest for assessment and re-examination of cases. On an average of 1,000 patients, 683 have been treated by one and other of the above stated treatments. The remainder include hospital and experimental cases together with a number too old or decrepit to benefit by treatment.

Hospital Cases.—Five hundred and fifty-one cases were treated in hospital. Roughly half these cases were diseases due directly to leprosy, the other half being general, medical or surgical cases.

One hundred and forty cases of lepra reaction were admitted as being sufficiently severe to require hospital treatment. There were no deaths. In 1930 sixty-five cases of lepra reaction were treated. The increase in number is largely to be accounted for by the increased faith of the patients in the hospital and in the new methods of treatment.

Treatment of reaction has been greatly developed throughout the year in the following ways :

Mercurochrome.—220 Soluble was used for a number of cases. This drug has already been used in India with very good effect. We have given this drug intravenously in doses of 5-10 c.c. of a two per cent. solution. The effect in reaction is often striking.

Eosin and Fluorescein.—Eosin in doses of from 10-25 c.c. of a two per cent. solution has been given intravenously in a number of cases of reaction. Fluorescein two per cent. dissolved in two per cent. sodium bicarbonate has also been used, and these are now part of the routine treatment of this condition here. Properly administered they give no rise of temperature (unlike Mercurochrome), are well tolerated, and appear to be an advance on any other treatment so far recommended. The control of this distressing condition obtained by these drugs is one of the most satisfactory aspects of the year's work both to patients and staff.

Calcium.—The report of the Leonard Wood Memorial Conference on Leprosy recommends the administration of large doses of calcium and alkalis in reaction. We have not found this to be of value and consider it to be physiologically unsound. A mixture of calcium, cod-liver oil and acid sodium phosphate was therefore substituted and an obvious improvement in the condition of the cases was observed. Proof of this by estimation of serum calcium, etc., is being completed.

The Pharmaceutical Chemist, Selangor, supplied us along the year with locally made calcium glucinate in bottles ready for intravenous injections. This has proved of great benefit. 10-20 c.c. of the solution are injected intravenously. This treatment is sufficient by itself to control milder cases of reaction and in severer cases is a most valuable adjuvant to treatment by eosin or fluorescein. It causes less disturbance to the patient than intravenous calcium chloride. Calcium chloride injected intravenously causes intense irritation and sloughing of tissues if there is any leakage: calcium glucinate is non-irritating.

Calophyllum Oil.—Esters of this oil were obtained in 1930 from Fiji and were tried out with success in a number of cases of nerve pains and "nerve reaction". We have found (a) that this is an oil commonly used locally by Indians under the name of Vepenny oil, (b) that the purified oil injected intramuscularly is just as effective as the esters, (c) that its effect on nerve pains is just as marked in most cases as that of ephedrine while the relief induced by the oil is more lasting, (d) three cases of herpes zoster showed improvement after injection of 3 c.c. into the sacrospinalis muscle.

The above methods have given us a very much more satisfactory control over the pain and distress associated with the acuter phases of leprosy. Experiments along these lines are still continuing.

Laboratory Work.—Two thousand eight hundred and forty-three microscopic examinations of skin smears were done in 1932, as compared with 1,108 in 1931. In addition a number of

sections of post-mortem and other material were made, and also examinations of films from defibrinated circulating blood, etc. A number of alternative staining methods have been experimented with: none of these have so far proved of value.

Experimental Work.—A number of tentative experiments were made throughout the year with Chinese and Malay remedies but no indication was obtained of any possible avenue of treatment. An attempt was made to desensitise two cases by injecting increasing doses of serum from a reaction case. A number of drugs were injected intradermally in selected cases and compared with controls on intradermal esters. One or two patients were put on ketone diet, high sugar diet, etc., none of these experiments proved of value.

Eighty-five selected cases were treated experimentally with injections of dyes. Over twenty dyes were used and the following results obtained:

- (a) A large number of dyes injected intravenously showed a selective affinity for the cutaneous leprotic lesion—i.e., the leprotic lesion became the colour of the dye while the surrounding skin remained normal. Four of these dyes trypan blue, brilliant green, fluorescein and eosin caused retrogression of the lesions in a number of cases. A comparatively large percentage of those so treated became bacteriologically negative. The details and results although haphazard and still very puzzling are full of promise. Further work is being conducted along these lines.

GENERAL TREATMENT.

A very definite advance in the nursing, ward management and out-patient organisation has been effected by the provision of a Matron. The women's ward has been reorganised under proper nursing conditions. The inmate-dressers receive lectures in nursing, medicine, hygiene and leprosy, and the result is that every educated patient who is fit to work is now undertaking volunteer duty of one kind or another. This increased supervision and improvement in atmosphere has made it possible to effect a number of economies without opposition or grumbling. Minor ailments of the children, of whom there were about 80, are now dealt with, and the children are medically inspected weekly. The advent of a Matron has also made possible the study of the relation between minor gynaecological disorders and the spread of leprosy. At present data are being gathered for a consideration of the effect of menstruation on the febrile aspect of leprosy.

A greater supervision of drugs, dhobie work, etc., and an elimination of a certain amount of waste has been effected. The improvement in nursing has led to a perceptible lowering of the death-rate.

Surgery.—Twelve major operations were conducted with one death. The main type of operation here is operation in the case of gangrene of the hand or foot. When minor operations—mainly removal of sequestra and decaying tissues—are included the number rises to 6,784. As this does not include minor bandaging and dressing it will be seen that the surgical side is a big drain on costs and energy. Experiments are being made with a view to finding cheaper and more effective methods of dealing with this problem.

