Annual report on the Medical Department / Straits Settlements.

STRAITS SETTLEMENTS

ANNUAL REPORT

OF THE

MEDICAL DEPARTMENT

FOR THE YEAR

1931

BY

R. D. FITZGERALD, M.C. M.D.,
Ag. Director of Medical and Health Services, Straits Settlements

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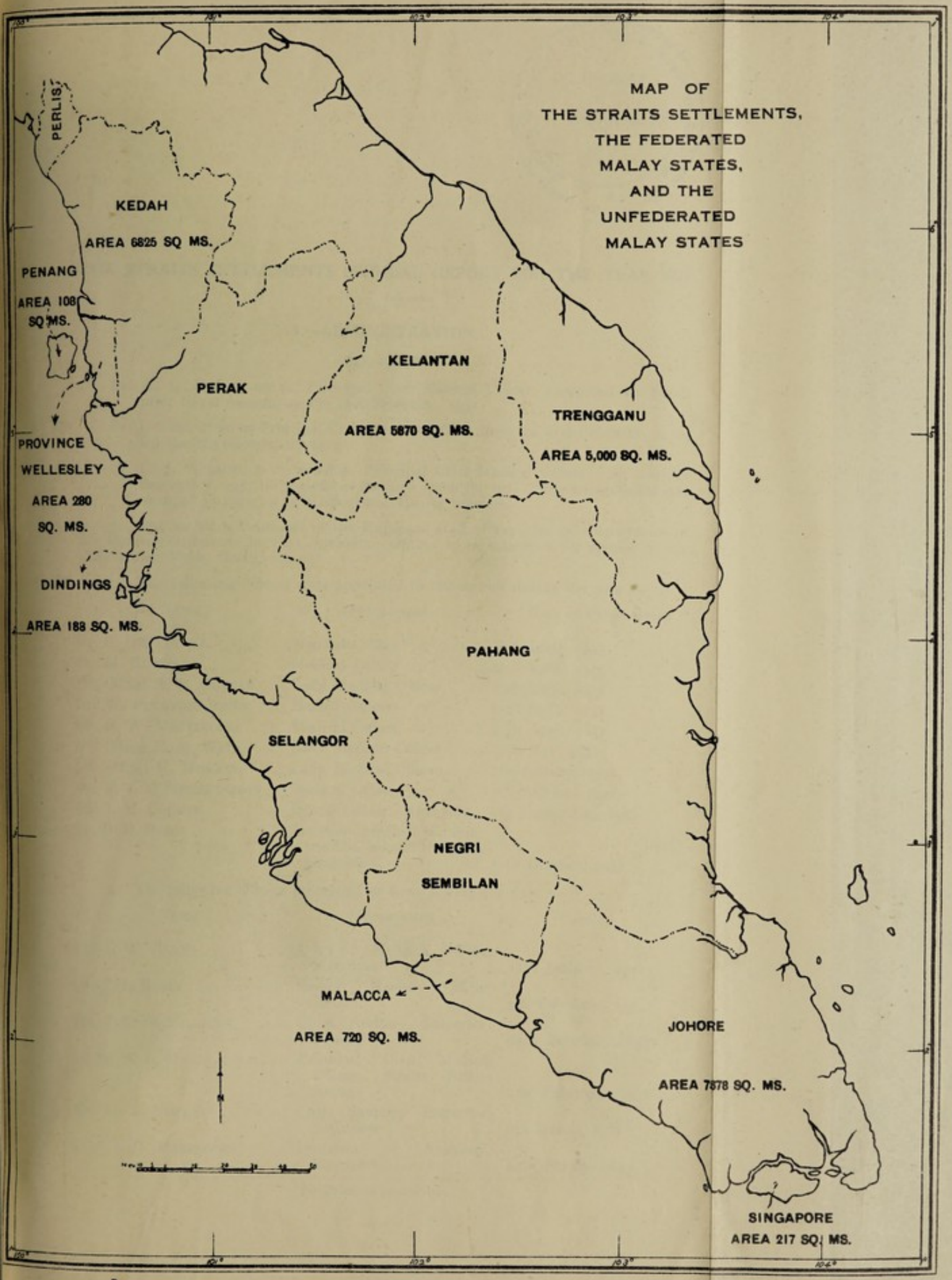
MAP OF
THE STRAITS SETTLEMENTS,
THE FEDERATED
MALAY STATES,
AND THE
UNFEDERATED
MALAY STATES
PERLIS
KEDAH
AREA 6825 SQ MS.
PENANG
AREA 108
SQ MS.
PROVINCE
WELLESLEY
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DINDINGS
AREA 188 SQ. MS.
PERAK
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TRENGGANU
AREA 5,000 SQ. MS.
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NEGRI
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JOHORE
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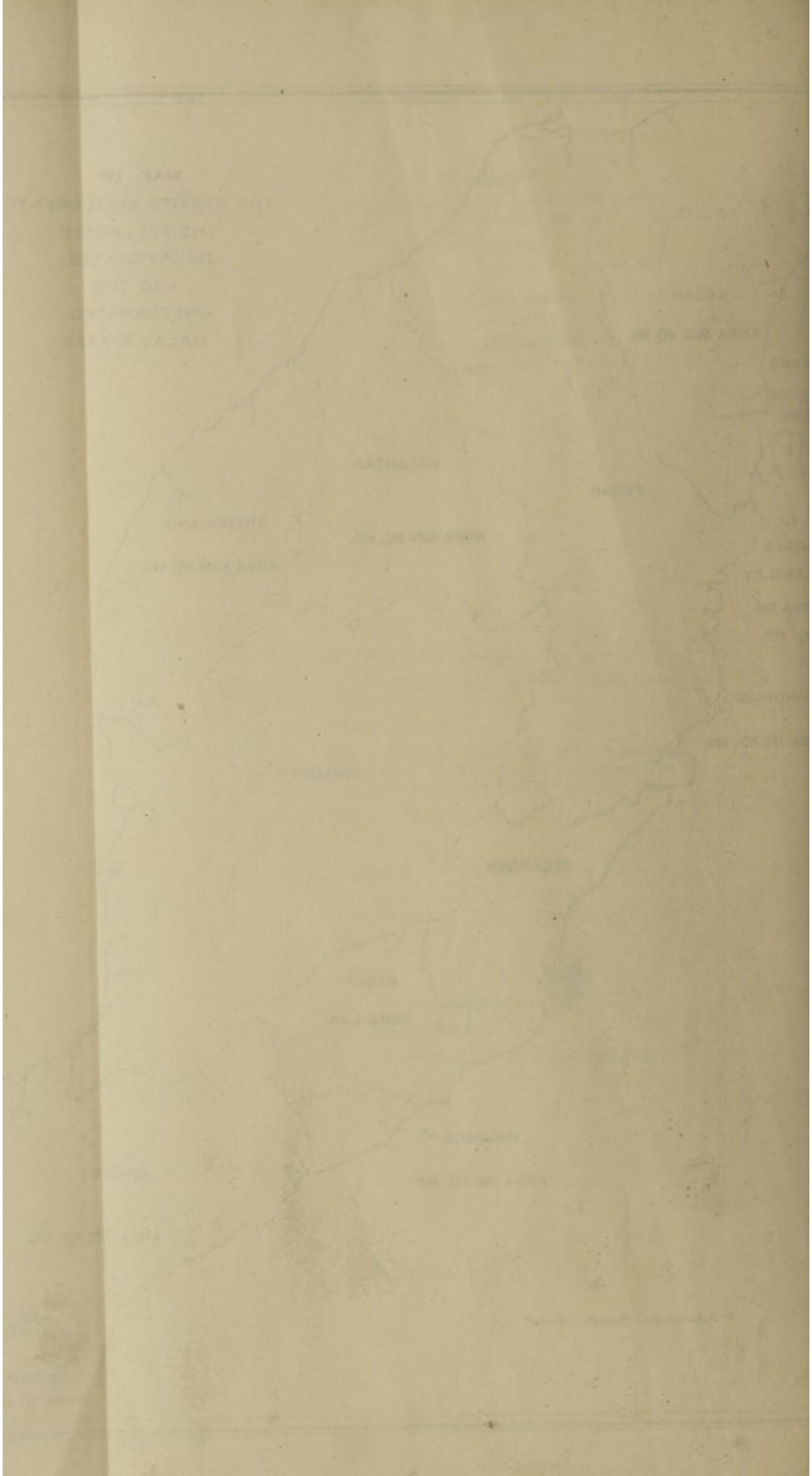


THE STRAITS SETTLEMENTS MEDICAL REPORT FOR THE YEAR 1931

I.—ADMINISTRATION

(a).—Staff

Dr. A. L. HOOPS, C.B.E., Principal Civil Medical Officer, proceeded on leave, prior to retirement, on the 21st February, 1931.

Dr. J. GRAY acted as Principal Civil Medical Officer from the 21st February, 1931, till the 8th September, 1931.

Dr. C. J. WILSON, M.C., acted as Principal Civil Medical Officer from the 9th September, 1931 till the end of the year when the title of the appointment was changed to Director of Medical and Health Services.

1. The authorised number of the European staff of the Medical Department of the Straits Settlements in 1931, including officers to be seconded for service in the Unfederated Malay States, was 198.

2. The following officers were appointed to the service during the year:—

Name	*Appointment*	*Date of appointment*
Dr. F. O'DRISCOLL	... Medical Officer	... 2nd April, 1931
Dr. M. EDWARDS	... Medical Officer	... 2nd April, 1931
Dr. (Miss) A. E. CONNAN	... Lady Medical Officer	... 2nd April, 1931
Dr. W. PULESTON-JONES	... Health Officer	... 17th April, 1931
Dr. E. W. MARTINDELL	... Medical Officer	... 17th April, 1931
Dr. (Miss) E. M. WEIR	... Lady Medical Officer	... 28th May, 1931
Dr. (Miss) E. MORRIS	... Lady Medical Officer	... 7th August, 1931
Dr. P. J. O'SHAUGHNESSY	... Medical Officer	... 7th August, 1931
Mr. J. M. COUTTS	... Dental Officer, Singapore	4th September, 1931
Dr. B. F. HOME ...	... Assistant Medical Superintendent, Mental Hospital, Singapore ...	... 30th October, 1931

3. The following officers proceeded on leave during the year:—

Name	*Appointment*	*Date*
Dr. L. W. EVANS	... Chief Medical Officer, Kelantan	11th January, 1931
Dr. J. I. BAEZA ...	... Senior Health Officer, Kedah	7th February, 1931
Mr. J. S. DE VILLIERS	... Chief Sanitary Inspector, Penang	14th February, 1931
(*a*) Dr. A. L. HOOPS, C.B.E.	... Principal Civil Medical Officer, Straits Settlements	21st February, 1931
Mr. H. S. HOPKINS	.. Chief Sanitary Inspector, Singapore	6th March, 1931
Prof. J. G. HARROWER	... Professor of Anatomy, Singapore	25th March, 1931

(*a*) Prior to retirement.

3. *Continued.*

Name	*Appointment*	*Date*
Mr. F. R. FARRER ..	European Attendant, Singapore	2nd April, 1931
Dr. G. V. ALLEN ..	Principal, College of Medicine, Singapore ...	3rd April, 1931
Mr. C. J. SMITH, O.B.E. ...	Senior Surgeon, Singapore	3rd April, 1931
Dr. H. O. HOPKINS ...	Bacteriologist, Singapore ..	5th May, 1931
Dr. H. W. FURNIVALL ...	Medical Officer, Singapore	5th May, 1931
Dr. R. W. C. KELLY ...	Chief Medical Officer, Social Hygiene, Singapore	29th May, 1931
Dr. J. M. A. LOWSON ...	Medical Officer, Singapore	4th June, 1931
Dr. R. D. FITZGERALD, M.C.	Principal Medical Officer, Johore	26th June, 1931
Mr. W. PECKHAM ...	European Attendant, Singapore	26th June, 1931
Dr. R. D. GROSS ...	Health Officer, Singapore	10th July, 1931
Dr. J. V. LANDOR ...	Medical Officer, Singapore	14th August, 1931
Prof. B. A. R GATER ...	Professor of Biology, Singapore	27th August, 1931
Dr. R. WALKINGSHAW, M.C.	Medical Officer, Penang ..	4th September, 1931
Dr. E. D. LINDOW ...	Ag. Chief Medical Officer, Malacca	18th September, 1931
Dr. E. V. LUPPRIAN ...	Medical Officer, Penang ..	6th November, 1931
Dr. J. W. WINCHESTER ...	Medical Officer, Brunei ...	13th November, 1931

4. The following officers returned from leave during the year :—

Name	*Appointment*	*Date*
Dr. R. B. HAWES ...	Professor of Medicine, Singapore	10th January, 1931
Dr. F. R. SAVERS ...	Chief Health Officer, Singapore	30th January, 1931
Dr. W. A. YOUNG ...	Professor of Bacteriology, Singapore	11th March, 1931
Dr. E. R. STONE ...	Medical Superintendent, Mental Hospital, Singapore	21st March, 1931
Dr. J. S. ENGLISH ...	Professor of Midwifery, Singapore	22nd May, 1931
Mr. J. W. ADAMS ...	Surgeon, Penang ...	5th August, 1931
Dr. J. C. CARSON ...	Medical Officer ...	5th September, 1931
Prof. J. R. KAY-MOUAT ...	Professor of Physiology, Singapore	7th September, 1931
Dr. L. W. EVANS ..	Chief Medical Officer, Kelantan	3rd October, 1931
Mr. C. J. SMITH, O.B.E. ...	Senior Surgeon, Singapore	31st October, 1931
Dr. J. PORTELLY ...	Health Officer, S. S. ...	14th November, 1931
Dr. J. F. BAEZA	Senior Health Officer, Kedah	26th November, 1931
Dr. G. V. ALLEN ...	Principal, College of Medicine, Singapore ...	28th November, 1931
Mr. H. S. HOPKINS ...	Chief Sanitary Inspector, Singapore	28th November, 1931
Mr. F. R. FARRER ...	European Attendant, Singapore	9th December, 1931

5. The following officers retired or resigned from the service during the year :—

Name	*Appointment*	*Date*
Dr. D. RUSSELL ...	Assistant Medical Superintendent, Mental Hospital Singapore	23rd March, 1931 (resigned)
Dr. A. L. HOOPS, C.B.E.	Principal Civil Medical Officer, Straits Settlements	30th September, 1931 (retired)

6. The following officers were seconded for service in the Unfederated Malay States during the year :—

Name	*Appointment*	*Date*
Dr. J. H. BOWYER	Health Officer, Kelantan ...	1st January, 1931
Dr. J. A. P. CAMERON	Medical Officer, Kedah ...	1st February, 1931
Dr. (Mrs.) L. S. O'MAY	Lady Medical Officer, Kedah ...	6th May, 1931
Dr. W. PULESTON-JONES	Health Officer, Johore ...	10th July, 1931
Dr. M. EDWARDS	Medical Officer, Johore ...	12th August, 1931
Dr. J. GRAY ...	State Surgeon, Kedah ...	11th September, 1931
Dr. E. L. ROBERT	Medical Officer, Johore ...	1st November, 1931
Dr. E. W. MARTINDELL	Medical Officer, Brunei ...	14th November, 1931

7. *European Matrons and Sisters.*—The number of Matrons and Sisters in the service, including those seconded to the Unfederated Malay States, was 101 in 1931.

8. The local medical service numbered 78, mostly graduates of the King Edward VII College of Medicine, Singapore.

Of these, two filled specialist posts :—

Dr. A. C. DUTTA ... ... Surgeon and Officer in resident charge of Durian Daun Hospital, Malacca.

Dr. P. M. MEHTA ... ... Senior Deputy Health Officer, Penang.

Ten others held responsible prize appointments.

(b).—Ordinances

The following Ordinances were enacted during the year :—

(*a*) An Ordinance to amend Ordinance No. 157 (Quarantine and Prevention of Disease). The Ordinance was amended in order to prohibit, under penalty, the importation into the Colony, or possession, of the virus of yellow fever or any substance infected with the causative agent of yellow fever.

(*b*) An Ordinance to alter the title of the Principal Civil Medical Officer, Straits Settlements, to Director of Medical and Health Services, Straits Settlements

(c).—Financial

The actual medical and sanitary expenditure and the revenue collected in the various settlements were :—

EXPENDITURE

	$ c.
Singapore	2,544,829 00
Penang	1,154,307 00
Malacca	334,671 00
Labuan	24,848 00
Total ...	$4,058,655 00

REVENUE

	$	c.
Singapore	865,251	00
Penang	459,125	00
Malacca	109,205	00
Labuan	3,787	00
Total ...	$1,437,368	00

It is to be remembered that in addition to the above the Health Services of the Municipalities spent :—

	$	c.
Singapore	908,440	00
Penang	142,878	00
Malacca	37,750	00
Total ...	$1,089,068	00

Further particulars are given in Table II on page 188.

Note.—$1 = 2/4d.

II.—PUBLIC HEALTH

(a).—General Remarks

MONTHLY MORTALITY FIGURES FOR THE PAST SIX YEARS

	1926	*1927*	*1928*	*1929*	*1930*	*1931*
January ...	2,579	2,734	2,577	2,571	2,387	2,487
February ...	2,141	2,536	2,219	2,139	2,117	1,956
March ...	2,458	2,792	2,401	2,410	2,411	2,004
April ...	2,762	2,891	2,615	2,307	2,689	2,208
May ...	3,340	3,164	3,004	2,734	3,219	2,903
June ...	3,227	3,121	2,921	2,629	3,194	2,742
July ...	3,038	3,301	2,980	2,571	2,870	2,323
August ...	2,740	3,167	2,495	2,302	2,603	2,255
September ...	2,504	2,975	2,496	2,323	2,588	2,033
October ...	2,588	3,213	2,524	2,443	2,658	2,046
November ...	2,534	2,907	2,607	2,482	2,639	2,112
December ...	2,722	2,760	2,677	2,633	2,553	2,300
Total deaths ...	32,633	35,561	31,516	29,544	31,928	27,369
Estimated population ...	1,025,835	1,059,968	1,095,635	1,131,903	1,168,806	1,118,511
Death-rate per thousand ...	31·81	33·55	28·76	26·10	27·32	24·47

The year 1931 was remarkable for the high standard of health maintained in comparison with former years. Evidence of the improved health is furnished by the diminished number of patients treated in the hospitals and dispensaries and by the lowered death-rate. This improvement is all the more noteworthy in view of the universal economic depression which pervaded all sections of the community, resulting in a declining average income per head of population and consequent lowering of the standard of living for many of the inhabitants. The number of in-patients decreased from 74,639 in 1930 to 58,815 in 1931. The decrease was, no doubt, due in part to the large numbers of Chinese and Indian labourers who were repatriated during the year, there being many who were old or decrepit amongst the 197,317 deck passengers who returned to China, and the 62,991 deck passengers who returned to India.

The death-rate was 24·47 per thousand and was the lowest yet recorded. It compares very favourably with the average death-rate for the three previous decennial periods :—

Decennial period	*Death-rate per thousand*
1901 – 1910	40·12
1911 – 1920	36·14
1921 – 1930	29·22

The lowest death-rate previously recorded was in 1929 when the rate was 26·10 per thousand.

The total number of deaths recorded in 1931 was 27,369 compared with 31,928 in the previous year.

The Infantile mortality was 180·65 per thousand against 193·94 in the previous year.

The population in 1931 was estimated to be 1,118,511 and was calculated on the census taken on the 1st April, 1931, which determined the population on that date to be 1,112,850. The population in 1930 was estimated to be 1,168,806.

The deaths registered in the Straits Settlements are classified as regards certification, as follows :—

Particulars	*Singapore*	*Penang*	*P. W. Dindings*	*Malacca*	*Labuan*	*Total*
Died in Hospitals ...	3,132	1,037	387	75	605	10	5,246
Certified by Outside Medical Practitioners ...	4,019	803	—	—	410	14	5,246
Certified by Registering Officers after death ...	3,546	1,998	4	1	489	—	6,038
Uncertified	2,926	1,060	2,855	345	3,447	206	10,839
Total ...	13,623	4,898	3,246	421	4,951	230	27,369

It will be observed that only 38 per cent. of the deaths were certified by a registered medical practitioner. The remaining 62 per cent. of deaths occurred amongst patients who were not attended by a registered practitioner at the time of their death. The difficulty of arriving at an accurate cause of death in such cases is evident.

The highest standard of accuracy is attained in Singapore city where 63·6 per cent. of the deaths are certified by registered medical practitioners, 31·6 per cent. by qualified registrars inspecting after death and 4·8 per cent. by a Coroner.

(b).—General Diseases

The deaths registered as due to beri-beri in the last 20 years numbered :—

Year	*Number of deaths*	*Year*	*Number of deaths*
1912	1,926	1922	1,388
1913	1,657	1923	904
1914	1,483	1924	910
1915	1,079	1925	973
1916	1,075	1926	1,098
1917	2,075	1927	1,528
1918	1,958	1928	1,146
1919	1,430	1929	944
1920	1,025	1930	1,047
1921 (Census 883,769) ...	1,299	1931 (Census 1,112,850) ...	911

Nine hundred and eleven deaths reported in 1931 is the lowest number recorded during the past 7 years, and reflects the improved state of health of the community in spite of the economic depression. It is noteworthy that a diminished mortality from beri-beri has coincided in past years with periods of lessened prosperity. The war years 1915 and 1916 showed this peculiarity, and again when the price of rubber was comparatively low in 1923 and 1924, fewer deaths from beri-beri were recorded. The explanation may lie in the exodus of a fleeting population such as that found in Malaya when the demand for labour lessens. The decreased incidence of the disease during

1931 may, however, be due in part to the awakening of the Chinese labourers to the advantages of a properly balanced nutrition, following the valuable educational and practical work being done in this field of research in the Biochemistry Laboratory of the King Edward VII College of Medicine.

Pneumonia.—Pneumonia continues to be one of the most frequently recorded causes of death in the Straits Settlements, and accounted for 2,373 deaths compared with 2,343 in the previous year. It is possible that many deaths due to pneumonia escape recognition and are recorded as due to other causes owing to the large numbers of deaths which are certified after simple inspection of the body without an ante-mortem diagnosis of the disease. The large proportion of the deaths from pneumonia recorded in Singapore city is probably due mainly to the larger proportion of deaths in that city which have been certified by a registered medical practitioner after attendance on the deceased during his illness, thus ensuring greater accuracy of certification.

Convulsions.—Seventeen per cent. of the total deaths in the Straits Settlements were recorded as due to convulsions. This is a cause of death commonly reported by the Police who report medically unattended deaths occurring in rural areas. For this reason, little reliance can be placed upon the figures submitted under this heading. 4,607 deaths were recorded in 1931 as due to convulsions against 5,136 in 1930.

(c).—Dangerous Infectious Diseases

Plague.—No case of Plague occurred in the Straits Settlements during the year.

Cholera.—Six cases with 2 deaths were treated at the Quarantine Station, Pulau Jerejak.

Small-pox.—There were 167 cases of which 48 proved fatal. Nearly all these cases occurred in Province Wellesley where sporadic cases were discovered at intervals throughout the year. Many of these were concealed cases in Malay villages and were brought to light with difficulty. An intensive vaccination campaign was carried out. The outbreak was completely under control at the end of the year.

During the year 134,257 vaccinations and revaccinations were performed in the Straits Settlements. The results were :—

Perfect	35,223
Modified	1,771
Failed	2,401
Not seen	94,862

Cerebro-spinal fever.—There were 13 deaths in 1931 compared with 23 deaths in the previous year.

(d).—Other Infectious Diseases

Tuberculosis.—Pulmonary tuberculosis continues to present one of the chief problems calling for preventive and curative health measures in this country. The problem is one of the most difficult to solve and cannot be successfully dealt with by simple health measures alone. There can be little doubt that large numbers of the Asiatic population have not yet acquired a sufficiently high degree of immunity to the disease to escape infection, and that they lack the vital resistance which is necessary to withstand the ravages of the disease when it is once established. The disease in this country is found chiefly in adults, and is a common terminal cause of death in later life. In some cases, it runs a semi-acute course and proves rapidly fatal. One of the main obstacles to curative measures is the neglect of the poorer classes to seek treatment in the early stages of the disease and their reluctance to submit to prolonged hospital treatment. It is generally recognised that the most promising preventive measures lie along the line of the provision of better housing and living conditions and the maintenance of an adequate and proper nutritional regimen in the daily life of the masses.

Steps have already been taken along these lines, and housing improvement schemes are in operation in Singapore and Malacca. These schemes aim at the eventual abolition of congested areas and the substitution of sanitary dwelling places for the present ill-lighted and ill-ventilated cubicles. Propaganda is carried out in schools, infant welfare clinics, dispensaries, etc. with a view to teaching the public how the disease can best be prevented. Special accommodation is now provided at the General Hospital, Singapore, for the treatment of early curable cases, and similar accommodation will be available in the new Hospitals at Penang and Malacca.

The following tables show that there has been a slight diminution in the number of deaths during the year :—

Year	*1929*	*1930*	*1931*
Estimated population of the Straits Settlements	1,131,903	1,168,806	1,118,511
Total deaths from all causes ...	29,544	31,928	27,369
Death-rate per thousand	26·10	27·32	24·47
Total deaths from pulmonary tuberculosis	2,710	2,795	2,587
Pulmonary tuberculosis death-rate per thousand	2·39	2·39	2·31

Year	*Deaths from tuberculosis in the Colony*	*Deaths from tuberculosis in Singapore city*
1926 ...	2,526	1,570
1927 ...	2,903	1,523
1928 ...	2,727	1,411
1929 ...	2,710	1,500
1930 ...	2,795	1,622
1931 ...	2,587	1,377

That pulmonary tuberculosis is a more pressing problem in the cities than in rural areas, is shown by the following table :—

	Estimated Population	*Death-rate from all diseases per thousand*	*Number of deaths from Tuberculosis*	*Tuberculosis death-rate per thousand*
Singapore Municipality ...	445,719	25·2	1,377	Cities 3·01
George Town (Penang) ...	149,964	24·74	420	
Malacca Municipality	38,043	28·44	111	
Rural areas of Colony ...	479,124	23·66	679	Rural areas 1·42

(e).—Malaria

The year 1931 was remarkable for the large decrease in the number of deaths attributed to Malaria and "fever unspecified". The figures for the past six years demonstrate the highly satisfactory decline which has taken place in that period :—

Year	*Malaria*	*Fever unspecified*	*Total*
1926	6,452	2,398	8,850
1927	6,283	2,161	8,444
1928	5,798	1,636	7,434
1929	4,648	1,764	6,412
1930	5,018	1,995	7,013
1931	3,506	1,513	5,019

The total number of deaths (5,019) under these two headings in 1931 is considerably less than the total (8,850) under the same headings in the year 1926. The figures quoted are a tribute to the efficacy of the anti-malarial measures carried out during recent years, and offer a justification, if such were needed, for the large sums expended by Government on health measures in the same period. Contributory factors should, nevertheless, not be lost sight of. Such factors may be the curtailment of agricultural enterprise associated with little opening up of new land; the reversed wave of migration resulting in fewer immigrants and therefore fewer imported infections and an exodus of feeble and, perhaps, infected persons. The already noted factor that 1931 was an unusually healthy year points to the possibility of the acquirement of a higher general resistance to infective disease by those sections of the population which are most exposed to infection.

(f).—Bowel Diseases

Dysentery, as a cause of death was, in common with most other diseases, less evident than in recent years. There were 620 deaths compared with 673, 902, 1,096, 1,015 and 770 in the five previous years. Of the deaths occurring in hospitals, 103 were ascribed to amœbic dysentery, 117 to bacillary dysentery and 29 to undefined dysentery. The Hospital records point to the amœbic form being the more prevalent in the Straits Settlements in the proportion of about 4 cases of amœbic dysentery to 3 cases of bacillary dysentery. The bacillary form, however, shows the higher case mortality, 35·67 per cent. for bacillary dysentery against 25·49 per cent. for amœbic dysentery.

Diarrhœa and Enteritis were recorded as the causes of 1,247 deaths in 1931 compared with 1,380, 1,230, 1,409, 1,169 and 1,464 in the five previous years.

Enteric Fever.—There were 127 deaths recorded as due to typhoid and paratyphoid fevers. 89 of these deaths occurred in the Settlement of Singapore. The number of cases notified to the Singapore Municipality was 150. The case mortality is high probably due to the patients' delay in seeking treatment. It is found that 3rd class patients seldom enter hospital before the end of the second week of the disease, the patients having worked in many cases up to the day of admission :—

Year	*Deaths in the Colony*	*Cases notified in Singapore Municipality*
—	—	—
1926	120	197
1927	188	235
1928	174	230
1929	118	133
1930	132	156
1931	127	150

(g).—Diphtheria

There were 43 deaths under this heading, which is the largest number of deaths recorded in any of the past six years. It is probable that the increase is due to more accurate diagnosis during the patients' illness :—

Year	*Deaths in the Colony*	*Cases notified in Singapore Municipality*
—	—	—
1926	15	46
1927	16	29
1928	21	59
1929	31	57
1930	31	63
1931	43	65

(h).—Scarlet Fever

There were no cases of scarlet fever observed in the Straits Settlements.

(i).—Venereal Diseases

There was an increase in total attendances at venereal disease clinics and dispensaries. The numbers were 346,057 in 1931 against 267,746 in 1930. The increase was not due to more cases of venereal disease, but was due to the greater number of times that each new case attended the Clinics. There was actually a decrease in the number of new infections seeking treatment. The number of new cases was 26,321 in 1931 against 33,719 in 1930.

(For details of anti-venereal work *vide* Appendix *G*, page 91).

(j).—Leprosy

The number of patients admitted to Leper Settlements decreased by 35.

During the year, the ration of opium which had hitherto been issued to certain patients who were opium smokers at Pulau Jerejak Settlement was stopped. The older habitués who were addicted to a comparatively heavy daily dose of opium, were removed from Pulau Jerejak to the old Leper Settlement at Kuala Lumpur, F. M. S. where they were permitted to continue the habit. The younger, less addicted smokers, were retained at Pulau Jerejak, and their opium ration was withdrawn. The removal of the 236 opium smoking patients to Kuala Lumpur has relieved the overcrowding at Pulau Jerejak Settlement and has facilitated the classification and segregation of cases for purposes of treatment.

Reports of the Leper Settlements, giving the results of treatment, are attached as Appendices *A* and *B*, pages 39 and 41.

		Remaining on 31/12/30	*Admitted*	*Died*	*Absconded*	*Transferred*	*Discharged*	*Remaining on 31/12/31*
Men	Pulau Jerejak, Penang ..	860	(*b*) 180	88	23	238 (*a*)	12	679
	Singapore ...	43	118	7	4	72 (*b*)	4	74
Women	Penang ..	54	25	2	5	7	3	62
	Singapore ...	74	30	4	1	10 (*c*)	3	86
	Total ...	1,031	353	101	33	327	22	901

(k).—Helminthic Diseases

Ankylostomiasis.—There was a marked decrease in the number of deaths, and cases of ankylostomiasis treated in hospital:—

Year	*Remained*	*Admitted*	*Total treated*	*Deaths*
1926 ...	138	3,996	4,134	142
1927 ...	138	3,874	4,012	102
1928 ...	144	3,037	3,181	84
1929 ...	96	2,731	2,827	63
1930 ...	130	2,576	2,886	55
1931 ...	103	1,267	1,370	28

There has been a steady decrease in the numbers admitted to hospital with this disease, following the Rural Sanitation Campaign initiated in co-operation with the Rockefeller Foundation in the year 1926.

Ankylostomiasis had been, for many years, one of the most wide-spread infections in this country, and one of the major causes of a lowered standard of health amongst the rural population. The gradual and steady reduction in its incidence as evidenced by the above figures is gratifying and is no doubt one of the factors contributing towards the improved health of the rural population during the year under review.

Ascariasis.—Infection with ascaris lumbricoides is common and is found in the children of all races dwelling in the Straits Settlements.

The prevalence of this helminth is due, no doubt, mainly to the centuries-old methods of cultivation used by Chinese vegetable gardeners.

Tæniasis.—Cestodes are rarely found, and have very little influence on the health of the community.

(*a*) Transferred to Leper Settlement, Kuala Lumpur.

(*b*) Transferred to Leper Settlement, Pulau Jerejak.

(*c*) Transferred to Leper Settlement, Johore.

(l).—Improvement of Public Health

Two graphs and three diagrams numbered I, II, III, IV and V are enclosed. The graphs demonstrate the improvement in public health during the last generation.

I is a graph depicting the mean monthly death-rate in Singapore from all causes in the decennial periods 1903—1912 and 1913—1922 and in the nine years 1923 to 1931. Material is not available to make such a graph for the whole Colony.

II is a graph giving a monthly comparison between the last two census years 1911 and 1921 and the year 1931.

Diagrams III, IV, and V explain themselves. It is not correct to state that every case of pneumonia is avoidable and many cases of convulsions, though not shown as preventable, are preventable.

Nevertheless the diagrams do give an idea of the amount of disease and of death that is preventable.

(m).—Vital Statistics

1. Under heading Table III, pages 100 to 104 the following ten tables are appended—

Table III A.—Estimated population with birth and death-rates for the years 1930 and 1931.

Table III B.—Quarterly death-rates for various parts of the Colony during the past three years.

Table III C.—Population estimated racially and collectively of the Straits Settlements for the years 1931, 1930 and 1929.

Table III D.—Births registered in the Straits Settlements during 1931 and their ratio per mille of population.

Table III E.—Births registered in the Straits Settlements during 1931 according to Nationalities.

Table III F.—Deaths registered in the Straits Settlements according to Nationalities.

Table III G.—Deaths registered in the Straits Settlements during 1931 under different group of ages.

Table III H.—Table showing the Infantile Mortality (under one year) in the Straits Settlements including children born elsewhere.

Table III I.—Table showing the Infantile Mortality (under one year) in the Straits Settlements, according to Nationalities, excluding children born elsewhere.

Table III J.—Deaths registered in the Straits Settlements as regards certificates in the year 1931.

2. The number of births registered throughout the Straits Settlements during the year 1931 was 41,361 (males 21,502 and females 19,859) as against 44,703 (males 23,204 and females 21,499) in the previous year: this represents a crude birth-rate of 36·98 per thousand persons living as compared with 38·25 in 1930 and 37·20 in 1929.

3. In every 100 births registered, there were 51·99 males and 48·01 females.

4. One thousand five hundred and thirty-seven still births were registered in 1931 as compared with one thousand seven hundred and sixty-one still births in the previous year—the percentage to those born alive was 3·72 as against 3·94 in 1930 and 4·35 in 1929.

5. The highest birth-rate according to nationalities was 39.19 per thousand of population amongst the Chinese, the Malays coming next with a ratio of 37·93 per thousand of population *vide* Table *III E*.

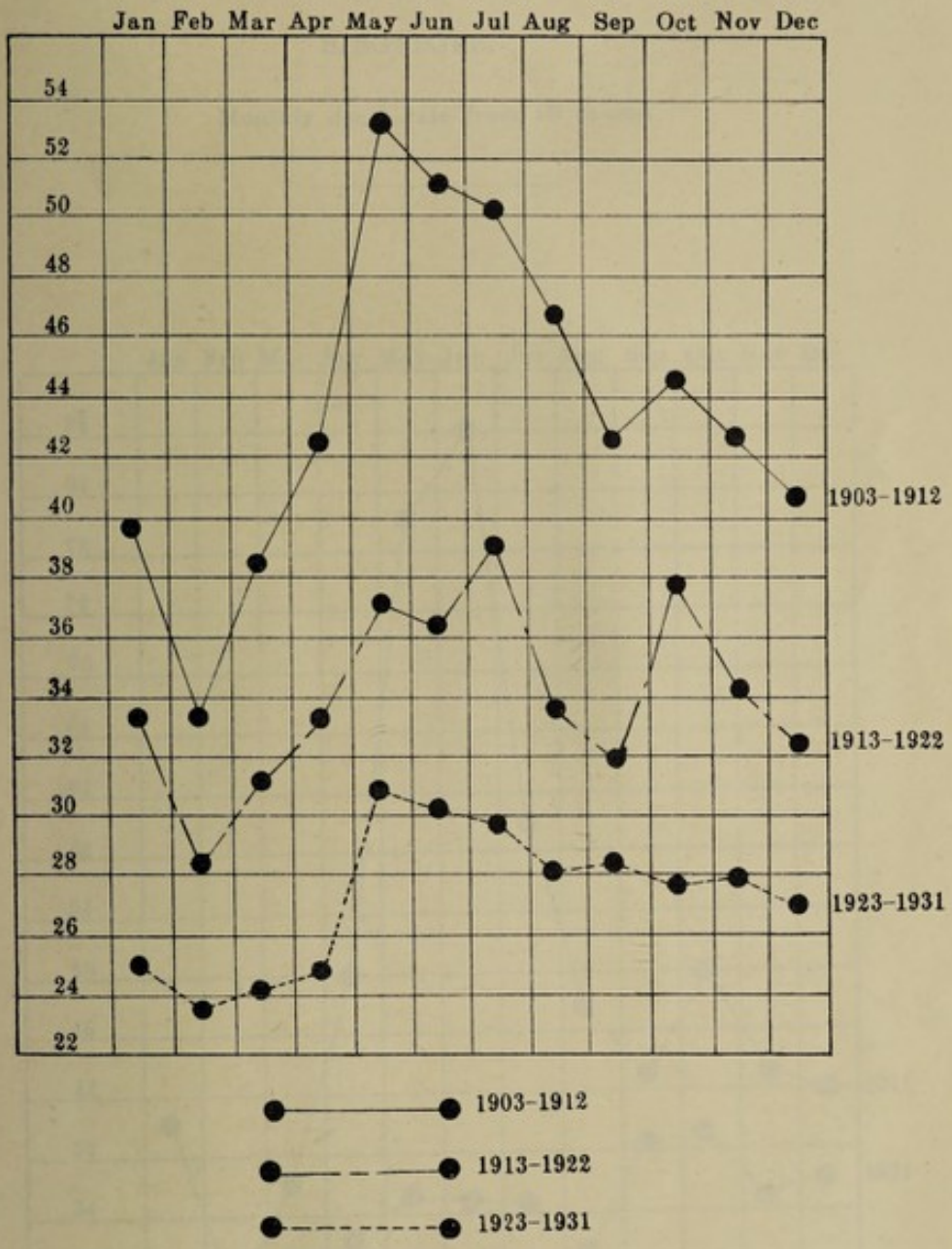
6. The deaths from all causes in 1931 were 27,369 (males 16,703 and females 10,666) as against 31,928 (males 19,950 and females 11,978) in the previous year.

The average death-rate for the last 10 years is 28·51 per thousand.

I.

SINGAPORE.

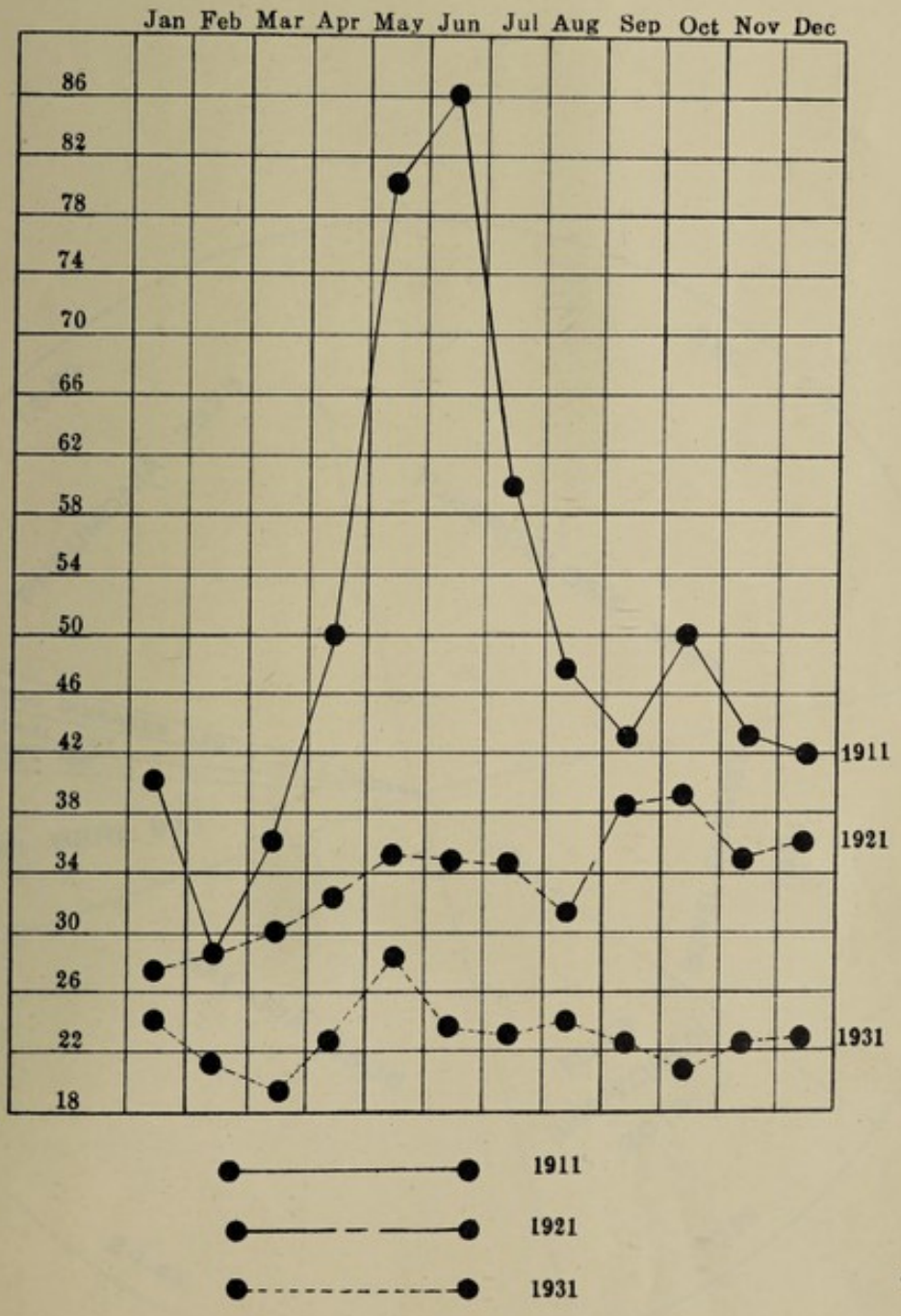
Mean monthly death rate from all causes.

