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STRAITS SETTLEMENTS.

ANNUAL REPORT

ON THE

MEDICAL DEPARTMENT

FOR THE YEAR

1922

BY

A. L. HOOPS,

Principal Civil Medical Officer, Straits Settlements.



PUBLISHED BY AUTHORITY.

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The Straits Settlements Medical Report for the year 1922.

HEALTH AND POPULATION.

1. The following table gives the census population for 1921 and estimated population for 1922:—

SETTLEMENT, OR PROVINCE.	POPULATION.		Births No.		Deaths No.		Birth Ratio per mille.		Death Ratio per mille.	
	Census, 1921.	Estima- ted 1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.
Singapore ...	417,859	435,614	12,315	12,458	14,111	13,616	29'47	28'60	33'30	31'26
Labuan ...	5,909	5,844	203	211	199	201	34'35	36'11	33'67	34'39
Pe ⁿ ang ...	162,310	164,495	5,193	5,177	5,126	5,253	32'00	31'47	31'58	32'11
Province Wellesley ...	130,335	130,478	4,624	4,533	3,730	4,251	35'48	34'74	28'61	32'58
Dindings ...	11,927	12,546	333	352	366	315	27'92	28'06	30'69	25'10
Malacca ...	153,599	157,160	6,104	4,992	4,468	4,128	39'73	31'76	29'09	26'26
Total ...	881,939	906,137	28,772	27,723	28,000	27,804	32'62	30'47	31'54	30'68

The figures for the European population are:—

—	POPULATION.		Births No.		Deaths No.		Birth Ratio per mille.		Death Ratio per mille.	
	Census, 1921.	Estima- ted 1922.	1921.	1922.	1921.	1922.	1921.	1922.	1921.	1922.
Straits Settlements.	8,045	8,403	259	240	73	76	32'19	28'16	9'05	9'04

2. The total immigrants from China in the last 5 years were:—

1918 ...	...	...	...	...	...	58,421
1919 ...	...	...	...	...	...	70,912
1920 ...	...	...	...	...	...	126,077
1921 ...	...	...	...	...	...	191,043
1922 ...	...	...	...	...	...	132,886

Births.

3. The births registered during the year numbered 27,723 as compared with 28,772 in 1921. The ratio per mille was 30'47, as against 32'62 in 1921 and 29'63 in 1920.

Deaths.

4. The deaths from all causes registered in 1922 were 27,804, as against 28,000 in 1921 and 28,710 in 1920: this is equal to a ratio of 30'68 per mille, and is the second lowest death-rate on record. There was a drop of two per mille in Singapore, nearly 3 per mille in Malacca and over five per mille in the Dindings.

This is probably not unconnected with increased public health activities, and in Malacca with the work done by the Agricultural Medical Board. There was a slight increase in Labuan and Penang and a rise of nearly 4 per mille in the Province Wellesley death-rate.

The highest death-rate in the past 10 years 43·85 per mille was during the Influenza epidemic in 1918.

Infantile Mortality.

5. The infantile mortality rate was 195·22 per mille, as against 179·23 per mille in 1921 and 194·86 in 1920. These figures are exclusive of infants born elsewhere than in the Colony.

European Officers.

6. Table showing the sick, invaliding and deaths of European Officials of all ranks:—

	1921	1922.
(1) Total number of Officials on the Establishment	481	538
(2) Average number resident in the Colony	395	450
(3) Total number on sick list	386	213
(4) Total number of days on sick list ...	2,728	1,786
(5) Total number invalided	11	2
(6) Total deaths	4	5
(7) Total deaths in Colony	2	4
(8) Average daily number on the sick list	1·05	·12
(9) Average number of days on the sick list	7·07	8·38
(10) Percentage of deaths to average number resident	1·05	1·11

Zymotic Diseases.

7. The following table gives the number of cases of Zymotic diseases occurring in the Colony during 1921 and 1922, excluding imported cases:—

SETTLEMENT.	PLAGUE.				CHOLERA.				SMALL-POX.				CEREBRO-SPINAL MENINGITIS.			
	1921.		1922.		1921.		1922.		1921.		1922.		1921.		1922.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Singapore ...	27	27	39	39	2	1	1	1	147	34	260	68	70	38	32	26
Penang ...	...	...	..	...	...	...	...	...	3	2	3	...	13	13	47	13
Province Wellesley ...	...	...	...	...	4	3	2	1	4	...	24	8	3	3	3	3
Malacca ...	...	...	...	...	...	...	...	...	1	1	43	4	...	...	3	3
Labuan ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dindings ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total ...	27	27	39	39	6	4	3	2	155	37	330	80	86	54	85	45

Vaccination.