Dental.—Four hundred dental operations have been carried out. The clinic has proved of definite benefit in controlling the minor debilities which encourage the spread of leprotic lesions.

Anti-syphilitic.—Two difficulties have confronted us throughout the year (i) that leper patients with much involvement of the skin do not tolerate large doses of arsenicals or bismuth, (ii) that of 690 patients 43.48 per cent. have both Wassermann and Kahn reactions positive. It is difficult to believe that nearly half of the cases here have active syphilis. The present tendency among leprologists however is towards the view that the Kahn test is not influenced by leprosy. The situation is therefore obscure. Selected cases with a history of chancre or clinical evidence of syphilis have therefore been treated. Two hundred and forty-seven cases were given partial or complete course during the year. The results are not yet ready for consideration.

SOCIAL.

During the year a women's club and an Indian club have been opened and an attempt made to stimulate the playing of games. Vegetable gardens and piggeries have increased, and there has been a much greater development of flower gardens. Subscriptions to the Lepers Aid Fund have decreased owing to the slump; but public interest in the Settlement appears to have increased as there have been a very large number of visitors. The usual social activities—sports, cinema shows, dramatic entertainments, etc., have been carried on. There is a good deal less cynicism about treatment, and a more hopeful atmosphere generally.

2.—Leper Asylum, Kuala Lumpur.

This asylum was re-opened in March, 1931, for the accommodation of opium smoking lepers for all the Settlements in Malaya.

The number remaining at the end of 1931 was 443. During the year there were 70 deaths, and the number remaining at the end of the year was 373.

The majority of the inmates have no wish for anti-leprosy treatment.

The asylum is under the control of the Medical Superintendent of the Sungei Buloh Settlements.

3.—Leper Settlement for Malays, Pulau Pangkor Laut.

There were ten admissions and three deaths during the year; the number remaining at the end of the year was 81, 57 males and 24 females. Three cases were discharged during the year.

Tai Foong Chee with Foh Mah Yean and Chaulmoogra oil treatment was continued, and injections of anti-leprol were given.

The immediate control of this Settlement is under the Deputy Medical Officer, Lumut, acting under the supervision of the Medical Superintendent, Sungei Buloh Leper Settlements.

VIII.—PRISONS, CRIMINAL VAGRANT WARDS AND DECREPIT SETTLEMENTS.

A.—GAOL HOSPITAL AND CRIMINAL VAGRANT WARDS.

	1931.			1932.		
	Admissions.	Deaths.	Case mortality per cent.	Admissions.	Deaths.	Case mortality per cent.
PERAK.						
Taiping Gaol	237	3	1.26	110	4	3.63
Decrepit Settlement, Taiping ...	180	9	5.00	72	2	2.78
Batu Gajah Gaol	202	...	...	229	2	0.87
SELANGOR.						
Kuala Lumpur Gaol and Criminal Vagrant Ward	234	3	2.24	136	2	1.55
NEGRI SEMBILAN.						
Seremban Gaol and Criminal Vagrant Ward	113	...	...	179	3	1.67
PAHANG.						
Kuala Lipis Gaol and Criminal Vagrant Ward	21	...	...	9		
Kuantan Gaol and Criminal Vagrant Ward	37	...	...	37		
Total ...	934	15	1.60	772	13	1.68

B.—DECREPIT SETTLEMENTS.

The majority of decrepits are accommodated at the Decrepit Settlement, Sungei Buloh, which is situated about three-quarters of a mile from the new Leper Settlement. It consists of 28 wards, each ward containing 24 beds, all the wards being connected by covered passages. Other buildings include an administration block, containing offices and a dispensary, a large dining hall, with a well-equipped kitchen, and two large workshops where the inmates can carry on their trades.

The Settlement is provided throughout with electric lighting, and a complete water supply. There are baths to every ward and water-flushed latrines, with a septic tank installation.

Dr. A. G. Badenoch was in charge until 27th April when Dr. G. A. Ryrie returned from leave.

RETURN OF ADMISSIONS AND CASUALTIES.

State.	Remained on 31st Dec., 1931.	Admissions.	Discharges.	Transfers.	Absconded.	Deaths.	Remained on 31st Dec., 1932.
Perak	61	7	7	1	1	4	55
Selangor	458	180	61	7	75	40	455
Negri Sembilan	92	27	30	4	9	5	71
Pahang ... ..	...	3	...	...	...	...	3
Total ..	611	217	98	12	85	49	584

IX.—INSTITUTE FOR MEDICAL RESEARCH.

The report of the Institute for Medical Research, which in past years has formed a bulky Appendix to the Annual Medical Report, is this year issued as a separate publication.

The report contains full information of the routine work carried out, as well as a detailed account of the research work. Among the features of general interest are the following:

(1) *Malaria*.—Investigation was carried out throughout the year into the comparative value of atabrin and quinine, among both hospital patients and estate labourers. The results were definitely in favour of the new drug.

The efficiency of the cinchona mixture known as "totaquina", as recommended for use by the Malaria Commission of the League of Nations, was tested on a number of hospital patients: this investigation was not completed at the end of the year.

Researches in connexion with the experimental feeding of various species of Malayan anophelines on human gametocyte carriers were continued, with a view to elucidating several obscure factors in the transmission of the disease.

Laboratory and field experiments were continued, on an extensive scale, into the relative efficiency of different mixtures of anti-larval oils.