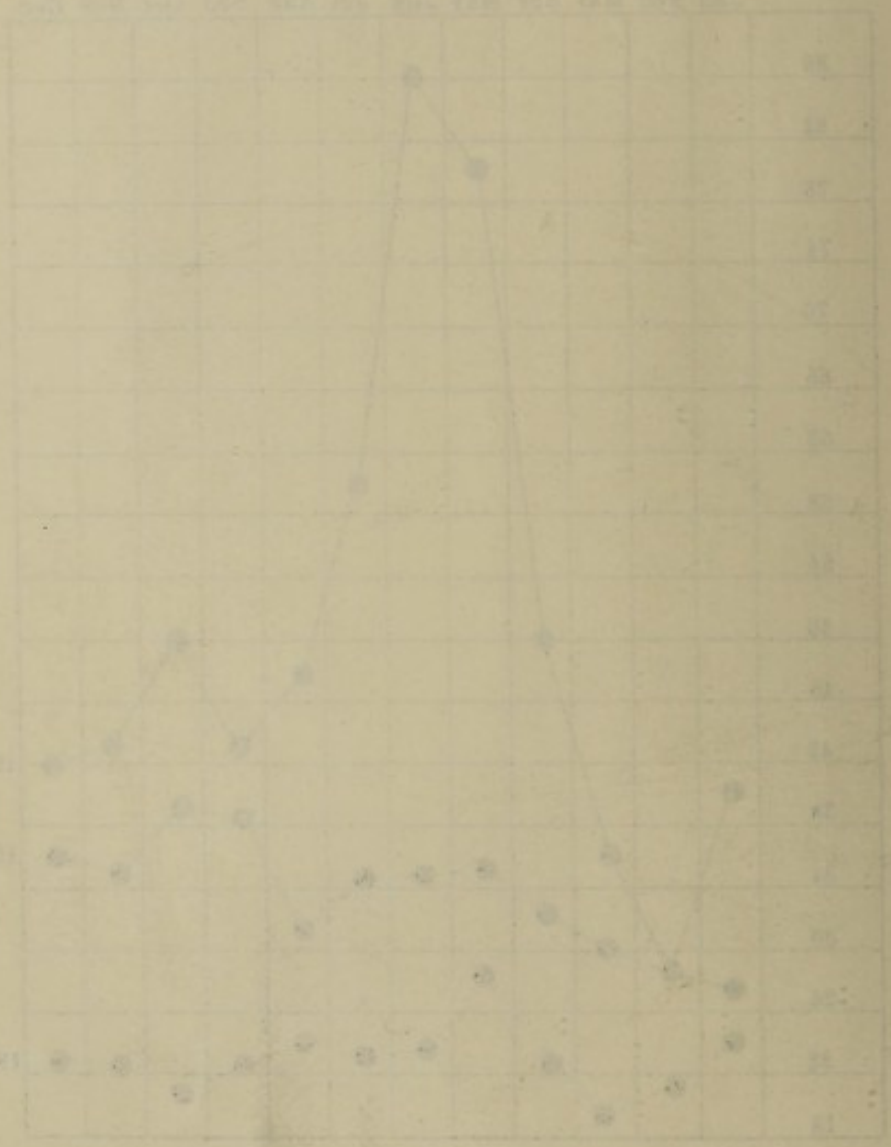


II.

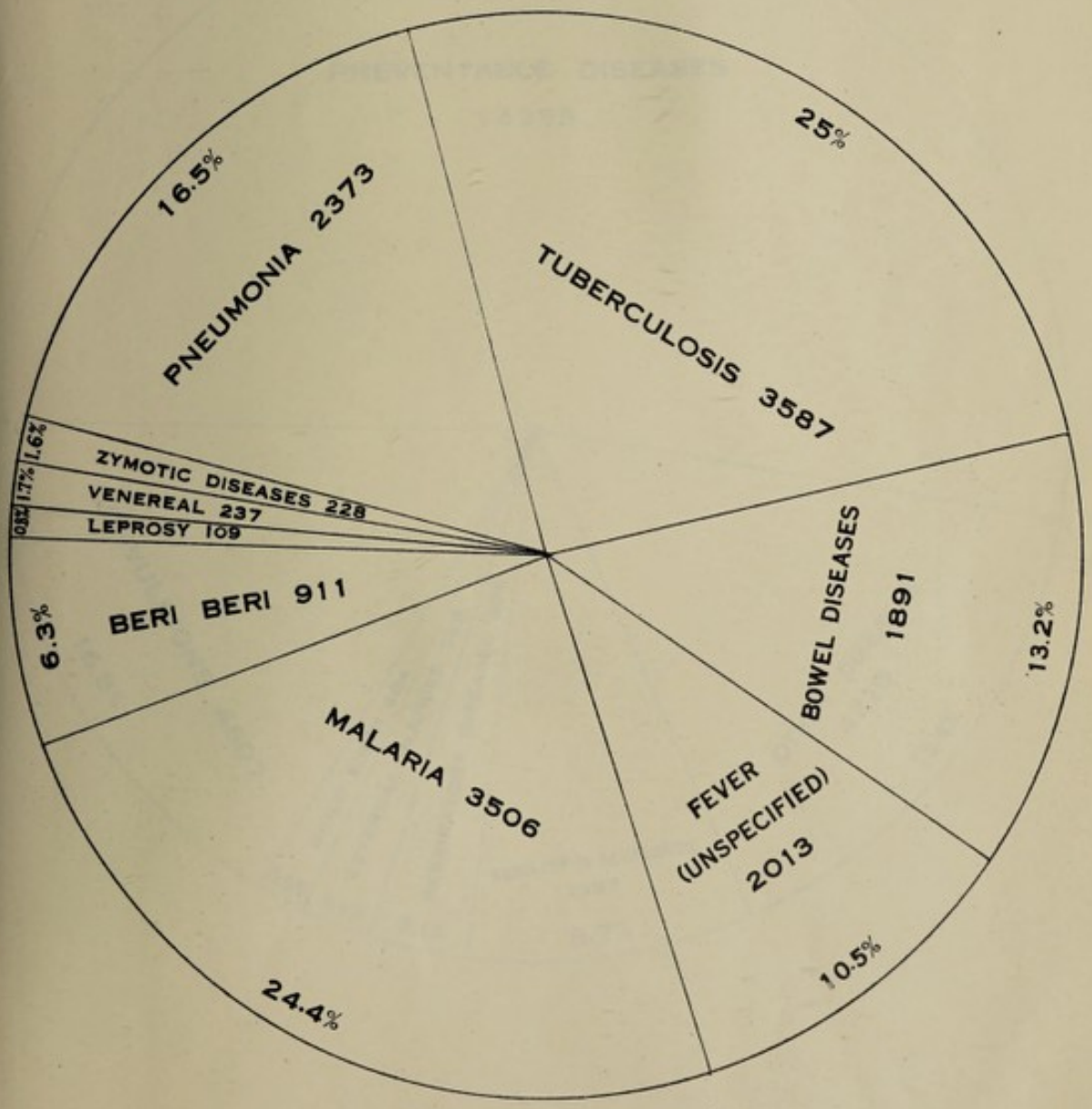
SINGAPORE.

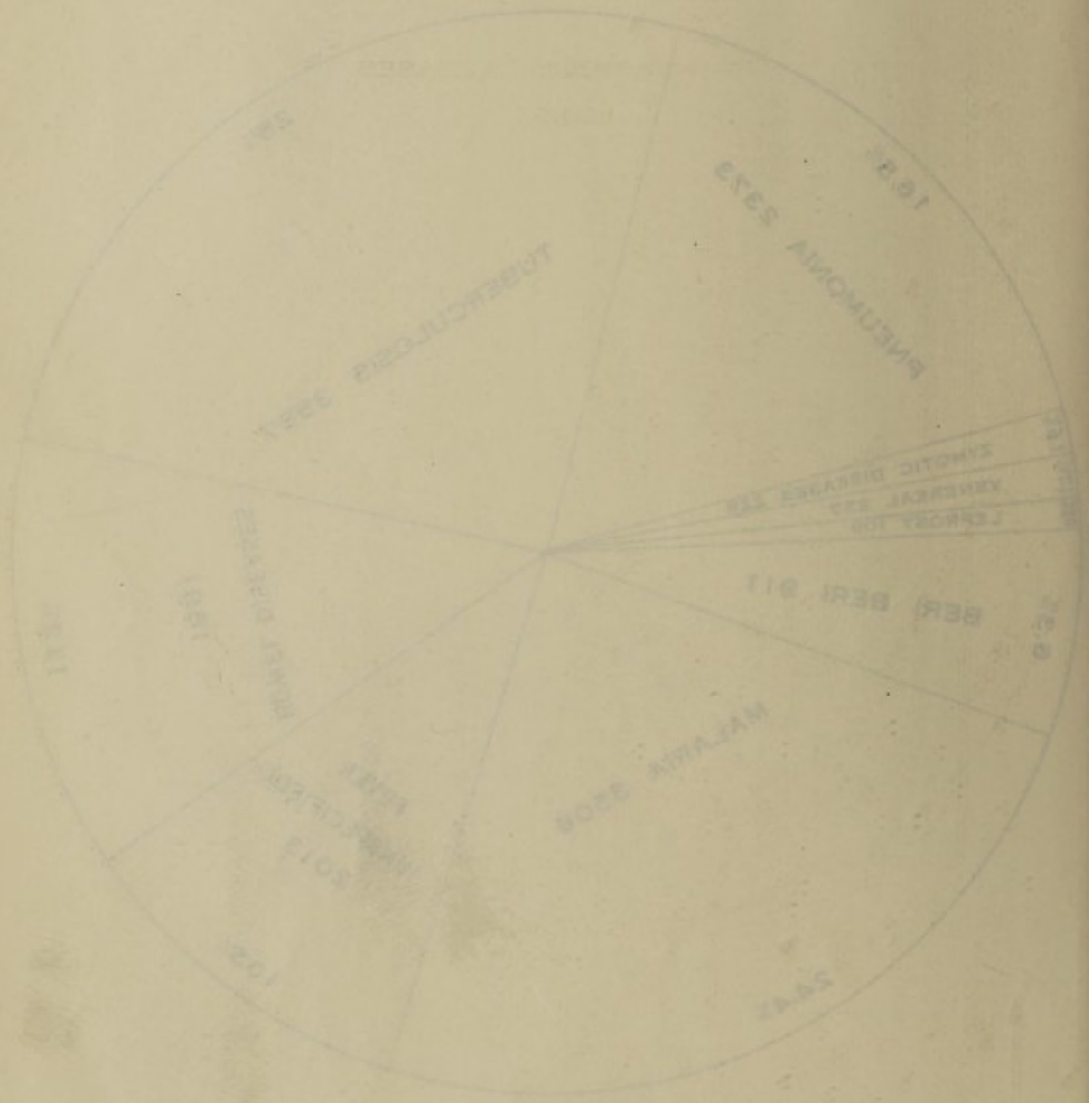
Monthly death rate from all causes



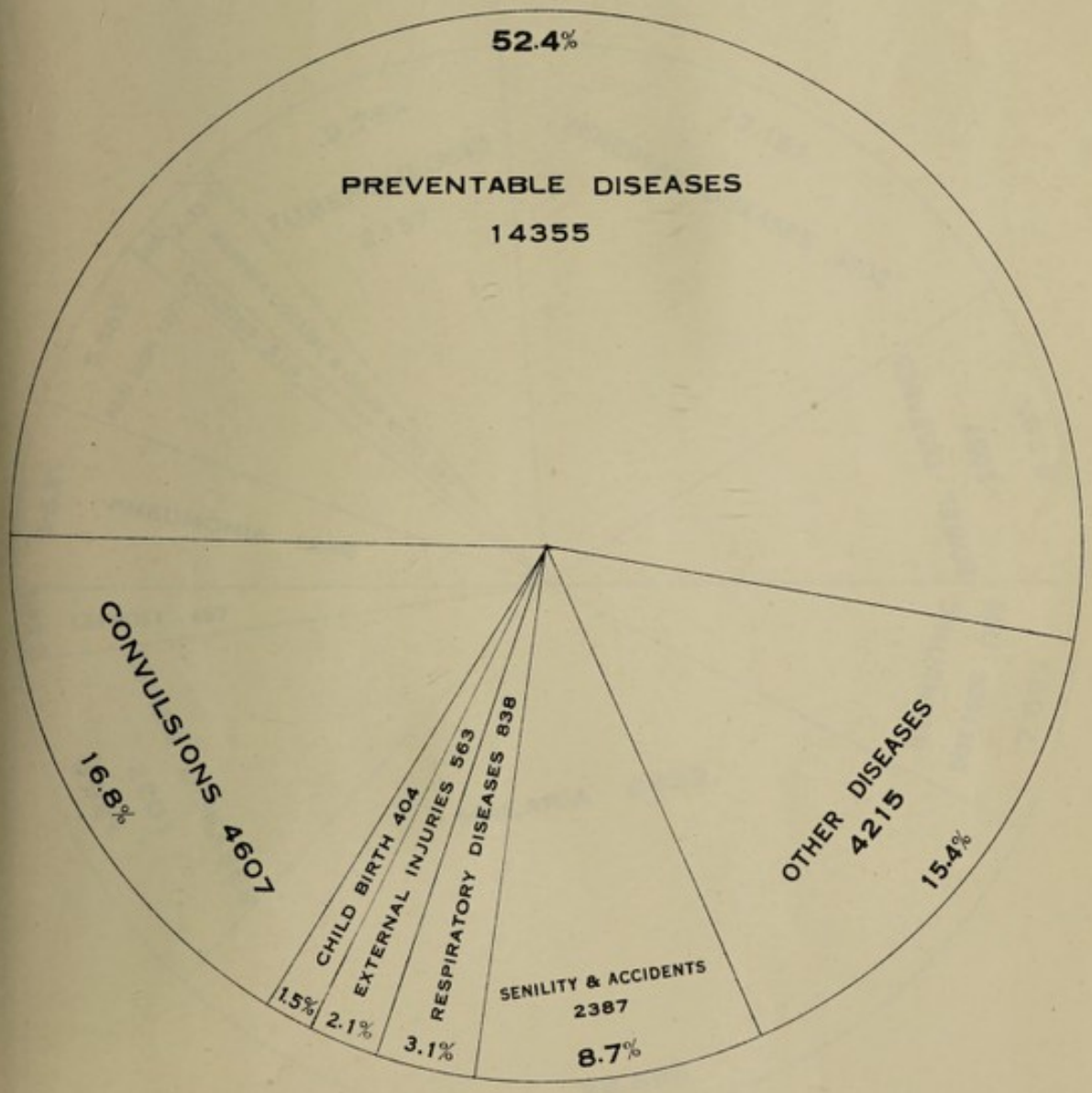


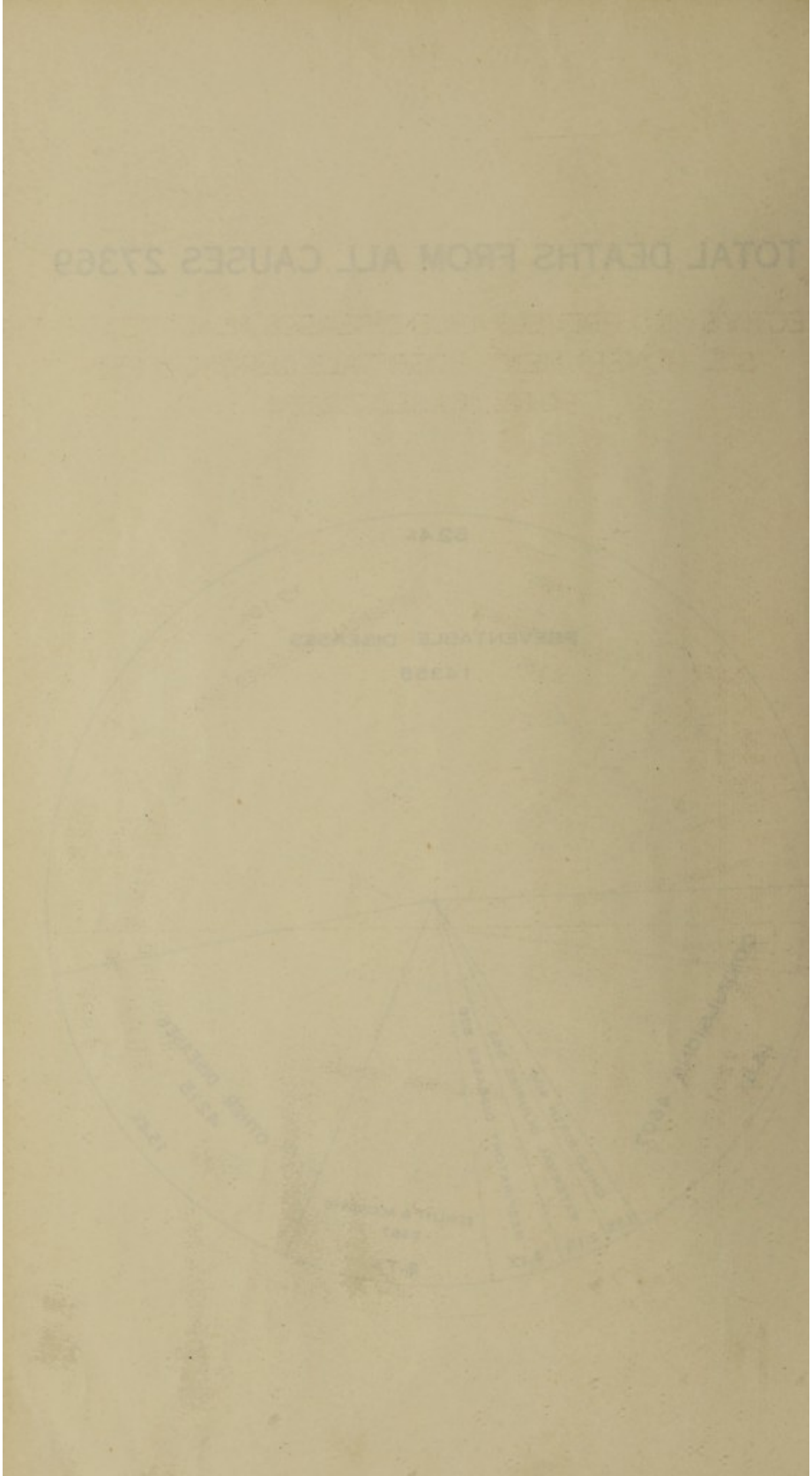
DEATHS FROM INFECTIVE AND PREVENTABLE DISEASES REGISTERED IN THE S.S. 1931 TOTAL 14355



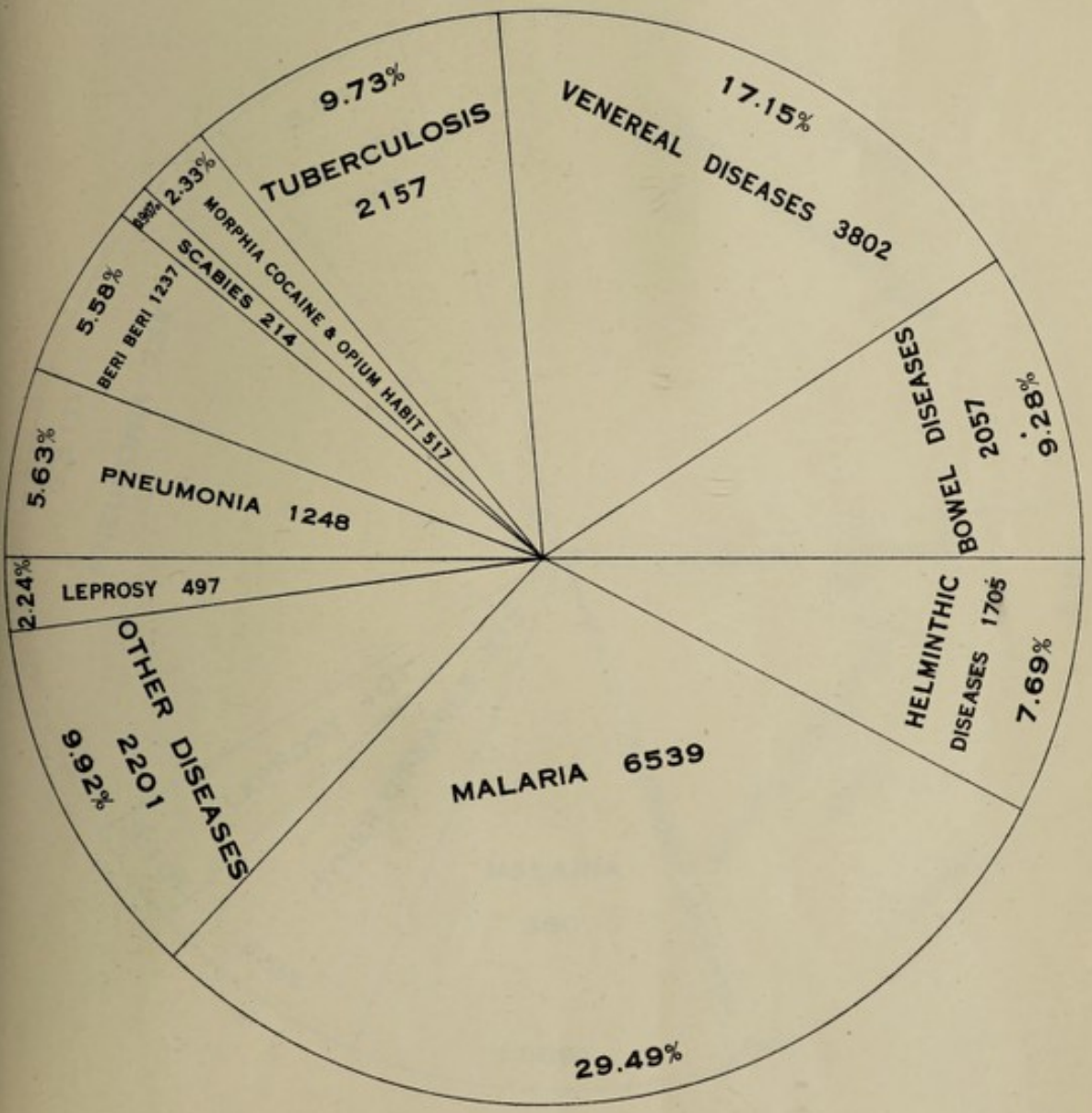


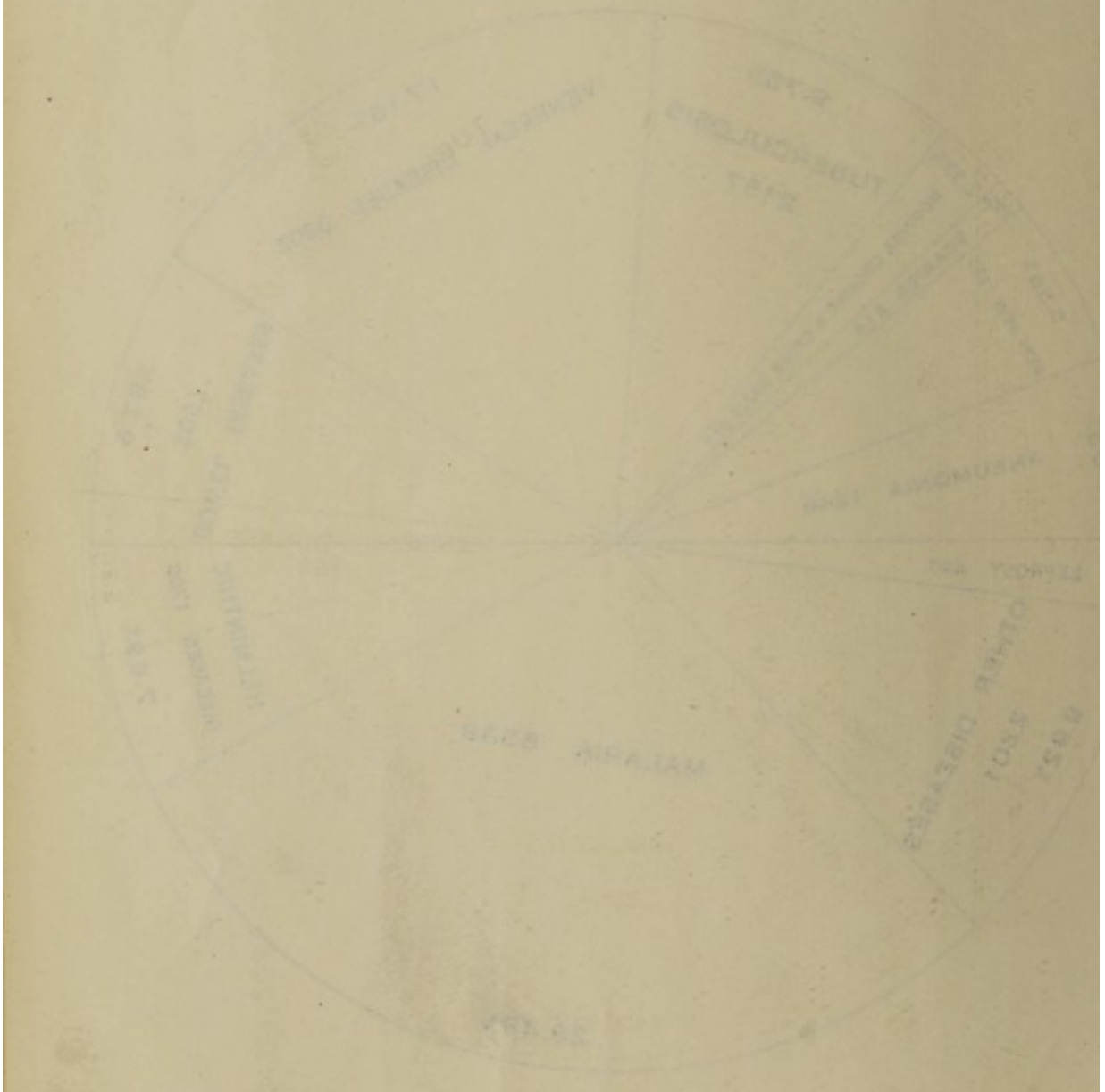
TOTAL DEATHS FROM ALL CAUSES 27369



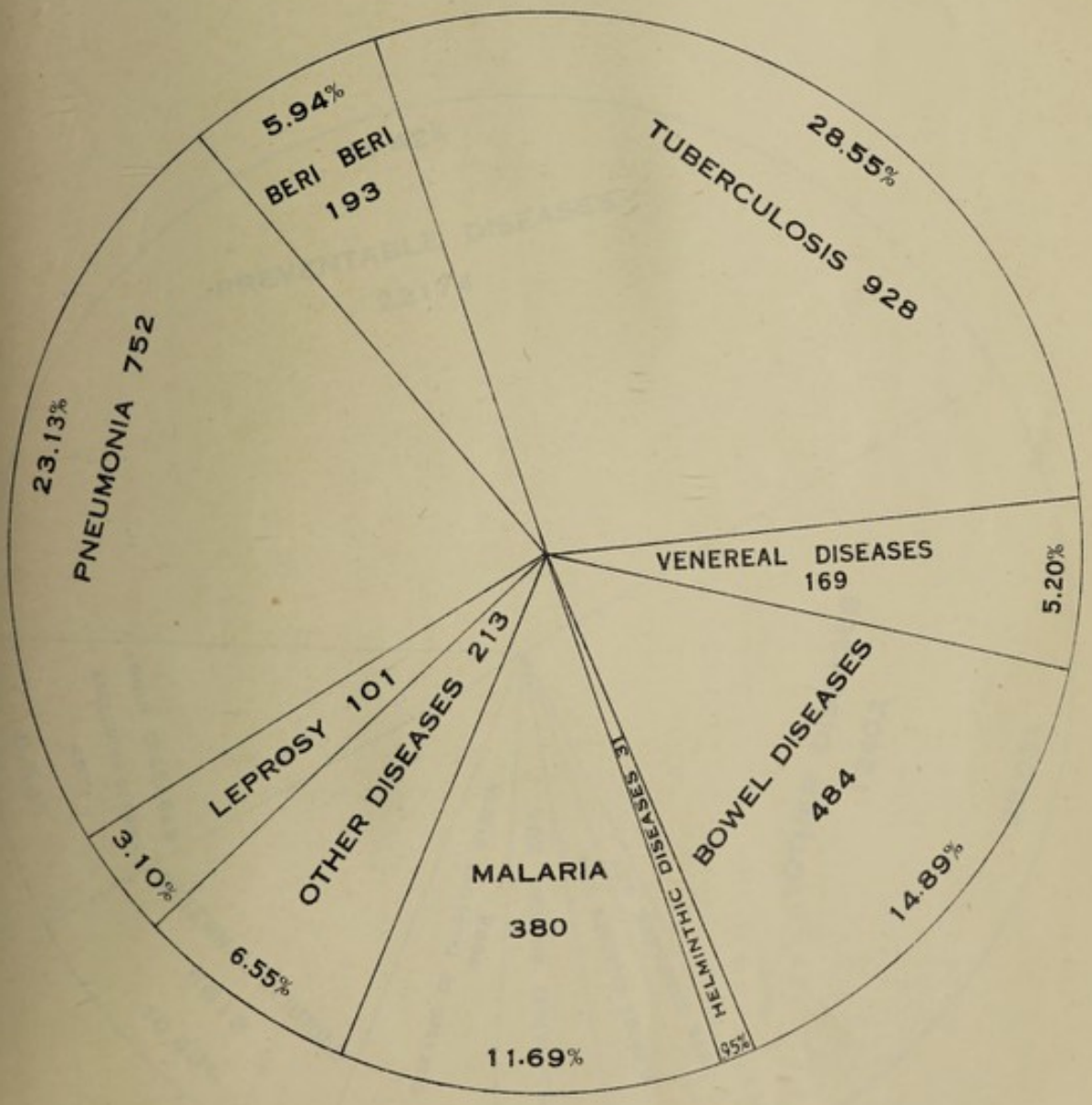


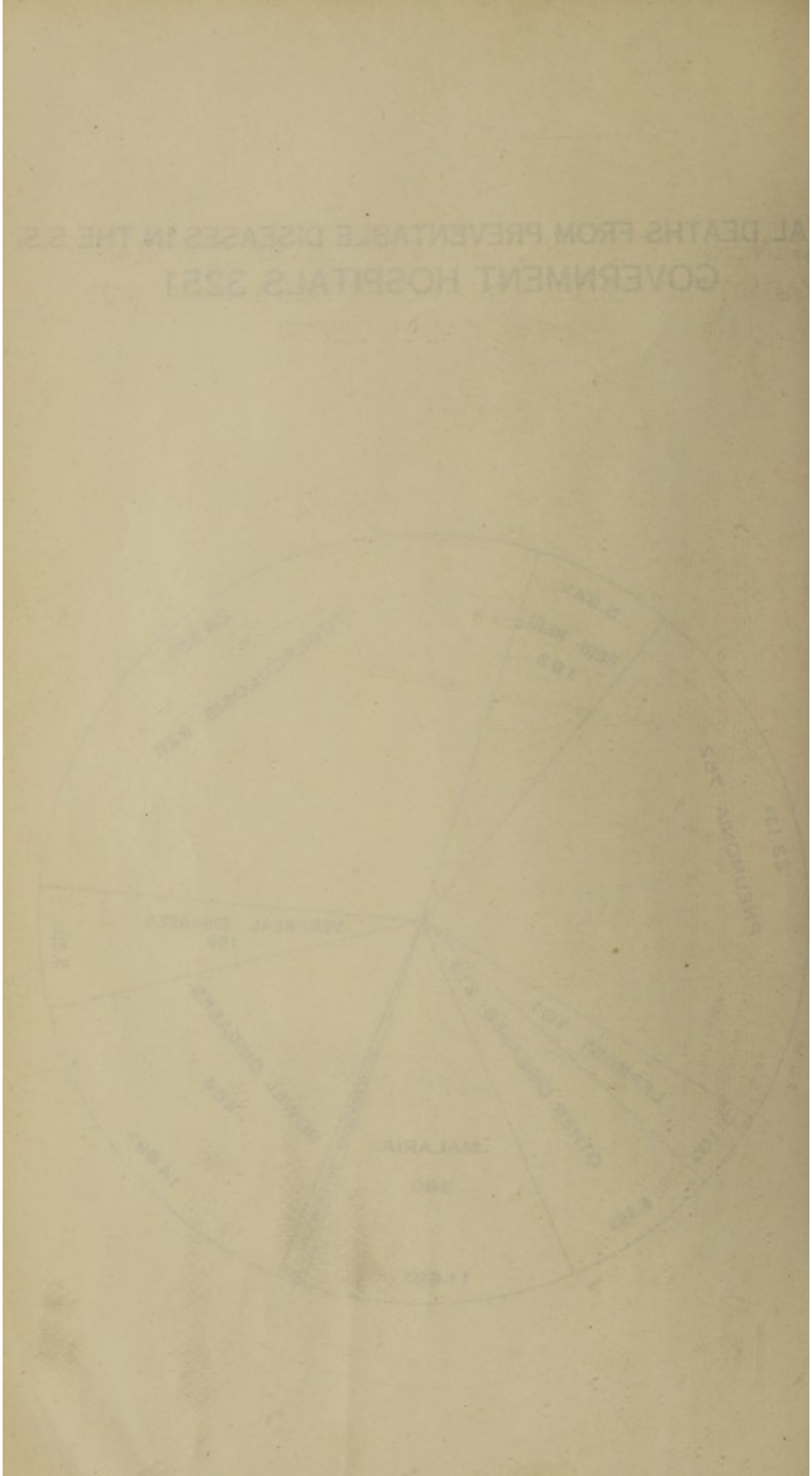
INFECTIVE AND PREVENTABLE DISEASES ADMITTED TO THE S.S. GOVERNMENT HOSPITALS DURING 1931
TOTAL CASES 22174





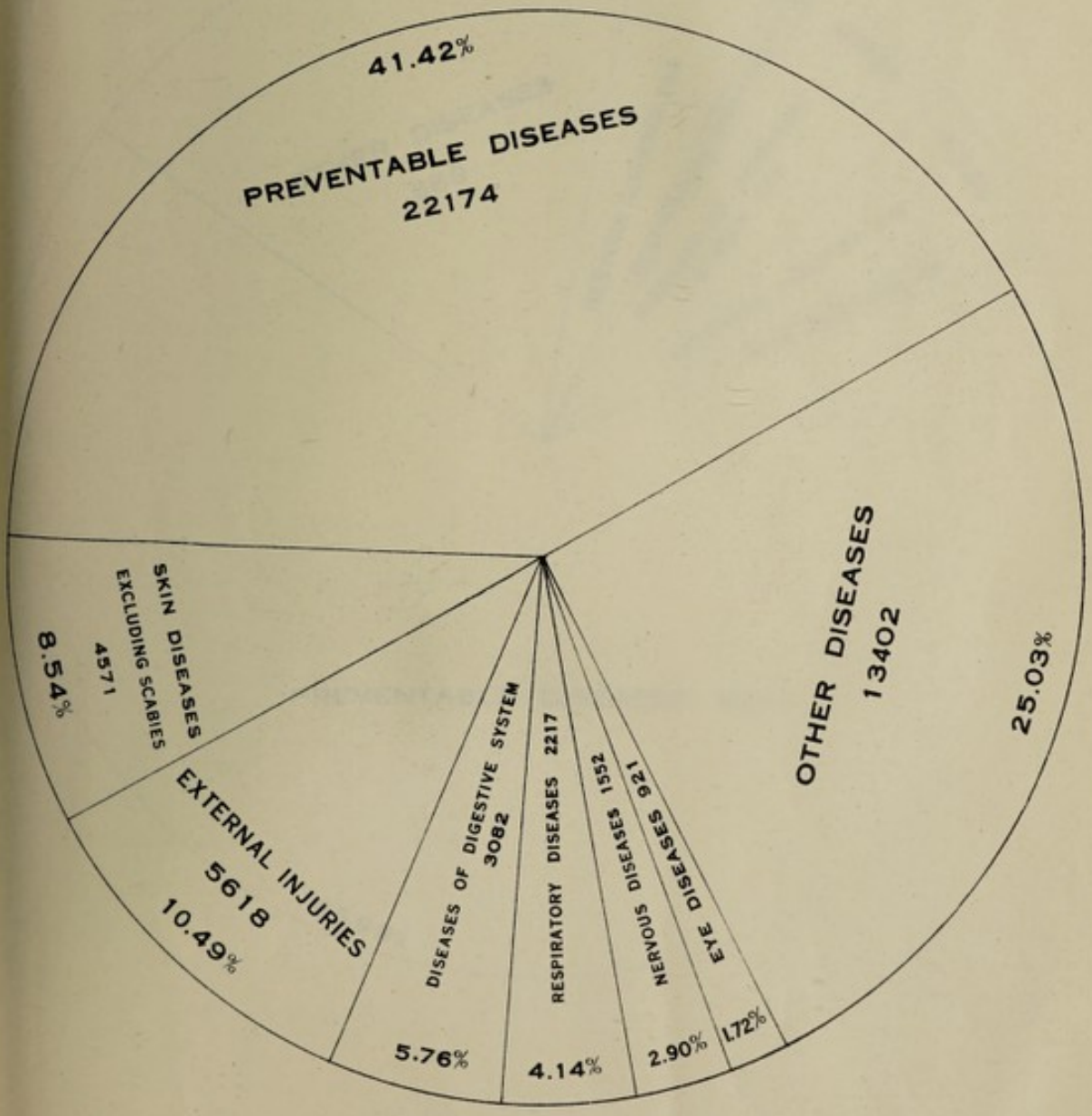
TOTAL DEATHS FROM PREVENTABLE DISEASES IN THE S.S.
GOVERNMENT HOSPITALS 3251





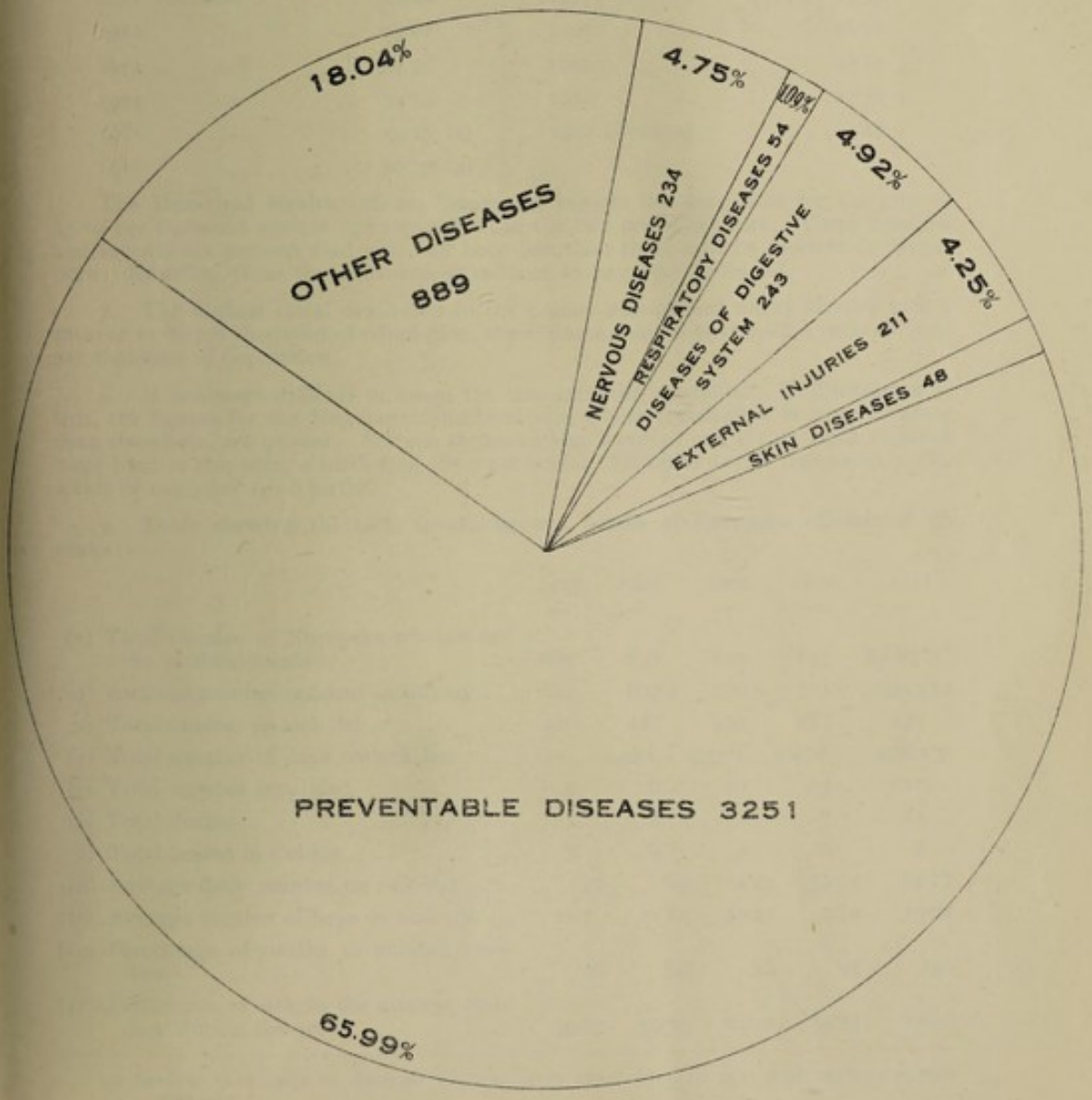
V

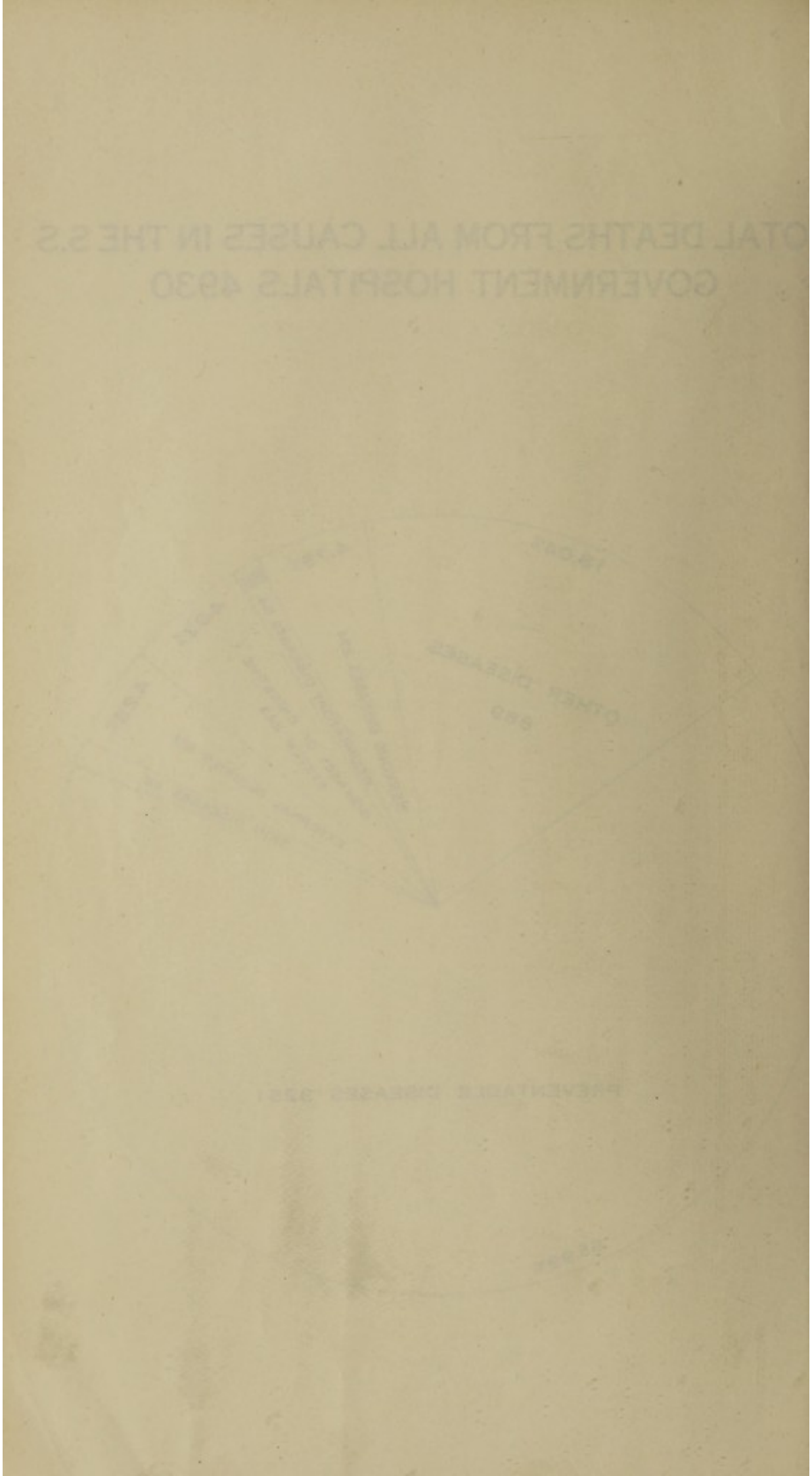
GENERAL SYSTEMIC AND PREVENTABLE DISEASES ADMITTED TO S.S. GOVT HOSPITALS DURING 1931 TOTAL CASES 53537



V

TOTAL DEATHS FROM ALL CAUSES IN THE S.S GOVERNMENT HOSPITALS 4930





Death-rates for the last 30 years are :—

Year	Ratio per mille	Year	Ratio per mille
1901 (Census)	39·85	1917	36·98
1902	42·96	1918	43·85 (*b*)
1903	39·49	1919	33·04
1904	39·00	1920	33·20
1905	40·51	1921 (Census)	31·54
1906	37·82	1922	30·68
1907	39·07	1923	27·80
1908	43·06	1924	27·42
1909	37·58	1925	27·26
1910	41·88	1926	31·81
1911 (Census)	46·46	1927	33·55
1912	39·01	1928	28·76
1913	34·93	1929	26·10
1914	34·13	1930	27·32
1915	29·15 (*a*)	1931 (Census)	24·47
1916	30·70 (*a*)		

The Municipal Health Officer, Singapore, reports the death-rate for the city as 25·19 per thousand against 27·73 and 26·63 in the two previous years. Three hundred and seventy-six persons died who had been less than three months resident in Singapore : deducting these the death-rate is reduced to 24·35 per thousand.