8. Two hundred and thirteen thousand four hundred and nineteen vaccinations or re-vaccinations were performed during the year. Of these 31,913 were successful, 1,431 modified, 900 failed and 179,175 were not seen. 176,411 of the inoculations were performed in Singapore, where small-pox was prevalent until May, 1922, but ceased after a house to house vaccination campaign.

Diphtheria.

9. The number of deaths from Diphtheria was 13. Thirty cases were treated in hospitals, of which three ended fatally.

Enteric Fever.

10. Enteric Fever contributed 53 deaths, as against 117 in 1921. One hundred and sixteen cases were treated in hospitals with 45 deaths, as compared with 174 cases and 86 deaths in 1921.

Beri-beri.

11. Beri-beri caused 1,388 deaths, as against 1,299 deaths in 1921, 1,025 deaths in 1920 and 1,430 deaths in 1919. Out of 1,175 cases treated in hospitals 168 terminated fatally.

It will be remembered that the fall in 1920 coincided with Food Control when the use of parboiled or undermilled rice supplemented by other articles of diet was increased, and that of polished white rice diminished.

Pneumonia and Influenza.

12. Pneumonia contributed 1,608 deaths, as against 1,230 and Influenza 234, against 207 in the previous year. Many deaths due to Influenza are doubtless registered as fever not specified.

Venereal Diseases.

		1921.	1922.
13.	In-patients	4,319	4,421
	Out-patients	2,462	3,448
	Total treated	6,781	7,869

Organic arsenical preparations were used in conjunction with the older remedies in the treatment of Syphilitic cases. Bismuth tartrate was tried extensively in the latter part of the year. Although handbills were distributed to all in-coming ships, the attendance of merchant-seamen at the Venereal Clinic in Tanjong Pagar Dock was disappointing. It was found that the majority of sufferers from Syphilis stopped treatment as soon as their symptoms disappeared.

Tuberculosis.

14. Two thousand nine hundred and sixty-six deaths were registered as due to Phthisis and Tuberculosis, as compared with 3,258 in 1921 and 3,336 in 1920. The total admissions to hospitals were 1,552 with 722 deaths.

Dysentery.

15. Dysentery contributed 1,085 deaths as against 1,090 deaths in 1921. It is not possible to classify all deaths under this head into Amoebic or Bacillary as many of those dying outside hospital are not seen by a medical man.

Of the 1,497 cases treated in hospitals, 605 died, against 1,452 with 490 deaths in 1921. The recovery rate in the General Hospitals was good.

The heavy mortality occurred in the large district hospitals amongst paupers whose general condition was very poor and who were usually in an advanced stage of the disease before admission.

Take for example Tan Tock Seng's Hospital, Singapore:—

	<i>Amoebic.</i>	<i>Bacillary.</i>	<i>Mixed.</i>	<i>Unclassified.</i>	<i>Total.</i>
Admissions ...	282	157	Nil.	88	525
Deaths ...	178	117	—	8	303

While in the General Hospital, Singapore, the figures were:—

	<i>Amoebic.</i>	<i>Bacillary.</i>	<i>Mixed.</i>	<i>Unclassified.</i>	<i>Total.</i>
Admissions ...	83	29	3	Nil.	115
Deaths ...	10	12	3	—	25

Malaria.

16. Malaria was the cause of 3,977 deaths, as against 4,703 deaths in 1921 and 4,690 deaths in 1920. Six thousand nine hundred and eighty-nine cases were admitted into hospitals with 394 deaths, as compared with 7,681 with 567 deaths in the previous year.

Ankylostomiasis.

17. The total numbers of Ankylostomiasis cases treated and of deaths therefrom in the hospitals of the Colony for the last 5 years are:—

<i>Year.</i>		<i>Remained from pre-vious year.</i>	<i>Admitted during the year.</i>	<i>Total treated.</i>	<i>Deaths.</i>
1918 ...	...	122	1,592	1,714	385
1919 ...	...	78	1,110	1,188	241
1920 ...	...	69	1,432	1,504	312
1921 ...	...	100	1,844	1,944	278
1922 ...	...	91	2,064	2,155	163

An instructive account by Dr. JOHN TULL of the treatment of this disease is included in the report of the District Hospital, Penang. From records by him, and by Dr. MACGREGOR (Tan Tock Seng's Hospital) it does not appear on the whole that Carbon Tetrachloride is an effectual as oil of Chenopodium. The only way to stamp out this disease is to teach the whole population, and especially those in rural districts, to use latrines.

Leprosy.