(2) *Tropical Typhus*.—Research into the aetiology of this disease has long been a prominent feature of the work of the Institute. Further serological and immunological investigation of strains of both types of typhus and of Japanese river fever has resulted in a definite advance in knowledge.

(3) *Enteric Fevers*.—The epidemiological features of enteric fevers as they occur in Malaya were the subject of investigation, and work was continued on the culture of the organism as a diagnostic aid.

(4) *Preparation of Vaccine Lymph*.—The number of doses issued was 561,000. Investigation was made into the rate of deterioration of lymph over varying periods of time.

(5) *Wassermann and Kahn Tests*.—The total number of specimens examined was 18,200.

(6) *Water Analysis*.—The number of samples of water submitted for examination was 2,638.

The writer of this report went on leave on the 1st April, 1932, and Dr. R. D. Fitzgerald acted as Adviser, Medical and Health Services, from that date until the end of the year.

C. J. WILSON,
*Adviser, Medical and Health Services,
Malay States.*

TABLE I.

STAFF OF THE MEDICAL AND HEALTH DEPARTMENT ON
31ST DECEMBER, 1932.

- 1 Adviser, Medical and Health Services
- 1 Secretary to Adviser

MEDICAL BRANCH.

- 4 State Medical and Health Officers
- 2 Deputy State Medical and Health Officers
- 2 Surgeons
- 1 Radiologist
- 1 Chief Medical Officer, Social Hygiene
- 1 Anaesthetist
- 27 Medical Officers
 - 6 Lady Medical Officers
 - 2 Pharmaceutical Chemists
 - 2 Senior Deputy Medical Officers
 - 7 Deputy Medical Officers
- 46 Assistant Medical Officers
 - 5 Hospital Assistants, Special Grade
 - 1 Staff Assistant, Bungsar Hospital, Kuala Lumpur
 - 52 Hospital Assistants, Grade I
- 259 Dressers, Grade II
 - 2 X-Ray Assistants, Grade II
- 130 Dressers, Grade III
 - 2 X-Ray Assistants, Grade III
 - 9 Probationer Dressers
 - 5 Matrons, Grade I
 - 5 Matrons, Grade II
- 61 European Nursing Sisters (including 7 at Infant Welfare Centres)
 - 1 Lady Assistant to Radiologist
- 173 Asiatic Nurses (including 21 at Infant Welfare Centres)
- 30 Asiatic Midwives

HEALTH BRANCH.

- 19 Health Officers (including one in Railway Department)
- 4 Lady Medical Officers
- 1 Dental Surgeon
- 2 Chief Sanitary Inspectors (one seconded to Sanitary Board)
- 1 European Steward at Quarantine Camp, Port Swettenham
- 3 Assistant Health Officers
 - 1 Hospital Assistant, Special Grade
- 4 Senior Health Inspectors, Grade I
- 3 Senior Health Inspectors, Grade II (including one in Railway Department)
- 12 Health Inspectors, Grade I (including one in Railway Department)

- 31 Health Inspectors, Grade II
- 1 Probationer Health Inspector
- 7 Vaccinators
- 1 Dental Mechanic

INSTITUTE FOR MEDICAL RESEARCH.

- 1 Director
- 1 Bacteriologist
- 1 Pathologist
- 2 Malaria Research Officers
- 1 Entomologist
- 1 Chief Chemist
- 3 Chemists
- 1 Deputy Medical Officer (Assistant Bacteriologist)
- 2 Assistant Medical Officers
- 1 Laboratory Assistant, Special Grade.
- 4 Laboratory Assistants, Grade I
- 6 Laboratory Assistants, Grade II
- 11 Laboratory Assistants, Grade III
- 1 Probationer
- 1 Shorthand Typist
- 1 Storekeeper

CENTRAL MENTAL HOSPITAL.

- 1 Medical Superintendent
- 1 Assistant Medical Superintendent
- 2 European Male Nurses
- 1 European Sister
- 1 Senior Assistant Physician (Senior Deputy Medical Officer)
- 3 Assistant Physicians (Assistant Medical Officers)
- 1 Inspector
- 1 Assistant Inspector
- 3 Dressers, Grade II
- 1 Dresser, Grade III
- 1 Probationer
- 3 Nurses
- 1 Workmistress
- 1 Farm Overseer

SUNGEI BULOH SETTLEMENTS.

- 1 Medical Superintendent
- 1 Assistant Medical Officer
- 1 Matron, Grade II
- 1 Hospital Assistant, Grade I
- 3 Dressers, Grade II
- 1 Probationer

TABLE II.

STATEMENT OF REVENUE AND EXPENDITURE UNDER
"PERSONAL EMOLUMENTS" AND "OTHER CHARGES", 1932.

Expenditure Detailed.	Personal Emoluments.	Other Charges.	
		Annually Recurrent.	Special Expenditure.
	\$ c.	\$ c.	\$ c.
1. Adviser, Medical and Health Services, Malay States	124,130 28	15,952 66	
2. Director, Institute for Medical Research, F.M.S.	143,440 97	44,288 44	3,616 50
3. College of Medicine, Singapore	90,878 09	36,302 37	1,923 91
4. Medical Superintendent, Central Mental Hospital, Tanjong Rambutan ...	76,644 53	276,548 49	
5. State Medical and Health Officer, Perak	875,213 45	561,512 56	1,471 08
6. State Medical and Health Officer, Selangor	763,142 00	433,434 00	3,033 00
7. State Medical and Health Officer, Negri Sembilan ...	365,832 68	218,254 01	6,158 00
8. State Medical and Health Officer, Pahang	261,572 11	167,343 26	5,828 24
9. Medical Superintendent, Sungei Buloh Settlements, Sungei Buloh	30,972 41	253,014 76	124 00
Total	2,731,826 52	2,006,650 55	22,154 73

Revenue for 1932,
hospital fees,
licences, etc.