7. The highest racial death-rate in the Colony was classed under Malays with a ratio of 25·89 per thousand of population, the Chinese coming next with a ratio of 24·90 per thousand of population.

8. It is always difficult to assess the true infantile mortality. In illustration of this, the figures for the Singapore Municipal area where registration is more accurate than elsewhere, are quoted. Sixteen thousand four hundred and eighty-eight children were born in this area, a birth-rate 36·99 per mille. Infantile deaths numbered 3,369, a rate of 204·3 per 1,000 births.

9. Table shewing the sick, invaliding and deaths of European officials of all ranks :—

	1927	*1928*	*1929*	*1930*	*1931*
(1) Total number of European officials on the establishments	689	698	822	835	2,089 (*c*)
(2) Average number resident in Colony ...	617	607·4	709·5	734·6	1,993·12
(3) Total number on sick list	246	427	433	483	439
(4) Total number of days on sick list ...	3,125	4,952	4,536	4,408	4,662·5
(5) Total number invalided	9	6	10	12	21
(6) Total deaths	3	4	2	7	11
(7) Total deaths in Colony	3	4	2	6	7
(8) Average daily number on sick list ...	57	·69	12·43	12·07	12·77
(9) Average number of days on sick list ...	12·7	11·62	10·47	9·12	10·62
(10) Percentage of deaths to number resident	·48	·65	·28	·95	·50
(11) Percentage of sick to the average resident during the year	39·87	70·29	61·02	65·75	17·26

(*a*) Several thousands of decrepit Chinese were repatriated in 1915 and 1916 as a war measure.

(*b*) The Influenza pandemic occurred in 1918.

(*c*) Increase due to the inclusion of other ranks, not included in previous years.

10. Table shewing the sick, invaliding and deaths of non-European officials :—

	1927	*1928*	*1929*	*1930*	*1931*
(1) Total number on the establishment (*a*) ...	5,994	9,445	11,362	13,377	11,707
(2) Average number resident ...	5,252	8,961·4	10,776·8	12,594·2	11,026·1
(3) Total number on sick list ...	2,948	6,244	13,357	12,702	8,190
(4) Total number of days on sick list	38,708	49,728	69,292	68,393	50,102
(5) Total number invalided ...	64	132	235	387	267
(6) Total deaths	24	36	49	77	117
(7) Average daily number on sick list	·57	1·25	189·84	187·37	137·27
(8) Average number of days on sick list	6·5	7·96	5·18	4·65	6·11
(9) Percentage of deaths to number resident ...	·45	·40	·45	·61	·64
(10) Percentage of sick to number resident ...	56·11	69·67	123·94	116·73	43·28

III.—HYGIENE AND SANITATION

A.—Organisation of the Health Branch

The Director of Medical and Health Services is Chief Health Officer of the Straits Settlements.

There is a Chief Health Officer, Singapore, who is responsible for the port and the rural areas of Singapore, and for the school inspection of the whole Settlement.

He also lectures in the College of Medicine and in the Sanitary Inspectors' School.

Under him are a Rural Health Officer, a Deputy Rural Health Officer, a Health Officer, Schools, a Lady Health Officer, Schools, a Health Officer, Quarantine Station, two Port Health Officers and an Assistant Health Officer.

In Penang, there is a Senior Health Officer who is responsible for the Port of Penang, the rural areas of the Settlement which include rural Penang, Province Wellesley, and the Dindings, and the Schools of the Settlement. Under him there are a Health Officer, Provinue Wellesley, and a Deputy Rural Health Officer, Penang ; and the Deputy Medical and Health Officer, Lumut, and the three Assistant Medical Officers in the Province Wellesley District Hospitals, as far as the health work of their districts is concerned. Under him also is the Port Health Officer of the Quarantine Station.

(The Municipalities of Singapore and Penang have their own Health organisation, comprising in Singapore a Municipal Health Officer with 3 other Health Officers, a Bacteriologist, and several Assistant Health Officers, and in Penang a Municipal Health Officer, a second Health Officer, and an Assistant Health Officer.)

In Malacca, there is a Government Health Officer, and a Deputy Health Officer who function for the whole Settlement, including the Municipality of Malacca.

The Assistant Medical Officers in charge of the two district hospitals in Malacca are under the health officer as regards their health work.

In the Island of Labuan the Medical Officer is also Health Officer.

The Unfederated Malay States Health Branches are staffed by officers seconded from the Straits Settlements.

Johore now has a cadre of a Senior Health Officer and three Health Officers, Kedah a Senior Health Officer and one Health Officer, Kelantan one Health Officer; in the State of Brunei in Borneo the Medical Officer is also Health Officer and Assistant Superintendent of Indian Immigrants.

There are European Chief Sanitary Inspectors in both Singapore and Penang, and there is a staff of locally trained Sanitary Inspectors in all districts.

(*a*) The increase is due to the fact that Police non-commissioned officers and constables are included in 1928 and 1929.

The rural area of Singapore is divided into five sanitary districts, similarly the rural areas of Penang Island and Province Wellesley are each divided into four sanitary districts, Malacca into three sanitary districts. The Dindings and Labuan each constitute a sanitary district.

As a rule one or two sanitary inspectors are stationed in each sanitary district.

The Health Office of the district is the centre from which the district health propaganda and welfare work are developed.

Where there is a district hospital the health office is usually situated in or beside the hospital.

There are Rural Health Sisters in Singapore, Penang and Malacca under whom locally trained district health nurses hold maternal and child welfare clinics, do house and school visiting in the villages and kampongs, and in some cases maternity work.

The travelling motor dispensaries in the three Settlements co-operate in these duties, in addition to treating the sick.

Details of rural areas in the Colony, 1931 :—

	Area in square miles	*Census population*
Singapore	185	114,227
Penang Island	98½	49,463
Province Wellesley	280	141,388
Dindings	183	19,592
Malacca	720	148,669
Labuan	28½	7,507
Add Municipal area, Malacca, which is staffed by part-time Government Officers	—	38,042
	1,495	518,888

B.—General Review of Work Done and Progress Made

(I).—Preventive Measures

1. *Mosquito and Insect borne diseases.*—

Government provided the following votes for anti-mosquito work in 1931 :—

Settlement	*Vote*
	$
Singapore	120,000
Penang	95,000
Malacca	33,000
Labuan	7,000

2. Continued progress is being made in anti-malaria measures throughout the Island of Singapore. In the rural area, the policy adopted is to destroy the breeding places of dangerous mosquitoes within a half mile radius of the outskirts of the principal villages and kampongs. Anti-mosquito oiling is used as a temporary measure followed, when possible, by the permanent drainage of dangerous ravines and swamps. Periodic mosquito surveys are used as a control, supplemented by spleen surveys, malaria case records, and the vital statistics of each district. More than 18,000 anopheline larvæ were collected, of which 22·47 per cent. were A. Maculatus the chief malaria carrier in the rural area. 6·16 miles of sub-soil pipes were laid at an average depth of 6 feet and 1.82 miles of main arterial open cement drains were constructed, permanently draining an area of 2 square miles. Sixty-two thousand and eighty-six gallons of anti-malarial mixture, costing $10,851 were sprayed on potential breeding places o protect an area of 16 square miles. The total expenditure was $112,821.25 inclusive of $5,428.79 recovered for work done on private premises.

From 1921 up to the end of 1931, approximately $919,180 have been spent on rural anti-malaria work in Singapore Island. The number of persons protected from malaria by this work, is approximately 60,000. The cost per head per annum is $2.20.

A complete record of mosquito breeding places discovered since 1921 has been kept. Plans of mosquito surveys are prepared and collections of mosquitoes are made.

3. Provision was first made for anti-mosquito work in the Settlement of Penang in 1924. Special expenditure votes from that year have been $50,000 in 1924 and 1925, and $75,000 in 1926 and 1927, rising to $95,000 since 1928. The Health Branch has thus been able to undertake measures for the permanent control of malaria in village areas that were notoriously malarial. The seriousness of the malaria problem in Penang Island is due to the widespread distribution of ideal breeding places for A. Maculatus. Anti-malaria measures are directed against the larval stage of the mosquito. An area is placed under control by dealing with all breeding places for a distance of half a mile. At the commencement, the application of larvicide (anti-malaria oil or Paris Green) is resorted to ; permanent works, drainage, filling, etc., are gradually instituted when feasible. The protection of all the zones that were under control has been effectively maintained since 1928, additional zones have been placed under control, and some of the old ones have been extended. On Penang Island newly controlled areas are :— Balik Pulau, Telok Bahang, Telok Kumbar and Bayan Lepas. The Glugor and Sungei Nibong areas have been extended as has also the zone of protection on Penang Hill, Botanical Gardens, Tanjong Bungah, Batu Ferringhi, Telok Nangka, Tanjong Bunga, Tanjong Tokong and villages of Ayer Itam and Telok Bohong.

In Province Wellesley, in addition to rubber estates where supervision over malaria control measures is exercised by the Health Branch, the following centres have been made protected zones :—Bukit Mertajam, Sungei Bakap, Butterworth, Bukit Tambun, Batu Kawan, Kubang Semang, Tassek, Bukit Tengah, Nibong Tebal, Prai, the first five being places where permanent works have been instituted in addition to temporary measures.

In the Dindings, the main extension of protected zones has taken place on the Segari Road and the villages of Damar Laut. Permanent anti-malarial works have been extended around Lumut where malaria is now under complete control.

The control of breeding places is the principal method employed, but a useful adjuvant in the suppression of malaria is the distribution of quinine by the travelling dispensary.

The following table gives a resume of work done :—

	Notices served	*Feet of subsoil drains laid*	*Feet of open masonry drains*	*Feet of earth drains*	*Wells constructed*	*Cubic yards of filling*	*Gallons of oil used*	*Mosquito larvæ examined*
	—	—	—	—	—	—	—	—
Penang ..	18	7,130	3,452	1,897	47	320	54,321	42,528
Province Wellesley ...	157	2,245	1,000	500	9	2,000	40,737	12,261
Dindings .	18	3,452	1,138	5,874	7	1,400	15,177	1,152
	183	12,827	5,590	8,271	63	6,600	110,235	55,941

The expenditure incurred in maintaining previously completed work, the construction of new work, the salaries of the staff, the purchase of materials and tools, upkeep of lorry, purchase of larvicides and implements used in their application has, during 1931, amounted to $94,686.28, this figure consisting of the amount of $95,000 allowed by Estimates plus the sum of $5,374.54 recovered from private owners.

4. Provision was first made for anti-mosquito work in the Settlement of Malacca in 1926, when a vote of $30,000 was provided. The vote was increased to $33,000 in 1928 and a similar sum was provided in 1931.

One hundred and sixteen mosquito surveys were made in suspected places and the following anopheline larvæ were collected and identified—a. maculatus, a. umbrosus, a. ludlowi, a. separatus, a. kochi, a. fuliginosus, a. leucosphyrus, a. vagus, a. sinensis, a. barbirostris and a. aitkennii.

Co-operation between a few of the large rubber estates, *e.g.*, Asahan, Bekok, Rembia, Kemuning, Batang Malaka and Pulau Sebang, with regard to oiling of Crown land and villages bordering these estates, has been very useful in reducing the incidence of malaria in the vicinity. This work is increasing.

Anti-malarial works undertaken in rural Malacca may be summarized as follows :—

Permanent Works.—Three thousand six hundred and thirty-two sub-soil pipes were laid. One thousand six hundred and fifty-eight concrete slabs were fixed at the sides of drains. Five hundred and eighty-one concrete inverts were made and laid in the drains. Three miles and one thousand six hundred and seven yards of new drains

were made with an average cross sectional area of 3 x 2½ feet. Seven acres and five hundred and thirty-eight square yards were filled to an average depth of 9 inches. Twenty-five and one-fourth acres were cleared of undergrowth.

Closed drains around Durian Daun Hospital were opened up, as they were difficult to clean and there was an offensive smell in dry weather. These were replaced by open concrete drains which have proved extremely satisfactory.

Draining of the large Ravine in Jasin Village was continued further by extending the area of sub-soil piping and the central open concrete channel. Heavy rainfall caused a very heavy flow at one time last year in the open channel and loosened some of the side concrete slabs. The channel should now prove capable of dealing with the very heavy flow of water from the whole of this area.

The large Rim Ravine which was sub-soiled last year, has given no trouble. The main open channels have been kept in order and sub-soil pipes have been laid an additional area. The number of cases of Malaria in this area has diminished greatly in consequence.

No. 4 Ravine at Pulau Sebang on the Malacca—Negri Sembilan border has been dealt with by sub-soiling. Cost approximately $3,000. No. 5, the last of this sequence, will be dealt with this year.

An area of seepage behind the main street of Pulau Sebang Village has been sub-soiled and extensively drained, with the result that A. Maculatus has disappeared and the houses, shops, car-stands, etc., are now dry. The deep wells which breed Maculatus, and which overflowed continuously, have been closed and a concrete bathing and washing place constructed.

One hundred and thirty-five glazed pipes were laid in the drain at Limbongan, one concrete basin has been built at the inlet of the said glazed pipe drain.

Periodical oiling was carried out and 9,702 gallons of anti-malarial mixture were sprayed at the following places :—

(i) Durian Daun Hospital; (ii) Peringgit; (iii) Limbongan; (iv) Tanjong Kling; (v) Jasin; (vi) Merlimau; (vii) Alor Gajah; (viii) Gadek; (ix) Durian Tunggal; (x) Pulau Sebang.

Periodical upkeep of drainage, etc., was carried out at the following places :—

Kuala Lanchot, Lereh, Batang Tiga, Limbongan, Durian Daun Hospital, Peringgit, Alor Gajah, Durian Tunggal, Pulau Sebang, Jasin, Merlimau, Asahan.

Oiling was also carried out in co-operation with the adjoining authorised Rubber Estates and the Mosquito Destruction Board, Tampin. Four thousand and fifty-five and a half gallons of anti-malarial mixture were sprayed at the following places :— Tampin, Rembia, Lendu, Kemuning, Tebong, Garing, Asahan, Bekoh, Batang Malaka, Rim.

(II).—General Sanitation and Village Conservancy

Under this heading are included house to house inspection, village scavenging, control of night-soil (removal and disposal), control of piggeries, cattlesheds and dairies, inspection of markets, survey of sites and building plans, sanitary supervision of police stations, rubber estates and factories, control of water supplies and sanitary control of schools.

SINGAPORE

The actual number of houses in the rural districts is 17,696. Four thousand four hundred and forty-eight routine house to house inspections were made by district sanitary inspectors. A number of similar inspections in cases of difficulty and complaint were carried out by the rural health officer. The sanitation of government buildings and crown land within the municipal limits was supervised by the health officer and the routine monthly inspections of all government offices and quarters were carried out by the sanitary inspector (town) and mosquito-collector.

Village scavenging and refuse collection is organised by the health branch ; all the villages in the rural areas are served with one or more incinerators according to their need. During the year, two new incinerators were built and two demolished, so that at present 15 incinerators are available for refuse destruction. Twenty-nine thousand cubic yards of rubbish were consumed during the year.

Considerable advance has been made during the year in the control of soil pollution. Nine hundred and eighty-four insanitary latrines were demolished and 1,360 new sanitary latrines were erected by owners of houses. Three tube latrines were sunk by the health branch in Geylang District. All new buildings in village areas and all coffee shops and eating-houses and rubber estates in rural areas have sanitary latrines. The trenching ground at the 8th mile West Coast Road and the septic tanks at Paya Lebar and Bukit Timah have worked very satisfactorily. Two new trenching grounds have been acquired in Seletar District and have worked satisfactorily.

Eight hundred and sixty-four building plans were submitted to the rural health officer for approval ; in the majority of the plans submitted, alterations of the sanitary arrangements were made. In certain parts of the rural area, kampongs were so congested that further building on the site had to be refused.

Reports of births and deaths registered at each police station are collected and scrutinised. The police co-operate in gathering children for vaccination and in finding new-born infants for the health sister.

Schools.—Two hundred and thirty-four visits by sanitary inspectors were made to schools. The sanitation of all government and aided schools is satisfactory.

PENANG

The greater part of this work is carried out in accordance with Rural Board regulations.

For conservancy, the system followed is the appointment of a reliable man who is authorised to collect the night-soil and dispose of it in the manner prescribed. He is allowed to charge the public a fee not to exceed $1 per month per bucket. This method is in use in all gazetted villages, except at Lumut, where the collected night-soil is removed in specially constructed buckets and thrown into the sea.

The following figures show the number of inspections carried out :—

	Houses	*Latrines*	*Police Stations*	*Schools*	*Estates & Copra Sheds*	*Cattle Sheds*	*Goat pens & poultry yards*	*Pigstyes*
	—	—	—	—	—	—	—	—
Rural								
Penang ...	13,859	23,070	294	302	184	1,295	976	3,506
Province								
Wellesley . .	3,718	4,313	217	289	158	407	89	305
Dindings ...	1,137	2,197	162	312	100	68	76	621
Total . .	18,714	29,580	673	903	442	1,770	1,141	4,432

In Penang Island, there were 153 prosecutions and the total amount of fines realized was $414.00.

In Province Wellesley, the number of prosecutions was 156 and fines amounted to $739.

In the Dindings, 10 prosecutions were effected ; fines were $10.00.

Scavenging and conservancy systems have been introduced into all the rural villages. Special attention is paid to night-soil collection and disposal, for which work Chinese contractors are employed in each locality. Sale of night-soil for manure is not permitted and, as a rule, disposal is effected by trenching, but in Lumut and at Butterworth sea dumping is successful.

On Penang Hill Station, there is a water-borne sewage system in which all permanent residences are included.

The use of latrines is being encouraged throughout all the rural areas. Pail latrines are generally used within village limits while pit and deep tube latrines are employed in suitable situations. The recorded number of latrines replaced or reconstructed is 671, while pit and tube latrines excavated number 602.

For refuse disposal, the method generally employed is incineration. In a number of villages new incinerators of an improved pattern have been constructed ; while at Ayer Itam, the method of refuse disposal by controlled dumping has been adopted. Suitable land is chosen where refuse can be dumped and earth filling applied daily. The heat engendered within the rubbish dump being sufficient to guard against fly breeding.

MALACCA

Certain gazetted village areas are scavenged by coolies under the direct supervision of government sanitary inspectors and sub-overseers belonging to the health branch, and one rural board overseer controlled by the health branch.

There are now 29 gazetted village areas in rural Malacca including one newly gazetted : the municipal ordinance and municipal by-laws are applicable in these areas.

In addition to the rural board coolies, the health officer provides travelling gangs of mandores and coolies ; and refuse, empty tins, etc. are collected and either burned or buried. This amounts to 39, 936 cubic feet of refuse during the year. Villages are provided with incinerators, 23 in all.

Considerable advance has been made during the year in the control of soil pollution. Eleven thousand five hundred and seventeen latrines were inspected. Two thousand six hundred and eighty new latrines were constructed and 1,296 reconstructed.

WATER SUPPLIES

The water supplies of the cities of Singapore, George Town (Penang) and Malacca, which have lately been greatly extended, are pure and abundant. A number of the surrounding villages are served by the municipal supplies.

The enhanced Singapore supply is derived from catchment areas in Johore, some thirty miles distant : to reach Singapore Island, the pipes are laid on the Johore Causeway.

There are excellent piped supplies at Bukit Pulau, a large village on Penang Island, and at Butterworth and Bukit Mertajam in Province Wellesley, where the amount is to be augmented by impounding additional water at Siraya shortly.

The Bukit Panchor reservoir, supplying the villages of Nibong Tebal and Sungei Bakap in South Province Wellesley, has recently been improved by treatment through a filtration plant.

In Lumut, the headquarters of the Dindings, there is a piped supply from hill streams impounded in two catchment reservoirs, which is shortly to be supplemented by water pumped from a series of wells bored in the Pundut Valley.

Malacca Town and part of the rural area get pure and abundant water supply from Lubok Kendondong. Alor Gajah has its own water supply, which is chlorinated. The work at Lubok Kendondong in connection with filtration and chlorination is in progress.

In Labuan, there is a similar supply.

A number of rubber estates have their own piped water systems.

In rural areas, spring water is, as a rule, plentiful along the foothills. In many such places, the health officers have utilised the anti-malarial sub-soil drainage systems to provide the neighbouring villages and kampongs with a water supply, by carrying sub-soil water into cemented basins, through which a constant flow is maintained to prevent mosquito breeding.

In kampongs on flat land, the water supply is mostly from shallow earth wells.

(III).—School Hygiene

There are in the Colony about 70,000 children of school age.

In Singapore, there are whole time male and female school health officers.

In other settlements, the work is done as a part time duty by members of the health and medical staffs.

The travelling dispensaries co-operate in this work in rural areas.

The health sister sends sick children and non-vaccinated children for treatment to the travelling dispensary.

The health officer arranges for the dispensary to visit the schools he has inspected, and to treat children.

Quinine is distributed and blood films taken by the assistant medical officer or the dresser in charge.

In the cities where dental defects are serious, more children are now being sent to the dentists.

There is now a dental clinic in Singapore under the charge of the Professor of Dental Surgery, who treats also school children, assisted by a Dental Officer.

(Details of school work are given in Appendix *F*, pages 77 to 90).

(IV).—Labour Conditions

ESTATES

Estates are inspected by government health officers and their subordinates.

There are 20 rubber or coconut estates in Singapore Island, with labour forces of over 25 coolies.

There are also 13 large rubber factories, whose coolies usually are not housed on the premises, but live in villages or in the city, whence they are brought to their work in lorries.

The large rubber estates in Singapore Island have visiting medical officers. The same system obtains on Penang Island where there are 30 rubber, coconut or spice estates, employing over 25 coolies each. There are 209 similar estates in Province Wellesley, including 31 large European owned estates. One group of estates there, known as "Caledonia", has its own resident medical officer. A number of other estates have visiting medical officers. There are five estate hospitals in Province Wellesley, the largest of which serves the "Caledonia" group. Two of these were closed during the year under review.

In the Dindings, where there are 34 estates, conditions are similar. There are two estate hospitals.

In Malacca, there is a planters' board, known as the Malacca Agricultural Medical Board, which has grouped many of the Malacca estates, and engaged 5 medical officers, 2 Europeans and 3 Chinese, stationed at convenient centres. Some of these officers are doing good preventive work. Twenty-two Malacca estates have small hospitals or sick lines. The Malacca estate medical service, which is paid for by a cess on the planted area had undoubtedly reduced the death-rate in Malacca estates. The estates under this board total 722, of which 180 exceed 100 acres in area: the annual revenue of the board is about $110,000, and the average number of coolies employed about 24,000.

In all parts of the Straits Settlements, estates which have no hospitals use the government hospitals. Even estates with hospitals send most of their serious cases into government hospitals.

OTHER LABOUR

The health of the public works and other labour forces in rural areas is cared for directly by the medical department.

Offensive trades operate almost entirely in the municipalities, where they are controlled effectively.

Factories and shops in cities are controlled by the municipal authorities.

(V).—Housing and Town Planning

The working out of further improvement schemes which has also been extended to the rural areas of Singapore, is proceeding in the municipalities of Singapore, Penang and Malacca: land is being acquired and laid out.

The sum of ten million dollars, appropriated by Government for the scheme in Singapore, is being spent.

More houses have been erected in the Serangoon district and elsewhere, and an extensive reclamation scheme has been carried out in the Tiong Bahru and other areas of Singapore.

(VI).—Food in relation to Health and Disease

The inspection and control of food is carried out by the municipal and government health officers in their respective areas. There are markets at all centres.

Milk vendors, eating houses, coffee shops, meat shops and aerated water factories are licensed and inspected. Water, milk and other beverages and food stuffs both local and imported are regularly analysed, and action is taken if indicated.

The practice of referring to the health branch applications for licences for coffee shops, eating shops, slaughter houses, markets, milk vendors, etc., has been continued with satisfactory sanitary results.

Inspections as tabulated were carried out in the northern and southern settlements :—

	Coffee Shops	*Toddy Shops*	*Eating Shops*	*Markets*	*Milk Vendors*	*Slaughter Houses*
Singapore ...	1,604	140	929	714	418	437
Penang ...	1,215	89	619	102	48	179
Province Wellesley	1,157	120	947	624	157	225
Dindings ...	197	16	102	254	85	78
	4,173	365	2,597	1,694	708	919

In addition, bakeries, fishmongers' shops, grocers' shops and chandu shops were inspected.

In Malacca, similar work was done. Eight villages have good markets. There are three dairies in the rural area, supplying milk to Malacca town ; samples taken were satisfactory.

C.—Measures taken to spread the knowledge of Hygiene and Sanitation

Some of these are detailed in the Maternity and Child Welfare and Social Hygiene reports.

Baby shows have been held in both large and small centres. Health officers and their assistants and health sisters give advice on the preservation of individual health both at clinics and in set lectures. Lantern slides and films are shown especially in connection with venereal disease, hook-worm and malaria. Pamphlets and posters are issued. Lectures on health are given in all government schools both English and Vernacular.

The diffusion of knowledge of the principles of hygiene is gradually spreading amongst school children through lectures and by demonstrations and physical examinations carried out in the schools, amongst mothers through the visits of the health sisters and amongst the population generally through the gradually awakening intelligence of those who share in the advance of sanitary progress. The householder who is unaware of the existence of a sanitary inspector is now a rarity, and few owners of land are left in ignorance if their holding proves to be a breeding place for mosquitoes.

Sanitary inspectors are taught to advice and encourage rather than to adopt the roll of the policeman. The knowledge of their duties, in which they receive a comprehensive grounding during their course of instruction in Singapore, is supplemented by fortnightly lectures at the office headquarters.

Public health museums have been set up in some of the health offices, both for the instruction of staff and the education of the general public : there are also exhibits and posters at the health centres.

Propaganda work has been undertaken on a permanent basis by the health branch.

D.—Training of Sanitary Personnel

With the development of rural sanitary work, it became obvious in 1921 that the government should have a proper staff of sanitary inspectors. A lecture-room, small museum and various offices and a store were fitted out. The collaboration of the Royal Sanitary Institute of London was fortunately obtained ; and, in accordance with its practice in suitable tropical centres, the Institute agreed that students locally trained on an approved schedule should be able to obtain the sanitary inspector's certificate of the London Institute after an examination by an approval board of examiners, in co-operation with the government of the Straits Settlements. This facility was much appreciated, for it meant that not only the students destined for government service would be catered for, but, at the same time, without much expenditure, members of the public might be admitted to the course on payment of the necessary fees. The first session began in May, 1921, and, was attended by five selected candidates for government service.

The numbers of students rapidly increased until since 1924, it has been necessary to limit the class so as to ensure that all should have adequate training.

In 1926, twenty-six students attended the course, of whom twenty passed. In 1927, thirty-three attended the course, of whom twenty-one passed. In 1928, twenty students attended the course and six others presented themselves for the examination for the certificate which they had failed to obtain at previous examinations ; nineteen passed. In 1930, thirty-four students attended the course and five others presented themselves for the examination for the certificate which they had failed to obtain at previous examinations twenty-five passed. In 1931, twenty-five students took the course while twenty-seven sat for the examination, of whom seventeen passed.

Students have been sent by the government of the Straits Settlements, Federated Malay States, Unfederated Malay States, Sarawak, and British North Borneo, and by the municipalities of Singapore and Malacca.

A few private students have also been admitted.

IV.—PORT HEALTH WORK AND ADMINISTRATION

A.—Singapore

1.	Number of ports from which vessels arrived	539
2.	Names of ports against which quarantine measures were declared during the year:— Amoy, Bombay, Basra, Calcutta, Chittagong, Cochin, Madras, Negapatam, Pondicherry, Rangoon, Saigon, Swatow, Shanghai, Tuticorin.	
3.	Total tonnage of ships entering the port	15,321,541
4.	Number of ships entering the port	23,755
5.	Ships examined including pilgrim ships and infected ships ...	697
6.	Outgoing pilgrim ships examined	6
7.	Returning pilgrim ships examined	3
8.	Infected ships examined	1
9.	Ships fumigated or disinfected	139
10.	Crew examined	71,263
11.	Passengers examined including Muslim pilgrims and Chinese immigrants	134,279
12.	Outgoing pilgrims examined	748
13.	Revenue from charges for fumigation or disinfection of ships and from certificates issued to such ships	$8,320
14.	Returning pilgrims examined	888
15.	Chinese immigrants examined	82,914
16.	Corpses inspected in harbour	52
17.	Water boats inspected in harbour	54
18.	Passengers undertakings issued for surveillance ashore ...	54
19.	Optional certificates issued to ships fumigated or disinfected	141
20.	Bills of Health issued	2,401
21.	Permits to import and export corpses issued (1 free) ...	47
22.	Revenue from Bill of Health fees (50 free to Warships) ...	$11,755
23.	Revenue from permits to import and export corpses (1 free) ...	$460
24.	Charge for water supplied to passengers at quarantine station recovered from agents	$102.85
25.	Total revenue	$20,637.85
26.	Exemption Certificates issued to ships	199
27.	Deratisation Certificates issued	6
28.	Rats trapped and bacteriologically examined :—	

R. Decumanus	*R. Rattus*	*Others*	*Total*	*Plague infected*
42	298	2	342	Nil

29.	Prosecution:—Captain, Surgeon and Chinchew of s.s. "Seistan" from Hongkong prosecuted on 29-12-31 under Section 54 of Ordinance 157 for making false Entry declaration. Convicted Captain fined $150, Surgeon $10 and Chinchew $100.	
30.	Five samples of drinking water were taken from water boats and sent for analysis, result of examination good.	

ST. JOHN'S ISLAND QUARANTINE STATION

1.	Total passengers admitted during the year	2,733
2.	Greatest number admitted in any one day (8-5-31)	236
3.	Maximum number in residence on any one day (8-5-31) ...	236
4.	Minimum number in residence on any one day (14-1-31) ...	1
5.	On 244 days there were none in residence.	
6.	Total sick treated in hospital, *i.e.* total admissions during the year and patients remaining in hospital on 31-12-30	21
7.	Maximum number in hospital on any one day (15-2-31) ...	4
8.	Minimum number in hospital on any one day (1-2-31) ... (*Note*:—On 245 days there were none in hospital).	1
9.	Average daily number of sick in hospital	0.05
10.	Total deaths during the year	Nil
11.	Death rate per mille in hospital	Nil
12.	Death rate per mille amongst passengers admitted	Nil
13.	Total cases of Cholera admitted	Nil
14.	Total cases of Plague admitted	Nil
15.	Total cases of Smallpox admitted	1
15A.	Total cases of Cerebro-spinal Fever admitted	Nil
16.	Number of non-infected ships whose passengers subsequently developed infectious diseases on the Island	Nil
17.	Number of infected ships whose passengers subsequently developed infectious diseases on the Island	Nil
18.	Number of Primary Vaccinations against Small-pox	1,549
19.	Number of Re-Vaccinations against Small-pox	Nil
20.	Total vaccinations with Anti-Cholera vaccine	59
21.	Total vaccinations with Anti-Meningococcus vaccine	Nil
22.	Total number of N.A.B. injections	Nil
23.	Cases treated as outdoor patients (Contacts & Staff)	743
24.	Total Births (2 Staff)	2
25.	Number of Municipal contacts and patients admitted:—	
	Small-pox contacts	Nil
	Plague contacts	Nil
	Cholera contacts	Nil
	Cerebro-Spinal Fever contacts	Nil
26.	Number of Government contacts and patients admitted:—	
	Small-pox contacts	1
	Plague contacts	Nil
	Cholera contacts	Nil
	Cerebro-spinal fever contacts	Nil
27.	Number of Municipal contacts who developed infectious diseases on the Island	Nil
28.	Number of Government contacts who developed infectious diseases on the Island	Nil
29.	Corpses sent to the Station for P.M. examination and burial ...	Nil
30.	Number of gallons of Singapore water supplied	2,909,088
31.	Average daily number of passengers in Quarantine	7·487

RÉSUMÉ OF PORT HEALTH WORK, SINGAPORE FOR 29 YEARS

Year	Crew and Passengers examined	Passengers sent to St. John's Island	Visits to Vessels	Bills of Health issued
1903	321,365	21,253	809	1,000
1904	279,297	17,852	712	1,036
1905	323,431	12,109	1,279	1,220
1906	493,021	30,076	1,625	1,674
1907	377,325	25,408	1,226	1,318
1908	303,484	29,356	1,506	1,344
1909	291,625	15,072	1,251	1,299
1910	467,868	35,062	1,920	1,200
1911	538,291	53,961	2,100	1,800
1912	539,677	56,726	1,927	2,145
1913	506,925	56,838	1,818	1,582
1914	402,583	18,193	1,803	1,802
1915	200,978	3,335	821	1,563
1916	426,584	9,738	1,617	1,726
1917	277,442	78,881	694	1,915
1918	284,198	24,182	1,709	2,086
1919	411,921	28,318	2,130	2,160
1920	507,176	31,991	2,023	2,878
1921	511,747	8,950	1,851	2,951
1922	369,072	15,343	1,552	2,720
1923	395,583	7,374	1,360	2,718
1924	408,419	39,053	1,433	2,912
1925	366,671	46,063	1,018	3,204
1926	550,443	78,963	1,650	3,273
1927	643,066	20,169	1,568	3,071
1928	501,009	13,993	1,342	3,345
1929	526,048	84,282	1,578	3,255
1930	431,017	43,659	1,186	2,922
1931	205,542	2,733	697	2,401
Total ...	11,861,808	908,933	42,205	62,520

B.—Penang

1. Ports of clearance on which quarantine restriction was imposed were:—

Small-pox.—Amoy, Madras, Saigon, Shanghai, Calcutta, Pondicherry Rangoon, Negapatam, Swatow, Cochin.

Cholera.—Calcutta, Chittagong, Pondicherry, Saigon, Madras, Amoy, Basrah, Shanghai, Bombay, Swatow.

Plague.—Rangoon.

Cerebro-spinal Meningitis.—Shanghai.

2. The following infected ships arrived in Penang during the year:—

Date of arrival	Ship	Port	Infection	No. of cases
16-1-31	Rajula	Madras	Cholera	1
13-2-31	Rajula	Madras	Cholera	1
20-2-31	Ho Sang	Calcutta	Small-pox	1
22-5-31	Adrastus	Jeddah	Small-pox	2
	Adrastus	Jeddah	C. S. M.	1
14-6-31	Tairea	Calcutta	Cholera	1
19-6-31	Sui Sang	Calcutta	Cholera	3

3. Other details are summarised as follows:—

1.	Passengers admitted to Quarantine Station	12,542
2.	Greatest number admitted on any one day (14-6-31)	1,613
3.	Passengers medically examined	89,327
4.	Crew Medically examined	47,176
5.	Maximum number in residence on any one day (24-6-31) ...	1,824
6.	Minimum number in residence on any one day	Nil
7.	Sick treated in Hospital (Patients remaining on 31-12-31 included)	287
8.	Total deaths during the year (of these 11 died within 48 hours)	28
9.	Death-rate among those treated per mille	97.5
10.	Number of births	2
11.	Cases of Cholera admitted	5
12.	Cases of Plague admitted	—
13.	Number of vaccinations	6,659
14.	Number of anti-cholera inoculations	1,253
15.	Number of out-patients treated	607
16.	Number of anthelmintic treatments	48
17.	Corpses examined in harbour	7
18.	Permits to import or export corpses (1 Free)	55
19.	Certificates to accompany hides	7
20.	Water boats examined	17
21.	Revenue in stamp fees	$5,263
22.	Number of vessels entering the port (including native craft) ...	9,564
23.	Tonnage of these vessels	6,682,189
24.	Number of ships examined (ships infected 6)	375
25.	Number of pilgrim ships proceeding to Jeddah	5
26.	Outgoing pilgrims examined	913
27.	Number of pilgrim ships returning to Jeddah	3
28.	Returning pilgrims examined	1,830
29.	Infected ships proceeding to Quarantine	6
30.	Fumigations and disinfections by disinfecting launch ...	14
31.	Number of disinfection certificates issued	2
32.	Passengers undertaking issued	264
33.	Bills of Health issued	783
34.	Exemption permits issued	159

RÉSUMÉ OF PORT HEALTH WORK, PENANG FOR 28 YEARS

Year	No. of vessels inspected	Bills of Health issued	Passengers and crew units examined	Passengers sent to Quarantine	Number of Small-pox admissions	Number of Cholera admissions	Number of Plague admissions	Vaccinations carried out
1904	748	...	184,691	2,217	16	5	2	...
1905	869	266	214,136	10,406	10	1	Nil	...
1906	675	460	204,988	23,288	16	8	2	6,490
1907	633	...	219,839	17,650	4	24	1	5,625
1908	1,205	...	176,119	21,175	51	9	2	5,691
1909	503	...	161,971	23,058	23	2	1	5,614
1910	526	...	217,967	71,876	62	33	2	12,205
1911	1,144	...	277,151	134,957	109	387	1	63,988
1912*	634	...	287,373	55,493	75	4	4	38,297
1913	818	...	272,473	53,937	11	12	1	37,276
1914	1,040	...	215,067	48,399	171	9	Nil	32,609
1915	405	396	148,622	23,176	3	Nil	Nil	21,562
1916	662	...	213,726	42,736	11	1	Nil	36,806
1917	367	437	203,737	37,595	11	12	Nil	36,808
1918	551	612	173,813	33,481	7	80	Nil	29,536
1919	493	633	210,839	50,733	6	264	Nil	39,941
1920	432	602	207,424	43,733	4	8	Nil	41,230
1921	461	393	197,446	19,653	42	3	Nil	10,377
1922	480	530	197,579	31,247	6	Nil	Nil	26,675
1923	442	646	182,349	24,129	2	9	Nil	23,359
1924	461	703	214,936	28,701	Nil	151	Nil	25,779
1925	417	754	203,204	44,984	8	47	Nil	42,514
1926	885	753	282,530	85,607	5	91	Nil	77,879
1927	3,201	733	367,183	88,849	11	41	Nil	83,675
1928	1,821	898	257,507	43,273	11	Nil	Nil	40,354
1929	532	1,058	262,476	58,013	1	Nil	Nil	54,554
1930	480	1,020	216,125	35,778	Nil	Nil	Nil	33,450
1931	375	783	136,503	6,837	3	5	Nil	6,659

*New Quarantine Station opened and old Quarantine Station converted into Leper Camp.

V.—KING EDWARD VII COLLEGE OF MEDICINE

Abstract of Annual Report

The Honourable Dr. A. L. HOOPS, C.B.E., Principal Civil Medical Officer, Straits Settlements, President of the Council retired on 20th February, 1931.

The Honourable Dr. C. J. WILSON, M.C., Director of Medical and Health Services, Straits Settlements, was appointed President on 10th September, 1931.

Professor W. A. YOUNG acted as Principal from 3rd April to 28th November, 1931.

Dr. E. E. HENDERSON (from the Department of Anatomy, Glasgow University) acted as Professor of Anatomy during the absence on leave of Professor J. G. HARROWER.

Students.—There was an entry of thirty-two medical students and four dental students during the year 1931. Fifteen students left the College during the same period; of these; seven completed the course and received the Diploma of L.M.S., Singapore; three left in order to continue their studies elsewhere; five ceased to study medicine.

There were one hundred and thirty-five students at the College at the end of the year, including eleven dental students. Nationalities of students are:—Chinese 60; Indians and Ceylonese 51; Eurasians 8; Malays 14; Japanese 2.

Teaching.—The course in Biology was revised and has proved very satisfactory. In the Physiology Department the investigations on their own physiology by students were extended and the application of physiology to medicine emphasised. Animal and comparative physiology are now only included in the course in so far as they explain human phenomena. A course in children's diseases was given at the General Hospital during term by the Professor of Medicine. The number of beds in the medical clinic in Tan Tock Seng Hospital was increased and each student is required to work for three terms in this unit. The students have beds allotted to them and are responsible for carrying out the investigation, both clinical and laboratory, and keeping the case records of the patients under the supervision and instruction of the Professor of Medicine and the Medical Tutor. Similar arrangements are in force for the teaching of Clinical Surgery. The teaching of midwifery was given, as in previous years in Kandang Kerbau Maternity Hospital where there were 1955 deliveries during the year. The average number of cases conducted or witnessed by each student was seventy-six.

Research.—The nutrition research being carried out by Professor J. L. ROSEDALE and his staff was continued during the year and considerable progress was made. The B. vitamin content of the black soya bean (*Glycine hispida*) was investigated. An attempt was made to purify B. vitamin following Steudel's method for nucleic acids, but the method was abandoned as the production of meta-protein prevented the possibility of success. It was decided instead to carry out further experiments with silver precipitation. A satisfactory method was evolved for the routine investigation of the vitamin C content of local fruits and vegetables; the method includes the histological examination of the teeth of the animals used in the experiments thereby reducing the length of the experiment to a period of fourteen to eighteen days. Experiments were made on the chemical nature of the anti-scorbutic vitamin. The investigation of the mineral contents of local foods was continued. Preliminary feeding tests of different rices were carried out upon rats and showed that none of the rices can be regarded as containing sufficient vitamins and minerals, but that black pulut rice is superior to any of the white rices. Difficulty was experienced in controlling the occurrence of Xerophthalmia with Cod-liver oil in some of the feeding experiments. Work upon the estimation of the basic amino-acids of the protein of different classes of animals was continued and the investigation of the muscle protein of the python was completed. A micro-chemical technique for the estimation of the basic amino-acids starting with 20 millegrams of nitrogen, has been worked out. Work upon the extraction of the whole of the protein from the green dhall (*Phaseolus radiatus*) was continued and a simple and satisfactory procedure was evolved whereby protein representing 80% of the nitrogen was extracted; tests indicate that this

represents all the protein and an endeavour is now being made to determine the nature of the residual nitrogen.