18. The systematic treatment of Leprosy was continued and extended. Four cases were discharged as cured, three in Penang and one in Singapore. E. C. C. O. (Muir) and Sodium hydncarpate (Rogers) were the most successful remedies. Fresh air, exercise, good food, and cleanliness, are important adjuvants. Full reports from the officers in charge of Lepar Asylums are enclosed. The rapid results hoped for at first are unlikely to be realised. As a rule prolonged treatment of cases that are not too advanced combined with healthy living, will be necessary to effect a cure.

19. Total in-patients treated and mortality in all Hospitals of the Colony for the past six years:—

Year.	Number treated.			Number of Deaths.			Percentage of Deaths to Total treated.		
	Europeans Wards.	Asiatic Wards.	Total.	Europeans Wards.	Asiatic Wards.	Total.	Europeans Wards.	Asiatic Wards.	Total.
1917 ...	1,904	34,559	36,463	83	4,006	4,089	4'36	11'59	11'21
1918 ...	3,197	39,836	43,033	143	5,698	5,841	4'47	14'30	13'57
1919 ...	2,944	37,812	40,756	139	4,602	4,741	4'72	12'17	11'69
1920 ...	3,454	39,343	42,797	165	4,120	4,285	4'77	10'47	10'01
1921 ...	2,184	41,309	43,493	74	4,311	4,385	3'39	10'44	10'09
1922 ...	2,517	39,682	42,199	105	4,031	4,136	4'17	10'16	9'80

Singapore Hospitals.

20. One thousand eight hundred and thirty-two cases were treated in the European Wards of the General Hospital during the year as against 1,638 in 1921. The number in the Asiatic Wards was 6,010 as against 6,532 in 1921. The deaths totalled 527 as compared with 666 in 1921.

21. Tan Tock Seng's Hospital, Singapore, treated 11,338 patients during the year with 1,578 deaths. The average daily sick was 689'20 against 703'80 in the previous year.

22. Four hundred and thirty-one patients remained in the Lunatic Asylum, Singapore, on 1st January, 1922; the admissions during the year were 321, making a total treated of 752 (54 Europeans and 698 Asiatics). The deaths totalled 5 Europeans and 70 Asiatics; the daily average of inmates was 460.

23. The total patients treated at the Kandang Kerbau Women's Hospital were 704 (1 European, 74 Eurasians and 629 Asiatics). The total deaths were 80 (1 European, 5 Eurasians and 74 Asiatics).

Penang Hospitals.

24. The number of patients treated in all Penang Hospitals including the Dindings totalled 11,260. Of these 184 were Europeans and 11,076 Asiatics. The total deaths were 991 (5 Europeans and 986 Asiatics).

Province Wellesley Hospitals.

25. One hundred and sixty-two patients remained in the Hospitals in Province Wellesley on 1st January, 1922, and 3,712 cases were admitted during the year making a total treated of 3,874—all these were Asiatics. The deaths totalled 335. The total cases treated in the previous year were 2,976 with 289 deaths.

Malacca Hospitals.

26. The Hospitals at Durian Daun and Jasin treated 4,124 in-patients during the year with 436 deaths, as compared with 4,241 in-patients and 450 deaths in the previous year. Seventy-three Europeans were treated with two deaths.

Labuan Hospital.

27. The number of in-patients treated in the Civil Hospital, Labuan, was 179 (of whom 1 was a European) with a mortality of 10. The number in the previous year was 292 with 14 deaths.

All Hospitals.

28. The total number of in-patients treated and the total deaths in the Hospitals of the Colony for some of the more important diseases are shown in the subjoined table with the corresponding figures for the five preceding years:—

Diseases.	1918.		1919.		1920.		1921.		1922.	
	Total treated.	Total deaths.	Total treated.	Total deaths.	Total treated.	Total deaths.	Total treated.	Total deaths.	Total treated.	Total deaths.
Malarial Fevers ...	7,726	766	6,446	472	7,539	548	7,681	567	6,989	394
Dysentery ...	2,481	739	1,708	632	1,451	462	1,452	490	1,497	605
Diarrhœa ...	407	41	420	35	460	23	451	23	390	9
Beri-beri ...	1,725	283	1,556	236	363	43	684	184	1,175	168
Phthisis & Tuberculosis	1,337	692	1,442	686	1,450	698	1,500	717	1,552	722
Enteric Fever ...	251	106	142	63	167	61	174	86	116	45
Ulcers ...	2,432	2	3,196	1	4,027	5	4,169	3	3,552	9
Venereal Diseases ...	2,774	101	3,451	77	3,836	52	4,319	44	4,421	140
Ankylostomiasis ...	1,714	385	1,183	241	1,501	312	1,944	278	2,155	163

Out patient Dispensaries.