\$ c.

1. Adviser, Medical and Health Services, Malay States ...	4,790 25
2. Director, Institute for Medical Research, Federated Malay States	22,080 35
3. College of Medicine, Singapore	1,175 00
4. Medical Superintendent, Central Mental Hospital, Tanjong Rambutan	65,282 47
5. State Medical and Health Officer, Perak	75,152 47
6. State Medical and Health Officer, Selangor	85,185 00
7. State Medical and Health Officer, Negri Sembilan ...	27,647 29
8. State Medical and Health Officer, Pahang	10,767 09
9. Medical Superintendent, Sungei Buloh Settlements ...	17,097 89

TABLE III.
RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
FOR THE YEAR 1932.

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.					
1. Enteric group--					
(a) Typhoid fever	20	209	53	229	27
(b) Paratyphoid A.	1	16	2	17	1
(c) Paratyphoid B.	...	3	...	3	...
(d) Paratyphoid C.	...	2	1	2	...
(e) Type not defined	...	3	1	3	...
2. Typhus (Tropical)	21	200	19	221	9
3. Relapsing fever	...	...	...	...	...
4. Undulant fever (Malta fever)	...	...	...	...	...
5. Malaria—					
(a) Tertian	94	3,192	45	3,286	75
(b) Quartan	26	371	7	397	7
(c) Aestivo-autumnal	212	7,721	399	7,933	157
(d) Mixed infection	15	503	41	518	18
(e) Undefined microscopically	80	2,369	93	2,449	53
(f) Cachexia	91	2,293	106	2,384	58
(g) Black-water fever	...	14	3	14	1
6. A.—Smallpox					
B.—Alastrim					
7. Measles	4	104	...	108	5
8. Scarlet fever	...	...	...	...	...
9. Whooping cough	...	35	2	35	1
10. Diphtheria	13	168	40	181	3
11. Influenza	34	3,237	12	3,271	49
12. Miliary fever	...	...	...	...	...
13. Mumps	...	42	...	42	1
14. Cholera	...	...	...	...	...
15. Epidemic diarrhoea	...	...	...	...	...
16. Dysentery—					
(a) Amœbic	44	687	80	731	17
(b) Bacillary	38	599	148	637	19
(c) Undefined or due to other causes	7	161	27	168	4
17. Plague—					
(a) Bubonic	...	...	...	...	...
(b) Pneumonic	...	...	...	...	...
(c) Septicæmic	...	...	...	...	...
(d) Undefined	...	...	...	...	...
18. Yellow fever	...	...	...	...	...
19. Leptospirosis...	...	19	7	19	...
20. Leprosy	6	274	1	280	8
21. Erysipelas	4	61	14	65	2
22. Acute poliomyelitis	...	8	...	8	2
23. Encephalitis lethargica	4	4	...	8	2
24. Epidemic cerebro-spinal fever	...	11	10	11	1
25. Other epidemic diseases—					
(a) Rubella (German measles)	...	...	...	...	...
(b) Varicella (chicken-pox)	10	185	...	195	6

TABLE III—(cont.)
 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES—(cont.)					
Other epidemic diseases—(cont.)					
(c) Kala-azar ... ..	...	...	...	...	...
(d) Phlebotomus fever ... ..	...	...	...	...	...
(e) Dengue... ..	2	43	...	45	...
(f) Epidemic dropsy ... ..	...	...	...	...	...
(g) Yaws	12	222	...	234	19
(h) Trypanosomiasis ... ..	...	1	...	1	...
26. Glanders ... ..	...	...	...	...	...
27. Anthrax ... ..	...	...	...	...	...
28. Rabies ... ..	...	1	1	1	...
29. Tetanus	3	96	72	99	1
30. Mycosis	1	2	...	3	...
31. Tuberculosis, pulmonary and laryngeal	259	1,829	919	2,088	217
32. Tuberculosis of the meninges or central nervous system	1	19	15	20	...
33. Tuberculosis of the intestines or peritoneum	1	39	28	40	...
34. Tuberculosis of the vertebral column	5	25	6	30	7
35. Tuberculosis of bones and joints	17	50	8	67	16
36. Tuberculosis of other organs—					
(a) Skin or subcutaneous tissue (lupus)	2	8	...	10	1
(b) Lymphatic system	7	28	5	35	1
(c) Genito-urinary	1	8	1	9	...
(d) Other organs ... ..	...	14	5	14	1
37. Tuberculosis disseminated—					
(a) Acute ... ..	...	20	16	20	1
(b) Chronic ... ..	...	1	...	1	...
38. Syphilis—					
(a) Primary	44	475	...	519	24
(b) Secondary	85	773	4	858	56
(c) Tertiary	55	354	45	409	37
(d) Hereditary	4	88	45	92	3
(e) Period not indicated	4	26	2	30	3
39. Soft chancre	16	290	...	306	19
40. A.—Gonorrhœa and its complications	87	1,378	2	1,465	60
B.—Gonorrhœal ophthalmia	7	74	...	81	4
C.—Gonorrhœal arthritis	29	236	...	265	24
D.—Granuloma venereum	5	18	...	23	...
41. Septicæmia	1	114	100	115	2
42. Other infectious diseases—					
Filariasis ... ..	...	4	...	4	...
Tsutsugamushi fever (Japanese river fever) ... ..	...	3	1	3	...