In the Department of Bacteriology Professor W. A. YOUNG and his staff continued the investigation into the results of enterovaccination against dysentery of the whole of the prison population in the Singapore Prison. A preliminary investigation, in conjunction with the acting Professor of Medicine, of the types of pneumococci found in 112 cases of all types of pneumonia, was completed. Investigations of the Salmonella infections and of the antimony test for leishmaniasis were also carried out This department carried out the bacteriological investigation of special cases in the Singapore Hospitals and the preparation of autogenous vaccines; in addition the routine serological diagnosis and the preparation of vaccines for the Social Hygiene Department was continued.

Professor R. B. HAWES and his staff carried out the following investigations:—

(*a*) Some progress was made in the differentiation and treatment of kidney diseases; (*b*) Estimations of the cholesterol content of the blood were made in various diseases and normal persons. (*c*) A control was made of a reputed test for hepatic function. (*d*) Comparative complete blood analyses were performed on cases of nephritis and beri-beri. (*e*) An antidote for procaine poisoning was worked out. (*f*) Various drugs, etc., were tested:—a preparation of aspidinol, a pancreatic preparation, a potassium iodide preparation, liver and stomach preparations, anti-typhoid serum, chlorophyll extracts, gonad, and pituitary extracts.

The Dental School.—Considerable progress was made in the organization of the Dental School. The senior students entered their fourth year and made satisfactory progress. The junior students attended courses in practical dental mechanics and metallurgy in addition to their other subjects. The dental mechanics laboratory was extended. An additional surgery, containing three chairs was completed The personnel was increased by the appointment of a Dental Officer who assists the Professor of Dental Surgery in his hospital duties and is available for the supervision of the clinical work of the students.

Publications.—The following papers, etc., were published during the year:—

Preliminary note on the life history of the reticulocytes in the rabbit. Malayan Medical Journal. Vol. VI No. 4, p. 123-125 by Dr. K. C. GHOSH.

Studies on the Antineuritic Vitamin, V. The Relationship of Beri-beri to the B. Vitamin Complex, by J. L. ROSEDALE and C. J. OLIVEIRO TRANS. 8th. Congress (F.E.A.T.M. (1930) Vol. i, p. 86).

The Chemical Analysis of Malayan Foods, by J. L. ROSEDALE, (Singapore 1931).

The Estimation of Tryptophan and Tyrosine, by G. A. DE SILVA, Biochem. Jour. XXV. p. 1634.

Calcium in Nutrition by C. J. OLIVEIRO, Malayan Medical Journal VI. p. 101.

A Preliminary Note on a Case of Salmonella Bacteriæmia by Dr. N. K. SEN Malayan Medical Journal, Vol. VI No. 3, pp. 92-94.

The Antimony Test with Sera other than those of Kala-Azar by Dr. N. K. SEN.

Two cases of Aneurism by Dr. G. HARIDAS.

Aneurism in a case of Transposition of Viscera by Dr. G. HARIDAS.

Dental Cyst caused by a Foreign Body, by Professor E. K. TRATMAN, Dental Journal, LII, 2, No. 5.

(The annual report of the Principal of the College of Medicine is being published separately).

VI.—MATERNITY AND CHILD WELFARE

I.—MATERNITY HOSPITALS

There are government maternity hospitals in both Singapore and Penang, and maternity wards in several of the government district hospitals, in the Church of England Mission Hospitals at Singapore and Malacca, and in the Kwong Wai Shiu Hospital, Singapore, a charity supported by the Cantonese community.

The following is a statement of the number of women admitted to and delivered in maternity institutions in the Straits Settlements, 1931 :—

	Admitted	*Delivered*
1. Maternity Wards, General Hospital, Singapore	1,074	1,007
2. Free Maternity Hospital, Kandang Kerbau, Singapore	2,147	1,955
3. Maternity Ward, St. Andrew's Mission Hospital, Singapore	285	261
4. Maternity Ward, Kwong Wai Shiu Hospital, Singapore	301	288
5.—(i) King Edward VII Maternity Hospital, Penang	1,391	1,260
(ii) Maternity Wards in Province Wellesley and Lumut Hospitals	108	96
6. Maternity Ward, St. David's Mission Hospital, Malacca	320	320
7. Maternity Wards in Malacca and other District Hospitals	166	148
	5,792	5,335

II.—TRAINING AND WORK OF MIDWIVES

Midwives are trained at the government hospitals ; a few are trained at the mission hospitals.

Class A midwives comprise women with sufficient English education to undergo a 12 months' training and examination similar to the C. M. B. at Home : they receive a diploma. Nurses with British diplomas are registered in this class also.

Class B midwives comprise Asiatics of lower education, who undergo a practical training given in Malay, for from six to nine months, and pass a practical examination.

Class C consists of women who have been registered, though unable to pass an examination, because they were in regular practice before the passing of the midwives ordinance.

The number of registered midwives in the Colony is :—

Settlement	*Singapore*	*Penang*	*Malacca*
Class A	114	72	10
Class B	234	210	30
Class C	36	218	11
Total . .	384	500	51

The number of births in the Colony in 1931 was 41,361.

Of some 33,386 births in Singapore and Penang Islands, nearly three-quarters were attended by trained midwives.

III.—INFANT AND CHILD WELFARE SERVICES

These are conducted by the municipalities of Singapore, Penang and Malacca within their boundaries, by the Singapore Child Welfare Society, and, in rural areas, by government.

A.—MUNICIPALITIES

The Singapore municipality has one lady medical officer and 7 qualified sisters. Four of these, supervise the work of local registered midwives. The other 3 are in charge of infant welfare clinics. There are 23 educated Asiatic health visitors, holding the local C. M. B. Many of whom gain a certain amount of general training while working under these sisters. Two of these visitors attended poor maternity cases ; there is also a panel of medical men who attend such cases and receive fees from the municipality.

Penang municipality employs two European sisters and eight locally qualified midwives.

Malacca municipality employs two health visitors under the supervision of a government European health sister.

B.—THE SINGAPORE CHILD WELFARE SOCIETY

This society was incorporated in 1923 under the presidency of Lady GUILLEMARD. Lady CLEMENTI was pleased to accept the presidency on her arrival in the Colony. The object of the society is to assist the welfare of mothers, expectant and actual, and of infants and children up to school age (6 years). To avoid overlapping, it leaves the care of infants up to one year as far as possible to the Singapore municipal service.

The committee comprises a nominee of His Excellancy the Governor, nominees of various local associations, and members elected by the society. It is not connected with any religious body ; it is supported by voluntary contributions and an annual grant from Government of $2,000. Over $50,000 was provided by the Chinese community in 1925.

The society maintains two clinics, each staffed by a trained matron and two Chinese health visitors. Much home visiting is done and milk, soup, malt and cod-liver oil are distributed to necessitous cases. A baby show, open to all nationalities, is held annually. Six hundred and eighty dollars was given in prizes last year.

A creche was opened in Minto Road in July, 1930, and has now become popular with women working in factories in the neighbourhood. Children of these women and others are left there from 7 A.M. to 5 P.M. on payment of a few cents (which includes food). As a result, both the health and mental development of those children who attend regularly, is noticeably improved.

C.—GOVERNMENT HEALTH BRANCH

Four government health sisters, with the assistance of eleven health nurses, conduct clinics, and do home visiting in the rural areas of the three settlements of the Colony.

They are supervised by health officers.

The clinics are held at various centres on stated days and hours.

The educational and preventive aspect of infant welfare work is kept in view ; mothers are instructed in the colloquial.

There is a regular weekly itinerary of home visits in connection with the routes of the motor travelling dispensaries.

Treatment of the newly born is carried on in their homes, but other patients are referred to the travelling dispensary, to which many infants are also sent for vaccination.

Roadside advice is also given to mothers and children who collect at points on the schedule routes.

Baby shows are held in rural districts and lectures are given to women school teachers and to inhabitants of villages and kampongs.

C Class midwives are supervised and instructed.

D.—COMBINED RETURN SHEWING VISITS PAID TO HOMES AND ATTENDANCES AT WELFARE CLINICS

	Visits to homes		*Attendances at Clinics*	
MUNICIPALITIES :—				
Singapore	112,387		24,088	
Penang	52,070		—	
Malacca	40,825		5,387	
		205,282		30,075
Singapore Child Welfare Society		43,117		39,579
GOVERNMENT :—				
Singapore	38,248		14,312	
Penang	54,204		38,709	
Malacca	22,541		14,385	
		114,993		67,406
Grand Total ...		363,392		137,060

IV.—ASSOCIATED ACTIVITIES

Women's and children's dispensaries are conducted by government in Singapore, Penang and Malacca, and by Missions in Singapore and Malacca. The dispensaries are staffed by lady medical officers.

The returns for 1931 are :—

	New patients	*Repetitions*	*Total*	*Total No. of Children of the new patients*
Women's and Children's Dispensaries, Singapore—				
(*a*) Kandang Kerbau ...	15,719	20,095	35,814	9,201
(*b*) General Hospital Outdoor dispensary ...	1,776	3,821	5,597	909
Women's and Children's Dispensary, Penang	7,861	17,275	15,136	4,388
Women's and Children's Dispensary, Malacca	4,385	5,616	10,001	2,223
St. Andrew's Mission Dispensary, Singapore	4,051	13,441	17,492	—
St. David's Mission Dispensary, Malacca	— (*a*)	—	6,438	—
	33,792	60,248	90,478	16,721

The Women's and Children's Dispensary, Malacca, was opened in June, 1930. The total number of new patients and repetitions was 2,036 and 6,046 respectively.

Motor Travelling Dispensaries.—There were 102,968 attendances in 1931. Of these, 16,075 were women and 26,235 children.

Children's Wards.—There are wards specially for children at two hospitals in Singapore, under the charge of lady medical officers. The high death-rate in these wards is due to the large proportion of the children who are in a dying condition when brought for admission—

	Admitted	*Discharged*	*Died*
General Hospital, Singapore ...	1,189	547	586
St. Andrew's Mission Hospital, Singapore	502	346	156
	1,691	893	742

The Children's ward at the Kandang Kerbau Hospital was closed in 1930.

(*a*) No figures were available for new patients and repetitions.

The St. David's Mission Hospital, Malacca, admitted 1,117 women and children to a women's and children's ward in 1931. Of these, 962 were discharged and 155 died.

There are wards for women at every government hospital in the Straits Settlements.

VII.—HOSPITALS, DISPENSARIES AND VENEREAL CLINICS

1.—(*a*) 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 treated :—

I.—Singapore

Hospitals	*Average daily No. of patients*	*Total No. of patients treated*	*Deaths*	*Percentage of deaths to total treated*
General Hospital ...	635·9	14,254	1,466	10·28
Tan Tock Seng Hospital	841·29	11,326	1,183	10·44
Maternity Hospital, Kandang Kerbau ...	35·66	2,171	22	1·01
St. John's Is. Hospital ...	0·05	21	—	—
Police Hospital ...	17·71	1,162	—	—
Mental Hospital ...	1322·96	1,558	111	7·12

II.—(*a*) Penang

Hospitals	*Average daily No. of patients*	*Total No. of patients treated*	*Deaths*	*Percentage of deaths to total treated*
General Hospital ...	228	4,324	411	9·51
King Edward VII Maternity Hospital ...	33·35	1,423	26	1·83
District Hospital ...	271·14	3,919	465	11·87
Balik Pulau ...	25·11	415	23	5·54
(*b*) Dindings				
Lumut	48·79	1,205	75	6·22
(*c*) Province Wellesley				
Butterworth ...	107·87	2,342	143	6·11
Bukit Mertajam ...	136·33	1,838	131	7·13
Sungei Bakap ...	103·86	2,250	111	4·93
III.—Malacca				
Durian Daun ...	345·69	4,878	404	8·28
Jasin	57·86	1,311	120	9·15
Alor Gajah	42·96	1,056	78	7·39
IV.—Labuan				
District Hospital ...	10·9	154	10	6·49

1.—(*b*) The preceding table excludes the total number treated at the Leper Settlements of Penang and Singapore, and the Prisons Hospitals (*vide* Appendices *A* and *B* and section VIII) (*a*), (*b*) and (*c*). These figures are included in the return of in-patients and diseases as shown in Table V, page 207.

1.—(*c*) Prevailing Diseases among Hospital Patients—

Diseases	*Admission*	*Deaths*	*Mortality*
Malaria, acute	5,751	354	6·15
Malaria chronic	777	20	2·57
Venereal Disease	3,802	169	4·44
Influenza	1,506	13	0·86
Chest Affections—			
Bronchitis	1,117	9	0·80
Pneumonia and broncho-penumonia	1,248	752	60·25
Pulmonary Tuberculosis ...	2,157	928	43·02
Intestinal Affections—			
Dysentery	870	249	28·62
Diarrhœa and Enteritis ...	834	133	15·95
Other Affections—			
Helminthic Diseases ...	1,705	31	1·82
Beri-beri	1,237	193	15·60
Anæmia	174	23	13·22
Surgical Conditions—			
Chronic Ulcers	2,403	4	0·17
Wounds	2,910	35	1·2
Fractures, etc.	2,233	118	5·28
Abscesses, etc.	1,307	20	1·53

2. The total number of in-patients treated during 1931 was 58,815 with 4,930 deaths as against 74,639 with 6,087 deaths in 1930.

The distribution in the three Settlements was as follows:—

	Admissions	*Deaths*
Singapore	31,601	2,814
Penang	19,726	1,504
Malacca	7,334	602
Labuan	154	10
Total ...	58,815	4,930

3. The Police Hospital at the Police Depôt, Thompson Road, was opened on the 27th October, 1930. It contains 30 beds. The admission to the end of 1930 was 358, besides the total number of 2,570 who were treated as out-patients. All police cases are treated in this hospital, with the exception of serious cases and those cases which need special treatment, which are sent to the General Hospital, Singapore.

The staff consists of an Assistant Medical Officer, one dresser, two attendants and a toty.

The total number treated during the year 1931 was 1,162. The average daily number of patients was 17·71. Twenty-one cases were transferred to the General Hospital, Singapore: of these, 4 died. The principal diseases treated were:—

Malaria	27	Worms	58
Ear diseases	29	Venereal diseases ...	207
Eye diseases	20	Bowel complaints ...	62
Bronchial complaints ...	27	Fever unspecified ...	186
Coryza	175		

In addition to these, the total number of out-patients treated at the Police Depôt was 5,332.

Ablution rooms were opened during the year under review, at the various police stations in Singapore. The number of cases of disease in the Police Force was less than half the number treated in 1930.

At the annual medical inspection, nineteen of the men were found to suffer from pulmonary tuberculosis, and they were consequently boarded out of the service.

Since the opening of the Police Depôt, all the stations are periodically visited, and during these visits, the Assistant Medical Officer-in-Charge, gives instructions to the men in charge of the stations, on general sanitation.

At the Depôt, new recruits are given instructions in first aid and general hygiene.

4. The total number of beds and the average daily number of patients in the three Settlements in 1931 was:—

	Beds	*Average daily number of patients*
Singapore	3,432	2828·48
*Penang	2,314	1625·31
Malacca	506	442·40
Labuan	25	11·50

5. The following terminal cases of deaths were noted in 322 fatal malarial cases:—

	General Hospital, Singapore	*Tan Tock Seng Hospital, Singapore*	*Penang Hospitals*	*Malacca Hospitals*	*Total*
Ankylostomiasis ...	—	—	6	—	6
Blackwater fever ...	5	—	—	—	5
Cardiac failure ...	28	28	52	24	132
Cachexia, Anaemia and Cardiac failure ...	12	1	10	18	41
Do. (complicated by severe ankylostomiasis) ...	1	—	—	—	1
Do. (complicated by arterio-sclerosis)	1	—	—	—	1
Cardiac failure (partly due to excessive opium smoking)	2	—	—	—	2
Coma: cerebral malaria ...	6	21	10	29	66
Dysentery and Enteritis ...	—	—	—	5	5
Failure of liver functions	1	2	—	1	4
Failure of kidney (including nephritis) ...	1	2	—	—	3
Hyper-pyrexia ...	6	—	4	16	26
Malaria—complicated by Beri-beri	1	5	—	—	6
Malaria—complicated by Amœbic Dysentery ...	1	—	—	—	1
Malaria—complicated by Myocarditis ...	2	—	—	—	2
Malaria—complicated by Acute Enteritis ...	1	5	—	—	6
Ruptured Spleen ...	—	—	1	—	1
Terminal pneumonia and other pulmonary complications	6	6	2	—	14
					322

* Includes Province Wellesley and Dindings.

6. The approximate daily cost of diets per head in the hospitals of the Colony in 1931 was:—

		$ c.
First Class	Full diet	1 81
Second Class	Full diet	1 28½
Third Class	Full diet	0 18¼
Third Class (Tamil)	Full diet	0 19¾
Third Class (Malays)	Full diet	0 23¼
Third Class (Sikhs)	Full diet	0 48½
Third Class (Bengali Hindus) ...	Full diet	0 36¼
Third Class (Sikh & Bengali Hindus)	Full diet	0 14½
Third Class (Tamil, Malay and Chinese)	Half diet	0 16
Third Class (Tamil, Malay and Chinese)	Milk diet	0 9½

7. *Out-door Dispensaries.*—Out-patients treated at all out-door dispensaries and hospitals, including travelling dispensaries, totalled 258,311, and the attendances were 493,299. This does not include those treated at social hygiene clinics, infant welfare centres, or at school inspections, all of which are recorded elsewhere in this report.

These out-patients can be classified under three headings:—

		Out-patients	*Attendances*
(I) At Hospitals	(*a*) Singapore	11,380	21,382
	(*b*) Labuan	2,663	4,140
(II) At Stationery Dispensaries	(*a*) Singapore	67,959	145,888
	(*b*) Penang*	69,803	160,674
	(*c*) Malacca	37,248	58,247
(III) At Travelling Dispensaries	(*a*) Singapore	14,771	16,759
	(*b*) Penang Island ...	26,218	36,384
	(*c*) Province Wellesley ...	17,461	29,282
	(*d*) Malacca	10,808	20,543
	Total ...	258,311	493,299

The number of out-patients treated for yaws was 7,477 as compared with 6,076 in 1930. More Malays who suffered from this disease, have come forward voluntarily to accept treatment.

The attendances at the Women's and Children's Dispensary, Kandang Kerbau, Singapore, numbered 35,814 as compared with 32,200 in 1930.

In the Women's and Children's Dispensary Penang, the attendances were 15,722 as against 14,832 in the previous year.

A Women's and Children's Dispensary was opened in Malacca under the charge of Dr. (Mrs.) L. S. O'May, in June of 1930. The attendances to the end of 1930 were 6,046; and the attendances during the year under review, were 10,001. Of the 4,285 new patients who received treatment at this dispensary, 2,223 were children.

8. *Buildings.*—Good progress was made with the reconstruction of the General Hospital, Penang, and with the erection of the new General Hospital, Malacca.

* Penang includes Province Wellesley and Dindings.

VIII.—PRISONS AND MENTAL HOSPITAL

A.—Prisons

(*a*) SINGAPORE PRISON

The general sanitary condition of the Prisons has been good and there has been no outbreak of any serious nature.

The average daily ratio of sick to Prison population was :—

1st Quarter	1 to 34
2nd Quarter	1 to 41
3rd Quarter	1 to 57
4th Quarter	1 to 80

Admissions to Prison Hospital during the year numbered 1,089. This, with 56 remaining from the previous year, gives a total of 1,145 treated, of these 9 were Europeans.

The principal diseases were :—

Pyrexia—			
(*a*) Malarial Type			59
(*b*) Other Types of which 40 were of less than 48 hours duration			168
Diarrhœa			91
Wounds—			
(*a*) Self Inflicted	2		
(*b*) Accidental	11		
(*c*) Assault	28		
		41	
Asthenia			40
Influenza			36
Dysentery—			
(*a*) Bacillary	19		
(*b*) Undefined	29		
		48	
Neuritis			26
Scabies			25
Ulcers			24
Abscess			21
Gastritis			21
Anæmia			21
Asthma			17
Beri-beri.—These cases were admitted to Prison suffering from Beri Beri. No new cases occurred in the Prison			2

The number of deaths in the Prison Hospital was 20 as compared with 25 for 1930.

The annual death-rate was 21·46 per mille including prisoners who died outside the prison.

The causes of deaths were :—

Tuberculosis of Larynx and Lung	7
Syphilitic Aortitis and Aortic Incompetence	3
Generalised peritonitis from perforated Gastric Ulcer	1
Internal Hæmorrhage from ruptured spleen (accidental)	1
Cerebral Softening	1
Chronic Interstitial Nephritis	1
Chronic Bacillary Dysentery *c* terminal Broncho Pneumonia	1
Bronchiectasis	1
Senility *c* arterio sclerosis	1
Strangulated Inguinal Hernia	1
Cirrhosis of Liver	2

Worm Infestations.—The stools of all prisoners and vagrants were examined on admission and those who were found suffering from Helminthiasis were treated. During the year 8,699 stools were examined with the following detailed results:—

	Anky	Anky R. W.	Anky R. W.	Anky R. W. W. W.	Round Worm	R. W. W. W.	Whip-Worm	Neg.	Total
Europeans ...	—	—	—	—	—	—	3	5	8
Chinese ...	2,373	563	664	338	467	216	693	2,883	8,197
Malays ...	63	15	14	7	9	6	17	55	186
Indians ...	90	21	22	11	23	8	28	105	308
	2,526	599	700	356	499	230	741	3,048	8,699

Transfers.—

—	Number Transferred	No. Died	No. remaining in Hospital	Returned to Prison and released
Tan Tock Seng and General Hospitals	84	15	10	59
Mental Hospital	12	1	9	2
Leper Asylum	6	—	6	—

Overcrowding.—The prison provides accommodation for 1,319 prisoners, daily average muster was 1,631. This overcrowding was most noticeable in the Female Prison, *D* and *E* Halls.

Diets.—The quality of the prisoners' diets has been improved and a greater variety of vegetables now supplied. The following changes in Diets were made during the year on the recommendation of the Medical Officer.

(1) Europeans receive fish once a week in lieu of pork.

(2) Asiatics receive fresh fish once a week in lieu of salt fish.

Corporal Punishments.—Forty prisoners were flogged during the year.

Executions.—During the year 8 prisoners were executed; of these 7 were Chinese and 1 was an Indian.

Staff.—The late Dr. H. W. Furnivall was Medical Officer until the end of April, 1931, and Dr. W. G. Evans was in charge after that date.

Dr. Abdul Samat was Assistant Medical Officer.

(*b*) PENANG PRISON

1. *Admissions.*—

(*a*) There were 3 cases remaining in Hospital at the beginning of the year. 280 cases were admitted during the year making a total of 283 cases treated in all as compared with 334 cases in 1930.

(*b*) The daily average number of sick for the year was 9·58 as compared with 12·18 for the previous year.

2. *Diseases.*—The principal diseases treated amongst the in-patients were as follows:—

Malaria	31	Bowel disorders	33
Tuberculosis	8	Ankylostomiasis	6
Venereal diseases	14	Skin Diseases	43
Diseases of the respiratory system	27	Injuries	12

3. *Deaths.*—There was one death due to Pulmonary Tuberculosis at the Prison Hospital during the year. In addition, there were 9 deaths during the year making a total of 10 with a death rate of 3·53 as compared with 8 deaths and a death rate of 2·09 of previous year.

1. Asphyxia from hanging (Suicide—died in Prison Cell).
2. Toxæmia-Extravasion Urine.
3. Enteritis.
4. Hæmorrhage due to rupture of spleen.
5. Carcinoma of stomach.
6. Pulmonary Tuberculosis.
7. Lobar Pneumonia.
8. Visceral Syphilis.
9. Syphilis.

The above deaths were among those who were transferred to General and District Hospitals. Of the 10 deaths 5 were Criminals, 3 were Vagrants and 2 Remand prisoners.

4. *Out-patients.*—1,689 cases were treated as out-patients during the year as compared with 4,091 cases in the previous year. The average daily attendance was 4·62. The principal diseases treated among the out-patients were:—

Venereal Diseases	95	Bowel Disorders	149
Fever (not specified)	240	Skin Diseases	132
Opium Habit	196	Ulcers	167
Diseases of the Respiratory system	225	Malaria	Nil
		Other Diseases	485

5. *Wassermann.*—

(*a*) 387 specimens of blood were taken for Wassermann Test as compared with 550 in 1930.

(*b*) 99 gave positive results as against 282 in 1930.

(*c*) 516 Intravenous Injections of N.A.B. were given as against 984 in 1930.

(*d*) 442 Bismuth Preparations were given as against 923 in 1930.

6. *Hookworm.*—

(*a*) 886 specimens of stools were examined for ova of Intestinal parasites, etc., as compared with 1,164 specimens for the previous year.

(*b*) 273 were found positive to Ova as compared with 394 the previous year.

(*c*) 273 cases received treatment for Hookworm and Ascariasis during the year (192 for Ankylostomiasis and 81 for Ascariasis).

7. *Minor Operations.*—The following minor operations were performed:—

Incision of Bubo	3
Incision of Abscess	15
Extraction of Teeth	8
Total	26

8. *Diagrams of Incidence of Infectious, Diseases, etc.*—Diagrams in graphic form showing the incidence of Infectious diseases are attached.

9. *Prison Strength.*—

There were 211 Prisoners and 112 Vagrants remaining at the beginning of the year.

1,991 were admitted during the year under review; of the total admitted 1,357 were Prisoners and 634 were Vagrants.

The number of Prisoners and Vagrants remaining on 31st December, 1931 were 214 Prisoners and 77 Vagrants respectively.

10. *Judicial Hanging.*—There was one case of Judicial Hanging during the year.

11. *Health.*—The sanitary conditions of the Prison and the health of Prison staff and Prisoners were satisfactory throughout the year. There were 3 cases of chicken-pox amongst Prisoners.

12. *Hospital Buildings.*—The Wards and Outbuildings were kept in a good state of repair and were painted and whitewashed during the latter part of the year.

13. *Staff.*—Dr. R. LETCHMANASAMY was in charge of the Prison Hospital from 3rd January, 1931 and was relieved by Dr. A. SOMASUNDRAM on 29th July, 1931.

(*c*) MALACCA PRISON

There were 87 admissions to the Prison Hospital, including 3 cases of Malaria. There was no death. The daily average number of sick was ·24.

The daily average number of inmates was as follows:—

Prisoners	57·01
Remands	12·60
Vagrants	11·53

There were 2 judicial executions during the year.

B.—Singapore Mental Hospital

There remained on 31st December, 1930, Eight hundred and eighty-one males and three hundred and six females. Two hundred and seventy-four males and ninety-seven females were admitted during 1931. The total treated was one thousand five hundred and fifty-eight persons.

2. Of the admissions twenty-five males and seven females had been previously inmates of Singapore Mental Hospital.

3. Of the total treated one hundred and three males and twenty-three females were discharged as recovered, thirty-three males and fourteen females as improved, three males and three females as not improved, and four males and one female as not insane. Nine males absconded. Ninety-one males and twenty females died.

4. There remained on 31st December, 1931, Nine hundred and twelve males and three hundred and forty-two females.

5. The average daily number was 903·53 males and 324·97 females.

6. The maximum and minimum daily numbers respectively were one thousand two hundred and sixty-two and one thousand one hundred and eighty-seven.

7. The nationalities of the admissions were:—

	Males	*Females*
British	2	—
Other Europeans	1	—
Eurasians	5	5
Chinese	177	69
Tamils	60	8
Malays and Allied races	21	14
Others	8	1

8. The physical condition of those admitted was:—

	Males	*Females*
Good	96	37
Fair	109	37
Impaired	52	16
Greatly impaired	17	7

9. Nineteen patients died within a month of admission.

10. Whilst a history of insane heredity was seldom obtained, there had been a previous attack of insanity in 10% of the admissions. Toxic causes and prolonged physical and mental stress accounted for many of the cases met with: a traumatic causation was uncommon.

11. The recovery rate for the year was 33·96.

12. Criminal population—

	Males	*Females*
There remained on 31st December, 1930 ...	42	2
During 1931—Criminal lunatics:—		
Number admitted	19	0
Number who recovered and were discharged from the hospital—		
(*a*) to prison	2	0
(*b*) as fit to plead	5	0
Number who were not insane on admission and were discharged from the hospital—		
(*a*) to prison	2	0
(*b*) as fit to plead	1	0
Number discharged to care of friends as unimproved	1	0
Number whose sentence expired	3	0
Number against whom the charge was withdrawn ...	1	0
Number who died	2	0

There remained on 31st December, 1931, forty-four male and two female criminal lunatics and one male banishee.

13. *Mortality.*—9·03, the death rate based on the daily average number for the year, is the lowest recorded in the past 44 years. Dysentery, general paralysis of the insane, pulmonary tuberculosis and pneumonia were the chief causes of death, accounting for 70% of the mortality. No suicide occurred in the institution during the year.

14. *Industries.*—Seven thousand five hundred and eighty-four yards of cotton cloth were woven by the male patients for use in the institution. Thirty one thousand three hundred and fifty pounds of vegetables cultivated in the hospital grounds were supplied to the hospital kitchens and four thousand four hundred and forty-six cocoanuts were harvested.

15. The admissions for 1931 showed a decrease of twenty-eight as compared with the year 1930.

16. Revenue was $15,325.76.

17. Dr. E. R. Stone, Medical Superintendent, returned from leave in England on 21st March, 1931. Dr. D. Russell, Assistant Medical Superintendent, acted as Medical Superintendent till 20th March, 1931 and left the service on 26th March, 1931. Dr. B. F. Home assumed duty as Assistant Medical Superintendent on 28th November, 1931. Dr. G. B. Leicester, Deputy Medical Officer and Dr. Lee Kek Soon, Assistant Medical Officer continued to work at the Mental Hospital.

IX.—SCIENTIFIC, ETC. (APPENDICES)

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APPENDIX "A"

Leper Settlement, Singapore

ANNUAL REPORT FOR THE YEAR 1931

1. *Male Leper Settlement—*

Remained on 31-12-30	43
Admitted during 1931	118
	161
Discharged during 1931	2
Repatriated to China	1
Repatriated to India	1
Died during 1931	7
Absconded during 1931	4
Transferred to Pulau Jerejak	72
Remaining on 31-12-31	74
	161

Immediate causes of death—

Leprosy	7

2. *Female Leper Settlement—*

Remained on 31-12-30	74
Admitted during 1931	30
	104
Discharged during 1931	3
Transferred to Johore Leper Settlement	10
Absconded	1
Died	4
Remaining on 31-12-31	86
	104

Immediate causes of death—

Pulmonary Tuberculosis	1
Leprosy	3

Treatment.—The treatment carried out in both the male and female Leper Settlements is as follows:—

(*a*) *Dietetic and Hygienic.*—The lepers live on a generous and varied diet; their food is properly cooked; such predisposing causes, tending to retard progress, as Syphilis, Hookworm and Constipation, are removed.

In the matter of exercise, they attend to their daily routine of work—attending to personal cleanliness, bedding, clothing, and their own cooking—later in the afternoons they do some gardening and such special work as interests them. They are told to avoid laziness and overwork as being injurious to their health. Recreation such as badminton and football are played on fine dry evenings and, much to their delight, a cinema show is given about twice a month.

Living in clean, healthy and hygienic surroundings, the lepers, adapting themselves to a regular mode of living, soon benefit in health and improve.

(*b*) *Special Treatment.*—The Interdermal and subcutaneous injections of Alepol 1% with .5% Carbolic and the subcutaneous injection of Hydnocarpus oil with .5% Iodine constitute the routine treatment which is given bi-weekly to the lepers,

the commencing dose being ½ c.c. increased to 5 c.c. The indication to reduce the dose, or temporarily stop the injections, is a lowering of the patient's vitality in any form, the usual manifestation being a lepra reaction.

Intradermal injections of Esters of Hydnocarpus Oil and subcutaneous and intradermal injections of Hydnocreol were also given to the lepers.

Innunctions of Chaulmoogra and Hydnocarpus Ointment or Oil gave relief.

Protein shock treatment was given in a few selected cases, Intravenous T.A.B. was used. One of these, a neural type with dermatitis involving the whole of one side of the face responded rapidly to the treatment, the cutaneous lesion recovering, the induration passing off and the hue of the affected skin gradually returning to normal. The reaction resulting from a protein shock therapy is a rapid rise of temperature to 104 or 105 degrees lasting from 4 to 6 hours, and accompanied usually by slight pains in the bones and joints.

Lepra reaction manifesting itself as fever, joint and bone pains, nerve pains, new eruptions, headache, etc., is carefully attended to. Rest, a light diet, a saline aperient and the administration of Aspirin, Phenacetin and Dover's Powders gives rapid relief. For severe headache, rheumatic and neuralgic pains, ephedrine hydrochloride gr. ⅓ gives relief.

Treatment of Ulcers

Special Surgical Treatment.—Periarterial sympathectomy of the femoral artery was performed on six cases exhibiting perforating ulcer of the foot. The results of the operation on all cases have been very successful, the ulcers healing completely in from a fortnight to about a month's time.

The *ordinary treatment* of perforating ulcers is as follows:—

(*a*) Hot permanganate footbath and cleansing with Iodine.

(*b*) Hydrogen Peroxide and flavine dressing.

(*c*) Idoform and Eucalyptus Oil.

Results of Treatment.—

Male Leper Settlement

Disease Arrested	2
Disease Improved	20
Disease Retrogressing	9
Disease Stationary	26

The remaining cases being recent admissions.

Female Leper Settlement

Disease Arrested	10
Disease Improved	26
Disease Retrogressing	7
Disease Stationary	29

The remaining cases being recent admissions.

Schedule showing number of injections given

	Male	*Female*
Hydnocarpus with .5% Iodine	1,620	5,801
Alepol 1% with .5% Carbolic	4,940	912
Hydnocarpus (mixed with .5% Iodine) ...	29	27
Hydnocarpus Wightiana (Ethyl Esters) with .5% Iodine	174	411
Avenyl	86	—

Staff.—During the year Assistant Medical Officer P. E. Pereira took charge of both the Settlements.

APPENDIX "B"

Pulau Jerejak Settlement

ANNUAL REPORT 1931

1. *Inmates*—

Number remaining on 31-12-30 ...	... 860
Admitted during the year 1931 ...	... 180

Total treated 1,040 as compared with 1,058 for the previous year.

		1931		*1930*
Died ...	...	88		125
Absconded ...	...	23		53
Discharged—Relieved	8	12	Relieved	4
Cured	4		Cured	Nil
Transferred ...	...	238		16

The eight inmates who were discharged as relieved were Indians and were repatriated by the Labour Department to their native country.

Remaining on 31-12-31 :—679 classified as follows :—

Colonial Lepers	535
Kedah Lepers	95
Perak Lepers	24
Selangor Lepers	8
Kelantan Lepers	17
Total ...	679

Chinese	531
Indians	117
Malays	10
Eurasians	14
Others	7
Total ...	679

Daily average number of inmates was 690·60 as compared with 860·90 for the previous year.

Death rate as compared with the rate for the previous ten years :—

Year	*Inmates*	*Deaths*	*Rate*
1921	655	201	30·69
1922	699	186	26·61
1923	688	140	20·31
1924	726	130	17·91
1925	831	117	14·08
1926	850	117	13·76
1927	871	122	14·01
1928	897	102	11·37
1929	990	105	10·61
1930	1,058	125	11·81
1931	1,040	88	8·46

The chief causes of deaths during the year were :—

Pulmonary Tuberculosis	21
Septicæmia	15
Senility	18
Pneumonia	6
Dysentery	5

2. *Administration.*—The Chief Medical Officer and the Senior Health Officer, Penang, were visiting Medical Officers throughout the year.

The Resident Staff at the beginning of the year consisted of :—

1 Acting Senior Deputy Medical Officer,

1 Assistant Medical Officer,

1 Lay Superintendent,

14 Dressers.

Dr. K. V. VEERASINGHAM took charge of the settlement from Dr. R. K. PONNIAH on the 16th February, 1931.

Dr. LYE HONG CHEONG relieved Dr. TAN HOR KEE on 25th February, 1931, and Dr. CHONG TAT SEONG relieved the former on 1st September, 1931.

Dr. H. MEHTA, Deputy Medical Officer, Dindings, stayed on the island from the 26th February to the 12th March studying the various aspects of the settlement.

The staff of fourteen dressers has been reduced by four. One leper dresser was transferred to Kuala Lumpur to take charge of the opium smoking lepers transferred there. The reduction in the staff of dressers was due to the transfer of 236 opium smoking lepers to Kuala Lumpur.

The regular Police-force consists of 2 N.C.O's and 7 constables. The 15 Sikh constables who were engaged owing to the unrest amongst the lepers during the previous year, were discharged on the 1st June.

3. *Buildings.*—All the buildings have been kept in good repair. The new Lock-up, comprising 12 cells and a charge room to accommodate 8 persons, was completed and occupied on the 10th April.

A club building for the use of the staff was completed and occupied in August.

The sea walls at camps A and B were completed.

The sea wall and filling at camp E is nearing completion.

The old Lock-up at the main asylum is being converted into a laboratory. Wards 1 and 2 are being prepared to provide suitable accommodation for the educated Straits-born Chinese.

Total authorised accommodation :—

Main Asylum	...	...	...	380
New Settlement	...	...	...	300
Camp E	...	...	...	162
Eurasian Camp	...	...	...	18
				860

In addition, there are temporary huts constructed by the inmates at the Magazine Station and the vegetable garden at camp C, to accommodate 20 persons.

4. *Water Supply.*—During the drought starting in February and continuing to the end of May the Green Bank Reservoir supply failed, and it was found necessary to purchase 1,121 tons of water from Penang, sent in 12 water boats at a cost of $1,681, to supplement the supply to the New Station. The Anti-malarial well which was completed during the latter part of 1930, yielded 2,000 to 2,500 gallons of water daily during the drought for the use of the inmates of the New Settlement. This, to a large extent, made good the shortage of water. Comparison with the previous year, shows that during the drought season in 1930, 10,486 tons of water had to be purchased from Penang at a cost of $15,729, compared with 1,121 tons costing $1,681 during 1931.

A crude oil pump has been installed at this well and it is now possible to pump the water to the High Service Reservoir. This may obviate the need for water boats from Penang in future.

5. *Rainfall.*—The total rainfall for the year was 2,271·5 m.m. as compared with 2,170 m.m. for the previous year.

The maximum rainfall during any one day was 92 m.m. on the 7th June.

6. *Anti-malarial Work.*—Permanent work at the Green Bank Reservoir, camp E and at the Main Asylum was completed. Oiling of the seapage areas was carried out regularly.

Nature of permanent work done :—

Laying of sub-soil pipes	... 589 feet
Wells for conducting the sub-soil pipes	... 4
Retaining wall in seapage areas ...	... 395 feet
Stone filling	... 134½ cubic yards

The amount of anti-malarial mixture used at the Settlement for oiling was 869 gallons.

One feature of the anti-malarial sub-soil drainage was to conduct the water into concrete wells and the water thus collected was available to the lepers for bathing and washing purposes. Four such wells were completed during the year.

There has been no case of malaria among the inmates or the staff.

An Anti-mosquito overseer now resides at the settlement and is in charge of the work under the supervision of the Senior Health Officer, Penang.

7. *Opium Smoking.*—At the beginning of the year, there were 295 inmates receiving rations of opium ; 236 of these have since been transferred to Kuala Lumpur, and the remaining had their rations of one hoon of opium per day stopped from the 16th April, 1931. There is no further issue of opium to any of the inmates of the settlement.

Anti-opium treatment was given to most of those who had their opium stopped.

There has been no further complaint of craving for opium.

8. *Various activities among the inmates.*—As much freedom as possible, within the confines of the Island, and encouragement, are given to the lepers to lead normal lives and employ themselves at any useful occupation for which they are suited. During the year, several were engaged in useful and lucrative work.

Employment is given to several of the able-bodied men as menials—attendants, barbers, sweepers, toties, dhobies, woodcutters, etc.—for which an allowance varying from $3 to $10 is paid by Government, 116 were employed during the year.

A few educated lepers are employed as teachers, dressers, bandmaster and tindals, etc.

Many take a lively interest as independent artisans in various ventures, such as carpentering, growing of vegetables and fruits, rearing of poultry and pigs, and fishing. What remains of the produce after their own consumption is sold to the other lepers direct or through the diets contractor who includes such articles in his supply to the lepers.

Several of them keep shops and deal with the other lepers.

During this year about 30 persons worked at camp E on earth filling and each of them earned on the average about $20 per month.

The Band consisting of the Eurasian inmates with a Filippino bandmaster, continued to be popular and extended their usefulness by visiting the different Settlements, during times of moon-light, and entertaining the inmates.

Another introduction to their activities was the game of football. Two active teams—Eurasian and camp E—regularly participated in games and matches. It is expected that when the sea-wall and filling at camp E have been completed, it will be possible to provide a good sized ground for their use.

Tuition in English to a number of boys had been given regularly. Tuition in Chinese had to be discontinued since March as the post of the teacher fell vacant and a suitable man was not available.

The Boy Scouts troup increased their number to 20 from 14 and, regularly, exercises were carried out. Improvement in their drill has been a marked feature.

9. *Treatment.*—In February, a classification of all the inmates of the settlement was made with the following results :—

Type	*Early*	*Moderately Advanced*	*Advanced*	*Total*
—	—	—	—	—
Neural ...	... 1	2	12	15
Cutaneous ...	... 2	8	178	188
Mixed ...	... 4	12	641	657
Total	... 7	22	831	860

As can be seen from the above classification, out of the total number of 860 lepers classified, 831 or 96·63% were advanced, 22 or 2·56% were moderately advanced and 7 or 0·81% were early cases.

The 7 cases that were classified as early were inmates of the settlement and undergoing intensive treatment for periods varying from 3 to 7 years and as far as can be judged they were moderately advanced cases on admission.

The following classification will give a clear idea of the type of cases that were admitted to the settlement during the year.

Type	Early	Moderately Advanced	Advanced	Total
Neural ...	—	—	—	—
Cutaneous ...	—	1	38	39
Mixed ...	—	1	109	110
Total ...	—	2	147	149

As can be seen from the above classification, out of the total of 149 cases admitted, there was not one that can be classified as 'Early', 2 or 1·34% were moderately advanced and the rest 147 or 98·66 were advanced.

It is a discouraging fact that nearly all the admissions to the settlement are advanced cases of five, seven or more years duration—some of which were already past the more infectious stage of the disease and most of them unpromising for treatment.

Compulsory segregation as adopted in Malaya has the grave disadvantage of driving amenable cases of leprosy to hide themselves until they have reached the incurable stage. Relaxation of this method in the case of early and uninfectious cases should be allowed and for this it is necessary to have an estimation of the incidence of leprosy in the country by a thorough survey.

Out of the total of 1,058 cases 468 were selected as suitable for intensive treatment with hydnocarpus oil and its derivatives. Out of this 92 cases were treated with intra-dermal injections of iodized ethyl esters combined with intramuscular injections of the hydnocarpus oil.

The remaining 367 cases were treated with intramuscular injections or subcutaneous injections of the oil or ethyl esters with 4 per cent. creosote added.