TABLE III—(cont.)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
II.—GENERAL DISEASES NOT MENTIONED ABOVE.					
43. Cancer or other malignant tumours of the buccal cavity	8	43	21	51	3
44. Cancer or other malignant tumours of the stomach or liver	8	89	58	97	3
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum	3	22	13	25	...
46. Cancer or other malignant tumours of the female genital organs ...	4	74	18	78	1
47. Cancer or other malignant tumours of the breast ... ..	...	14	4	14	...
48. Cancer or other malignant tumours of the skin ... ..	...	37	6	37	3
49. Cancer or other malignant tumours of organs not specified	8	97	43	105	14
50. Tumours non-malignant	7	129	6	136	5
51. Acute rheumatism ... ..	...	52	...	52	1
52. Chronic rheumatism	10	128	...	138	7
53. Scurvy (including Barlow's disease)	...	7	...	7	...
54. Pellagra ... ..	...	...	...	...	...
55. Beri-beri	114	574	47	688	71
56. Rickets	3	5	1	8	...
56A. Other deficiency diseases ... ..	...	4	...	4	...
57. Diabetes mellitus	7	126	15	133	9
58. Anæmia—					
(a) Pernicious	2	27	7	29	4
(b) Other anæmias and chlorosis	65	1,059	237	1,124	56
59. Diseases of the pituitary body ...	...	...	...	...	...
60. Diseases of the thyroid gland—					
(a) Exophthalmic goitre	1	4	...	5	1
(b) Other diseases of the thyroid gland, myxœdema, etc. ...	...	8	...	8	...
61. Diseases of the para-thyroid glands	...	...	...	...	...
62. Diseases of the thymus ... ..	...	...	...	...	...
63. Diseases of the supra-renal glands	...	...	...	...	...
64. Diseases of the spleen	1	40	6	41	1
65. Leukæmia—					
(a) Myelogenous ... ..	...	6	...	6	...
(b) Lymphatic ... ..	...	3	3	3	...
(c) Undefined ... ..	...	3	...	3	...
65A. Hodgkin's disease (lymphadenoma) ... ..	...	7	2	7	1
66. Alcoholism	1	36	...	37	...
67. Chronic poisoning by mineral substances (lead, mercury, etc.) ...	3	28	4	31	2
68. Chronic poisoning by organic substances (morphia, cocaine, etc.) ...	1	105	...	106	2
69. Other general diseases—					
(a) Auto-intoxication ... ..	...	4	4	4	...
(b) Purpura hæmorrhagica ... ..	...	1	...	1	...
(c) Hæmophilia ... ..	...	4	...	4	...
(d) Diabetes insipidus	1	1	...	2	...
(e) Other	8	60	7	68	1

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.					
70. Encephalitis (not including encephalitis lethargica) ... ..	...	9	7	9	...
71. Meningitis (not including tuberculous meningitis or cerebro-spinal meningitis)	1	31	23	32	1
72. Locomotor ataxia	13	20	6	33	9
73. Other affections of the spinal cord	11	35	6	46	8
74. Apoplexy—					
(a) Hæmorrhage ... ..	...	60	46	60	2
(b) Embolism ... ..	...	1	1	1	...
(c) Thrombosis ... ..	...	6	3	6	...
75. Paralysis—					
(a) Hemiplegia	41	101	23	142	34
(b) Other paralyzes	30	71	5	101	21
76. General paralysis of the insane ... ..	...	3	...	3	...
77. Other forms of mental alienation ...	13	617	...	630	6
78. Epilepsy	8	110	3	118	5
79. Convulsions (non-puerperal) 5 years or over ... ..	...	11	4	11	...
80. Infantile convulsions (<i>see</i> XII Diseases of Infancy) ... ..	...	4	3	4	...
81. Chorea	1	2	...	3	...
82. A.—Hysteria ... ..	...	34	...	34	...
B.—Neuritis	8	143	1	151	13
C.—Neurasthenia ... ..	...	62	...	62	2
D.—Neuralgia	4	145	...	149	1
83. Cerebral softening	1	2	2	3	...
84. Other affections of the nervous system	5	53	2	58	5
85. Affections of the organs of vision—					
(a) Conjunctivitis	21	374	...	395	9
(b) Trachoma	16	113	...	129	16
(c) Tumours of the eye ... ..	...	2	...	2	1
(d) Other affections of the eye ...	136	895	...	1,031	76
86. Affections of the ear or mastoid sinus	14	263	1	277	10
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.					
87. Pericarditis	1	22	15	23	1
88. Acute endocarditis or myocarditis	3	39	22	42	1
89. Angina pectoris ... ..	...	3	...	3	...
90. Other diseases of the heart—					
(a) Valvular—					
Mitral	16	172	54	188	7
Aortic... ..	2	73	37	75	1
Tricuspid	1	1	1	2	...
Pulmonary ... ..	...	...	...	...	...
Undefined	1	22	8	23	2
(b) Myocarditis	16	271	143	287	16
(c) Functional ... ..	...	4	...	4	...
(d) Other	2	49	14	51	2