Classification of the type of cases under treatment with intra-dermal injections combined with intramuscular injections and the results of treatment :—

Type	Total No. treated	Bac. Negative	Marked Improvement	Slight Improvement	No Improvement
Neural Type ...	8	6	1	1	—
Cutaneous Type	36	8	10	12	6
Mixed Type ...	48	1	6	28	13
Total ...	92	15	17	41	19

For this method of treatment the early and moderately advanced cases with a moderate number of skin lesions were selected.

Classification of the type of cases under treatment with intramuscular or subcutaneous injections and results of treatment :—

Type	Total No. treated	Bac. Negative	Marked Improvement	Slight Improvement	No Improvement
Neural Type ...	4	—	1	2	1
Cutaneous Type	87	—	4	47	36
Mixed Type ...	276	—	2	104	170
Total ...	367	—	7	153	207

Most of the above cases were in an advanced stage of the disease.

The cases that were unsuitable for treatment with either of the above two methods received hydnocarpus oil or seeds by mouth.

A report on the treatment of leprosy and complications as carried out at the settlement is attached.

10.—*General.*—The health of the inmates and staff has been good. Since the transfer of the opium smoking lepers to Kuala Lumpur discipline has greatly improved. Most of the inmates turned out regularly for treatment and appeared in general to take a more lively interest in life. There were 23 absconders as compared with 53 during the previous year. The island is not without disadvantages in this respect owing to its being very close to the mainland of Penang and the channel being frequented by fishing boats

A good proportion of the absconders return to the settlement within a few months and it is possible that most of the others find their way to one of the leper settlements in the Federated Malay States or leave the country for good. Several of the absconders from the settlements of the Federated Malay States find their way to this settlement.

11. The following returns are attached :—

Table *A*. Showing the number of admissions and deaths.

Table *B*. The nationality of the inmates.

Table *C*. The occupations of the inmates.

TABLE *A*

SHOWING THE NUMBER OF ADMISSIONS, TOTAL NUMBER OF DEATHS, TOTAL NUMBER OF INMATES AND THE DAILY AVERAGE FOR 1931

Year	Remained from previous year	Colonial	Perak	Selangor	Kedah	Kelantan	Total	Deaths	Percentage of deaths to total treated	Daily Average
1931 ...	860	141	2	...	31	6	1,040	88	8·46%	690·6

TABLE *B*

SHOWING THE NATIONALITY OF THE INMATES FOR THE YEAR 1931

Nationality	Colonial	Kedah	Perak	Selangor	Kelantan
Bengali ...	5	1	—	—	—
Bugies ...	1	—	—	—	—
Cantonese ...	215	12	39	1	8
Chowfoo ...	1	—	—	—	—
Dutch Eurasian ...	1	—	—	—	—
Eurasians ...	12	—	1	—	—
Fooichew ...	—	1	—	—	—
Hochchew ...	3	2	—	—	1
Hylam ...	66	6	1	—	—
Hylockhong ...	1	—	—	—	—
Hockien ...	149	10	13	3	1
Hooichew ...	3	—	—	—	—
Kheh ...	87	21	23	13	4
Kongfoo ...	4	1	—	—	—
Kwansai ...	2	1	—	—	—
Indian Islam ...	8	4	—	—	1
Javanese ...	—	—	1	—	—
Looichew ...	6	—	—	—	—
Malays ...	9	—	2	—	1
Malabery Islam ...	—	—	—	—	—
Maccow ...	7	11	1	20	—
Philippino ...	1	—	—	—	—
Shanghai ...	2	—	—	—	—
Tamils ...	81	22	10	1	1
Teochew ...	97	39	1	—	1
Total ...	761	131	92	38	18

TABLE *C*

SHOWING THE OCCUPATIONS OF INMATES FOR THE YEAR 1931

Occupation	Colonial	Kedah	Perak	Selangor	Kelantan	Total
Actor ...	1	—	—	—	—	1
Barber ...	3	—	—	1	—	4
Basket-maker ...	1	—	—	—	—	1
Boat-man ...	1	—	—	—	—	1
Blacksmith ...	10	—	—	—	—	10
Bullock Cart-driver	4	2	—	—	—	6
Bandmaster ...	1	—	—	—	—	1
Cooly ...	250	54	22	18	12	356
Cobbler ...	1	—	—	—	—	1
Changkol Cooly ...	33	13	—	—	—	46
Carpenter ...	36	1	2	4	1	44
Conductor ...	1	—	—	—	—	1
Cake Seller ...	10	—	—	—	—	10
Cigar Seller ...	—	—	1	—	—	1
Cook ...	15	—	—	—	—	15
Clerk ...	6	—	—	—	—	6
Cart Driver ...	3	2	1	—	—	6
Contractor ...	2	—	—	—	—	2
Coffin Carrier ...	2	—	—	—	—	2
Dentist ...	1	—	—	—	—	1
Dhoby ...	17	—	1	—	—	18
Fish Monger ...	2	—	—	—	—	2
Fitter ...	3	—	—	1	—	4
Fisherman ...	7	—	—	—	—	7
Fowl Seller ...	—	2	—	—	—	2
Govt. Pensioner ...	—	—	2	—	—	2
Gardener ...	38	14	2	—	—	54
Goldsmith ...	1	—	—	1	—	2
Grass Cutter ...	10	—	—	—	—	10
Hawker ...	25	3	7	1	—	36
Hospital Attendant	1	—	—	—	—	1
Hand Cart-puller	10	—	—	—	—	10
Mason ...	16	—	—	2	—	18
Motor-car Driver	3	—	—	—	—	3
Mining Cooly ...	5	—	23	—	—	28
Money Changer ...	1	—	—	—	—	1
Nil ...	125	16	5	—	3	149
Painter ...	4	—	—	—	—	4
Peon ...	1	—	—	—	—	1
Pork Seller ...	1	—	—	—	—	1
Rickshaw Puller	20	—	—	1	—	21
Rubber Tapper ...	28	3	14	4	1	50
School Boy ...	11	—	2	—	—	13
Sampan Cooly ...	3	—	—	—	—	3
Shop Keeper ...	8	6	3	—	—	17
Stone Breaker ...	1	—	—	—	1	2
Scavenger ...	1	—	1	—	—	2
Sailor ...	2	—	—	—	—	2
Shoe Maker ...	5	—	—	—	—	5
Tailor ...	6	1	—	—	—	7
Tamby ...	1	—	—	—	—	1
Time Keeper ...	1	—	—	—	—	1
Telephone Attendant ...	1	—	—	—	—	1
Tindal ...	1	2	—	—	—	3
Teacher ...	1	1	—	—	—	2
Undertaker ...	1	—	—	—	—	1
Vegetable Planter	7	6	—	3	—	16
Weaver ...	1	—	—	—	—	1
Wood Cutter ...	10	5	5	2	—	22
White Washer ...	1	—	—	—	—	1
Watchman ...	—	—	1	—	—	1
Total ...	761	131	92	38	18	1,040

Annual Return of Inmates at the Pulau Jerejak Settlement for the Year 1931

—	Remained					Admitted					Total					Discharged					Transferred					Absconded					Died					Remained				
	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan	Colonial	Kedah	Perak	Selangor	Kelantan
Bengali ...	5	...	...	...	...	...	1	...	...	...	5	1	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	1	...	...	...	...	4	1	...	...	...
Bugis ...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	1	...	...	...	...
Chinese ...	530	70	77	37	11	113	16	...	...	4	643	87	78	37	15	3	...	...	...	...	131	16	65	26	...	15	1	...	...	...	53	14	1	3	1	441	56	12	8	14
Eurasian ...	12	...	1	..	...	1	...	...	...	...	13	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	13	...	1	...	...
Filippino ...	1	...	...	...	...	...	...	...	...	...	1	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Indian Islam ...	8	2	...	...	...	...	2	...	...	1	8	4	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	4	...	...	1
Javanese ...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	..	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Malay ...	7	...	...	...	1	2	...	2	...	...	9	...	2	...	1	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	2	...	...	...	...	7	...	2	...	1
Tamil ...	56	27	10	1	...	25	12	...	...	1	81	39	10	1	1	7	2	...	...	...	...	...	...	...	...	4	3	...	...	...	10	...	1	1	...	60	34	9	...	1
	620	100	90	38	12	141	31	2	...	6	761	131	92	38	18	10	2	...	...	...	131	16	65	26	...	19	4	...	...	...	66	14	3	4	1	535	95	24	8	17

TREATMENT OF LEPROSY AND ITS COMPLICATIONS CARRIED OUT AT THE PULAU JEREJAK SETTLEMENT

1. *General principles of treatment.*—

It is important in the treatment of leprosy, to raise and maintain the general resistance of the patient. In patients with lowered resistance, the disease developes more rapidly. The first essential in the treatment is to find out and remedy the cause or causes of lowered resistance. The causes can be enumerated as following :—

(*a*) Concurrent diseases—such as malaria, syphilis, helminthic infection, etc.

(*b*) Dietary defects—such as insufficient, unsuitable or not properly cooked food.

(*c*) Pernicious habits—such as laziness, overeating, etc.

(*d*) Insanitary surroundings.

(*e*) Mental factor—mental depression tends to retard the effects of treatment.

2. *Medicinal treatment.*—

Hydnocarpus oil and its preparations are used in routine treatment. The oil for the injection should be specially prepared from fresh ripe seeds, otherwise it is found to be irritating and unfit for use. The oil is sterilised by heating to a temperature of 120°c and stocked in a well corked bottle.

(*a*) Hydnocarpus oil with four per cent. double distilled creosote added and sterilised at a temperature of 120° c. for thirty minutes is used for intramuscular and subcutaneous injections.

Dose.—Start with 1 c.c. and increase by 1 c.c. at each injection until 10 c.c are reached. Injections are given weekly.

(*b*) Ethyl esters of hydnocarpus oil with four per cent. double distilled creosote added, is also used for the intramuscular and subcutaneous injections. Dosage and injections are given in the same way as the oil with creosote.

Subcutaneous infiltration is carried out by inserting a 1½ inch needle under the skin at an acute angle with its surface, and inject small quantities of the drug into the subcutaneous tissues at points on the circumference of a circle of which the skin puncture forms the centre. Half to 1 c.c. may be injected at each point.

The esters and the pure oil do not give very different results. The esters being less viscid are easily administered but as they are slightly more toxic and liable to bring on severe reactions, the oil for intramuscular injection is preferred, as a routine method.

(*c*) Iodised ethyl esters for intra-dermal-treatment—Iodised ethyl esters which are prepared by boiling ethyl esters with 0·5 per cent. metallic iodine at a temperature of 150 degrees centigrade for thirty minutes is used for intradermal injections. The dose is from 1 c.c. to 10 c.c. given once a week.

The solution of iodine with esters is found to render it less irritating. An all—glass or record syringe with a fine needle with a guard about 2 mm. from the point is used. The guard prevents the needle from penetrating the skin beyond the limit desired. The needle should penetrate into and not under the skin. The amount of drug injected should be just sufficient to raise a wheal of about one-third of an inch in diameter. The wheal so made should just coalesce.

For this method of treatment, the early cases with a moderate number of skin lesions, should be selected. Intra-dermal injections undoubtedly hasten the resolution of the leprous lesions, either macular or nodular, but improvement was found to be rapid in the former type. In a macule, complete resolution is effected with one or two injections ; whereas in a nodule it may be necessary to inject as many as four or five times. The effect is mainly due to the counter-irritation produced in the part of the skin injected.

In giving intra-dermal injections, it is advisable not to exceed 5 c.c. at one sitting if the site of the injection is not completely anæsthetic.

The Iodised ethyl esters, prepared by the Philippines Health Laboratories, Manila, are highly suitable for intra-dermal injections.

(*d*) *Potassium Iodide.*—This is a useful drug with which to supplement the hydnocarpus oil and esters treatment. It should be given only to patients who can tolerate the maximum doses of the oil or esters. It is best administered in single doses daily. Start with 30 grains and increase by 10 grains each week until maximum doses of 240 grains are reached. Dissolve the potassium iodide in 15 to 20 ounces of water before administering.

(*e*) *Sodium Morrhuate.*—Three per cent. solution of sodium morrhuate with 0·5 per cent. Phenol added and sterilised is a useful drug for treating cases with low reaction level ; or those who readily develop acute reaction with the hydnocarpus oil or esters.

Dose :—Half to 5 c.c. intravenously or up to 10 c.c. intra-muscularly.

3. *Local treatment (Counter-irritants).*—

(*a*) Rubbing chaulmoogra or hydnocarpus oil over the patches, with subsequent exposure to the sun, is beneficial.

(*b*) Trichloracetic acid.—Painting the lesions with the acid ; 1 in 1 for nodules and 1 in 3 for diffuse lesions, helps the absorption of the leproma.

N.B.—Too many lesions should not be painted at one time and repainting of the same lesion should not be done within 10 days. It is well to keep lint soaked in hydnocarpus oil or vaseline over the painted surface for about 7 days.

4. *Treatment for reaction.*—

(*a*) General reaction.—Treated by putting the patient to complete rest and giving intravenous injections of potassium antimony tartrate 0·02 to 0·04 gm in 2 c.c. of normal saline every third day.

Alkalines may be given orally or intravenously. Ten to twenty ounces of 5 per cent. solution of sodium bicarbonate in normal saline can be given intravenously.

(*b*) Nerve reaction.—Adrenalin 1 in 1,000. Three to five minims is given intravenously.

Calcium chloride. Fifteen to twenty c.c. of 2 per cent. solution can be given intravenously daily for four days.

Sodium salicylate. Grain 4 in 5 c.c. of normal saline can also be given intravenously once in three days.

Local treatment.—Inject subcutaneously along the course of the nerve 10 c.c. of 0·5 per cent. Sodium Bicarbonate in distilled water containing half a grain of ephedrine sulphate.

Oral treatment.—Tincture or syrup of ephedrine in half to one drachm doses can be given thrice daily.

Sodium Salicylate grains 5 to grains 10 can also be administered by mouth thrice daily.

Ephedrine sulphate or hydrochloride in half grain doses in one drachm of water administered by mouth once daily is found to be beneficial when there is severe nerve pain combined with muscular pains.

When a nerve is thickened and tender, freeing it from adhesions by operation often gives immediate relief.

5. *Advice to those under treatment.*—

(i) Food must be fresh. Tinned, salted or otherwise preserved foods should be avoided. Alcohol also should be avoided. Excessive eating is decidedly harmful.

(ii) Exercise.—Sufficient and well regulated exercise is most important.

(iii) Skin sanitation.—Regular application of chaulmoorga or hydnocarpus oil is beneficial, and it is best done before the regular bath so that the excess of the oil may be removed. The daily bath is absolutely essential. All irritating skin diseases are specially harmful and should be thoroughly treated.

(iv) Bowel Sanitation.—Avoid constipation as this often brings reaction by lowering the vitality.

(v) Other diseases.—Avoid the possibility of contracting other diseases.

(vi) Happiness and good spirits have a most beneficial effect in Leprosy. The will to get better is an important factor, without which even the best treatment may fail.

Annual Report of Female Leper Settlement, Jelutong, Penang for 1931

Remained on 31st December, 1930	54
Admitted	25
Total treated	79
Discharged	3
Transferred	7
Absconded	5
Died	2
Remained on 31st December, 1931	62
Average daily number of patients	56

Treatment.—

(*a*) *General.*—Improvement of general health: Good food, exercise, cleanliness, attention to minor ailments.

(*b*) *Specific Treatment.*—A 3% solution of Alepol is injected once a week by the Subcutaneous and Intramuscular routes, commencing with 1 c.c. and increasing by 1 c.c. weekly until a maximum of 10 c.c. is reached. Then a fortnight's rest is prescribed, after which the same treatment is administered. This process is carried out until such time as the patient shows improvement. Many patients are improved by this method of treatment.

A few patients are averse to taking injections, and to these is administered Hydnocarpus Wightiana Oil by mouth, and the same oil is annointed into the skin.

Intradermal injections of Alepol solution are made into the leprous patches, and in addition to this the patches are painted over with Trichloracetic acid once a week.

Result of Treatment.—In view of the fact that the majority of the cases are in an advanced stage, the success of treatment has not been marked. Nevertheless 10 distinctly improved, but in 34 the disease has remained stationary, and 4 have become worse.

About 20 patients take an interest in the vegetable garden, working in it morning and evening.

APPENDIX "C"

REPORT ON THE PATHOLOGICAL BRANCH, STRAITS SETTLEMENTS

by

Dr. J. C. TULL, *Government Pathologist, Singapore*

I.—SINGAPORE

The total number of specimens examined during the year by the Pathological Division was 7,612, including 979 pieces of tissue for histological diagnosis, 7,084 sera for complement fixation test for syphilis, and 60 police exhibits for presence of human blood. During the second half of the year the police exhibits were examined by the Bacteriological Division.

The total number of autopsies performed was 1,755, 1,333 at Tan Tock Seng Hospital, and 422 at the Central Mortuary, Sepoy Lines. This number includes 646 autopsies done for the Coroner.

Tan Tock Seng Hospital.—Total number of autopsies 1,333. Autopsies on patients dying within 24 hours of admission 84. Autopsies on patients dying within 48 hours of admission 13.

Central Mortuary, Sepoy Lines.—Total number of autopsies 422.

RETURN SHOWING IMMEDIATE CAUSE OF DEATH

	Tan Tock Seng Hospital	*Central Mortuary*
Injuries from motor car accidents	31	49
Injuries from gun-shot wounds	1	2
Injuries from stab-wounds	14	17
Injuries from other wounds caused by assault ...	55	48
Asphyxia by drowning	16	30
Asphyxia by hanging	19	31
Asphyxia by strangulation	0	1
Electrocution	1	1
Cut throat	2	2
Poisoning	3	16
Burns	3	5
Scalds	0	1
Still-born	1	14
Premature birth	1	0
Malnutrition	1	1
Too decomposed for autopsy	24	5
Acute cardiac beri-beri	73	19
Dysentery:—		
(*a*) amœbic	52	4
(*b*) bacillary	58	4
(*c*) combined	7	0
Typhoid fever	27	6
Pneumonia:—		
(*a*) lobar	61	18
(*b*) broncho	49	46
Abscess lung	8	1
Gangrene lung	3	0
Empyema	1	1
Pulmonary infarct.	2	0
Malaria:—		
(*a*) subtertian	87	7
(*b*) benign tertian	9	0
(*c*) quartan	6	0
Malarial cachexia	7	2
Endocarditis:—		
(*a*) mitral	6	0
(*b*) aortic	5	0
(*c*) mitral and aortic	4	0
Myocardial degeneration	29	8
Acute pericarditis	4	0
Adherent pericardium	1	0
Meningitis:—		
(*a*) streptococcal	2	0
(*b*) cerebro-spinal	2	0
(*c*) pneumococcal	1	0
(*d*) tuberculous	6	4
Malignant neoplasms	42	3
(including 14 cases of primary carcinoma of liver)		

RETURN SHOWING IMMEDIATE CAUSE OF DEATH—*Continued*

	Tan Tock Seng Hospital	*Central Mortuary*
Acute generalised peritonitis	15	0
Arterio-sclerosis	41	0
Thoracic aortic aneurysms	9	4
Tuberculosis:—		
(*a*) pulmonary	301	30
(*b*) intestinal	11	0
(*c*) generalised	5	0
(*d*) meningitis	6	0
(*e*) bone	2	0
(*f*) kidney	0	1
Leprosy	6	0
Hepatic cirrhosis	15	0
Amœbic abscess liver	1	1
Pyæmic abscesses liver	4	2
Nephritis:—		
(*a*) acute	2	1
(*b*) subacute	5	0
(*c*) chronic	26	4
Cystic kidneys	1	1
Cystitis and pyelitis	1	1
Pyonephrosis	11	0
Acute cystitis, with pelvic cellulitis	3	0
Septic cholangitis and cholecystitis	7	0
Gastric ulcer	3	1
Duodenal ulcer	2	1
Gastrostaxis	1	0
Strangulated hernia	1	0
Retro-pharyngeal abscess	1	0
Ulceration œsophagus, with hæmorrhage	1	0
Syphilis:—		
(*a*) aorta with aortic incompetence	28	10
(*b*) liver	20	1
(*c*) aorta and heart	10	0
(*d*) nervous system	9	0
(*e*) generalised	19	3
Anæmia:—		
(*a*) secondary	2	0
(*b*) primary	1	0
Lymphatic leukæmia	1	0
Ankylostomiasis with anæmia	2	0
Pellagra	1	0
Diabetes mellitus	2	1
Cerebral softening	4	1
Tetanus	3	1
Septicæmia	26	6
Acute appendicitis with localized peritonitis ...	0	1
Hirschsprung's disease	0	1
Acute intussusception	0	1
Cerebellar abscess	0	1
Eclampsia	0	1

MAIN CAUSES OF DEATH, EXCLUSIVE OF CORONER'S CASES, BY MONTHS, 1931

Month	Number of Autopsies	Malaria	Pulmonary Tuberculosis	Lobar pneumonia	Dysentery (amoebic and bacillary)	Beri-beri	Typhoid fever	Syphilis	Others	Coroner's Cases
January ...	136	11	35	4	10	2	5	10	26	33
February ...	101	8	21	4	7	1	2	8	22	28
March ...	100	3	26	5	5	5	3	6	20	27
April ...	101	3	21	6	8	3	1	4	36	19
May ...	162	11	38	4	14	8	0	9	49	29
June ...	130	7	41	9	14	5	3	4	30	17
July ...	121	17	26	6	12	7	2	6	28	17
August ...	113	6	20	5	10	3	2	4	37	26
September ...	100	3	20	3	11	9	1	6	29	18
October ...	86	4	19	4	5	9	2	3	22	18
November ...	88	12	15	3	4	5	0	4	30	15
December ...	114	5	24	2	9	8	3	10	36	17

MAIN CAUSES OF DEATH IN 1931, AS COMPARED WITH 1930, AS ASCERTAINED AT POST-MORTEM EXAMINATION AT TAN TOCK SENG HOSPITAL

Year	Number of Autopsies	Malaria	Pulmonary Tuberculosis	Lobar Pneumonia	Dysentery	Beri-beri	Typhoid	Coroner's cases
1930 ...	1934	383 or 19·8%	359 or 18·6%	113 or 5·8%	99 or 5·1%	94 or 4·9%	30 or 1·6%	437 or 22·6%
1931 ...	1352	90 or 6·6%	306 or 22·6%	55 or 4·1%	109 or 8·1%	65 or 4·8%	24 or 1·8%	264 or 19·5%

THE BACTERIOLOGICAL SECTION

Total number of specimens examined	3,264
Blood cultures	632
Positive to B typhosus	38
Examination of sera for agglutination re-actions	682
Positive to typhoid	131
Positive to paratyphoid A	11
Positive to paratyphoid B	12
Positive to paratyphoid C	1
Examination of police exhibits for presence of human blood	36
Positive to presence of human blood	22
Bacteriological examination of milk	24
Examination of cerebro-spinal fluid for presence of meningococci ...	21
Positive	8
Examination of throat cultures for Klebs-Loeffler bacillus	85
Positive	14
Examination of cultures from naso-pharynx for presence of meningococci	71
Positive	3
Estimation of bactericidal power of disinfectants	2
Preparation of autogenous vaccines	20
Cultures from fæces for typhoid group of organisms	247
Positive	33
Cultures from fæces for dysentery group of organisms	508
B. Flexner isolated	99
B. Shiga isolated	3
Cultures from urine	425
B. typhosus isolated	22
B. coli isolated	61
Examination of films from conjunctiva	273
Other cultures	238
Total ...	6,986

Staff.—Dr. J. C. TULL was absent until February 4th, attending the Leonard Wood Memorial Conference on leprosy in the Philippine Islands. During his absence Dr. H. O. HOPKINS was in charge of the Branch.

Dr. H. O HOPKINS proceeded on long leave on May 7th, and was absent during the remainder of the year. His duties were carried out by Dr. C. SUBRAHMANYAM, until the return from leave on June 30th of Dr. J. R. JACOB, since when he has acted as Bacteriologist.

II.—PENANG

Blood films examined	363
Positive to *Plasmodium falciparum*	47
,, ,, *Plasmodium vivax*	54
,, ,, *Plasmodium malariæ*	3
Blood matching for transfusion	1
Blood counts, total	216
Blood counts, differential	185
Blood cultures	27
Blood, chemical examinations	133
Wassermann tests	6,849
Positive	2,980
Widal tests	142
Positive to *Bact. typhosum*	46
,, ,, *Bact. paratyphosum "A"*	3
,, ,, *Bact. paratyphosum "B"*	4
Weil-Felix tests	1
Positive	0

Stools examined microscopically	549
Positive to *E. histolytica*	48
,, ,, *Ankylostome ova*	13
,, ,, *Clonorchis sinensis ova*	1
Stools examined bacteriologically	409
Positive to *Bact. shiga*	4
,, ,, *Bact. schmitz*	7
,, ,, *Bact. flexner*	24
,, ,, *Bact. dispar*	2
,, ,, *Bact. typhosum*	1
,, ,, *Bact. asiaticum*	3
,, ,, *Salmonella* group	22
,, ,, *Mycobact. tuberculosis*	1
,, ,, *Vibrio choleræ*	1
Stools examined chemically	27
Urines examined chemically	104
Urines examined microscopically	84
Urines examined bacteriologically	68
Smears examined for *Mycobact lepræ*	190
Positive	57
Smears examined for *Neisseria gonorrhoeæ*	759
Positive	322
Smears of pus, etc., examined	289
Sputa examined for *Mycobact tuberculosis*	103
Positive	12
Throat swabs examined	86
Positive to *Corynebact. diphtheriæ*	27
Cultural examinations of pus, etc.	48
Autogenous vaccines prepared	30
Test meals examined	22
Dark ground examinations of scrapings from chancres	3
Positive to *Treponema pallidum*	1
Spinal fluids examined bacteriologically	11
Positive to *Mycobact. tuberculosis*	1
,, ,, *Neisseria meningitidis*	1
Spinal fluids examined chemically	10
Spinal fluids, cell counts	9
Animal inoculations	9
Positive to *Leptospira icterohæmorrhagiæ*	1
,, ,, *Mycobact. tuberculosis*	1
Waters examined bacteriologically	115
Milk specimens examined bacteriologically	7
Histological sections examined	45
Medico-legal exhibits examined for human blood	79
Positive	47
Medico-legal exhibits examined for spermatozoa	30
Positive	2
Other examinations	53
Autopsies, hospital cases	66
Autopsies, H. M. Coroner's cases	149

The "hormone test" for pregnancy has been applied in 12 cases, the technique used being that outlined by Schneider (Surgery, Gynæcology and Obstetrics, January 1931, p. 56). The results obtained corresponded with the clinical condition in every case—8 being positive, and 4 negative.

An attempt was made to confirm Lowenstein's work on the presence of tubercle bacilli in the blood stream of patients suffering from pulmonary tuberculosis. Using Lowenstein's technique, 17 cases of active pulmonary tuberculosis with positive sputa were studied, with negative results in each case.

Dr. COWAN has been in charge of the laboratory during the year. The work of the staff has been satisfactory.

CAUSES OF DEATH AS ASCERTAINED AT AUTOPSY, 1931

Hospital Cases

Chronic aortic endocarditis	3
Myocarditis, chronic	3
Pulmonary tuberculosis	9
Lobar pneumonia	4
Broncho-pneumonia	5
Hypostatic pneumonia	1
Septic aspiration pneumonia	1
Empyema thoracis	2
Amoebic dysentery (perforation and general peritonitis)	1
Acute bacillary dysentery	4
Intestinal tuberculosis	1
Appendicitis, gangrenous	2
Typhoid fever (perforation and general peritonitis)	1
Pneumococcal peritonitis	1
Strangulated inguinal hernia	1
Acute suppurative cholangitis	1
Hepatic cirrhosis	2
Carcinoma, liver	2
Carcinoma, stomach	1
Chronic nephritis, with uræmia	3
Suppurative pyelonephritis	2
Sub-tertian malaria	2
Beri-beri	4
Pontine hæmorrhage	1
Cerebral hæmorrhage	3
Necrosis jaw toxæmia	2
Congenital syphilis	1
Pernicious anæmia	1
Ankylostomiasis	1
Infestation with *Clonorchis sinensis*	1

CAUSES OF DEATH AS ASCERTAINED AT AUTOPSY, 1931

H. M. Coroner's Cases

Ruptured aortic aneurysm	3
Vascular syphilis	11
Arteriosclerosis	1
Shock and cardiac failure (blow on solar plexus)	1
Pulmonary tuberculosis	7
Lobar pneumonia	7
Hypostatic pneumonia	1
Broncho-pneumonia	1
Abscess of lung	1
Acute intestinal obstruction (strangulation by bands)	1

Carcinoma stomach	1
Chronic amœbic dysentery	3
Strangulated inguinal hernia	1
Pyonephrosis	2
Meningeal hæmorrhage	1
Septic meningitis	1
Dislocation of cervical vertebræ	1
Cerebral hæmorrhage	3
Opium poisoning	1
Sodium cyanide poisoning	1
Caustic soda poisoning	4
Asphyxia from drowning	11
Asphyxia from hanging	11
Asphyxia from suffocation	2
Gunshot wound abdomen	1
Gunshot wound skull	1
Cut throat	4
Stab wounds, heart	2
Stab wounds, trachea	2
Stab wounds, neck	1
Stab wounds, lung	1
Stab wounds, aorta	1
Stab wounds, abdomen	1
Stab wounds, multiple	2
Fractures, skull	8
Fractures, spine	5
Fractures, femur	2
Fractures, sternum (with hæmothorax)	1
Fractures, multiple	5
Burns	1
Electrocution	1
Rupture of spleen	5
Rupture of liver	1
Rupture of intestines	1
Cellulitis, following stab wound neck	1
Beri-beri	2
Subtertian malaria	2
Quartan malaria	2
Stillbirth	5
Typhoid fever	1

DEATHS OCCURRING UNDER ANAESTHESIA

Cardiac failure, with persistent, hyperplastic thymus	1
Cerebral hæmorrhage	1
Bodies too decomposed for examination	12
	150

III. MALACCA

Staff.—Dr. J. R. JACOB was in charge of the Laboratory till 31st March, 1931, when he was relieved by Dr. THAM YING KHOW.

As in past years, the training of Estate Dressers in practical laboratory work has been entrusted to this Branch.

Nature of Specimens Examined

	1930	1931
Blood films for malarial parasites	3,066	2,637
Positive to Subtertian Parasites ...	454	305
Positive to Benign Tertian Parasites ...	198	152
Positive to Quartan Parasites	94	112
Positive to Subtertian and Benign Tertian ...	36	9
Positive to Benign Tertian and Quartan ...	4	2
Blood film for Pasteurella Boviseptica (negative) ...	—	1
Blood film for Spironema Obermeieri (negative) ...	—	1
Blood film for Filaria (negative)	3	7
Blood counts	44	39
Blood Cultures	6	9
Blood sugar estimations	4	12
Cultures for C. Diphtheriæ	242	233
Positive	33	24
Cultures for Gonococci	2	1
Cultures for Meningococci	8	43
Positive	—	5
Cultures from Stools	19	6
Cultures from Urines	14	15
Cerebro-Spinal fluid examinations	10	10
Films for B. Lepræ	72	95
Positive	26	42
Films for B. Koch-Week's	—	5
Positive	—	3
Films for Spironema Vincenti and B. Fusiformis ...	—	3
Positive	—	1
Films for Gonococci	486	697
Positive	170	370
Films for T. Pallidum (negative)	—	2
Medico-legal exhibits	39	32
Sections—Histological	26	27
Sputum	673	782
Positive to B. Tuberculosis	175	210
Positive to Pneumococci	27	38
Stools for Helminth Infections	3,808	3,436
Positive to Ankylostomum Duodenale ...	875	692
Positive to Trichuris Trichura	411	522
Positive to Ascaris Lumbricoides	167	115
Positive to Oxyuris Vermicularis	—	9
Positive to Ankylostome and Ascaris ...	169	118
Positive to Ankylostome and Trichuris ...	568	568
Positive to Ascaris and Trichuris	198	206
Positive to Ankylostome, Ascaris and Trichuris	333	285
Stools for Protozoa	277	184
Positive to Entamœba Histolytica	38	35
Stools for Occult Blood	43	46
Positive	25	16
Urine for general examination	4,439	4,405
Urine for estimation of sugar	15	177
Urine for estimation of albumen	—	2
Vaccines prepared	3	2
Wassermann Reactions	1,622	1,996
Positive	675	1,043
Water analysis chemical and Bacteriological ...	14	4
Widals	49	67
Positive to B. Typhosus	12	11
Positive to B. Paratyphosus B.	2	1
Other examinations	34	41
Autopsies	71	54
	19,779	19,965

APPENDIX "D"

REPORT ON GENERAL HOSPITAL, SINGAPORE

Administration.—Dr. J. GRAY was Chief Medical Officer until 21st February, 1931, after which date Dr. R. B. MACGREGOR was in charge.

Financial.—

Year	*Nett Revenue*	*Nett Hospitals Board Expenditure*
—	—	—
	$ c.	$ c.
		601,666 69
1930	269,248 44	601,666 69
1931	240,370 01	572,966 36

Staff.—During the past year Mr. C. J. SMITH, Senior Surgeon, was on leave for 8 months: his place was taken by Professor K. BLACK.

Professor R. B. HAWES relinquished charge of medical cases in the hospital, but he is still associated with the hospital for consultations.

Nursing Staff.—Twelve sisters resigned on account of marriage during the year: this number is higher than usual.

Arrangement of Wards.—The decrease in the number of patients made possible a re-arrangement of wards.

The free male wards at the old Lunatic Asylum which are now attached to the General Hospital, were closed and the patients in them repatriated or returned to Tan Tock Seng's Hospital.

The Isolation Block hitherto used as a 1st Class Venereal Ward, was closed and the building transferred to the College of Medicine. The patients in this section have since been accommodated in one of the wards in the Lower blocks of the main building.

This re-arrangement has made possible the organisation of a compact Venereal Disease unit, where all male in-patients suffering from Venereal Disease in Singapore can be concentrated and treated.

Accommodation has been provided for 1st Class Children accompanied by mothers, in a section of the hospital where they have more freedom and do not disturb the other first class patients.

An additional Children's Ward has been provided, for the treatment of children aged 1 to 5 years.

The original Children's Ward is now used for infants under one year.

Out-patient Department.—An out-patient department was started on 1st July, 1931. The accommodation was provided by using the former admission ward which has been sub-divided.

This is quite adequate for the present work of the department, which is still in its infancy.

An attempt is being made to build up specialist clinics in this department, but progress is naturally slow, and the policy followed has been to let the department develop gradually, and to make no special attempt to attract patients to it.

The numbers treated in the Out-patient Department during the half year were 2,978 with 8,691 attendances.

Work done.—The daily average number of in-patients in 1931 was 635·9 compared with 875·2 in 1930.

The total number treated during 1931 was 14,254.

The total number of deaths was 1,466.

Comparative Table for the years 1927 to 1931 is as follows :—

Year	No of patients treated in 1st and 2nd Class Wards	Died	Precentage	No. of patients treated in Child Ward	Died	Percentage	No. of patients treated in 3rd Class Wards	Died	Percentage
1927	3,775	280	7.42	Included with Wards	1st & 2nd Class		10,842	1,037	9.57
1928	4,137	308	7.44				11,246	881	7.83
1929	4,727	389	8.23				11,974	944	7.88
1930	4,201	129	3 07	994	438	44.06	13,959	1,045	7.49
1931	3,854	128	3.32	1,230	586	47.64	9,170	752	8.2

The death rate in the Children's Ward remains appallingly high : it has increased, in spite of the fact that the total number treated has increased considerably. This can be accounted for only by the fact that in the majority of cases the hospital is only used as a last resort in the case of infants.

In many cases, the only reason for bringing the child is to save the trouble of getting a death certificate and the expense of a funeral. Nevertheless it is not possible to refuse admission to such cases.

Chief Diseases.—The chief diseases treated are shown below, with figures for previous years for comparison :—

Chief Diseases	*1931*	*1930*	*1929*	*1928*	*1927*
Malaria	946	2,567	1,821	2,094	1,967
Enteric Fever ...	156	154	132	224	228
Tuberculosis ...	644	712	621	545	481
Dysentery Amœbic ...	94	143	107	161	165
,, Bacillary ...	97	119	62	50	53
,, Unclassified	9	27	25	23	27
Syphilis and Gonorrhœa	1,012	1,079	783	889	783
Beri-beri	234	428	308	346	237
Pneumonia Lobar ...	152	227	264	268	319
,, Broncho ...	349	233	147	100	104
,, Unclassified	6	34	17	7	28
Ankylostomiasis ...	354	1,112	700	239	317

Influenza.—There was a mild epidemic of influenza in the spring of 1931; the cases admitted to hospital were 412 compared with 40 in 1930. The type of disease was not severe, but it probably accounts for some of the increase in cases of pneumonia.

Pneumonia.—There were 501 cases in 1931 compared with 460 in 1930. (Both types of pneumonia are considered together).

Maternity Wards, General Hospital, Singapore.—

	1931	*1930*
Admitted	1,074	1,063
Delivered	1,007	1,010

Dental Clinic.—This department has been in working order throughout the whole year. The staff was increased by the arrival of Mr. J. M. COUTTS, Dental Officer, in October, 1931. The total number of cases treated was 1,306, with 5,761 attendances. Details are given in Professor E. K. TRATMAN's report which is appended.

The reports of the Special Departments are submitted as appendices.

Appendix I

Annual Report of the Dental Department of the General Hospital, Singapore for the Year 1931

The past year, 1931, has been a busy one for the Dental Department, the number of patients applying for treatment showing a marked increase over those of 1930 even after making due allowance for the fact that the department was only open for the last nine months of the earlier year.

2. The accommodation for students in the Dental Mechanics Laboratory has been increased from five to eighteen by converting a wide verandah into an extension of the laboratory. The surgical part of the department was extended by the addition of a surgery containing three dental chairs and accessory fitting ; at the same time, the departmental store was moved so as to be in the department and not a long distance from it.

3. The operating staff has been increased by the appointment of a European Dental Officer who assumed duties early in October; the staff of the mechanical laboratory has been increased by the appointment of an assistant (Chinese) dental mechanic in April.

4. In addition to the above, two students commenced treatment of patients on the surgical side from July 15th onwards; but though the students represent an increase in the operating staff, yet their presence has naturally meant that a larger portion of the time of the qualified staff that was formerly devoted to the treatment of patients has had to be devoted to the further training and supervision of students.

5. Another feature of the year has been the great increase in the number of in-patients of the Hospital, who have been sent to the department for examination and report on the condition of their mouths with a view to the relationship of the mouth's condition to the general condition; it has been surprising to find in the majority of cases that the mouth was in a bad condition, and this amongst classes of patients whom one would expect to be reasonably careful of their oral hygiene.

6. The financial state of the country has caused the temporary abandonment of the new out-patient department of the Hospital and, therefore, of the new dental department which was included in the plans of this proposed building.

7. The figures of the attendances for the year and the treatments given, appear below; the figures include two cases of compound fracture of the mandible, several cases of fractures of the maxilla, and five cases of osteomyelitis of the mandible that have been treated in the department. In addition, the department has been called upon to make a number of special plates and moulds for radium treatment of the mouth, face and neck, and to make a special splint for a case of paralysis of the arm and hand. The attendances for dentures, given in the last column, represent a total of 178 finished dentures either in the form of full or partial cases.

1931 Month	*No. of 1st attendances*	*No. of other attendances*	*Fillings*	*Scalings*	*Dressings*	*Teeth extracted*	*Attendances for dentures*
January	100	269	86	32	121	330	32
February	72	196	88	33	52	193	34
March	108	310	152	46	142	236	24
April	84	346	122	47	195	197	27
May	81	371	136	34	206	274	53
June	116	389	95	31	232	287	62
July	99	615	190	60	299	474	55
August	91	597	141	52	370	351	61
September	88	456	141	53	327	373	64
October	153	757	177	57	384	602	78
November	152	720	180	89	391	713	70
December	162	735	205	56	326	595	72
Totals	1,306	5,761	1,713	590	3,045	4,625	632

Appendix II

REPORT OF THE X'RAY DEPARTMENT, GENERAL HOSPITAL, SINGAPORE FOR THE YEAR 1931

by

Dr. J. S. WEBSTER, M.B., F.S., D.P.H. (Vict.), D.M.R.E. (Cantab.)

The work of the department has proceeded unabated throughout and, despite the slump, has shown no diminution. The total number of radiograms taken is 9020 which is in excess of any previous year: this number would have been greater but for the fact that the plant installed in Tan Tock Seng's Hospital came into operation on April 19th and from that date no cases were brought to this hospital for examination. Considerable use is made of this department for the more complicated examinations as the following list of parts examined shows:—

Abdomen	39	Knee	117
Ankle	104	Leg	129
Arm—upper	30	Lipiodol injections. Spine ...	1
Arm—Lower	157	Lipiodol injections. Sinus ...	1
Barium Meal	196	Mastoids	24
Barium enema	12	Pelvis	149
Barium swallow ...	16	Pyelogram-retrograde ...	41
Clavicle	28	Pyelogram-Uroselectan ...	16
Calculus salivary ...	1	Pregnancy	4
Cholecystography ...	31	Ribs	11
Elbow	58	Sinuses	77
Foot	113	Scapula	11
Foreign Bodies ...	15	Skull	148
Foreign Bodies in eye ...	2	Shoulder	42
Gall bladder	18	Spine	139
Hand	137	Sternum	4
Hip	76	Teeth	318
Jaw—upper	29	Thigh	78
Jaw—Lower	63	Thorax	478
Kidneys	116	Wrist	91

Barium meals:—This examination is chiefly done for duodenal ulcer which is common in Malaya: one extraordinary feature emerged and consisted in the comparative frequency with which dilatation of the 2nd and 3rd parts of the duodenum was discovered. Occasionally it was a true case of Wilkie's disease and the dilatation usually ended at the midline.

Barium swallow:—More cases of Oesophageal obstruction were seen during the year than in the past: it was generally due either to a foreign body or malignant disease. The barium paste was found to be very useful.

Cholecystography:—The intravenous method of administration has been dropped and the oral substituted. The chief difficulty with native patients is to force them to keep to the routine: on the slightest pretext food will be taken and the gall bladder emptied of the opaque material.

Pyelography. Increasing use is being made of uroselectan which is proving very useful especially in the demonstration of growths of the kidney.

Lipiodol:—But little use has been made of this drug during the year probably owing to the absence of suitable cases.

Radiography of the Mastoid Processess and the Temporal Bone:—

The method used is that elaborated in Vienna and has proved satisfactory. A fair number of cases have been examined and the results are very useful to the surgeons.

Radiotheraphy:—The following is the list of the cases treated either by X'rays or Radium. It is to be regretted that more use is not made of these methods and it is even more regrettable that the cases do not come under observation earlier at a time when more satisfactory results might be expected. In any case it is almost impossible to follow up one's results and no five-year cures can ever be determined. It is particularly disappointing to be asked to treat a cancer of the cervix where the vagina is filled with a large fungating and fixed mass (group 4), yet that is the usual stage in which they are first seen: before much can be hoped for an anti-cancer campaign must be started with the formation of anti-cancer centres on the lines of those which have been instituted in Paris. Similarly with cases of cancer of the tongue, the cases are never seen without an accompanying bilateral cervical gland involvement.

During the year additional radium was purchased and the hospital is now equipped with the minimum quantity needed for this work *i.e.* 200 mgms.

Cancer of the cervix. uteri	...	5
Cancer of the tongue	...	3
Malignant disease nasopharynx	...	4
Lymphosarcoma	...	6
Rodent ulcer	...	3
Sarcoma of the face	...	1
Haemorrhage from uterine fibroids	...	2
Exophthalmic goitre	...	2
Lupus	...	1
Cancer of breast	...	4 (post-operative treatment)
Cancer of uterus	...	1
Papillomata of vagina	...	1
Erysipelas, etc.	...	10
Dermoid of lung	...	1
Arthritis	...	1
Tinea	...	1
Epilation of hair on scalp	...	2
Acne, sycosis nuchae, favus, lichen ruber planus, warts. Erythema nodosum, etc.	...	11

The X'ray treatment of inflammatory conditions has proved very successful and ought to be employed more often: it is useful in erysipelas, erysipeloid conditions, cellulitis, etc. Ten cases have been treated, all with marked success.

Electrotherapy and Actinotherapy.—

The following cases have been treated during the year:—

Septic wounds	24
Myalgia	20
Debility	16
Lumbago	13
Sinusitis	11
Arthritis	11
Fibrositis	8
Furunculosis	8
Acne	8
Galvanism to muscles	10
Singapore ear	8
Ionisation in mastoid disease	6
Synovitis, Writer's cramp, flat foot, enteroptosis	6

The K. B. B. lamp has proved useful in cases of "Singapore ear" when other remedies have failed and the tungsten arc is of especial value in promoting the healing of sluggish wounds, particularly after the excision of tropical buboes.

Appendix III

ANNUAL REPORT OF THE X-RAY DEPARTMENT, TAN TOCK SENG HOSPITAL FOR 1931

We commenced work in the X-Ray Department at Tan Tock Seng Hospital on the 22nd April, 1931, and up the end of that year a total of 1,121 radiograms were taken. These were divided as follows:—

Skull	42	Hip	56	Kidneys	33
Sinuses	17	Knee	48	Bladder	10
Mastoids	5	Ankle	43	Pyelography	8
Spine	54	Pelvis	23	Bronchography	3
Clavicle	19	Sacrum and Sacro-iliac joints	2	Lipiodol in sinuses	3
Scapulae	2	Lungs	252	Oesophagus-barium swallow	9
Arm	9	Heart	33	Barium meal	47
Forearm	29	Sternum	6	Barium enema	7
Shoulder	15	Ribs	30	Diaphragm	9
Elbow	17	Teeth	24	Mediastinum	2
Wrist	41	Jaw	13	Abdomen	12
Hand	21	Nasal bones	5	Foreign bodies	8
Femur	36	Gall-bladder	19	Miscellaneous	6
Leg	64	Cholecystography	6		
Foot	33				

IV.—Return of Operations at Hospitals of Singapore

FROM 1st JANUARY TO 31st DECEMBER, 1931

Total Operations 5,417

Deaths 108

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
AMPUTATIONS—				
Forearm or hand	2	2	...	...
Foot or leg	21	18	...	3
Fingers	32	31	1	...
Toes	23	21	2	...
Arm	4	4	...	...
Re-amputations	1	1	...	...
OPERATIONS ON MUSCLES, TENDONS AND LIGAMENTS—				
Tenotomy	2	2	...	...
Suturing divided tendon	22	20	2	...
Removal of Ganglion	1	1	...	...
Others	1	1	...	...
OPERATIONS ON HEART AND BLOOD VESSELS—				
Peri-arterial Sympathectomy	2	2	...	..
Suturing of Popliteal Aneurysm	1	1	...	...
Ligature of Arteries	4	4	...	...
Ligaturing Vessels	11	9	1	1
Obliteration of Aneurysm	10	10	...	...
Injection of Varicose Veins	10	5	5	...
Others	1	1	...	...
OPERATIONS OF LYMPHATIC GLANDS—				
Excision of Lymphatic Glands	18	18	...	...
Disection Glands Neck	17	16	...	1
Incision of Glands	11	11	...	...
REMOVAL OF FOREIGN BODY—				
Hand	10	10	...	...
Foot	9	9	...	...
Nose	4	4	...	...
Arm	2	2	...	...
Ear	2	2	...	...
Others	8	8	...	...
OPERATIONS ON BONES—				
Sequestrectomy	20	20	...	...
Plating Fracture	21	21	...	...
Bone Grafting	2	1	...	1
Plaster of Paris Splints	123	73	50	...
Osteomylitis	6	5	...	1
Reduction Fractures	78	68	10	...
Wiring or Pegging Fractures	28	24	2	2
Osteotomy	8	8	...	...
Excision of Cocyx	1	1	...	...
Removal of Wire from Fracture	3	3	...	...
Exostosis Femur	1	1	...	...
Removal of Plate	6	6	...	...
Cyst of Bone	1	1	...	...
Excision of elbow and Clavicle	2	2	...	...
Carried forward	529	447	73	9

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	529	447	73	9
OPERATIONS ON JOINTS—				
Arthrotomy	5	1	3	1
Aspiration	12	9	3	...
Reduction of Dislocation ...	8	8	...	...
Excision of Semi-Lunar Cartilage	3	3	...	...
Mobilisation of Joint under Anæsthetic	2	2	...	...
Hammer Toe	1	1	...	...
Plaster of Paris Splints ...	10	10	...	...
Manipulation	64	27	37	...
OPERATIONS ON SKULL—				
Trephining	8	5	2	1
Hydrocephalus	1	1	...	...
Decompression	11	9	...	2
Aspiration of ventricle ...	1	...	...	1
OPERATIONS ON EAR—				
Radical Mastoid Operations ...	35	32	2	1
Plastic	3	3	...	...
Removal of Papilloma ...	5	5	...	...
Myringotomy	5	1	4	...
OPERATIONS ON LIPS, MOUTHS AND SALIVARY GLANDS—				
Repair of Hare Lip	15	15	...	...
Repair of Cleft Palate ...	1	1	...	...
Enucleation of Tonsils and Removal Adenoids	449	449	...	...
Diathermy, Cancer of Tongue, Tonsil, and Cancer of Nose, Sarcoma, Cheek	3	3	...	...
Extraction of Teeth	211	210	...	1
Removal of Portion of Growth for Examination	2	2	...	...
Peritonsillar Abscess	6	6	...	...
Radium Introduced	2	1	1	...
Alveolar Abscess	7	7	...	...
Polypus of Cheek	1	1	...	...
Excision Ulcer of Tongue ...	2	2	...	..
Hæmorrhage from Tonsils ...	3	3	...	...
Others	7	6	1	...
OPERATIONS ON OESOPHAGUS—				
Oesophagoscopy	9	6	3	...
Dilatation of Oesophagus ...	16	11	5	...
OPERATIONS ON TRACHEA—				
Tracheotomy	2	...	2	...
Hemithyroidectomy ...	1	...	...	1
Bronchoscopy for Foreign Body ...	4	...	3	1
Carried forward ...	1,444	1,287	130	18

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	1,444	1,287	139	18
OPERATIONS ON NOSE AND SINUSES—				
Turbinectomy	22	22	...	...
Submucous Resection	44	44	...	...
Drainage of Maxillary Antrum ...	13	9	4	...
Nasal Polypus	30	30	...	...
Fracture-Moulded	1	...	1	...
Frontal Sinusitis	2	1	1	...
Cauterisation of Nose	4	2	2	...
Others	1	...	1	...
OPERATIONS ON EYES—				
Removal of Foreign Body ...	7	7	...	...
For Pterygium	9	5	4	...
Plastic for Entropion	3	3	...	...
Excision Lachrymal Sac ...	1	1	...	...
Iridectomy	1	...	1	...
Extraction of Cataract ...	17	17	...	...
Needling of Cataract	2	2	...	...
Evisceration of Eye	9	9	...	...
Enucleation of Eye	1	1	...	...
Synblepharon	1	1	...	...
Excision of Lachrymal Duct ...	1	...	1	...
Incision of Ectropion	3	3	...	...
Expression of Lids for Trachoma ...	17	13	4	...
Excision Growth of Eye ...	2	2	...	...
Incision Abscess of Eyelid ...	3	3	...	...
Muscle Advancement for Squint ...	1	1	...	...
Penquecula	1	1	...	...
Toilet of Eye	3	3	...	...
Glaucoma	1	...	1	...
Corneal Ulcer	3	...	3	...
Hordeleon	4	4	...	...
Others	1	1	...	...
OPERATIONS ON BREASTS—				
Complete Amputation ...	9	8	...	1
Excision of Breast	4	4	...	...
Papilloma	2	2	...	...
OPERATIONS ON THORAX—				
Resection Rib	26	17	6	3
Empyema Drained	1	1	...	...
Aspiration of Chest	1	...	1	...
Thoracoplasty	2	2	...	...
OPERATIONS FOR HERNIA—				
Radical Cure of Hernia ...	102	102	...	...
For Strangulated Hernia ...	10	7	...	3
Ventral Hernia	1	1	...	...
Femoral Hernia	1	1	...	...
Umbilical Hernia	1	1	...	...
Carried forward ...	1,812	1,618	169	25

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	1,812	1,618	169	25
ABDOMINAL OPERATIONS—				
Peritoneal Abscess Drained ...	9	8	...	1
General Peritonitis	6	...	...	6
Exploratory Laparotomy ...	39	29	1	9
Gastrectomy, partial	1	1	...	...
Perforated Duodenal or Gastric Ulcer	9	4	...	5
Gastro-Jejunostomy	22	9	10	3
Splenectomy	5	3	...	2
Liver Abscess, Laparotomy and Drainage	2	...	2	...
Cholecystostomy	10	7	1	2
Cholecystectomy	15	10	2	3
Choledocotomy	3	2	...	1
Acute Intestinal Obstruction ...	8	6	...	2
Intussusception	5	3	...	2
Acute and Chronic Appendectomy	109	104	...	5
Colostomy	11	8	2	1
Plication of Colon	3	2	...	1
Stab Wound Abdomen ...	4	2	...	2
Gunshot Wound Abdomen ...	1	1	...	...
Laparatomy for Imperforate Anus	1	...	...	1
Typhoid Perforation Intestine ...	6	2	...	4
Resection of Intestine	8	6	...	2
Laparotomy, Adhesions ...	3	2	...	1
Ruptured Liver	1	...	...	1
Suture of Ruptured Intestine ...	2	...	...	2
Colostomy Closed	3	...	3	...
Gastrostomy	6	2	1	3
Abscess Pelvic Laparotomy and drainage	1	1	...	...
Repair Abdominal Wall ...	5	5	...	...
Enterostomy	1	1	...	...
Amœbic Abscess—Aspiration ...	5	5	...	...
Pyloric Stenosis	1	...	...	1
Exploratory Laparotomy and Anastomosis Gut	3	1	...	2
OPERATIONS ON RECTUM AND ANUS—				
Excision of Hæmorrhoids ...	106	76	30	...
Ischio-Rectal Abscess	32	30	2	...
Rectal Polypus	1	1	...	...
Sigmoidoscopy	24	15	9	...
Imperforate Anus	5	5	...	...
Dilatation of Anal Canal ...	7	7	...	...
Anal Fissure	14	14	...	...
Fistula in Ano	46	43	3	...
Excision of Ulcer	1	1	...	...
Examination under Anæsthetic ...	1	1	...	...
Anal Abscess	12	12	...	...
Tumour Rectum	1	1	...	...
Carried forward ...	2,370	2,048	235	87

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	2,370	2,048	235	87
OPERATIONS ON KIDNEYS, URETERS AND BLADDER—				
External Urethrotomy ...	4	...	3	1
Dilatation Urethral Stricture ...	105	85	20	...
Litholopaxy	1	1	...	...
Cystoscopy	120	40	80	...
Nephrectomy	9	8	...	1
Nephro-Lithotomy	12	10	...	2
Peri-Nephric Abscess	2	1	...	1
Suprapubic Cystotomy ...	10	9	...	1
Urethrotomy	3	3	...	...
OPERATIONS ON THE MALE GENERATIVE ORGANS—				
Funiculitis	1	...	...	1
Amputation of Penis	7	6	1	...
Plastic of Penis	1	...	1	...
Hydrocele, Radical Cure ...	110	108	...	2
Varicocele	4	4	...	...
Ruptured Urethra	8	8	...	...
Suturing of Scrotum	1	1	...	...
Prostatectomy	1	1	...	...
Circumcision	93	87	6	...
Excision Lymphœdema of Scrotum	3	3	...	...
Undescended Testicle ...	2	...	2	...
Prostatic Abscess	1	1	...	...
Incision Scrotum	2	2	...	...
Urethroscopy	2	1	1	...
Peri-Urethral Abscess	7	7	...	...
Hæmatocele	1	1	...	...
Slitting Prepuce	5	2	3	...
Medication, Urethra	2	2	...	...
Abscess Testicle	2	2	...	...
Urethral Calculus	3	2	1	...
Vasectomy	1	1	...	...
Castration	2	2	...	...
Aspiration Hydrocele	3	3	...	...
OPERATIONS ON THE FEMALE GENERATIVE ORGANS—				
Ovariotomy	15	14	...	1
Salpingectomy	13	13	...	...
Laparotomy and Hysteropexy or Round Ligament Operation ...	1	1	...	...
Hysterectomy	11	10	...	1
Perineorrhaphy	9	5	4	...
Amputation Uterine Cervix ...	11	11	...	...
Hymenectomy	1	1	...	...
Examination under Anæsthetic ...	33	20	13	...
Curettage	74	74	...	...
Colporraphy	7	1	6	...
Ovarian Cyst	4	4	...	...
Myomectomy	2	2	...	...
Trachelorraphy	3	...	3	...
Salpingostomy	1	1	...	...
Cæsarian Section	5	4	...	1
Ventral Suspension	19	19	...	...
Ruptured Ectopic Gestation ...	7	6	...	1
Recto-Vaginal Fistula ...	4	4	...	...
Insertion Radium, Cervix ...	16	13	3	...
Excision Papillomata, Perinem ...	7	7	...	...
Induction of Labour	17	17	...	...
Episiotomy	6	6	...	...
Others	12	12	..	...
Carried forward ...	3,176	2,694	382	100

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	3,176	2,694	382	100
OPERATIONS ON CYSTS—				
Sabaceous	54	51	3	...
Others	2	2	...	...
OPERATION FOR ABSCESS—				
Incision	683	612	70	1
Psoas Abscess Aspirated ...	17	11	6	...
Abscess Hip-Joint	2	2	...	....
Others	1	...	1	...
OPERATIONS ON NERVES—				
Alcohol Injections of Nerves ...	1	...	1	...
Nerve Suture	3	3	...	...
Phrenic Exauresis	5	5	...	...
Phrenicetomy	1	...	1	...
OPERATIONS ON THE SPINE, CORD AND MENINGES—				
Lumbar Puncture	7	5	2	...
Bone Graft of Spine	1	1	...	...
Laminectomy	4	3	...	1
Plaster Splint to Spine	3	3	...	...
Fraser's Operation	1	...	...	1
Spina Bifida	1	...	...	1
OPERATIONS ON THE SKIN AND SUB-CUTANEOUS TISSUES—				
Skin Grafting	48	38	10	...
Removal of Nail	16	16	...	...
Removal of Papillomata ...	3	3	...	...
Suturing Wounds	1,169	1,167	1	1
Exploration Incision, Extraction of Bullet	2	2	...	...
Hæmatoma Drained	2	2	...	...
Cellulitis Incised	66	57	6	3
Carbuncle	19	16	3	...
Keloid	3	3	...	...
Sinuses Scraped	20	17	3	...
Excision of Ulcer	14	14	...	...
Tumour (unspecified)	9	8	1	...
Condylomata	3	3	...	...
Excision of Scar	2	2	...	...
Whitlows	11	11	...	...
Plastic Operations of Face ...	3	...	3	...
Others	22	19	3	...
TUMOURS—				
Fibroma	2	2	...	...
Lipoma	10	10	...	...
Naevus	9	9	...	...
Tumour of Scalp (unspecified-removed)	2	2	...	...
Rodent Ulcer Removed ...	1	1	...	...
Ganglion Removed	2	2	...	...
Bartholin Cyst	1	1	...	...
Angioma	1	1	...	...
Growth (unspecified)	6	6	...	...
Others	9	9	...	...
Total ...	5,417	4,813	496	108

V.—Return of Operations at Hospitals of Penang

FROM 1st JANUARY TO 31st DECEMBER, 1931

Total Operations 1,664
Deaths 30

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
AMPUTATIONS—				
Forearm or hand	2	2	...	...
Foot or leg	5	3	...	2
Fingers	8	8	...	...
Toes	11	11	...	...
Arm	1	...	...	1
Re-Amputations	1	1	...	...
OPERATIONS ON MUSCLES, TENDONS AND LIGAMENTS—				
Suturing divided tendon ...	4	4	...	...
Others	1	1	...	...
OPERATIONS ON HEART AND BLOOD VESSELS—				
Peri-arterial Sympathectomy ...	1	...	...	1
Suturing of Popliteal Aneurysm ...	2	2	...	...
Excision of Varicose Veins of Legs	2	2	...	...
Others	1	1	...	...
OPERATIONS ON LYMPHATIC GLANDS—				
Excision of Lymphatic Glands ...	36	36	...	...
Incision of Glands	2	2	...	...
REMOVAL OF FOREIGN BODY—				
Hand	2	2	...	...
Nose	3	3	...	...
Ear	2	2	...	...
Others	29	29	...	...
OPERATIONS ON BONES—				
Sequestrectomy	6	6	...	...
Setting fractures	35	32	...	3
Wiring or Pegging Fractures ...	6	5	...	1
Others	2	2	...	...
OPERATIONS ON JOINTS—				
Arthrotomy	1	...	...	1
Aspiration	5	5	...	...
Reduction of Dislocation ...	1	...	1	...
Others	1	1	...	...
OPERATIONS ON SKULL—				
Trephining	1	...	...	1
OPERATIONS ON EAR—				
Radical Mastoid Operations ...	2	2	...	...
Removal of Papilloma ...	1	1	...	...
Incision of infected Antrum ...	1	1	...	...
OPERATIONS ON LIPS, MOUTHS & SALIVARY GLANDS—				
Enucleation of Tonsils and Removal Adenoids	25	25	...	...
Extraction of Teeth	102	102	...	...
Others	2	2	...	...
Carried forward ...	304	293	1	10

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	304	293	1	10
OPERATIONS ON OESOPHAGUS—				
Dilatation of Oesophagus ...	1	1	...	...
Pharyngoscopy	1	1	...	...
OPERATIONS ON NOSE AND SINUSES—				
Nasal Polypus	2	2	...	...
OPERATIONS ON EYES—				
Removal of Foreign Body ...	3	3	...	...
For Pterygium	2	2	...	...
Plastic for Entropion	2	2	...	...
Iridectomy	3	3	...	...
Extraction of Cataract ...	6	6	...	...
Evisceration of Eye	7	7	...	...
Excenteration of Orbit ...	1	1	...	...
Others	4	3	1	...
OPERATIONS ON BREASTS—				
Radical operation of Breast Carcinoma	1	...	1	...
OPERATIONS ON THORAX—				
Aspiration of Chest	25	25	...	...
OPERATIONS ON HERNIA—				
Radical Cure of Hernia ...	22	22	...	...
For Strangulated Hernia ...	7	6	...	1
ABDOMINAL OPERATIONS—				
Exploratory Laparotomy ...	2	...	...	2
Perforated Duodenal Gastric Ulcer	1	...	...	1
Gastro-Jejunostomy	1	...	...	1
Liver Abscess, Laparotomy and Drainage	5	4	...	1
Cholecystostomy	1	...	...	1
Acute and Chronic Appendicectomy	36	34	...	2
Stab Wound Abdomen ...	3	1	...	2
Laparotomy, Adhesions ...	1	1	...	...
Retro-Peritoneal Hæmorrhage ...	1	1	...	...
Enterostomy	1	1	...	...
OPERATIONS ON RECTUM AND ANUS—				
Excision of Hæmorrhoids ...	28	28	...	...
Partial Excision of Rectum ...	2	2	...	...
Ischio-Rectal Abscess ...	2	2	...	...
Sigmoidoscopy	6	6	...	...
Imperforate Anus	3	1	1	1
Anal Fissure	4	4	...	...
Fistula in Ano	16	16	...	...
OPERATIONS ON KIDNEYS, URETERS AND BLADDERS—				
External Urethrotomy ...	1	...	1	...
Dilatation Urethral Stricture ...	58	56	2	...
Cystoscopy	9	9	...	...
Suprapubic Cystotomy ...	2	2	...	...
Hypospadias	1	1	...	...
Others	2	2	...	...
Carried forward ...	577	548	7	22

Pathological condition and nature of operation	*Total No. of cases*	*Cured*	*Relieved*	*Died*
Brought forward ...	577	548	7	22
Operations on the Male Generative Organs—				
Amputation of Penis (Cancer) ...	1	...	1	...
Hydrocele, Radical Cure ...	17	17	...	...
Ruptured Urethra	1	...	...	1
Circumcision	53	53	...	...
Hæmatocele	1	1	...	...
Others	32	32	...	...
Operations on the Female Generative Organs—				
Hysterectomy	2	...	...	2
Perineorrhaphy	1	1	...	...
Examination under Anæsthetic ...	11	11	...	...
Curettage	14	13	1	...
Ovarian Cyst	2	1	...	1
Cæsarian Section	2	2	...	...
Ventral Fixation	1	1	...	...
Marsupialisation of Uterus ...	1	1	...	...
Urethral Caruncle	1	1	...	...
Excision of Vulva	1	1	...	...
Cervical Polypus	1	1	...	...
Episiotomy	3	3	...	...
Operations on Cysts—				
Sabaceous	20	20	...	...
Others	14	14	...	...
Operations for Abscess—				
Incision	360	357	1	2
Psoas Abscess Aspirated ...	1	...	1	...
Others	19	19	...	...
Operations on Nerves—				
Alcohol Injections of Nerves ...	2	2	...	...
Stretching Sciatic Nerves ...	1	1	...	...
Operations on the Spine, Cord and Meninges—				
Lumbar Puncture	1	1	...	...
Operations on the Skin & Subcutaneous Tissues—				
Skin Grafting	10	10	...	...
Removal of Nail	3	3	...	...
Suturing Wounds	343	343	...	...
Exploration Incision, Extraction of Bullet	4	4	...	...
Cellulitis—Incised	20	19	...	1
Carbuncle	7	6	...	1
Keloid	2	2	...	...
Diathermy	3	3	...	...
Sinuses Scraped	113	113	...	...
Tumour (unspecified) ...	5	5	...	...
Whitlows	1	1	...	...
Others	5	5	...	...
Tumours—				
Fibroma	3	3	...	...
Lipoma	2	2	...	...
Rodent Ulcer Removed ...	1	1	...	...
Sarcoma Femur	1	1	...	...
Sarcoma Skin	1	1	...	...
Total ...	1,664	1,623	11	30

VI.—Return of Operations at Hospitals of Malacca

FROM 1st JANUARY TO 31st DECEMBER, 1931

9. There were 3,103 surgical operations performed during the year, of which 485 were major and 2,618 minor. There were 8 deaths.

Operations	*No. of cases*	*Deaths*
ON TUMORS—		
Excision of New growth-malignant	5	...
Excision of New growth-non-malignant	11	...
Excision cysts	32	...
FOR ABSCESS AND CELLULITIS—		
Incision for Cellulitis	14	...
Incision for Cellulitis and drainage for abscess	155	...
ON FOREIGN BODY—		
Removal of foreign bodies	24	...
ON ARTERIES—		
Ligature of Artery	6	...
Dissection of Aneurismal sac	2	...
ON VEINS—		
Intravenous injections of various fluids	1,835	...
Cure of Varix by injection of Solutions	7	...
ON LYMPHATICS—		
Excision of enlarged glands	24	...
Incision and drainage for Supp: Bubo	29	...
ON SKIN AND SUBCUT: TISSUE—		
Skin grafting Theirsch method	3	...
Suturing or wounds	335	...
Excision of Keloids	3	...
Excision of Carbuncles	10	...
Incision and drainage for whitlow	12	...
Curetting of Ulcers	19	...
Removal of ingrowing toe nails	9	...
Application of Ultra Violet Light	17	...
ON SKIN AND BONES—		
Sequestrectomy	11	...
Setting of fractured bones	15	...
ON SKIN AND JOINTS—		
Reduction of dislocated joints	3	...
ON JOINTS—		
Aspiration of joints	14	...
Arthrectomy	2	...
Excision of joint	1	...
Arthroplasty	1	...
ON MUSCLES AND TENDONS—		
Union of divided muscles	2	...
Union of Tendons	3	...
AMPUTATION—		
Amputation of Thigh	4	...
Amputation of Leg	4	...
Amputation of Forearm	1	...
Amputation of Fingers and Toes	16	...
Disarticulation of shoulder	1	1
Carried forward	2,630	1

Operations	*No. of cases*	*Deaths*
Brought forward ...	2,630	1
ON SKULL—		
Elevation of depressed fract. Skull	5	1
Trephining of skull and incision of lacerated brain for fracture	1	...
Decompression of brain for fractured Skull	1	1
ON SPINE—		
Lumbar punctures	17	...
Intra thecal injection of sera and other fluids ...	13	...
Laminectomy	1	...
ON FACE—		
Plastic operation for hare lip	2	...
Operation for parotid fistula	2	...
ON EYE—		
Excision of Pterygium	1	...
Dilation of naso-lachrymal duct	2	...
Removal of foreign body eye	3	...
Excision of eyeball	1	...
ON THROAT—		
Tonsillectomy	15	...
Incision of peritonsillar abscess	5	...
ON MOUTH—		
Extraction of teeth	34	...
Incision of Alveolar abscess	3	...
ON NASO-PHARYNX—		
Extraction of Polypi nose	2	...
Cauterization for Rhinitis	13	...
Removal of foreign body nose	8	...
Curetting of Adenoids	10	...
ON EAR AND MASTOID PROCESS—		
Operation for Mastoid abscess	9	...
Plastic operation for ear	5	...
Removal of foreign body ear	5	...
ON TRACHEA—		
Tracheotomy	3	...
ON BREASTS—		
Incision and drainage for Mastitis	8	...
Excision of breasts with glands for Carcinoma ...	1	...
Excision of adenoma of breast	2	...
ON THORAX—		
Paracentesis Pleuræ	14	...
Resection of rib and drainage for empyema	3	...
ON ABDOMEN—		
Herniotomy	8	...
Radical cure of Inguinal hernia	15	...
Paracentesis abdominis	42	...
Laparotomy for penetrating wounds of abdomen with injury to Viscera	5	1
Laparotomy with drainage for peritonitis	2	2
Appendicectomy	4	...
Incision and drainage ilio-psoas abscess	2	...
Carried forward ...	2,807	6

Operations	*No. of cases*	*Deaths*
Brought forward ...	2,897	6
ON RECTUM AND ANUS—		
Plastic operation for imperforate anus	2	...
Whitehead's operation for piles	5	...
Ligature and incision of hæmorrhoids	19	...
Incision and curetting of fistula-in-ano	28	...
Incision and drainage for ischio-rectal abscess ...	8	...
Dilatation of rectal stricture	2	...
ON LIVER—		
Aspiration of hepatic abscess and injection of Emetine ...	4	...
ON BLADDER—		
Cystoscopy	3	...
Sounding of Bladder	18	...
Suprapubic cystotomy for Vesical Calculus	2	...
ON URETHRA—		
External Urethrotomy	2	...
Operation for extravasated urine	4	1
Dilatation of Strictured urethra	8	...
Plastic operation for urethral fistula	1	...
Extraction of urethral Calculus	5	...
ON MALE GENITAL ORGANS—		
Circumcision	30	...
Dilatation of constricted prepuce	5	...
Amputation of penis with incision of gland for malignant growth	1	...
Excision of Scrotum for malignant growth	2	...
Tapping of Hydrocele	2	...
Tapping of hydrocele with injection of fluid for radical cure	4	...
Radical cure of hydrocele	12	...
Incision and drainage for supp. hydrocele	1	...
Castration for malignant Disease	1	...
ON FEMALE GENITAL ORGANS—		
Ovariotomy	2	...
Dilatation of Cervix and curetting of uterus ...	9	...
Plastic operation for vesico-Vaginal fistula	1	...
Incision of supp. Bartholins glands	2	...
Perineorrhaphy, (Complete)	2	...
ON OBSTETRICS—		
Management of breech presentation	4	...
Management of impacted shoulders	1	...
Dilatation of cervix and curetting of uterus for Vesicular Mole	2	...
Application of Forceps	8	...
Craniotomy	1	...
Manual extraction of Placenta and Membranes ...	2	...
Cæsarean section	3	1
Total ...	3,103	8

APPENDIX "E"

Report on Treatment of Opium Habit during the Year 1931

I.—SINGAPORE

Remained on 31st December, 1930	22
Admitted during 1931	282
Total ...	304
Discharged	207
Absconded	94
Discharged for breaking rules	1
Unfit for treatment	2
Remaining on 31st December, 1931	Nil
Total ...	304

The number seeking admission decreased during the 2nd half of the year 1931.

Before commencing treatment, all patients are carefully examined. Urine, Sputum and Fæces are also fully examined.

If found physically fit, they are given a dose of Hydrag Subclor gr. 3 with sod. Bicarb gr. 10 statum followed by Mist. Alba 2 ounces, 3 hours after.

Every morning Atropine Sulph injections are given subcutaneously beginning with gr. 1/75 and increasing the dose daily to gr. 1/55, gr. 1/33 and gr. 1/25 on the fourth day. The latter dose is the maximum and is continued until the end of treatment, which lasts, on an average, 10 days. Mist. Ammon. Bromide one ounce is given every night alternating with Chloretone gr. 10 when patients complain of sleeplessness. Mist. Nux Vomica et Gentian Co. ounce one TDS. AC. is given to all patients.

All patients are weighed daily, and are mostly found at the end of treatment to have gained 1 to 2 pounds in weight.

Notices in Chinese are hung up in the ward, warning patients that they would be discharged if they ever leave the ward. No visiters are allowed inside the ward.

A search for Opium is made on all patients every day, and if found with the drug, they are immediately discharged.

II.—PENANG

No patients presented themselves for treatment of Opium Habit during 1931.

III.—MALACCA

There were three patients remaining in the hospital at the end of 1930, and 208 were admitted during the year 1931, making a total of 211 treated. Of these, 64 underwent the complete course of treatment and 146 left the Hospital before the completion of the treatment. There was one patient remaining at the end of 1931 in the Hospital.

APPENDIX "F"

I.—Medical Inspection of English and Malay Girls' Schools, Singapore

I. The Government and Aided Girls' Schools;

II. The Malay Girls' Schools;

III. Eleven Junior Boys' Schools, *i.e.* of boys up to the age of twelve years; and

IV. The Locally Trained Female Teachers. The last forms a separate report.

The examinations followed on the lines of former, years, a routine examination and re-examination of those found defective. In the latter half of the year, treatment was also carried out in the Malay Girls' Schools. Vaccinations were performed and worm treatment was given in all these schools. All were treated for roundworm with santonin. All were infected. Those found infected with hookworm received chenopodium treatment. One hundred and fifty-nine girls out of 408 had hookworm infection, 149 slightly (+)and 10 moderately severe (++). Kampong Roko School which stands on piles in the sea had the lowest rate of infection. The anæmia found in these girls is seldom severe in spite of their heavy worm infection.

This year many return visits were paid to all the schools for the purpose of following up cases with defective vision. The result was that 70% got correctly fitting glasses compared with 48% in 1930. Health propaganda work was carried out in some of the schools by means of cinema films; it is hoped to develop further this work in 1932.

A sanitary Inspector of Schools was appointed during the year, and visits were made with him to the Schools. Several private Chinese Girls' Schools were also visited and reports submitted to the 2nd Director of Education (Chinese). Prosecutions were threatened in several cases for insanitary conditions.

The number of children medically examined in 1931 was 7,108 out of a possible 7,393, a slight increase in the figures for 1930. There was a noticeable decline in the number of pupils in the Malay Girls' Schools.

One thousand nine hundred and eighty-nine children required re-vaccination being 959 less than for last year. All were vaccinated, with a few exceptions, either at school or by private practitioners. Practically all "conscientious objectors" allowed their children to be vaccinated this year.

Five thousand four hundred and eighty-three children were referred for treatment as a result of the routine examinations; 2,554 or 73.3% from the English Girls' Schools, 322 or 87.5% from the Malay Girls' Schools and 2,607 or 80.4% from the Junior Boys' Schools. The percentage for 1930 for all groups was 71.3. There was a larger number with enlarged tonsils this year and the number with enlarged anterior cervical glands was practically double that for 1930. Diseased tonsils and carious teeth did not account for all these cases.

Altogether 15,367 examinations, re-examinations, vaccinations, etc., were made during 1931.

Some extracts from the General Report are given below and compared with those for 1930 and 1929.

	Undernourished			Improved at 2nd Examination		
	1931	1930	1929	1931	1930	1929
Govt. Girls ...	0·4%	2·3%	1·2%	80%	42·%	26%
Malay Girls ...	0·27%	—	5·6%	100%	—	33·8%
Junior Boys ...	0·95%	1·6%	9·4%	51·6%	38·5%	24·2%

These figures indicate that the general condition of school children has steadily improved. Five cases of Tuberculosis were found amongst 7,393 children. When the routine examinations were made there was no indication that the continued bad trading conditions had affected the general health. But this impression was not maintained during subsequent surveys of some of the poorer schools. Also towards the end of the year many parents found they could no longer keep their children at school.

Cleanliness.—0·2% were found dirty in all groups compared with 2·8% in 1930 and 2·6% in 1929.

Nits.—Dirty heads were slightly more numerous in both the English and Malay Girls' Schools, the percentages being 2% and 18·75% respectively. Of these only 31% had been cleaned when re-examined.

	Requiring Revaccination			Successful Revaccination		
	1931	1930	1929	1931	1930	1929
Govt. Girls ...	26·1%	48·9%	32·2%	68·2%	60·3%	62·5%
Malay Girls ...	30·98%	52·7%	88·4%	72·8%	64%	81%
Junior Boys ...	29·6%	33%	40·4%	73·9%	70%	74·9%

There was a decrease in the number requiring re-vaccination and an increase in those successfully vaccinated.

Dental Caries. The figures for dental caries remained high though they were an improvement on those for 1930. They were high because the majority of children examined were under the age of eleven and it is in these young children and especially amongst the entrants that dental caries is so rife. In the latter it is a serious problem for many of these children have all their teeth diseased. More dental treatment was received this year and the work was again done by two local dentists at reduced rates for school children and by other private dentists. One of the dentists visited the Malay Schools and carried out treatment there, the money saved in transport helping to pay for the work done. Wherever possible conservative treatment was given. The figures for dental caries were:—

——	Decayed Teeth			Treated		
	1931	1930	1929	1931	1930	1929
Govt. Girls ...	45·7%	51·9%	39·6%	59%	59%	55·4%
Malay Girls ...	54%	61%	56%	61·8%	49·3%	60·6%
Junior Boys ...	57·7%	65·3%	54·8%	76·4%	70·4%	72.8%

Enlarged Tonsils and Adenoids.—As already mentioned there was an increase this year in the number of enlarged tonsils and a very great increase in the number of enlarged cervical glands.

——	1931	1930	1929
Enlarged Tonsils, etc., in all groups	16·24%	10%	14·4%
Enlarged Tonsils, Improved ...	39·6%	35·5%	36·7%

There was 68% enlarged anterior cervical glands compared with 32·5% in 1930. The enlargements were mostly slight. Most of the serious cases of enlarged tonsils had surgical treatment. Twenty-one tonsillectomies were done during the year.

Defective vision.—More girls suffered from defective vision than boys. The numbers with defective vision remained much the same as for 1930. A greater number had this defect remedied this year. The numbers were :—

——	Defective Vision			Correct glasses fitted		
	1931	1930	1929	1931	1930	1929
Govt. Girls ...	3·19%	3·2%	2·2%	69·37%	35·8%	28·7%
Malay Girls ...	0·54%	0·2%	0%	0%	100%	—
Junior Boys ...	1·23%	1·4%	1·5%	70%	60·9%	12·2%

Eye Affections.—There were 1·8% eye affections in all groups chiefly catarrhal and follicular conjunctivitis, squints and a fairly chronic granular conjunctivitis which has not the photophobia or other symptoms of real trachoma. There were a few cases of trachoma.

Ear Affections.—These were always slight and were 0·74% this year.

Anæmia.—There were 4·4% cases compared with 5·9% in 1930. The Malay Girls' had the highest incidence. After intensive worm treatment they showed an improvement of 75%.

Skin Conditions.—4·2% skin conditions were reported in all groups with 81·6% improvement. They showed a very slight improvement on last year's figures. Sores mostly the result of scratching mosquito bites were the commonest condition. There were 11 cases of ringworm out of 7,393 children. These conditions are kept in check by the daily survey in the schools and by the prompt treatment at the Schools' and Government Dispensaries.

There was one case of suspected leprosy in a girl of 14. She is still under observation.

Infectious Diseases.—There was an epedemic of influenza in March, April and May which was characterised by high fever, sore throat and bronchitis. Many school children were victims.

There were sporadic cases only of other infectious diseases. The following cases were reported :—Chicken-pox 71, Measles 141, Mumps 42, Whooping Cough 27, Fever 3.

Fever.—There were 62·2% cases of fever amongst the Malay Girls' and 3·36% and 2·79% respectively amongst the Government Girls' and Junior Boys'.

Operations.—In addition to the 21 tonsillectomies, there were 2 appendectomies, 1 herniotomy, 2 eye operations and a Chinese girl of 7 had a large meningocoele successfully operated upon.

Sanitation and Food.—These were satisfactory in most of the schools.

Conclusion.—The year under review saw a continuation of the world wide slump and a growing impoverishment of all classes. In spite of this the results of the physical survey of school children in 1931 showed a further improvement in the general health and well being of the average school child. Some schools maintained a very high standard of health. There were fewer cases of serious illness and parents were less inclined to accept abnormal health as an act of a deity. Many principals encouraged the less robust children to drink Cold Storage Milk at school daily, and in many other ways helped on the campaign of health amongst their children. As in former years parents were encouraged to take their children to private practitioners for treatment but for those unable to obtain this there were facilities for free treatment and operations at the Government Dispensaries, and at Tan Tock Seng and General Hospitals.

The various reports are enclosed.

TREATMENT AND IMPROVEMENTS DURING 1931

Schools	Mal-Nutrition	Dirty	Anæmia	Coryza	Otorrhœa	Conjuncti-vitis	Trachoma	Defective Vision	Enlarged Tonsils	Adenoids	Dental Caries	Sores	Ringworm	Enlarged Spleen	Fever	Tuberculosis
Raffles Girls School	..	..	3	..	..	2	..	13	18	14	175	2	1	..	9	..
The French Convent	..	..	8	..	..	4	1	24	34	17	203	14	..	1	21	1
Fairfield Girls School	2	1	3	6	2	..	1	3	12	6	199	4	..	..	10	..
Singapore Chinese Girls	1	..	..	1	..	1	..	11	10	22	122	1	..	..	3	..
St. Anthony's Convent	..	2	4	4	..	..	..	20	14	1	79	13	..	..	28	..
Methodist Girl's School	1	4	6	..	..	10	..	6	13	7	162	14	..	..	32	..
Kampong Glam Malay Girls'	..	..	2	1	1	..	..	..	8	4	34	..	..	..	46	..
Rochoh Malay Girls'	..	..	7	..	..	3	..	..	8	..	17	..	..	..	13	..
Geylang Malay Girls'	..	..	7	2	..	..	..	..	5	..	18	1	..	..	42	..
Kampong Roko Malay Girls' ..	..	..	6	2	..	..	..	..	6	..	25	1	..	..	43	..
Siglap Malay Girls'	..	..	1	2	..	2	..	..	5	1	21	1	1	..	43	..
Teluk Kurau Malay Girls	1	..	4	..	..	1	..	..	7	..	8	2	..	..	31	..
Anglo-Chinese Boys' School	..	3	11	11	7	1	..	4	41	21	222	8	2	..	5	..
St. Andrew's Boys School	2	..	3	6	..	2	..	3	16	12	143	5	1	..	5	..
Victoria Bridge Boys' School ..	..	4	3	4	1	3	..	2	27	10	124	10	1	..	8	..
Radin Mas Boys' School	..	..	1	5	..	..	..	1	5	3	62	2	..	..	4	..
Gan Eng Seng Boys'	2	..	..	23	2	5	..	6	19	7	141	8	..	..	14	..
McNair Road Boys'	..	3	8	12	4	1	1	1	25	7	142	6	..	..	11	1
Pearl's Hill Boys'	10	..	5	14	4	3	..	1	23	6	282	18	1	..	22	1
Teluk Kurau English Boys'	1	1	4	5	..	1	..	..	10	5	77	14	1	..	4	..
Outram Boys' School	..	..	..	3	..	..	1	4	7	..	37	3	1	..	1	..
Serangoon English School	..	..	4	5	2	1	..	..	16	7	92	17	1	..	3	..
Geylang English School	1	2	6	3	..	2	..	6	30	15	115	22	..	..	7	..
Totals ..	21	20	96	109	23	42	4	105	359	165	2,500	166	10	1	405	3
Percentages ..	77.2	100	67.39	90.83	55.56	63.86	28.57	69.7	39.67	40.41	65.74	89.73	90.91	100	88.24	60

MEDICAL EXAMINATIONS 1931

of Locally Trained Female Teachers, Singapore Schools

Schools	No. of Teachers	Nits	Requiring Re-vaccination	Genito Urinary System	Teeth	Defective Vision		Throat		Skin		Fever	Improvements at 2nd Examination				
				Pregnancy	Dental Caries	Slight ($V^{6}/_{12}$)	Severe ($V^{5}/_{12}$ or more)	Pharyngitis	Enlarged Tonsils	Acne Vulgaris	Other Conditions		Successful Re-vaccination	Teeth Improved	Eyes Examined	Throat and Tonsils Improved	Skin Improved
St. Anthony's Convent ..	4	..	1	..	2	1	..	1	..	..	..	..	..	1	1	..	..
Methodist Girls' School ..	22	..	1	..	1	..	..	..	..	1	..	..	..	1	..	..	..
Fairfield Girls' School ..	16	..	1	..	2	..	..	1	..	..	..	..	..	2	..	..	..
The French Convent	21	..	1	..	2	..	..	2	..	..	..	..	..	2	..	1	..
Raffles Girls' School	16	..	2	..	..	..	..	3	1	..	..	..	..	..	..	3	..
S'pore Chinese Girls' School ..	9	..	1	..	1	..	..	1	..	..	..	1	..	1	..	..	..
Radin Mas Boys' School ..	2	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Gan Eng Seng	8	..	..	..	2	..	..	1	..	..	..	..	..	2	..	..	..
Pearl's Hill Boys' School ..	17	..	2	..	..	..	..	1	..	..	1	..	1	..	..	..	..
McNair Road School ..	12	..	1	..	1	..	..	..	..	..	..	..	1	1	..	..	..
Anglo Chinese School ..	11	..	1	..	1	..	..	1	..	1	..	..	1	1	..	..	..
Victoria Bridge School ..	5	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Serangoon English School ..	5	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Andrew's School	10	..	..	..	..	1	..	1	..	2	..	..	..	..	1	1	..
St. Anthony's Boys School ..	5	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..
St. Joseph's Institution ..	4	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Rangoon Road School ..	8	..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..
Geylang English School ..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Teluk Kurau English School ..	4	..	2	..	1	..	..	1	..	..	..	..	1	1	..	1	..
Kampong Glam Malay Girls' School	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rochoh Malay Girls' School ..	5	2	1	..	2	..	..	..	1	..	..	..	1	2	..	..	..
Teluk Kurau Malay Girls' School	4	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..
Siglap Malay Girls' School ..	3	..	1	..	3	..	..	..	..	..	..	..	1	2	..	..	..
Geylang Malay Girls' School ..	6	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Kampong Roko Malay Girls' School	5	..	1	1	4	..	..	..	..	..	..	..	1	2	..	..	..
Assistant Supervisor Malay Girls' School	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	213	3	20	4	28	2	1	14	2	5	1	1	8	20	2	6	..
Percentages 1931 ..	..	1·41	9·39	1·88	13·2	1·41		7·51		2·8		·47	40·	71·43	66·67	37·5	..
Percentages 1930 ..	..	1·4	28·2	1·4	14·8	1·9		12·4		2·8		3·8	47·5	48·3	75	46·2	50

MEDICAL EXAMINATIONS FOR 1931

Summary of Results Government and Aided Girls' Schools, Singapore

TREATMENT AND IMPROVEMENT AT 2ND EXAMINATION

SCHOOLS	No. of pupils	No. Examined	Average Height	Average Weight	Condition : Fair or Poor	Dirty	Nits	Requiring Re-vaccination	Affections of Respiratory System	Affections of Circulatory System	Throat Affections	Ear Affections	Eye Affections	Defective Vision	Dental Caries	Skin Affections	Tuberculosis	Enlarged Spleen	Enlarged Glands	Fever	Abnormalities	General Condition Improved	Successful Re-vaccination	Anæmia Improved	Teeth Improved	Eye Conditions Improved	Eyes Examined	Tonsils Improved	Skin Improved	Tuberculosis Improved
Anthony's Convent	503	487	...	...	...	2	25	138	8	7	48	...	13	29	209	31	...	...	271	31	3	...	110	4	79	5	20	14	19	...
Methodist Girls' School	704	679	...	...	1	4	2	122	...	12	50	...	19	13	235	29	...	...	306	37	5	1	81	6	162	9	6	13	17	...
Methodist Girls' School	468	465	...	...	2	1	...	154	6	11	50	2	10	6	277	12	...	...	183	14	3	2	77	3	199	4	3	12	8	...
Convent	1,099	1,040	...	...	1	...	29	233	3	17	104	1	12	34	505	41	2	1	467	22	9	...	140	8	203	4	24	34	28	1
Girls' School	546	532	...	...	...	...	15	154	...	6	55	...	6	18	217	15	...	...	186	10	2	...	124	3	175	2	13	18	7	...
Chinese Girls' School	284	271	...	...	1	...	...	108	1	4	46	...	2	11	150	5	...	...	140	3	2	1	79	...	122	2	11	10	4	...
Totals ...	3,604	3,483	...	...	5	7	71	909	18	57	353	3	62	111	1,593	133	2	1	1,553	117	24	4	620	24	940	26	77	101	83	1
Percentages 1930 ...	...	3,300	1931 Percentages		·14	·2	2·04	26·1	·51	1·64	10·14	·09	1·78	3·19	45·75	3·82	·06	·03	44·59	3·36	·69	80	68·21	52·17	58·69	41·94	69·37	28.61	62·41	50
Percentages ...	...	3,458	1930		2·3	1·1	1·3	48·9	1·6	4·2	13	...	2·4	3·2	51·9	2·4	...	·03	23	6·7	·4	42·1	60·3	40·3	59·1	58·2	35·8	34·9	78·2	...