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM—(cont.)					
91. Diseases of the arteries—					
(a) Aneurism	2	10	4	12	...
(b) Arterio-sclerosis	2	21	8	33	1
(c) Other diseases... ..	2	6	1	8	1
92. Embolism or thrombosis (non-cerebral) ... ..	...	7	2	7	1
93. Diseases of the veins—					
(a) Hæmorrhoids	4	207	...	211	7
(b) Varicose veins... ..	...	7	...	7	...
(c) Phlebitis	2	13	...	15	...
94. Diseases of the lymphatic system—					
Lymphangitis ... ..	...	41	...	41	...
Lymphadenitis, bubo (non-specific)	33	300	...	333	17
95. Hæmorrhage of undetermined cause .. ..	...	7	3	7	...
96. Other affections of the circulatory system ... ..	...	9	1	9	1
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.					
97. Diseases of the nasal passages—					
(a) Adenoids	1	10	...	11	...
(b) Polypus ... ..	...	19	...	19	...
(c) Rhinitis	1	30	...	31	...
(d) Coryza	2	130	...	132	...
(e) Other	2	35	...	37	3
98. Affections of the larynx—					
Laryngitis	1	43	6	44	2
Others ... ..	...	1	1	1	...
99. Bronchitis—					
(a) Acute	48	1,370	19	1,418	23
(b) Chronic	39	768	33	807	46
100. Broncho-pneumonia	25	723	317	748	20
101. Pneumonia—					
(a) Lobar	37	1,010	444	1,047	15
(b) Unclassified ... ..	...	56	22	56	3
102. Pleurisy—					
(a) Dry pleurisy	8	164	2	172	7
(b) Pleural effusion	8	64	12	72	5
(c) Empyema	1	35	11	36	3
103. Congestion of the lungs	1	8	1	9	1
104. Gangrene of the lungs ... ..	...	16	15	16	...
105. Asthma	32	703	4	735	32
106. Pulmonary emphysema	1	3	...	4	2
107. Other affections of the lungs—					
(a) Pulmonary spirochaetosis	1	1	...	2	...
(b) Other	2	50	13	52	2

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
VI.—DISEASES OF THE DIGESTIVE SYSTEM.					
108. A.—Diseases of teeth or gums—					
Caries, pyorrhœa, etc.	4	294	1	298	1
B.—Other affections of the mouth—					
(a) Stomatitis	3	64	...	67	3
(b) Cancrum oris ... ..	...	11	8	11	...
(c) Glossitis ... ..	...	14	...	14	1
(d) Other	1	29	1	30	...
109. Affections of the pharynx or tonsils—					
(a) Tonsillitis	5	290	2	295	1
(b) Pharyngitis	2	145	1	147	4
(c) Other ... ..	...	38	1	38	38
110. Affections of the œsophagus	2	25	2	27	3
111. A.—Ulcer of the stomach	13	179	30	192	15
B.— " duodenum	9	99	9	108	4
112. Other affections of the stomach—					
(a) Gastritis	13	480	1	493	12
(b) Dyspepsia, etc.	5	257	...	262	7
(c) Other ... ..	...	58	5	58	3
113. Diarrhœa and enteritis (in children under two years of age)	9	325	122	334	5
114. A.—Diarrhœa and enteritis (in patients over two years of age)	27	1,003	99	1,030	29
B.—Colitis	3	37	...	40	...
C.—Sprue	8	105	13	113	5
115. Ankylostomiasis	36	820	8	856	28
116. Diseases due to intestinal parasites—					
(a) Cestoda (tœnia) ... ..	...	...	...	...	...
(b) Trematoda (flukes) ... ..	...	...	...	...	...
(c) Nematoda (other than ankylostoma)—					
Ascaris	35	1,275	7	1,310	18
Trichocephalus dispar ... ..	...	4	...	4	1
Trichina ... ..	...	...	...	...	...
Dracunculus ... ..	...	4	...	4	...
Strongylus ... ..	...	...	...	...	...
Oxyuris ... ..	...	3	...	3	...
(d) Coccidia ... ..	...	...	...	...	...
(e) Other parasites ... ..	...	2	...	2	...
(f) Unclassified ... ..	...	6	...	6	...
117. Appendicitis	10	246	14	256	8
118. Hernia	11	237	5	248	7
119. A.—Affections of the anus, fistula, etc.	11	204	...	215	7
B.—Other affections of the intestines—					
(a) Enteroptosis ... ..	...	2	...	2	...
(b) Constipation	4	456	...	460	5
(c) Colic	2	352	...	354	4
(d) Other ... ..	...	98	29	98	4

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
VI.—DISEASES OF THE DIGESTIVE SYSTEM—(cont.)					
120. Acute yellow atrophy of the liver	1	2	2	3	...
121. Hydatid of the liver	...	...	...	...	...
122. Cirrhosis of the liver—					
(a) Alcoholic	...	13	7	13	...
(b) Other forms	38	290	118	328	21
123. Biliary calculus	...	6	...	6	...
124. Other affections of the liver—					
(a) Abscess	5	56	16	61	1
(b) Hepatitis	9	143	1	152	6
(c) Cholecystitis	2	69	9	71	1
(d) Jaundice	2	124	12	126	5
(e) Other	...	24	2	24	...
125. Diseases of the pancreas	...	7	3	7	...
126. Peritonitis (of unknown cause)	3	79	48	82	2
127. Other affections of the digestive system	1	24	...	25	...
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).					
128. Acute nephritis	22	215	69	237	13
129. Chronic nephritis	42	478	162	520	42
130. A.—Chyluria	...	...	...	...	...
B.—Schistosomiasis	...	...	...	...	...
131. Other affections of the kidneys (pyelitis, etc.)	7	221	35	228	8
132. Urinary calculus	10	59	1	69	3
133. Diseases of the bladder (cystitis, etc.)	5	139	11	144	6
134. Diseases of the urethra—					
(a) Stricture	6	74	...	80	3
(b) Other	7	148	...	155	8
135. Diseases of the prostate—					
(a) Hypertrophy	...	4	...	4	...
(b) Prostatitis	...	13	...	13	2
136. Diseases (non-venereal) of the genital organs of man—					
(a) Epididymitis	...	33	...	33	...
(b) Orchitis	2	73	...	75	1
(c) Hydrocele	5	69	...	74	1
(d) Other	2	113	2	115	8
137. Cysts or other non-malignant tumours of the ovaries	3	40	1	43	3
138. A.—Salpingitis	1	77	1	78	1
B.—Abscess of the pelvis	1	7	...	8	...
139. Uterine tumours (non-malignant)	...	34	2	34	1
140. Uterine hæmorrhage (non-puerperal)	...	14	...	14	2
141. A.—Metritis	...	15	...	15	...