Summary of Results Malay Girls' Schools, Singapore

SCHOOLS	No. of pupils	No. Examined	Average Height	Average Weight	Condition : Fair or Poor	Dirty	Nits	Requiring Re-vaccination	Affections of Respiratory System	Affections of Circulatory System	Throat Affections	Ear Affections	Eye Affections	Defective Vision	Dental Caries	Skin Affections	Tuberculosis	Enlarged Spleen	Enlarged Glands	Fever	Abnormalities	General Condition Improved	Successful Re-vaccination	Anæmia Improved	Teeth Improved	Eye Conditions Improved	Eyes Examined	Tonsils Improved	Skin Improved
Kampong Glam Malay Girls	72	68	...	...	...	...	7	32	1	3	18	2	...	1	39	...	...	...	56	52	...	...	23	2	34	...	...	8	...
Tanjuk Kurau Malay Girls	54	51	...	...	1	...	11	16	...	8	13	...	1	...	31	3	...	...	45	36	...	1	10	4	8	1	...	7	3
Chinchoh Malay Girls	79	71	...	...	...	...	11	18	...	7	18	...	3	1	25	...	...	...	60	16	1	...	14	7	17	3	...	8	...
Telanj Malay Girls	86	71	...	...	...	...	19	12	3	10	13	...	...	...	43	1	...	...	50	52	...	...	9	7	18	...	...	5	1
Telap Malay Girls ..	50	48	...	...	...	...	10	15	2	1	14	2	5	...	31	4	...	...	37	46	...	...	9	1	21	4	...	5	4
Kampong Roko Malay Girls	67	59	...	...	...	...	11	21	2	7	13	1	...	...	30	2	...	...	40	49	...	...	18	6	25	...	...	6	2
Totals ..	408	368	...	...	1	...	69	114	8	36	89	5	9	2	199	10	...	..	297	251	1	1	83	27	123	8	...	39	10
Percentages 1930 ...	495	469	1931 Percentages		·27	...	18·75	30·98	2·17	9·78	24·18	1·36	2·45	·54	54·08	2·72	...	..	80·71	68·21	·27	100	72·81	75	61·81	88·89	...	43·82	100
Percentages ...	...	...	1930		...	·19	16·4	52·7	3·8	10·9	19	1·3	3	·2	61	3·8	...	4	39·2	42·9	·4	...	64	58·8	40·3	35·7	100	24·7	77·8

MEDICAL EXAMINATIONS FOR 1931

Summary of Results Government Junior Boys' Schools, Singapore

TREATMENT AND IMPROVEMENT AT 2ND EXAMINATION

SCHOOLS	No of pupils	No. Examined	Average Height	Average Weight	Condition : Fair or Poor	Dirty	Tuberculosis	Requiring Re-vaccination	Affections of Respiratory System	Affections of Circulatory System	Throat Affections	Ear Affections	Eye Affections	Defective Vision	Dental Caries	Skin Affections	Affections of Genito Urinary System	Enlarged Spleen	Enlarged Glands	Fever	Abnormalities	General Condition Improved	Successful Re-vaccination	Anæmia Improved	Teeth Improved	Eye Conditions Improved	Eyes Examined	Tonsils Improved	Skin Improved	Tuberculosis Improved
St. Andrew's School	347	330	...	...	2	...	...	120	6	3	48	2	10	5	201	20	16	...	205	6	7	2	107	3	143	8	3	16	18	...
Pearl's Hill School ...	533	524	...	...	12	...	1	56	15	6	57	6	9	1	349	33	12	...	426	24	4	10	27	5	282	5	1	23	29	1
Geylang English School	275	265	...	...	2	2	...	88	3	7	51	...	3	6	163	35	9	...	188	7	3	1	66	6	115	2	6	30	32	...
Victoria Bridge School	223	221	...	...	...	4	...	52	4	5	42	1	10	4	133	22	5	...	196	8	2	...	39	3	124	6	2	27	20	...
McNair Road School	439	411	...	...	1	3	2	150	14	10	51	5	8	2	207	26	18	...	342	12	4	...	112	8	142	6	1	25	20	1
Outram School ..	152	151	...	...	1	...	...	13	3	...	19	...	2	7	71	7	2	...	119	1	1	...	7	...	37	1	4	7	5	...
Teluk Kurau English	191	185	...	...	2	1	...	61	5	5	25	...	2	1	126	20	4	...	150	5	...	1	49	4	77	...	...	10	16	...
Gan Eng Seng ...	365	351	...	...	7	...	...	129	25	2	49	2	12	8	190	21	8	...	275	16	5	2	91	...	141	7	6	19	18	...
Anglo-Chinese School	500	483	...	...	2	3	...	167	11	12	79	7	8	4	239	32	10	...	414	5	12	...	130	11	222	3	4	41	27	...
Radin Mas English School	110	100	...	...	1	...	...	44	1	5	15	...	1	1	62	6	2	...	81	4	2	...	29	1	62	...	1	5	3	...
Serangoon English School	246	235	...	...	1	...	...	86	3	5	34	2	5	1	140	27	5	...	182	3	3	...	71	4	92	3	...	16	20	...
Totals ...	3,381	3,257	1931 Percentages		31	13	3	966	90	60	470	25	70	40	1,881	249	91	...	2,578	91	43	16	714	45	1,437	41	28	219	208	2
Percentages 1930 ...	3,309	3,296			·95	·4	·09	29·66	2·76	1·84	14·43	·77	2·15	1·23	57·75	7·65	2·79	...	79·15	2·79	1·32	51·61	73·91	75	76·4	58·57	70	46·6	83·53	66·7
Percentages ..	...	...	1930		1·6	4·8	...	33	4	2·6	9·1	15	2·1	1·4	65·3	7·5	3·1	·1	35·5	7·8	·8	38·5	70·1	58·1	70·4	30·9	60·9	48·3	83·1	...

II.—Medical Examination of Boys' Schools, Singapore

1. *Work Done.*—The following table gives the numbers of boys systematically examined in Goverment English, Aided and Vernacular Schools:—

Year	*In Government and Aided Schools*	*In Vernacular Schools*	*Grand Total*
1929	5,859	1,920	7,779
1930	6,067	2,371	8,438
1931	6,224	2,388	8,612

2. All the Government, Government-Aided, and Private English Schools numbering fifty-three were inspected as to their sanitary arrangements and accommodation capacity. Two hundred and ten Chinese Schools, nineteen Malay Schools and ten Tamil Schools were also inspected for the same purpose.

3. Data elicited from systematic examination of boys:—

(*a*) *General Condition.*—

	1929	*1930*	*1931*
Good	81·90%	83·52%	88·72%
Fair	11·58%	13·25%	9·23%
Poor	2·10%	·94%	2·05%

(*b*) *Cleanliness.*—The percentage of dirty children was 1·93% compared with 6·11% in 1930.

(*c*) *Vaccination.*—This was performed by the vaccinator attached to the Health Branch. The figures below show a summary of work done. The total vaccinated was 1,834.

	English Schools	*Malay Boys' Schools*	*Total*
1929 ...	2,700	1,016	3,716
1930 ...	1,287	1,082	2,369
1931 ...	1,022	812	1,834

(*d*) *Eye-sight.*—(1) Defective Vision, and (2) Diseases of the eye proper. Total number of pupils with defective vision was 228 cases, diseases of the eye, 305 cases. Under the same category were (*a*) Trachoma 134, (*b*) Conjunctivitis 132, (*c*) Corneal Opacity 3, (*d*) Squint 15, (*e*) Other Conditions 21. These cases were sent for treatment either to the General Hospital, Mandalay Road Hospital or to an out-door dispensary.

(*e*) The percentage of caries amongst school children was 25·37% compared with 38·53% in 1930 and 49·8% in 1929. A steady improvement is evident from these percentages.

(*f*) It is difficult to persuade children to undergo, and parents to provide for, operative treatment for enlarged tonsils and adenoids, hence there is no improvement to report in the condition of tonsils amongst school children. The percentage of enlarged tonsils and adenoids amongst school children for the year 1931 was 22·98% as against 22·30% in 1930.

(*g*) *Sanitation.*—Visits to schools—The number of visits was 356. Reports and recommendations were submitted to the Inspector of Schools through the Chief Health Officer.

(*h*) *Infectious Diseases.*—(1) Chicken-pox 31 cases, (2) Measles 21 cases, (3) Whooping Cough 4 cases, (4) Diphtheria 3 cases, and (5) Leprosy 2 cases.

(*i*) *Malaria.*—Boys with enlarged spleens in English Schools are very few. There were 11 cases only out of the 6,224 children examined. In Malay Schools there were 27 cases out of the 2,388 children examined. In the Pulau Tekong Malay School, situated on an Island, the spleen rate is 15% of the pupils.

4. *Medical Certificates of Room Accommodation.*—These were given whenever necessary to all the classes of schools requiring them, and were sent to the Principals of the Schools through the Inspector of Schools stating the number to be accommodated according to Regulation 12 of the School Ordinance, 1920.

5. *Lectures.*—Short talks and demonstrations on Health Habits were given whenever necessary during the routine medical examination of pupils.

(6) *Travelling Dispensary.*—During its usual itinerary the Vernacular Schools en route were visited and treatment given to the pupils free of charge. The Travelling Dispensary also treated in rotation all the other Malay Schools in Singapore.

7. *Systematic Examination of School-Teachers of Government, Aided and Vernacular Schools.*—The total number examined was 296. No cases of Tuberculosis were found.

8. *Treatment of Diseases of School children.*—Treatment was carried out at all the Out-door Dispensaries, the General Hospital and the Mandalay Road Hospital. At the Mandalay Road Hospital 132 school children were treated as in-patients of whom 9 were Malays, 85 Chinese and the other nationalities 38; of these 103 were surgical cases and 29 medical cases.

9. *Propaganda—Cinema Films.*—The locally produced films "Aminah" which deals with Infant Welfare work and "Rescue of Swee Kim" which deals with the various points in connection with the cause and prevention of Tuberculosis were shown to the following schools and associations and elicited great interest :—

SCHOOLS

(1) Rochoh Malay School ...	200 Malay children and teachers attended.
(2) Outram Road School ...	350 pupils and teachers attended.
(3) Victoria Bridge School ...	350 pupils and teachers attended.
(4) Tanglin Besar Malay School ...	250 Malay pupils and teachers attended.
(5) Chinese Industrial and Commercial School ...	250 men and women attended.

ASSOCIATIONS

(1) Chinese Literary Association	80 men attended.
(2) Young Women Christian Association	60 women attended.
(3) Chinese Christian Church ...	600 men and women attended.

CHILD WELFARE CENTRE

(1) Jalan Besar Centre ...	250 women and children attended.

10. The following is a summary of school sanitation inspections made at Chinese and other schools for the year 1931 :—

A. *Chinese Schools.*—

Number of inspections for general sanitation for the year ...	872
Number of new school premises inspected as to their sanitary arrangements and accommodation capacity	161
Number of new school premises granted accommodation certificates	132
Number of schools reported as being housed in unsuitable premises and consequently asked to remove to more suitable premises	34
Number of schools reported to the Assistant Director of Education (Chinese) for action concerning sanitary improvements or overcrowded class rooms	40

Number of notices served by the Assistant Director of Education (Chinese) on schools that are reported to (*a*) be insanitary (*b*) be overcrowded (*c*) have inadequate sanitary arrangements or dirty premises	34
Number of schools where (*a*) sanitary arrangements have been improved (*b*) overcrowded class rooms relieved (*c*) cubicles have been demolished (*d*) other sanitary improvements have been made	39

B. *English Schools.*—

Number of inspections for general sanitation for the year ...	139
Number of new school premises inspected as to their sanitary arrangements and accommodation capacity	11
Number of new school premises granted accommodation certificates	7
Number of schools reported as being housed in unsuitable premises and consequently asked to remove to more suitable premises	2
Number of schools reported to the Inspector of Schools for action *re* sanitary improvements	2
Number of schools where sanitary improvements have been made	2

C. *Malay Schools.*—

Number of inspections for general sanitation for the year ...	46
Number of schools reported to the Inspector of Schools for action *re* sanitary improvement	4
Number of schools where sanitary arrangements have been improved	1

D. *Tamil Schools.*—

Number of inspections for general sanitation for the year ...	41
Number of new school premises inspected as to their sanitary arrangements and accommodation capacity	9
Number of new school premises granted accommodation certificates	5
Number of schools reported as being housed in unsuitable premises and consequently asked to remove to more suitable premises	6
Number of schools reported to the Iuspector of Schools for action *re* sanitary improvements	4
Number of schools where sanitary improvements have been made	3

11. Results of treatment carried out as reported by the Principals are given in tabulated form on the page after next.

12. *General.*—A review of the year's work shows a steady progress in the health work amongst boys' schools generally. The health of the school child has been gradually improving with the result that now a better, cleaner and brighter type of school child is noticeable in every school, particularly in the Malay Vernacular Schools. The number of subnormal cases is gradually decreasing, this is attributable to the organised system of physical drills, exercises, and school games obtaining in all the schools.

There is also noticeable a greater amount of co-operation between the parents or guardians and teachers in geting the children treated for their various defects.

The Inspector of Schools and the Heads of Schools, as usual, have given their hearty co-operation and encouragement in this work.

13. *Staff.*—Mr. Ong Wee Kiong was appointed Sanitary Inspector, Schools, on the 1st May, 1931. There were no other changes in the school health establishment.

TREATMENT AS CARRIED OUT SINCE LAST MEDICAL EXAMINATION

Schools	Anæmia	Enlarged Glands	Bronchial Catarrh	Enlarged Tonsils and Adenoids	Defective Vision	Conjunctivitis	Trachoma	Other Eye Affections	Dental Caries	Sordes	Sores	Scabies	Ringworm	Other Skin Affections	Otorrhœa	Hernia	Phimosis	Leprosy	Enlarged Spleen
Anglo-Chinese School ..	6	2	1	93	33	7	2	..	100	..	..	..	26	6	..	..	..	..	..
Gan Eng Seng School ..	..	..	..	38	4	2	..	..	33	..	1	..	1	..	..	1	..	..	1
Geylang English School ..	1	2	1	31	..	2	1	..	15	..	..	..	4	9	..	..	..	1	1
Government Trade School ..	..	..	..	3	..	1	..	..	4	..	..	..	..	4	..	..	..	..	..
Holy Innocent School ..	2	1	1	56	4	6	3	2	37	..	..	1	..	8	..	..	..	..	..
Raffles Institution ..	..	..	..	57	49	..	..	33	47	..	..	..	..	51	..	..	..	..	..
Radin Mas School ..	..	..	..	34	1	..	..	3	3	..	..	..	..	6	..	..	..	..	..
Serangoon English School ..	..	..	..	19	..	..	..	2	11	..	..	..	..	10	..	..	..	..	..
St. Andrew's School ..	..	..	..	41	11	3	2	..	21	..	..	..	..	27	..	..	..	..	..
St. Anthony's Boy's School ..	..	2	..	90	4	6	4	1	147	..	..	3	5	6	1	..	..	..	2
St. Joseph's Institution ..	3	18	1	137	20	15	4	..	253	7	3	..	10	14	1	..	1	..	3
Telok Kurau English School ..	1	..	..	..	3	..	..	9	25	..	..	..	..	17	..	..	..	..	..
Victoria Bridge School ..	..	..	..	52	2	5	7	1	19	..	..	2	5	13	..	..	..	..	1
Totals ..	13	25	4	651	131	47	23	51	715	7	4	6	51	171	2	1	1	1	8

III.—Schools, Penang Settlement

There are 23 vernacular boys schools in Penang island with a total enrolment of 3,191 scholars. These boys are medically examined each year by the Assistant Health Officer who records the health and sickness statistics of the scholars in Penang. In addition, he visits these schools monthly to supervise treatment of minor ailments, to give treatment for worm and yaws infections, and to deliver public health lectures. One hundred and fify such visits were made to these schools during the year and sixty lectures were delivered dealing principally with hookworm and malaria prevention, illustrated by posters and diagrams.

There are eleven English schools in George Town where medical inspection is carried out by the Assistant Health Officer, Schools, who is aided in this work by the Assistant Medical Officer in charge of Chowrasta Dispensary.

Public health lectures were delivered in boys English schools and cinema films on malaria and hookworm were shown on two occasions.

The girl schools in Penang island number 18, four of these are English schools and 14 vernacular, with a nominal roll of 3,532. These are visited by the Lady Medical Officer attached to the Women and Children's Outdoor Dispensary. In addition there are 12 girls' schools in Province Wellesley and Dindings with a roll of 755 pupils ; these are also inspected annually by the Lady Medical Officer.

In Province Wellesley there are 48 boys' schools with an attendance of 6,030. The boys receive medical inspection and treatment through the Health Officer who is assisted in this work by the Assistant Medical Officers attached to the three hospitals situated in the north, south and central districts of Province Wellesley.

In the Dindings, where there are 9 boys' schools with an enrolment of 619 boys, medical inspection is done by the Deputy Medical Officer who is a part-time Health Officer.

The following is a summary of the records obtained in school medical examination during 1931 :—

SCHOOL MEDICAL DATA, 1931

Detail of Medical Inspection	Boys			Girls	
	English Schools Penang	Vernacular Schools Penang	Vernacular Schools P. W.	English	Vernacular
No. of schools visited	11	26	58	5	27
No. of pupils examined	4,722	3,414	5,358	2,341	1,760
No. physically subnormal ...	476 (10%)	611 (18%)	702 (13%)	116 (5%)	122 (7%)
No. with gross dental defect ...	2,675 (57%)	3,000 (88%)	1,540 (29%)	1,250 (53%)	1,237 (70%)
No. with defects of ear, nose & throat	1,801 (38%)	1,271 (37%)	2,364 (44%)	802 (34%)	500 (28%)
No. with skin infections ...	467 (10%)	865 (25%)	573 (11%)	234 (10%)	166 (9%)

An examination of the figures above, reveals the great number of physical defects amongst the pupils and the need for remedial and sanitary measures.

There is a medical examination record card for each child attending school upon which details of the annual inspection are entered. Medical examinations in schools in rural areas are followed by visits of the Travelling Dispensary. Headmasters of urban schools are required to address a special memorandum form to the parents or guardians of any pupil who is in need of treatment, informing them of the nature of the ailment and advising treatment.

There were three changes during the year in the post of Lady Medical Officer. Dr. NORA WEBSTER was in charge from the beginning of the year until 17th July, 1931, when she resigned. Dr. GLADWELL then temporarily occupied the post until the arrival of Dr. ETHEL MORRIS on 3rd September, 1931. In spite of these changes a full medical survey of all girl schools in the settlement was completed by the end of the year.

IV.—Schools, Malacca

There are, in the Settlement, about 11,947 children of school age. In Malacca, the work is done as a part-time duty by the Health Officer, Lady Medical Officer, Deputy Health Officer and two Assistant Health Officers. The Travelling Dispensary co-operates in this work in rural areas. The Health Sister sends sick children and non-vaccinated children for treatment to the Government out-door-dispensary and Travelling Dispensary. The Health Officer arranges for a Government dresser to treat the children not treated in hospital or dispensary, and have them vaccinated. Many children suffer from dental defects, they are advised to go to the dentists for treatment. There is no Government dentist.

Details of school work are given in the attached statement

MEDICAL INSPECTION OF SCHOOLS FOR 1931

Schools	No. of Children Examined		General Condition			Required Re-vaccination	Diseases of Circulation	Diseases of Respiratory System	Diseases of Urinary System	Skin Diseases	Eye		Ear Disease	Throat Disease	Caries of Teeth	Spleen Enlargements	Specific Diseases					Lectures
	No. Examined	No. Absent	Good	Fair	Poor						Eyes Defective	Disease of the eye					Yaws	Chicken Pox	Leprosy	Measels	Mumps	
English Schools (Boys')	1957	40	1,354	576	27	110	6	26	...	228	123	19	52	202	1,261	33	1	...	...	...	...	...
			69·19%	29·43%	1·38%	5·62%	·31%	1·33%		11·65%	6·29%	·97%	2·66%	10·32%	64·44%	1·69%	·05%	...	...	...	...	
English Schools (Girls')	1193	...	658	446	89	38	476	116	6	230	79	22	22	570	316	13	8	...	1	...	...	...
			55·16%	37·38%	7·46%	3·19%	39·90%	9·72%	·50%	19·28%	6·62%	1·84%	1·84%	47·78%	26·49%	1·09%	·67%	...	·081%	...	...	
Central Vernacular Schools	3116	255	2,057	976	83	172	4	71	2	398	19	30	48	284	1,949	141	11	...	2	...	1	116
			66·02%	31·33%	2·66%	5·52%	·13%	2·28%	·06%	12·77%	·61%	·96%	1·54%	9·12%	62·56%	4·53%	·35%	...	·06%	...	·03%	
Jasin Vernacular Schools	1487	...	718	311	458	392	83	158	...	338	287	103	79	1,086	1,278	48	51	...	...	...	...	18
			48·29%	20·91%	30·80%	26·36%	5·58%	10·63%	...	22·73%	19·30%	6·93%	5·31%	73·03%	85·94%	3·23%	3·43%	...	...	...	...	
Alor Gajah Vernacular Schools	3294	...	3,075	162	57	774	...	4	...	162	50	44	15	964	1,096	177	27	6	...	1	...	36
			93·36%	4·92%	1·73%	23·50%	...	·12%	...	4·92%	1·52%	1·34%	·46%	29·27%	33·27%	5·37%	·82%	·18%	...	·03%	...	
Total ...	11047	295	7,862	2,471	714	1,486	569	375	8	1,356	558	218	216	3,106	5,900	412	98	6	3	1	1	170
			71·17%	22·37%	6·46%	13·45%	5·15%	3·39%	·07%	12·27%	5·05%	1·97%	1·96%	28·12%	53·41%	3·73%	·89%	·05%	·03%	·01%	·01%	

APPENDIX "G"

Social Hygiene Branch, Medical Department, S.S.

ANNUAL REPORT FOR 1931

1. *Treatment Centres.*—

I.—SINGAPORE

Male Clinics—

(*a*) Bencoolen Street Clinic.
(*b*) Sago Street Clinic.
(*c*) General Hospital Clinic.
(*d*) Tanjong Pagar Clinic.

Female Clinics—

(*a*) Outdoor Dispensary, General Hospital.
(*b*) Kandang Kerbau Women and Children Outdoor Dispensary.

Outdoor Dispensaries which treat V. D. cases—

(*a*) Joo Chiat Road Outdoor Dispensary.
(*b*) Bukit Timah Outdoor Dispensary.
(*c*) Kandang Kerbau Outdoor Dispensary.
(*d*) Paya Lebar Outdoor Dispensary.

II.—PENANG

(*a*) Kampong Kolam Clinic.
(*b*) General Hospital Clinic.
(*c*) Chowrasta Outdoor Dispensary.
(*d*) Balik Pulau Outdoor Dispensary.
(*e*) Government Travelling Dispensary.
(*f*) Butterworth and Penagga Dispensary.
(*g*) Sungei Bakap Outdoor Dispensary.
(*h*) Lumut Hospital.
(*i*) Bukit Mertajam Dispensary.
(*j*) Pengkalan Bharu Outdoor Dispensary.
(*k*) Prison Hospital.
(*l*) Women and Children Outdoor Dispensary.

III.—MALACCA

(*a*) Durian Daun Hospital.
(*b*) Travelling Dispensary.
(*c*) V. D. Clinic, Malacca.
(*d*) Government Outdoor Dispensary, Jasin.
(*e*) Government Outdoor Dispensary, Alor Gajah.
(*f*) Prison Dispensary.

2. *Classification of cases.*—

New cases—

	Singapore		*Penang*		*Malacca*	
	1930	*1931*	*1930*	*1931*	*1930*	*1931*
Males ...	21,195	17,378	9,402	6,412	3,122	2,531
Females ...	2,035	746	458	1,200	181	538
Total ...	23,230	18,124	9,860	7,612	3,303	3,069
Re-attendances—						
Males ...	209,403	252,975	35,043	41,169	4,977	10,086
Females ...	9,946	4,310	4,728	7,862	268	851
Total ...	219,349	257,285	39,771	49,031	5,245	10,937
Total attendances including new cases—						
	242,579	275,409	49,631	56,043	8,548	14,006

3. *Classification of diseases—*

	1930			1931		
	New cases	*Re-attendances*	*Total*	*New cases*	*Re-attendances*	*Total*
Syphilis ...	8,252	68,354	76,606	5,589	62,534	68,123
Soft Sore ...	3,652	41,443	45,095	5,390	77,322	82,712
Gonorrhœa ...	5,822	78,577	84,399	4,404	95,861	100,265
Others ...	5,504	30,975	36,479	2,741	21,568	24,309
Total ...	23,230	219,349	242,579	18,124	257,285	275,409
Penang—						
Syphilis ...	5,713	24,550	30,263	2,759	27,219	29,978
Soft Sore ...	305	1,037	1,342	577	6,189	6,766
Gonorrhœa ...	2,022	10,406	12,428	1,440	7,721	9,161
Others ...	1,820	3,778	5,598	2,836	7,901	10,737
Total ...	9,860	39,771	49,631	7,612	49,030	56,642
Malacca—						
Syphilis ...	1,833	2,874	4,707	1,904	5,614	7,518
Soft Sore ...	368	656	1,024	104	624	728
Gonorrhœa ...	853	1,368	2,221	512	3,603	4,115
Others ...	249	347	596	549	1,096	1,645
Total ...	3,303	5,245	8,548	3,069	10,937	14,006

No. of Attendances by Nationalities

Singapore	*New cases*	*Re-attendances*	*Total*
Europeans	428	8,448	8,876
Chinese	11,862	121,341	133,203
Malays	1,156	25,421	26,577
Indians	4,231	92,017	96,248
Others	447	10,058	10,505
Total	18,124	257,285	275,409

Ratio of Attendances to New cases

Ratio of total attendances to new cases—

Singapore			*Penang*			*Malacca*		
1929	*1930*	*1931*	*1929*	*1930*	*1931*	*1929*	*1930*	*1931*
8.98	10.40	15.2	2.82	5.0	7.4	1.3	2.6	4.6

Treatment of seamen.—

The clinic situated at the docks at Tanjong Pagar caters for men of the Mercantile Marine and conforms to the International Agreement by treating seamen of all nationalities free and providing them with therapeutic agents to carry them through to the next port of call.

No. of seamen treated—

	1930	1931
New cases	803	607
Re-attendances	4,764	4,505
Total ...	5,567	5,112

Nationalities of seamen treated—

	1930	1931
British	193	158
Other Europeans	90	80
Chinese	445	286
Malays	16	11
Indians	53	40
Others	6	23
Total ...	803	598

Treatment by private practitioners—

There are at present 9 private practitioners on our list who are supplied by Government with drugs and who have agreed to treat poor patients at a reduced fee.

Number of patients treated by general practitioners during the year are :—

	Syphilis		*Gonorrhœa*		*Total*	
	1930	1931	1930	1931	1930	1931
New cases ...	1,598	1,230	634	459	2,232	1,689
Re-attendances	1,729	1,469	717	590	2,446	2,059
Total ...	3,327	2,699	1,351	1,049	4,678	3,748

Ablution Centre, Bencoolen Street Clinic—

The following are the attendances at the Ablution Centre :—

	1930	1931
Europeans	213	178
Chinese	589	641
Malays	150	131
Indians	415	428
Others	427	436
Total ...	1,794	1,814

Serological Examinations—

These are carried out at Singapore by the Professor of Bacteriology and at Penang and Malacca by the officers attached to the Pathological Laboratories at these settlements.

	No. of blood tests	*Positive*	*Negative*
Singapore	11,370	5,073	6,297
Penang	2,766	1,872	894
Malacca	1,293	740	553

Analysis of work done in V. D. Clinics—

		Singapore	Penang	Malacca
(a) Intravenous—				
Arsenobenzol	... ...	18,557	10,182	4,579
Collosol Iodine	... ...	1,973	986	3
Thiostab	... ...	63	26	15
Neosilbersalvarsan	... ...	482	217	—
Acriflavine	... ...	—	74	148
(b) Intramuscular—				
Bismuth	... ...	16,270	6,977	2,116
Contramine	... ...	298	212	—
Trimine	... ...	1,909	131	25
Manganese Butyrate	...	358	37	—
Collosol Manganese	... ...	210	76	8
Trypaflavine	... ...	415	—	—*
(c) Hypodermic—				
Vaccine, gonococcal	... ...	24,066	2,106	1,411
Sulphostab	... ...	1,124	751	193
Gonoyatren	... ...	196	92	13
Sulfarsenol	... ...	—	—	76
Arthigon	... ...	—	420	—
Miscellaneous—				
Irrigations	... ...	106,808	25,876	4,565
Dressings	... ...	146,963	37,208	4,028
Prostatic Massage	... ...	2,711	775	143
Minor Operations	... ...	1,151	158	46
Dilatations	... ...	425	9	—
Microscopic Examinations—				
Gonococci ...	... +	5,774	1,931	318
	−	3,288	768	133

Propaganda—

The office continues to distribute pamphlets and leaflets to the public. Applications from outstations for these were promptly attended to.

Large posters in Chinese, Malay and Tamil are posted daily throughout the streets. These explain the dangers of venereal diseases and the location of the clinics and call the attention of the public to the facilities offered by Government for free and confidential treatment.

Cinema films, Singapore—

Early in the year, the Secretary-General of the British Social Hygiene Council, London, kindly lent to the office a cinema film entitled "Ways of Life".

It was demonstrated, with great success, to the following :—

Chinese Students' Literary Association
Chinese Reading Club
Singapore Chinese Mandarian School
Siong Boo Association
Chinese Industrial and Continuation School
Police Force
} 1,100 persons attended.

Penang—

Hu Yew Seah
Anglo-Chinese School Union
St. Xavier's Association
Hindu Sabah
} 1,200 persons attended.

Malacca—

The film was publicly shown at the Capitol Theatre in Malacca on four occasions, and was well attended by the various communities in Malacca.

Schools—

The film was demonstrated to the senior boys of the following schools:—

1. St. Joseph's Institution.
2. St. Andrew's School.
3. Raffles Institution.
4. Anglo-Chinese School.

Lectures—

The Acting Chief Medical Officer (Dr. W. J. E. PHILLIPS) gave lectures on social hygiene to the members of the following Associations:—

Chinese Students' Literary Association Chinese Reading Club Singapore Chinese Mandarin School Siong Boo Association	About 500 persons attended.

General—

Dr. R. W. C. KELLY, Chief Medical Officer, Social Hygiene, proceeded on furlough for 8 months on 29th May, 1931, and Dr. W. J. E. PHILLIPS acted during that period.

TABLE I

STAFF

1. The authorised number of the European staff of the Medical Department of Straits Settlements in 1931, including officers to be seconded for service in the Unfederated Malay States, was 198.

GENERAL

Principal Civil Medical Officer, Straits Settlements.
Nine Leave Supernumerary Medical and Health Officers
Nine Leave Supernumerary Nursing Sisters.
Accountant, Medical Department, Straits Settlements.

HOSPITALS AND DISPENSARIES

Chief Medical Officer, Singapore.
Chief Medical Officer, Penang.
Chief Medical Officer, Malacca.
Senior Surgeon, Singapore.
One Radiologist, Singapore.
Surgeon, Penang.
Eight Medical Officers, Singapore.
Five Medical Officers, Penang.
One Medical Officer, Malacca.
One Dental Officer, Singapore.
One Dispensing Chemist, Singapore.
One Medical Officer, Labuan.
Secretary, General Hospital, Singapore.
One Matron, Super-scale, General Hospital, Singapore.
One Matron, Grade I, Singapore.
One Matron, Grade I, Penang.
Four Matrons, Grade II, Singapore.
Two Matrons, Grade II, Penang.
One Matron, Grade II, Malacca.
Forty-three Sisters, Singapore.
Fourteen Sisters, Penang.
One Sister, Malacca.
Two European Attendants, Singapore.
One Lady Superintendent, Leper Settlement, Pulau Jerejak.

Health Branch

Chief Health Officer, Singapore.
Senior Health Officer, Penang.
Five Health Officers, Singapore.
One Health Officer, Penang.
One Health Officer, Malacca.
One Chief Sanitary Inspector, Singapore.
One Chief Sanitary Inspector, Penang.
One Lay Superintendent, Quarantine Station, Singapore.
Two Public Health Sisters, Singapore.
One Sister, Quarantine Station, Singapore.
One Lay Superintendent, Quarantine Station, Penang.
One Public Health Sister, Penang.
One Public Health Sister, Malacca.

Pathological Branch

One Pathologist, Singapore.
One Pathologist, Penang.
One Bacteriologist, Singapore.

College of Medicine, Singapore

Principal.
Professor of Physiology.
Professor of Anatomy.
Professor of Medicine.
Professor of Surgery.
Professor of Clinical Surgery.
Professor of Midwifery and Gynæcology.
Professor of Bacteriology.
Professor of Biology.
Professor of Bio-chemistry.
Professor of Dental Surgery.
Dental Mechanic.
Janitor.

Mental Hospital, Singapore

Medical Superintendent.
Assistant Medical Superintendent.
One Matron, Grade I.
One Sister.
Four European Attendants.

Social Hygiene Branch

Chief Medical Officer, Singapore.
One Medical Officer, Singapore.

2. In addition, 7 Superscale and 15 Time-scale supernumerary Medical and Health Officers and 2 supernumerary Matrons and 15 supernumerary Nursing Sisters are borne on the establishment for service in the Unfederated Malay States, making a total of 198.

3. The local qualified medical staff (Senior Deputy Grades, Deputy Medical Officers, Deputy Health Officers, Assistant Medical Officers, Assistant Health Officers, etc.,) number 78.

TABLE II

(c) FINANCIAL

1931

(a) REVENUE

Settlement	Hospital Fees, &c.	Govt. Contribution to Hospitals Board	Total Revenue of Hospitals Board	Medical, General and Health	Total
	$	$	$	$	$
Singapore	265,386	572,368	837,754	27,497	865,251
Penang	109,784	336,416	446,199	12,926	459,125
Malacca	13,528	94,044	107,572	1,633	109,205
Labuan	66	3,527	3,593	194	3,787
Total ...	388,764	1,006,355	1,395,118	42,250	1,437,368

OF THE SINGAPORE EXPENDITURE UNDER HOSPITALS AND DISPENSARIES, $7,003 IS MET BY PROVISION OTHER THAN CONTRIBUTION TO THE HOSPITALS BOARD AND $840, SIMILARLY, IN THE CASE OF MALACCA

(*b*) EXPENDITURE

Settlement	Item of Expenditure	Medical General	Hospitals and Dispensaries	Health Branch	Social Hygiene Branch	General Clerical Service	Total
		$	$	$	$	$	$
SINGAPORE	Personal Emoluments ...	319,953	775,017	163,888	61,866	47,185	1,367,909
	Other Charges ...	68,907	823,514	69,770	44,456	...	1,006,647
	Special Expenditure ...	4,575	21,243	(*w*) 144,455	...	...	170,273
	Sub-total ...	393,435	1,619,774	378,113	106,322	47,185	2,544,829
PENANG	Personal Emoluments ...	34,626	368,154	118,401	6,370	20,643	548,194
	Other Charges ...	4,017	446,199	51,606	9,141	...	510,963
	Special Expenditure ...	...	...	(*x*) 95,150	...	...	95,150
	Sub-total ...	38,643	814,353	265,157	15,511	20,643	1,154,307
MALACCA	Personal Emoluments ...	20,183	108,428	25,072	5,681	10,740	170,104
	Other Charges ...	4,222	108,412	15,368	3,608	...	131,610
	Special Expenditure ...	...	...	(*x*) 32,957	...	...	32,957
	Sub-total ...	24,405	216,840	73,397	9,289	10,740	334,671
LABUAN	Personal Emoluments ...	7,061	5,066	2,010	...	...	14,137
	Other Charges ...	...	3,593	604	...	...	4,197
	Special Expenditure ...	...	...	(*x*) 6,514	...	...	6,514
	Sub-total ...	7,061	8,659	9,128	...	...	24,848
TOTAL ...	Personal Emoluments ...	381,823	1,256,665	309,371	73,917	78,568	2,100,344
	Other Charges ...	77,146	1,381,718	137,348	57,205	...	1,653,417
	Special Expenditure ...	4,575	21,243	(*y*) 279,076	...	...	304,894
	Grand total ...	463,544	2,659,626	725,795	131,122	78,568	4,058,655

(*w*) Of this expenditure, $107,375 is on account of Anti-mosquito Works and $37,080 on account of Two Passenger Flats for conveying passengers from St. John's Island Quarantine Station.
(*x*) All this expenditure is on account of Anti-mosquito Works.
(*y*) All this expenditure with the exception of $37,080 is on account of Anti-mosquito Works.

The above statement excludes the revenue and expenditure of the Tan Tock Seng's Hospital, the funds of which are administered by a special committee. The following is a brief summary of the revenue and expenditure for 1931 :—

		$
Balance brought forward from 1930		12,754
Government contribution for 1931		220,000
Interest, rents, &c.		9,207
Total ...		241,961

Less:—

	$	
Salaries and Wages	27,732	
Other Charges	148,428	
Investment	7,063	
		183,223
Balance carried forward to 1932		58,738

The hospital is staffed and administered chiefly by officers paid from Hospitals and Dispensaries, Personal Emoluments.

The total cost of the King Edward VII College of Medicine, excluding expenditure met from Council Funds, was $240,320 for 1931 of which $113,637 will be refunded to this Government by the Government of the Federated Malay States.

$6,657 expended on Vitamin Research by Professor ROSEDALE was met from the Colonial Development Fund.

Sums expended by the Public Works Department on upkeep of buildings, minor repairs, &c., are not included in the financial statement.