TABLE III—(cont.)

RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)—(cont.)					
B.—Other affections of the female genital organs—					
(a) Displacements of uterus ...	3	76	...	79	...
(b) Amenorrhœa ...	...	8	...	8	...
(c) Dysmenorrhœa ...	...	60	...	60	...
(d) Leucorrhœa ...	3	76	...	79	4
(e) Other ...	8	209	1	217	9
142. Diseases of the breast (non-puerperal)—					
(a) Mastitis ...	1	20	...	21	...
(b) Abscess of breast ...	1	26	...	27	2
VIII.—PUERPERAL STATE.					
143. A.—Admitted for ante-natal observation ...	131	927	...	1,058	76
B.—Normal labour ...	132	4,342	...	4,474	86
C.—Difficult labour ...	13	278	13	291	13
D.—Accidents of pregnancy—					
(a) Abortion ...	10	221	2	231	6
(b) Ectopic gestation ...	1	17	4	18	...
(c) Anæmia of pregnancy ...	1	77	39	78	3
(d) Other accidents of pregnancy ...	6	225	11	231	4
144. Puerperal hæmorrhage ...	...	16	9	16	1
145. Other accidents of parturition ...	5	140	25	145	7
146. Puerperal septicæmia ...	2	132	64	134	6
147. Phlegmasia dolens ...	1	1	...	2	...
148. Puerperal eclampsia ...	4	59	21	63	1
149. Sequelæ of labour ...	...	36	2	36	2
150. Puerperal affections of the breast ...	...	3	...	3	...
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.					
151. Gangrene ...	4	41	12	45	5
152. A.—Boil ...	3	88	1	91	5
B.—Carbuncle ...	7	81	3	88	1
153. A.—Abscess ...	70	1,471	12	1,541	69
B.—Whitlow ...	1	44	...	45	2
C.—Cellulitis ...	47	558	39	605	39
154. A.—Tinea ...	6	104	...	110	6
B.—Scabies ...	10	253	...	263	7
155. Other diseases of the skin—					
(a) Erythema ...	...	18	...	18	1
(b) Urticaria ...	1	38	...	39	...
(c) Eczema ...	18	430	...	448	16
(d) Herpes ...	1	69	...	70	1
(e) Psoriasis ...	...	12	...	12	...
(f) Elephantiasis ...	...	17	...	17	1
(g) Myiasis ...	...	...	...	...	...
(h) Chigoes ...	...	...	...	...	...

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES—(cont.)					
Other diseases of the skin—(cont.)					
(i) Cutaneous leishmaniasis ...	...	3	...	3	...
(j) Other ...	26	317	1	343	19
155A. Chronic ulcer ...	253	3,226	7	3,479	216
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS).					
156. Diseases of bones (Osteitis, etc.)...	6	94	1	100	5
157. Diseases of joints—					
(a) Arthritis ...	28	274	2	302	20
(b) Synovitis ...	3	128	...	131	4
158. Other diseases of bones or organs of locomotion ...	20	277	4	297	19
XI.—MALFORMATIONS.					
159. Malformations—					
(a) Hydrocephalus ...	...	7	4	7	...
(b) Hypospadias ...	...	...	...	...	...
(c) Spina bifida ...	...	3	1	3	...
(d) Other ...	3	27	3	30	2
XII.—DISEASES OF INFANCY.					
160. Congenital debility ...	3	89	49	92	1
161. Premature birth ...	2	333	220	335	4
162. A.—Infantile convulsions...	2	68	28	70	...
B.—Other affections of infancy ...	8	183	82	191	8
163. Infant neglect (infants of three months or over) ...	1	16	7	17	...
XIII.—AFFECTIONS OF OLD AGE.					
164. Senility—					
(a) Senile dementia ...	...	3	...	3	...
(b) Senile debility ...	138	391	97	529	89
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.					
165. Suicide by poisoning ...	...	4	3	4	...
166. Corrosive poisoning (intentional) ...	...	20	7	20	...
167. Suicide by gas poisoning ...	...	...	...	...	...
168. Suicide by hanging or strangulation ...	...	3	3	3	...
169. Suicide by drowning ...	...	1	...	1	...
170. Suicide by firearms ...	...	...	...	...	...
171. Suicide by cutting or stabbing instruments ...	...	2	1	2	1
172. Suicide by jumping from a height ...	...	...	...	...	...
173. Suicide by crushing ...	...	...	...	...	...