TABLE IIIa

ESTIMATED POPULATION, WITH BIRTH AND DEATH-RATES FOR THE YEARS 1930 AND 1931

	POPULATION		BIRTHS		DEATHS		BIRTH-RATIO PER MILLE		DEATH-RATIO PER MILLE	
	Estimated 1930	Estimated 1931	1930	1931	1930	1931	1930	1931	1930	1931
Singapore	596,209	562,866	21,461	20,470	16,470	13,623	36.00	36.37	27.62	24.20
Penang	196,586	199,150	7,430	7,083	5,242	4,898	37.80	35.57	26.67	24.59
Province Wellesley	144,967	141,635	5,796	5,281	3,702	3,246	39.98	37.29	25.54	22.92
Dindings	19,068	19,628	692	552	526	421	36.29	28.12	27.59	21.45
Malacca	205,820	187,627	9,007	7,700	5,739	4,951	43.76	41.58	27.88	26.39
Labuan	6,156	7,605	317	275	249	230	51.49	43.74	40.45	30.24
Total ...	1,168,806	1,118,511	44,703	41,361	31,928	27,369	38.25	36.98	27.32	24.47

TABLE IIIb

QUARTERLY DEATH-RATES FOR VARIOUS PARTS OF THE COLONY DURING THE PAST 3 YEARS WERE :—

YEAR	1929				1930				1931			
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Singapore and Labuan ...	24.38	26.83	26.13	26.09	23.36	31.68	28.35	27.64	20.62	27.93	23.81	21.98
Penang Island ...	29.38	31.07	26.08	28.28	25.79	28.73	26.30	25.85	23.03	28.30	22.63	23.34
Province Wellesley	25.04	27.89	24.25	25.42	22.97	28.61	26.03	24.52	19.39	27.17	20.68	21.19
Dindings ...	26.99	22.31	24.89	35.27	25.31	32.39	30.79	27.47	19.02	26.51	19.41	20.23
Malacca ...	24.94	24.36	22.68	26.10	24.57	34.98	26.31	26.45	21.38	25.53	22.57	26.91

TABLE IIIc

POPULATION ESTIMATED RACIALLY AND COLLECTIVELY OF THE STRAITS SETTLEMENTS FOR THE YEARS 1931, 1930 AND 1929

Settlement or Province	Europeans 1931	Eurasians 1931	Chinese 1931	Malays 1931	Indians 1931	Other Nationalities 1931	Estimated 30th June, 1931	Census 1931	Estimated 1930	Estimated 1929
Singapore	8,225	6,976	422,492	65,506	51,863	7,804	562,866	558,861	596,209	574,665
Penang	1,274	2,199	125,394	40,811	27,594	1,878	199,150	198,788	196,586	191,330
Province Wellesley	232	264	44,747	70,591	25,359	442	141,635	141,377	144,967	141,541
Dindings	22	16	7,018	7,704	4,823	45	19,628	19,592	19,068	18,334
Malacca	328	2,015	65,742	95,527	23,555	460	187,627	186,694	205,820	200,004
Labuan	22	34	2,301	5,059	136	53	7,605	7,538	6,156	6,029
Straits Settlements Total ...	10,103	11,504	667,694	285,198	133,330	10,682	1,118,511	1,112,850	1,168,806	1,131,903

TABLE IIId

BIRTHS REGISTERED IN THE STRAITS SETTLEMENTS DURING 1931 AND THEIR RATIO PER MILLE OF POPULATION

Settlement or Province	Male	Female	Total 1931	Total 1930	Total 1929	Ratio per mille 1931	Ratio per mille 1930	Ratio per mille 1929
Singapore	10,753	9,717	20,470	21,461	20,902	36.37	36.00	36.37
Penang	3,618	3,465	7,083	7,430	7,346	35.57	38.21	38.39
Province Wellesley	2,740	2,541	5,281	5,273	5,515	37.29	40.19	38.96
Dindings	268	284	552	692	597	28.12	34.39	32.56
Malacca	3,980	3,720	7,700	9,007	7,464	41.58	43.76	37.32
Labuan	143	132	275	317	278	43.74	51.49	46.11
Total ...	21,502	19,859	41,361	44,703	42,102	36.98	38.25	37.20

TABLE IIIe

BIRTHS REGISTERED IN THE STRAITS SETTLEMENTS DURING 1931 ACCORDING TO NATIONALITIES

SETTLEMENTS OR PROVINCE	EUROPEANS		EURASIANS		CHINESE		MALAYS		INDIANS		OTHER NATIONALITIES		TOTAL	
	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio	No.	Ratio
Singapore	169	20.55	199	28.53	15,993	37.85	2,862	43.69	1,020	19.64	227	29.09	20,470	36.37
Penang	64	50.24	46	20.92	4,847	38.65	1,294	31.71	796	28.85	36	19.17	7,083	35.57
Province Wellesley ..	3	5.92	7	16.74	2,048	45.77	2,357	31.97	859	33.87	7	15.84	5,281	37.29
Dindings	..	..	1	28.57	188	26.79	236	30.63	131	27.16	..	..	552	28.12
Malacca	6	9.54	69	34.24	2,996	45.60	3,900	40.83	725	30.78	4	8.70	7,700	41.58
Labuan	1	29.41	1	47.62	92	54.09	169	38.80	5	43.10	7	120.74	275	43.74
Total ..	243	24.05	323	28.08	26,164	39.19	10,818	37.93	3,536	26.52	191	17.88	41,361	36.98

TABLE IIIf

DEATHS REGISTERED IN THE STRAITS SETTLEMENTS IN 1931 ACCORDING TO NATIONALITIES

SETTLEMENTS OR PROVINCE	EUROPEANS		EURASIANS		CHINESE		MALAYS		INDAINS		OTHER NATIONALITIES AND UNKNOWN		TOTAL	
	No.	Ratio per mille	No.	Ratio per mille	No.	Ratio per mille	No.	Ratio per mille	No.	Ratio per mille	No.	Ratio per mille	No.	Ratio per mille
Singapore	51	6.20	103	14.76	10,599	25.09	1,905	29.08	820	15.81	145	18.58	13,623	24.20
Penang	15	11.77	30	13.64	3,090	24.64	933	22.86	778	28.19	52	27.69	4,898	24.59
Province Wellesley ..	..	..	4	15.15	1,079	24.11	1,547	21.91	587	23.15	29	65.61	3,246	22.92
Dindings	..	..	..	..	161	22.94	160	20.77	97	20.11	3	66.67	421	21.45
Malacca	1	3.05	40	19.85	1,642	24.98	2,663	27.88	602	25.56	3	6.52	4,951	26.39
Labuan	1	45.45	..	..	52	22.60	175	34.59	1	7.35	1	18.87	230	30.24
Total ..	68	6.73	177	15.39	16,623	24.90	7,383	25.89	2,885	21.64	233	21.81	27,369	24.47

TABLE IIIg

DEATHS REGISTERED IN THE STRAITS SETTLEMENTS IN 1931 UNDER DIFFERENT GROUPS OF AGES

Ages	Singapore	Penang	Province Wellesley	Dindings	Malacca	Labuan	Total
Under 3 months	2,173	556	474	46	1,197	45	4,491
3 months to under 1 year ...	1,873	391	165	26	678	34	3,167
1 year to 5 years	1,531	570	447	61	496	23	3,128
5 years to 10 years	322	147	140	19	132	9	769
10 years to 20 years	374	258	158	29	178	11	1,008
20 years to 25 years	585	230	144	24	182	12	1,177
25 years to 35 years	1,623	622	385	62	543	18	3,253
35 years to 45 years	1,671	596	294	51	474	18	3,104
45 years to 55 years	1,464	535	326	39	370	13	2,747
55 years to 75 years	1,632	793	490	48	530	32	3,525
75 years and above	364	181	219	16	167	15	962
Unknown	11	19	4	—	4	—	36
Total ...	13,623	4,898	3,246	421	4,951	230	27,369

TABLE IIIh

TABLE SHOWING THE INFANTILE MORTALITY (UNDER ONE YEAR) IN THE STRAITS SETTLEMENTS INCLUDING DEATHS IN CHILDREN BORN ELSEWHERE

Settlements	Births	Deaths	Ratio per mille of Births		
			1931	1930	1929
Singapore	20,470	4,046	197.65	216.07	196.73
Penang	7,083	947	133.70	148·05	160.63
Province Wellesley	5,281	639	121.00	123.53	114.96
Dindings	552	72	130.43	182.08	180.90
Malacca	7,700	1,875	243.51	252.91	247.19
Labuan	275	79	287.27	290.22	223.02
Total ...	41,361	7,658	185.15	200.19	188.61

TABLE IIIi

TOTAL SHOWING THE INFANTILE MORTALITY (CHILDREN UNDER ONE YEAR) IN THE STRAITS SETTLEMENTS AND NATIONALITIES EXCLUDING DEATHS IN CHILDREN BORN ELSEWHERE

Nationalities	Singapore			Penang			Province Wellesley			Dindings			Malacca			Labuan			Total		
	Deaths	No. born elsewhere	Ratio	Deaths	No. born elsewhere	Ratio	Deaths	No. born elsewhere	Ratio	Deaths	No. born elsewhere	Ratio	Deaths	No. born elsewhere	Ratio	Deaths	No. born elsewhere	Ratio	Deaths	No. born elsewhere	Ratio
Europeans ..	5	..	29.59	1	..	15.63	..	..	..	..	..	..	..	..	..	..	..	..	6	..	24.69
Eurasians ..	22	1	110.55	3	..	65.22	2	..	285.71	..	..	..	12	..	173.91	..	..	..	39	1	120.74
Chinese ..	2,940	101	183.83	608	34	125.44	216	1	105.47	25	..	132.98	570	3	190.25	13	1	141.30	4,372	140	167.10
Malays ..	748	24	261.36	171	2	132.15	260	3	110.31	27	1	114.41	1,157	2	296.67	62	1	366.86	2,425	33	224.16
Indians ..	167	4	163.73	120	5	150.75	152	1	176.95	18	1	137.40	130	1	179.31	1	..	200.00	588	12	166.29
Other Nationalities and unknown ..	34	..	149.78	3	..	83.33	4	..	571.43	..	..	..	..	..	..	1	..	142.86	42	..	219.89
Total ..	3,916	130	191.30	906	41	127.91	634	5	118.16	70	2	126.81	1,869	6	242.73	77	2	280.00	7,472	186	180.65

TABLE IIIj

DEATHS REGISTERED IN THE STRAITS SETTLEMENTS AS REGARDS CERTIFICATES IN THE YEAR 1931

Particulars	Singapore	Penang	Province Wellesley	Dindings	Malacca	Labuan	Total
Died in Hospitals	3,132	1,037	387	75	605	10	5,244
Certified by outside Medical Practitioners	4,019	803	—	—	410	14	5,246
Certified by Registering Officers after death	3,546	1,998	4	1	489	—	6,038
Uncertified	2,926	1,060	2,855	345	3,447	206	10,839
Total ..	13,623	4,898	3,246	421	4,951	230	27,369

TABLE IV

Meteorological returns for the Straits Settlements for the year 1931, and also two graphs shewing the wettest and driest years since 1869, and the annual rainfall in inches and millimetres since 1862.

METEOROLOGICAL RETURN FOR THE YEAR 1931

Singapore

—	Temperature				Rainfall		Winds		Remarks
	Shade Maximum	Shade Minimum	Range	Mean	Amount in m. m.	Degree of Humidity at 9 a.m.	General Direction	Average Force	
January ...	87.2	73.3	13.9	80.3	293.6	83	E.N.E.	3	
February ...	90.4	73.8	16.6	82.1	150.1	79	E.N.E.	3	
March ...	89.9	74.7	15.2	82.3	131.6	78	E.N.E.	3	
April ...	89.0	75.7	13.3	82.3	172.7	80	S.	2-3	
May ...	88.8	76.5	12.3	82.6	176.8	82	S.S.W.	2-3	
June ...	88.3	76.9	11.4	82.6	258.3	82	S.S.E.	2-3	
July ...	87.3	76.1	11.2	81.7	176.3	81	S.S.E.	2-3	
August ...	89.7	77.6	12.1	83.7	145.8	81	S.S.E.	3	
September ...	87.4	74.9	12.5	81.1	248.7	83	S.S.E.	2-3	
October ...	86.6	75.1	11.5	80.9	233.9	80	W.S.W.	2-3	
November ...	87.4	73.6	13.8	80.5	266.2	79	N.N.E.	2	
December ...	84.2	73.3	10.9	78.7	303.0	85	N.N.E.	3	
Mean ...	88.0	75.1	12.9	81.5	213.1	81			

METEOROLOGICAL RETURN FOR THE YEAR 1931

Penang

—	Temperature				Rainfall		Winds		Remarks
	Shade Maximum	Shade Minimum	Range	Mean	Amount in m.m.	Degree of Humidity at 9 a.m.	General Direction	Average Force	
January ...	90.2	74.8	15.4	82.5	150.9	74	No observations		
February ...	93.5	74.8	18.7	84.1	31.8	74			
March ...	93.7	75.9	17.8	84.8	113.8	75			
April ...	92.0	75.9	16.1	83.9	203.2	78			
May ...	92.0	75.9	16.1	84.1	360.5	75			
June ...	90.3	75.5	14.8	82.9	348.2	78			
July ...	90.5	75.2	15.3	82.9	160.5	76			
August ...	90.5	74.6	15.9	82.5	186.7	77			
September ...	88.3	73.4	14.9	80.9	209.3	77			
October ...	88.5	73.9	14.6	81.2	351.5	80			
November ...	89.4	73.8	15.6	81.6	335.8	77			
December ...	89.0	73.6	15.4	81.3	182.6	77			
Mean ...	90.7	74 9	15.9	82.8	220.1	76.5			

METEOROLOGICAL RETURN FOR THE YEAR 1931

Malacca

	Temperature				Rainfall		Winds		Remarks
	Shade Maximum	Shade Minimum	Range	Mean	Amount in m.m.	Degree of Humidity at 9 a.m.	General Direction	Average Force	
January ...	85.9	73.4	12.5	79.7	132.6	80	N.E.	3	
February ...	90.1	74.2	15.9	82.1	43.4	72	N.E.	3	
March ...	89.2	74.8	14.4	82.0	169.7	77	N.E.	3	
April ...	86.7	74.4	12.3	80.5	140.5	83	N.E.	2–3	
May ...	86 3	75.0	11.3	80.7	319.8	85	S.	2–3	
June ...	85.6	74.4	11.2	80.0	386.1	84	S.E.	2–3	
July ...	84.4	76.3	8.1	80.3	398 5	87	S E.	2	
August ...	85.3	74.5	10.8	79.9	111.5	83	S.S.E.	2–3	
September ...	84.8	73.7	11.1	79.3	436.9	85	S.S.E.	2–3	
October ...	84.9	73.8	11.1	79.3	183.7	84	W.N.W.	3	
November ...	85.1	73.2	11.9	79.1	217.4	80	N.	3	
December ...	83.6	72.8	10.8	78.2	182.6	84	N.E.	3	
Mean ...	86.0	74.2	11.8	80.1	226.9	82			

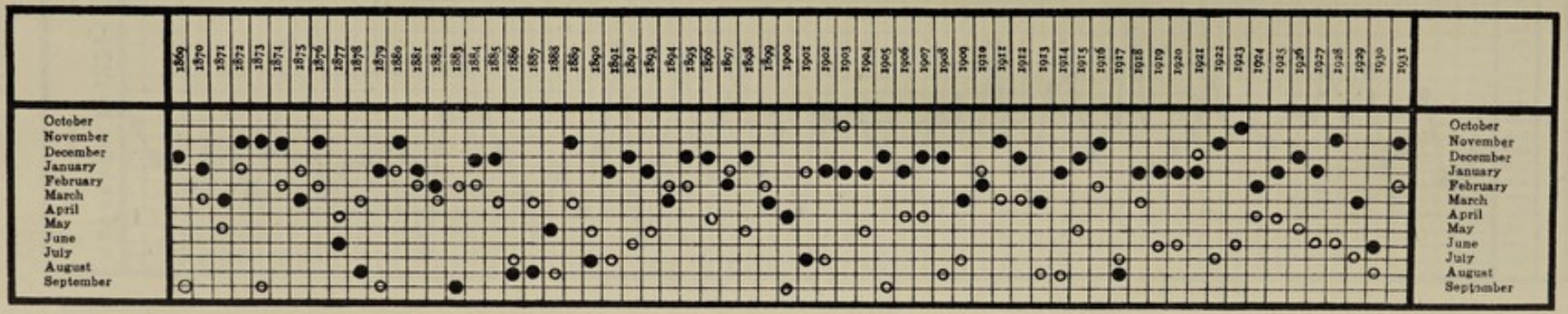
METEOROLOGICAL RETURN FOR THE YEAR 1931

Labuan

	Temperature				Rainfall		Winds		Remarks
	Shade Maximum	Shade Minimum	Range	Mean	Amount in m.m.	Degree of Humidity at 9 a.m.	General Direction	Average Force	
January ...	Records unreliable	Records unreliable			32.3	77	N.N.E.	...	
February ...					26.5	81	N.N.E.	...	
March ...					142.0	80	N.N.W.	...	
April ...					190.7	81	W.	...	
May ..					399.0	81	W.	...	
June ...					411.0	81	S.	...	
July ...					627.5	82	S.W.	...	
August ...					132.5	78	S.W.	...	
September ...					567.5	82	W.	...	
October ...					450.0	81	S.S.W	...	
November ...					292.5	85	W.S.W.	...	
December ..					272.5	81	N.	...	
Mean ...					293.7	81		...	

STRAITS SETTLEMENTS
GRAPH

SHOWING THE WETTEST AND DRIEST MONTHS FOR YEARS FROM 1869 TO 1931 INCLUSIVE



● Wettest months.

○ Driest months.

STRAITS SETTLEMENTS
GRAPH

SHOWING THE ANNUAL RAINFALL IN INCHES AND MILLIMETRES SINCE 1862

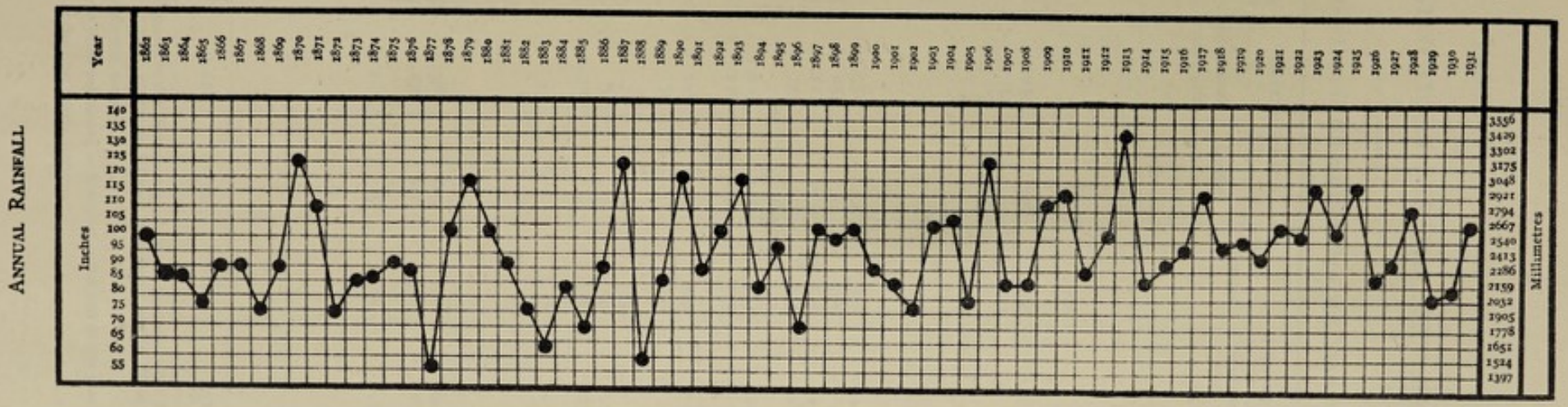


TABLE V

HOSPITALS OR INSTITUTIONS STRAITS SETTLEMENTS

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931

DISEASES	*Remaining in Hospital at end of 1930	YEARLY TOTAL		†Total Cases Treated	‡Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES						
1. Enteric Group—						
(a) Typhoid Fever ...	18	250	97	268	15	
(b) Paratyphoid ...	1	12	...	13	...	
2. Typhus	...	...	...	...	...	
(a) Japanese River Fever	...	1	...	1	...	
3. Relapsing Fever ...	...	...	...	...	...	
4. Undulant Fever ...	8	1	...	9	1	
5. Malaria—						
(a) Tertian	41	1,056	32	1,097	21	
(b) Quartan ...	10	255	9	265	4	
(c) Aestivo-autumnal ...	122	2,423	161	2,545	59	
(d) Cachexia ...	18	777	20	795	26	
(e) Blackwater Fever ...	1	11	6	12	...	
(f) Unclassified ...	57	1,907	145	1,964	49	
(g) Mixed Infection ...	5	110	7	115	2	
6. Small-pox—	19	148	34	167	2	
7. Measles	...	30	...	30	...	
8. Scarlet Fever	...	...	...	...	...	
9. Whooping Cough ...	...	11	1	11	...	
10. Diphtheria	...	60	23	60	1	
11. Influenza	10	1,506	13	1,516	23	
12. Miliary Fever ...	...	...	...	...	...	
13. Mumps	...	13	...	13	...	
14. Cholera	...	6	2	6	...	
15. Epidemic diarrhœa ...	...	...	...	...	...	
16. Dysentery—						
(a) Amœbic ...	16	388	103	404	24	
(b) Bacillary ...	29	299	117	328	20	
(c) Undefined or due to other causes ...	6	183	29	189	5	
17. Plague —						
(a) Bubonic ...	...	...	...	...	...	
(b) Pneumonic ...	...	...	...	...	...	
(c) Septicæmic ...	...	...	...	...	...	
(d) Undefined ...	...	...	...	...	...	
Total carried forward ...	361	9,447	799	9,808	252	

The form shows in the main the arrangement of diseases in the *International Nomenclature, 1921 Edition*. To save space the unimportant diseases of any class can be grouped in their places as "Other Diseases" of the Class

* *i.e.* the year previous to that for which the return is made

† "Total cases treated" will, of course, include those remaining in Hospital at the end of the previous year.

‡ The figures in this column to be carried on to the next year's Return.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	361	9,447	799	9,808	252	
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.—*(contd.)*						
18. Yellow Fever ...	...	...	...	...	...	
19. Spirochætosis ictero-hæmorrhagica ...	...	...	...	...	...	
20. Leprosy	1,034	497	101	1,531	903	
21. Erysipelas	...	19	2	19	...	
22. Acute Poliomyelitis ...	...	1	...	1	...	
23. Encephalitis Lethargica ...	...	8	...	8	2	
24. Epidemic Cerebro-spinal Fever	...	10	2	10	...	
25. Other Epidemic Diseases—						
(*a*) Rubeola (German Measles) ...	...	...	...	...	...	
(*b*) Varicella (Chicken-pox)	5	80	...	85	1	
(*c*) Kala-azar ...	...	3	...	3	2	
(*d*) Phlebotomus Fever	...	...	...	...	...	
(*e*) Dengue	1	101	...	102	...	
(*f*) Epidemic Dropsy ...	...	...	...	...	...	
(*g*) Yaws	1	17	...	18	1	
(*h*) Trypanosomiasis ...	...	...	...	...	...	
26. Glanders	...	...	...	...	...	
27. Anthrax	...	...	...	...	...	
28. Rabies	...	1	...	1	...	
29. Tetanus	3	83	63	86	1	
30. Mycosis	...	2	...	2	...	
31. Tuberculosis, Pulmonary and Laryngeal ...	189	1,984	876	2,173	220	
32. Tuberculosis of the Meninges or Central Nervous System	1	26	25	27	...	
33. Tuberculosis of the Intestines or Peritoneum ...	2	14	12	16	...	
34. Tuberculosis of the Vertebral Column	9	18	3	27	5	
35. Tuberculosis of Bones and Joints	13	43	4	56	12	
36. Tuberculosis of other organs—						
(*a*) Skin or Subcutaneous Tissue (Lupus)	...	1	...	1	...	
(*b*) Bones	...	12	...	12	4	
(*c*) Lymphatic System	...	15	1	15	2	
(*d*) Genito-urinary ...	...	5	1	5	...	
(*e*) Other organs ...	3	35	2	38	1	
37. Tuberculosis disseminated—						
(*a*) Acute	...	1	1	1	...	
(*b*) Chronic	...	3	3	3	...	
Total carried forward ...	1,622	12,426	1,895	14,048	1,406	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	1,622	12,426	1,895	14,048	1,406	
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.—*(contd.)*						
38. Syphilis—						
(*a*) Primary ...	31	486	...	517	41	
(*b*) Secondary ...	212	1,119	16	1,331	108	
(*c*) Tertiary ...	38	261	19	299	34	
(*d*) Hereditary ...	2	72	57	74	6	
(*e*) Period not indicated	3	284	72	287	11	
39. Soft Chancre	32	291	...	323	5	
40. A.—Gonorrhœa and its complications ...	60	1,076	3	1,136	55	
B.—Gonorrhœal Ophthalmia	8	31	2	39	3	
C.—Gonorrhœal Arthritis	10	178	...	188	15	
D.—Granuloma Venereum	...	4	...	4	1	
41. Septicæmia	3	86	68	89	3	
42. Other Infectious Diseases	...	20	4	20	1	
II.—GENERAL DISEASES NOT MENTIONED ABOVE—						
43. Cancer or other malignant Tumours of the Buccal Cavity	2	31	4	33	3	
44. Cancer or other malignant Tumours of the Stomach or Liver	3	83	57	86	1	
45. Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum	1	28	9	29	6	
46. Cancer or other malignant Tumours of the Female Genital Organs ...	1	66	27	67	3	
47. Cancer or other malignant Tumours of the Breast ...	2	14	2	16	...	
48. Cancer or other malignant Tumours of the Skin ...	4	33	6	37	3	
49. Cancer or other malignant Tumours of Organs not specified	6	122	29	128	8	
50. Tumours non-Malignant ...	...	100	2	100	4	
51. Acute Rheumatism ...	5	126	1	131	8	
52. Chronic Rheumatism ...	3	24	...	27	3	
53. Scurvy (including Barlow's Disease)	...	7	2	7	...	
54. Pellagra	2	5	1	7	...	
55. Beri-beri	148	1,237	193	1,385	164	
56. Rickets	...	2	...	2	...	
57. Diabetes (not including Insipidus)	7	117	16	124	4	
Total carried forward ...	2,205	18,329	2,485	20,534	1,896	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	2,205	18,329	2,485	20,534	1,896	
II.—GENERAL DISEASES NOT MENTIONED ABOVE.—*(contd.)*						
58. Anæmia—						
(*a*) Pernicious ...	1	14	6	15	...	
(*b*) Other Anæmias and Chlorosis ...	18	160	17	178	8	
59. Diseases of the Pituitary Body	...	...	...	...	...	
60. Diseases of the Thyroid Gland—						
(*a*) Exophthalmic Goitre	...	8	...	8	...	
(*b*) Other diseases of the Thyroid Gland, Myxœdema ...	...	4	1	4	...	
61. Diseases of the Para-Thyroid Glands	...	...	...	...	...	
62. Diseases of the Thymus ...	...	1	1	1	...	
63. Diseases of the Supra-Renal Glands	...	...	...	...	...	
64. Diseases of the Spleen ...	...	8	...	8	...	
65. Leukæmia—						
(*a*) Leukæmia ...	1	8	4	9	...	
(*b*) Hodgkin's Disease ...	1	...	...	1	...	
66. Alcoholism	1	105	...	106	1	
67. Chronic poisoning by mineral substances (lead, mercury, etc.) ...	...	16	1	16	...	
68. Chronic poisoning by organic substances (Morphia, Cocaine, etc.) ...	3	234	3	237	2	
(*a*) Opium habit ...	22	283	...	305	1	
69. Other General Diseases—	10	4	1	14	...	
Auto-intoxication ...	...	1	...	1	...	
Purpura Hæmorrhagica	...	3	3	3	...	
Hæmophilia ...	...	...	...	...	...	
Diabetes Insipidus ...	...	3	...	3	...	
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—						
70. Encephalitis (not including Encephalitis Lethargica)	...	20	5	20	...	
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	...	38	29	38	4	
72. Locomotor Ataxia ...	6	25	...	31	8	
73. Other affections of the Spinal Cord ...	5	15	6	20	5	
Total carried forward ...	2,273	19,289	2,542	21,552	1,925	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	2,273	19,289	2,542	21,552	1,925	
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.—*(contd.)*						
74. Apoplexy—						
(*a*) Hæmorrhage ...	1	49	33	50	6	
(*b*) Embolism ...	...	...	...	...	...	
(*c*) Thrombosis ...	1	5	1	6	...	
75. Paralysis—						
(*a*) Hemiplegia ...	39	111	9	150	50	
(*b*) Other Paralysis ...	23	71	...	94	20	
76. General Paralysis of the Insane	31	120	20	151	27	
77. Other forms of Mental Alienation	1,166	600	*93	1,766	1,237	
78. Epilepsy	6	75	5	81	9	
79. Eclampsia, Convulsions (non-puerperal) 5 years or over	...	7	4	7	...	
80. Infantile Convulsions ...	...	41	18	41	...	
81. Chorea	1	3	...	4	3	
82. A.—Hysteria ...	1	46	...	47	3	
B.—Neuritis	11	201	1	212	15	
C.—Neurasthenia ...	...	29	...	29	...	
83. Cerebral Softening ...	...	10	9	10	...	
84. Other affections of the Nervous System such as Paralysis Agitans ...	6	86	1	92	7	
85. Affections of the Organs of Vision—						
(*a*) Diseases of the Eye	2	56	...	58	12	
(*b*) Conjunctivitis ...	14	296	...	310	14	
(*c*) Trachoma ...	11	56	...	67	1	
(*d*) Tumours of the Eye	3	19	...	22	1	
(*e*) Other affections of the Eye ...	180	494	...	674	161	
86. Affections of the Ear or Mastoid Sinus ...	9	223	1	232	12	
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM—						
87. Pericarditis	...	9	5	9	1	
88. Endocarditis	1	32	22	33	2	
89. Angina Pectoris ...	...	2	...	2	...	
90. Other Diseases of the Heart—						
(*a*) Valvular :—	1	32	6	33	4	
Mitral ...	12	80	30	92	3	
Aortic ...	4	83	17	87	5	
Tricuspid ...	...	1	...	1	...	
Pulmonary ...	...	...	...	...	...	
(*b*) Myocarditis ...	7	193	72	200	12	
Total carried forward ...	3,803	22,309	2,909	26,112	3,530	

* 93 of these deaths were from:—Malaria (6) Enteric fever (3) Dysentery (26) Pulmonary Tuberculosis (17) Pneumonia (15) Beri-Beri (3) Heart isease (6) Cellulitis (4) Cerebral hæmorrhage (2) etc.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	3,803	22,309	2,909	26,112	3,530	
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.—*(contd.)*						
91. Diseases of the Arteries—						
(*a*) Aneurism ...	2	21	4	23	2	
(*b*) Arterio-Sclerosis ...	9	91	51	100	11	
(*c*) Other diseases ...	...	6	1	6	1	
92. Embolism or Thrombosis (non-cerebral) ...	...	12	4	12	2	
93. Diseases of the Veins ...	...	1	...	1	...	
Hæmorrhoids ...	6	220	...	226	6	
Varicose Veins ...	1	15	...	16	2	
Phlebitis	...	10	...	10	1	
94. Diseases of the Lymphatic System	2	2	...	4	...	
Lymphangitis ...	1	27	...	28	1	
Lymphadenitis, Bubo (non-specific) ...	7	266	...	273	23	
95. Hæmorrhage of undetermined cause ...	...	19	10	19	...	
96. Other affections of the Circulatory System ...	2	38	5	40	...	
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM—						
97. Diseases of the Nasal Passages	2	73	...	75	2	
Adenoids	...	5	...	5	...	
Polypus	2	21	...	23	2	
Rhinitis	2	24	...	26	...	
Coryza	...	205	...	205	...	
98. Affections of the Larynx—						
Laryngitis	...	11	1	11	...	
99. Bronchitis—						
(*a*) Acute	42	804	1	846	12	
(*b*) Chronic ...	29	313	8	342	19	
100. Broncho-Pneumonia ...	17	572	417	589	12	
101. Pneumonia—						
(*a*) Lobar	14	645	321	659	17	
(*b*) Unclassified ...	3	31	14	34	2	
102. Pleurisy, Empyema ...	8	138	16	146	12	
103. Congestion of the Lungs ...	...	2	...	2	...	
104. Gangrene of the Lungs ...	...	20	11	20	1	
105. Asthma	40	560	6	600	28	
106. Pulmonary Emphysema ...	...	13	2	13	1	
Atalectasis	...	1	...	1	...	
107. Other affections of the Lungs	1	27	9	28	1	
Pulmonary Spirochætosis	2	...	...	2	...	
Total carried forward ...	3,995	26,502	3,790	30,497	3,688	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	3,995	26,502	3,790	30,497	3,688	
VI.—DISEASES OF THE DIGESTIVE SYSTEM—						
108. A.—Diseases of Teeth or Gums—						
Caries, Pyorrhœa, etc. ...	7	263	5	270	8	
B.—Other affections of the Mouth—						
Stomatitis ...	...	28	1	28	1	
Glossitis, etc. ...	3	27	4	30	2	
109. Affections of the Pharynx or Tonsils ...	...	14	...	14	1	
Tonsillitis ...	8	535	...	543	8	
Pharyngitis ...	1	70	...	71	3	
110. Affections of the Œsophagus	...	8	1	8	1	
111. A.—Ulcer of the Stomach	11	116	19	127	7	
B.—Ulcer of the Duodenum	3	50	5	53	7	
112. Other affections of the Stomach—						
Gastritis	13	341	1	354	8	
Dyspepsia, etc. ...	7	182	3	189	4	
113. Diarrhœa and Enteritis—						
Under two years ...	10	343	90	353	9	
114. Diarrhœa and Enteritis—						
Two years and over ...	18	491	43	509	22	
Colitis	1	85	3	86	4	
Ulceration	...	...	...	...	...	
114A. Sprue	...	17	...	17	2	
115. Ankylostomiasis ...	103	1,267	28	1,370	37	
116. Diseases due to Intestinal Parasites—						
(*a*) Cestoda (Tænia) ...	...	6	...	6	6	
(*b*) Trematoda (Flukes)	...	...	...	...	...	
(*c*) Nematoda (other than Ankylostoma—						
Ascaris ...	19	419	3	438	14	
Trichocephalus dispar ...	...	...	...	...	...	
Trichina ...	...	2	...	2	...	
Dracunculus ...	...	3	...	3	...	
Strongylus ...	...	...	...	...	...	
Oxyuris ...	...	2	...	2	...	
(*d*) Coccida ...	...	...	...	...	...	
(*e*) Other parasites ...	1	4	...	5	...	
(*f*) Unclassified ...	...	2	...	2	...	
117. Appendicitis	12	180	14	192	12	
118. Hernia	13	219	14	232	9	
Total carried forward ...	4,225	31,176	4,024	35,401	3,853	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	4,225	31,176	4,024	35,401	3,853	
VI.—DISEASES OF THE DIGESTIVE SYSTEM.—*(contd.)*						
119. A.—Affections of the Anus, Fistula, etc. ...	8	255	1	263	17	
B.—Other affections of the Intestines—	3	57	16	60	4	
Enteroptosis ...	...	...	...	...	...	
Constipation ...	1	150	...	151	1	
120. Acute Yellow Atrophy of the Liver	...	...	...	...	...	
121. Hydatid of the Liver ...	1	1	2	2	...	
122. Cirrhosis of the Liver—						
(*a*) Alcoholic ...	...	1	1	1	...	
(*b*) Other forms ...	22	167	74	189	13	
123. Biliary Calculus ...	...	8	...	8	2	
124. Other affections of the Liver	...	4	2	4	...	
Abscess	2	41	12	43	2	
Hepatitis	2	64	2	66	1	
Cholecystitis, Cholangitis	4	98	22	102	5	
Jaundice	2	56	2	58	3	
125. Diseases of the Pancreas	...	1	...	1	1	
126. Peritonitis (of unknown cause)	...	60	41	60	1	
127. Other affections of the Digestive System ...	2	69	1	71	2	
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)—						
128. Acute Nephritis ...	14	220	37	234	26	
129. Chronic	38	391	119	429	29	
130. A.—Chyluria ...	...	4	1	4	2	
B.—Schistosomiasis ...	...	...	...	...	...	
131. Other affections of the Kidneys—						
Pyelitis, etc. ...	5	178	22	183	6	
132. Urinary Calculus ...	3	36	1	39	...	
133. Diseases of the Bladder ...	3	11	...	14	...	
Cystitis	5	76	9	81	1	
134. Diseases of the Urethra—						
(*a*) Stricture ...	5	76	1	81	6	
(*b*) Other	2	68	3	70	6	
135. Diseases of the Prostate—						
Hypertrophy ...	...	...	...	...	...	
Prostatitis, etc. ...	...	16	...	16	...	
Total carried forward ...	4,347	33,284	4,393	37,615	3,981	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	4,347	33,284	4,393	37,615	3,981	
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).—*(contd.)*						
136. Diseases (non-Venereal) of the Genital Organs of Man—						
Epididymitis ...	2	65	...	67	...	
Orchitis	3	53	...	56	...	
Hydrocele ...	4	148	1	152	5	
Ulcer of Penis, etc. ...	6	84	...	90	1	
137. Cysts or other non-malignant Tumours of the Ovaries	1	41	2	42	2	
138. Salpingitis	1	39	...	40	4	
Abscess of the Pelvis ...	...	12	1	12	...	
139. Uterine Tumours (non-malignant)	1	26	3	27	...	
140. Uterine Hæmorrhage (non-puerperal)	...	2	...	2	...	
141. A.—Metritis	1	37	...	38	...	
B.—Other affections of the Female Genital Organs ...	4	84	1	88	4	
Displacements of Uterus	2	29	...	31	...	
Amenorrhœa	...	6	...	6	...	
Dysmenorrhœa ...	...	15	...	15	...	
Leucorrhœa	3	23	...	26	1	
142. Diseases of the Breast (non-puerperal)—						
Mastitis	2	14	...	16	...	
Abscess of Breast ...	...	12	...	12	1	
VIII.—PUERPERAL STATE—						
143. A.—Normal Labour ...	86	3,664	...	3,750	78	
B.—Accidents of Pregnancy—						
(*a*) Abortion ...	...	80	...	80	1	
(*b*) Ectopic Gestation ...	...	6	...	6	1	
(*c*) Other accidents of Pregnancy ...	...	165	14	165	5	
144. Puerperal Hæmorrhage ...	...	88	13	88	...	
145. Other accidents of Parturition	...	689	12	689	4	
146. Puerperal Septicæmia ...	...	45	28	45	...	
147. Phlegmasia Dolens ...	...	2	1	2	...	
148. Puerperal Eclampsia ...	...	21	10	21	1	
149. Sequelæ of Labour ...	...	...	...	...	...	
150. Puerperal affections of the Breast	...	4	...	4	...	
Total carried froward ...	4,463	38,738	4,479	43,201	4,089	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	4,463	38,738	4,479	43,201	4,089	
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES—						
151. Gangrene	3	49	17	52	2	
152. Boil	5	98	2	103	3	
Carbuncle	6	73	3	79	3	
153. Abscess	42	867	5	909	34	
Whitlow	...	33	...	33	3	
Cellulitis	29	407	15	436	22	
154. A.—Tinea	1	73	...	74	4	
B.—Scabies	19	214	...	233	8	
155. Other Diseases of the Skin	9	225	2	234	12	
Erythema	...	3	...	3	1	
Urticaria	...	12	...	12	...	
Eczema	7	247	...	254	5	
Herpes	1	28	...	29	1	
Psoriasis	1	13	...	14	...	
Elephantiasis ...	3	20	...	23	3	
Myiasis	1	19	...	20	...	
Chigoes	...	...	...	...	...	
Cutaneous Leishmaniasis	...	1	...	1	...	
Ulcers	254	2,403	4	2,657	218	
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS)—						
156. Diseases of Bones—						
Osteitis	1	40	2	41	4	
157. Diseases of Joints ...	...	6	...	6	...	
Arthritis	25	279	...	304	20	
Synovitis	1	41	...	42	4	
158. Other Diseases of Bones or Organs of Locomotion	...	...	...	...	...	
XI.—MALFORMATIONS—						
159. Malformations—						
Hydrocephalus ...	1	2	2	3	...	
Hypospadias ...	...	2	1	2	...	
Spina Bifida, Imperforate Anus, etc. ...	1	27	9	28	1	
XII.—DISEASES OF INFANCY—						
160. Congenital Debility ...	...	6	6	6	...	
161. Premature Birth ...	...	22	19	22	...	
162. Other affections of Infancy	...	14	7	14	...	
163. Infant neglect (infants of three months or over) ...	...	...	...	...	...	
Total carried forward ...	4,887	44,050	4,511	49,021	4,448	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Continued*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	4,887	44,050	4,511	49,021	4,448	
XIII.—AFFECTIONS OF OLD AGE—						
164. Senility	48	260	73	308	39	
Senile Dementia ...	4	8	...	12	...	
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—						
165. Suicide by Poisoning ...	...	25	5	25	...	20 attempted suicide
166. Corrosive Poisoning (intentional)	...	15	6	15	...	
167. Suicide by Gas Poisoning	...	...	...	...	...	
168. Suicide by Hanging or Strangulation ...	...	12	11	12	...	1 attempted suicide
169. Suicide by Drowning ...	1	15	1	16	1	15 attempted suicide
170. Suicide by Firearms ...	...	3	3	3	...	
171. Suicide by cutting or stabbing Instruments ...	...	18	4	18	...	14 attempted suicide
172. Suicide by jumping from a height	...	2	1	2	...	1 attempted suicide
173. Suicide by crushing ...	...	...	...	...	...	
174. Other Suicides ...	...	1	1	1	...	
175. Food Poisoning—						
Botulism	...	14	...	14	...	
176. Attacks of poisonous animals	...	5	...	5	...	
Snake Bite ...	...	11	...	11	1	
Insect Bite ...	..	12	...	12	...	
177. Other accidental Poisonings	...	13	1	13	...	
178. Burns (by Fire) ...	...	57	4	57	...	
179. Burns (other than by Fire)	2	229	11	231	6	
180. Suffocation (accidental) ...	...	...	...	...	...	
181. Poisoning by Gas (accidental)	...	1	...	1	...	
182. Drowning (accidental) ...	1	5	...	6	...	
183. Wounds (by Firearms, war excepted)	...	22	...	22	...	
184. Wounds (by cutting or stabbing Instruments) ...	37	702	5	739	21	
185. Wounds (by Fall) ...	27	831	6	858	23	
186. Wounds (in Mines or Quarries)	1	2	1	3	...	
187. Wounds (by Machinery) ...	5	70	...	75	4	
188. Wounds (crushing, *e.g.* Motor Cars, Railway Accidents, etc.)	23	1,190	20	1,213	33	
189. Injuries inflicted by Animals, Bites, Kicks, etc.	4	93	2	97	1	
Total carried forward ...	5,040	47,750	4,730	52,790	4,577	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1931—*Concluded*

DISEASES	Remaining in Hospital at end of 1930	YEARLY TOTAL		Total Cases Treated	Remaining in Hospital at end of 1931	REMARKS
		Admissions	Deaths			
Brought forward ...	5,040	47,750	4,730	52,790	4,577	
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—(*contd.*).						
190. Wounds inflicted on Active Service	...	...	...	...	...	
191. Executions of civilians by Hangmen	...	...	...	...	...	
192. A.—Over fatigue ...	...	13	...	13	...	
B.—Hunger or Thirst ...	...	1	...	1	...	
193. Exposure to Cold, Frost bite, etc.	2	1	...	3	...	
194. Exposure to Heat—						
Heatstroke	...	1	...	1	...	
Sunstroke	...	1	...	1	...	
195. Lightning Stroke ...	...	...	...	...	...	
196. Electric Shock ...	...	1	...	1	...	
197. Murder by Firearms ...	...	1	1	1	...	
198. Murder by cutting or stabbing Instruments ...	...	1	1	1	...	
199. Murder by other means ...	...	2	2	2	...	
200. Infanticide (Murder of an infant under one year) ...	...	1	1	1	...	
201. A.—Dislocation ...	5	45	1	50	1	
B.—Sprain	2	104	...	106	1	
C.—Fracture	86	608	87	694	47	
202. Other external injuries ...	31	1,476	30	1,507	59	
203. Deaths by Violence of unknown cause ...	...	...	...	...	...	
XV.—ILL-DEFINED DISEASES—						
204. Sudden Death (Cause unknown)	...	...	...	...	...	
205. A.—Diseases not already specified or ill-defined ...	76	1,071	16	1,147	53	
Ascites	...	13	6	13	1	
Œdema	...	...	...	...	...	
Asthenia, Marasmus, etc.	1	89	33	90	...	
Shock	...	10	1	10	...	
Hyperpyrexia ...	...	2	1	2	1	
Pyrexia of Uncertain Origin	16	1,269	20	1,285	46	
B.—Malingering ...	6	135	...	141	1	
XVI.—DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS	1	16	...	17	1	
Contacts of Infectious diseases	...	163	...	163	...	
Accompanying patients ...	11	608	...	619	17	
Observation for Lunacy ...	1	155	...	156	1	
	5,278	53,537	4,930	58,815	4,806	