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—(cont.)					
174. Other suicides ... ..	...	...	...	...	...
175. A.—Food poisoning ... ..	...	10	...	10	...
B.—Botulism ... ..	...	1	...	1	...
176. Attacks of poisonous animals—					
(a) Snake bite	1	29	1	30	2
(b) Insect bite	1	53	...	54	...
177. Other poisonings	1	69	7	70	3
A.—Datura poisoning ... ..	...	19	...	19	...
178. Burns (by fire)	13	147	17	160	4
179. Burns (other than by fire) ...	12	198	6	210	14
180. Suffocation (accidental) ... ..	...	1	...	1	...
181. Poisoning by gas (accidental) ...	...	...	...	...	...
182. Drowning (accidental) ... ..	...	3	...	3	...
183. Wounds by firearms (war ex- cepted)	1	48	5	49	3
184. Wounds by cutting or stabbing instruments	63	1,640	20	1,703	49
185. Wounds by fall	56	1,225	10	1,281	44
186. Wounds in mines or quarries ...	4	149	2	153	5
187. Wounds by machinery	2	105	1	107	4
188. Wounds by crushing (e.g., railway accidents, etc.)	11	247	11	258	6
189. Injuries inflicted by animals, bites, kicks, etc.	2	183	3	185	6
190. Wounds inflicted on active service ... ..	...	...	...	...	...
191. Executions of civilians by bel- ligerents ... ..	...	...	...	...	...
192. A.—Over fatigue ... ..	...	...	...	...	...
B.—Hunger or thirst ... ..	...	...	...	...	...
193. Exposure to cold, frost bite, etc....	...	...	...	...	...
194. Exposure to heat—					
(a) Heatstroke ... ..	...	3	...	3	...
(b) Sunstroke ... ..	...	1	...	1	...
195. Lightning stroke ... ..	...	3	...	3	...
196. Electric shock ... ..	...	4	...	4	...
197. Murder by firearms ... ..	...	...	...	...	...
198. Murder by cutting or stabbing instruments ... ..	...	...	...	...	...
199. Murder by other means ... ..	...	...	...	...	...
200. Infanticide (murder of an infant under one year) ... ..	...	...	...	...	...
201. A.—Dislocation	8	71	...	79	3
B.—Sprain	6	194	...	200	2
C.—Fracture	116	851	83	967	93
202. Other external injuries	47	1,302	4	1,349	32
202A. Concussion	1	42	1	43	3
203. Deaths by violence of unknown cause ... ..	...	...	...	...	...

TABLE III—(cont.)

 RETURN OF DISEASES AND DEATHS (IN-PATIENTS)
 FOR THE YEAR 1932—(cont.)

Diseases.	Remaining in hospital at end of 1931.	Yearly total.		Total cases treated.	Remaining in hospital at end of 1932.
		Admissions.	Deaths.		
XV.—ILL-DEFINED DISEASES.					
204. Sudden death (cause unknown) ...	...	...	...	...	...
205. A.—Diseases not already specified or ill-defined—					
(a) Ascites ...	1	39	1	40	4
(b) Edema ...	...	5	...	5	...
(c) Asthenia ...	6	145	18	151	5
(d) Shock ...	...	12	7	12	...
(e) Hyperpyrexia ...	...	6	3	6	...
B.—Malingering ...	...	23	...	23	...
C.—Pyrexia of uncertain origin ...	5	151	10	156	10
D.—Diagnosis undetermined ...	55	489	...	544	90
Total ...	4,029	74,166	6,085	78,195	3,150
NATIONALITIES.					
Europeans ...	40	1,000	12	1,040	28
Eurasians ...	12	342	14	354	9
Chinese ...	1,999	25,597	3,230	27,596	1,579
Indians ...	1,659	39,605	2,616	41,264	1,319
Malays ...	262	6,724	156	69,886	181
Javanese ...	37	458	37	495	23
Japanese ...	3	55	6	58	...
Others ...	17	385	14	402	11
Total ...	4,029	74,166	6,085	78,195	3,150

TABLE IV.

The Annual Return of Diseases (out-patients) treated at all Government hospitals, stationary dispensaries, and travelling dispensaries (excluding Infant Welfare Centres, and Social Hygiene and other Special clinics).

Diseases.	Male.	Female.	Total.
I.—Epidemic, endemic and infectious diseases	103,605 ...	31,706 ...	135,311
II.—General diseases not mentioned above	15,906 ...	6,117 ...	22,023
III.—Affections of the nervous system and organs of the senses	28,817 ...	10,317 ...	39,134
IV.—Affections of the circulatory system ...	1,280 ...	346 ...	1,626
V.—Affections of the respiratory system ...	42,182 ...	13,557 ...	55,739
VI.—Diseases of the digestive system ...	119,761 ...	48,657 ...	168,418
VII.—Diseases of the genito-urinary system (non-venereal)	1,764 ...	3,081 ...	4,845
VIII.—Puerperal state	1 ...	2,748 ...	2,749
IX.—Affections of the skin and cellular tissues	112,878 ...	25,901 ...	138,779
X.—Diseases of bones and organs of locomotion (other than tuberculosis)	5,748 ...	1,875 ...	7,623
XI.—Malformations	2 ...	1 ...	3
XII.—Diseases of infancy	156 ...	85 ...	241
XIII.—Affections of old age	1,490 ...	549 ...	2,039
XIV.—Affections produced by external causes	42,258 ...	7,200 ...	49,458
XV.—Ill-defined diseases	3,348 ...	1,342 ...	4,690
Total ...	479,196 ...	153,482 ...	632,678

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