29.—(1) Out-patients treated at the various out-patient dispensaries throughout the Colony were:—

Year.	Total patients.
1922 ...	58,005
1921 ...	43,070
1920 ...	30,535

The total attendances in 1922 were ninety-nine thousand four hundred and eighty-eight. Both the number of out-patients and the attendances have nearly doubled since 1920.

(2) The first of the five projected rural dispensaries for Singapore was completed and opened at Paya Lebar in November; the construction of the second at Bukit Timah was nearly finished. It is hoped that in 1923, two more rural dispensaries may be started in Singapore at Pasir Panjang and Katong.

(3) A number of Government servants of whom no full return is available have been treated in their own homes, or as out-patients at hospitals where there is no regular out-patient department.

(4) In Malacca and Province Wellesley a beginning has been made with the treatment of Malays, suffering from Yaws, in their own homes, or at such centres as police stations, penghulu's houses, etc. A considerable extension of this system is expected in the coming year. As a rule Yaws is common in rural districts where there was formerly little venereal disease: the prevalence of the latter has, however, increased in rural areas with the spread of rubber estates. In towns it is probable that every second adult has, or has had venereal disease.

Health.

30. The reports sent in by the Chief Health Officer, Singapore, are a record of useful work and steady progress, which is reflected by a lessened death-rate in the rural areas under his charge. In Malacca too a lower death-rate points to the success of the Malacca Agricultural Medical Board Staff, and of the Government Health Officer. In Province Wellesley the rural death-rate is unsatisfactory and in the rural areas of Penang Island it has risen to 54.12 per thousand. This emphasizes the necessity for expenditure on anti-malarial measures, and for the proper training of Sanitary Inspectors.

31. The medical inspection of School children has been continued and extended throughout the year. The outstanding fact is the need for dental treatment amongst young children. In the large towns over 50 per cent of all School children are affected with serious dental caries.

College of Medicine.

32. The total number of students in the College was 135, of whom 16 joined during the year. Ten students qualified. The number of Licentiates now totals 134.

Buildings, etc.

33. Increased activity has been shewn in making up the leeway of years.

The new Convalescent Home at Labrador, which owes its inception to Lady Guillemard, was opened in September, 1922, for occupation by patients and nurses needing change.

Thanks are due to Lady Guillemard for presenting rottan furniture, cushions, and pictures to the Home, and for her continued kind interest in its welfare.

The Home is much used and appreciated.

At the General Hospital, Singapore, the new nurses home, the third class female wards, and one first class ward are under construction. In Penang, additions to the nurses home were completed, and additions to other parts of the General Hospital were begun. In the District Hospital, Penang, the building of the pathological laboratory was commenced.

Miscellaneous.

34. The Principal Civil Medical Officer was appointed a member of the Legislative Council by office, with effect from 1st January, 1923.

Sixty-nine Medical Practitioners were registered during the year. The total on the Register numbers 699. Seventy-two licences were issued to Chemists and Druggists, and 37 licences to Dentists under the Deleterious Drugs Ordinance; 79 licences were issued under the Poisons Ordinance.

The Hospitals Board ambulance in Singapore attended to 389 calls for conveying cases to hospitals.

The following gentlemen were appointed members of the Hospitals Board for the year, excluding Government ex-officio members:—

Dr. J. A. R. GLENNIE.

Dr. E. A. ELDER.

Mr. H. B. WARD.

Mr. TAN KHEAM HOCK.

Mr. H. B. BAKER.

Dr. A. S. MCKERN.

I record with deep regret the sudden death on 21st April, 1922, of Mr. TAN KHEAM HOCK, an old and valued member of the Board and of the Council of the Medical College. His place has been filled by Dr. CHEONG CHEE HAI.

Staff.

35. Dr. A. E. HORN, C.M.G., went on leave in June, 1922, after 13 months resident service as Director of Medical and Sanitary Services, Malaya.

During this period he prepared Schemes for all branches of the Department.

Dr. HORN was awarded the C.M.G., before his departure.

He retired at the conclusion of his leave and has since been appointed Secretary to the Medical Advisory Committee at the Colonial Office.

The department lost the services of a valuable officer when Dr. JOHN HARRISON, acting Chief Medical Officer, Malacca, died of Erysipelas on 21st March, 1922, after a short illness.

Dr. V. B. KYLE, resigned the service while on leave, on 8th September, 1922.

Dr. T. E. MARSHALL, a temporary Medical Officer employed at the General Hospital, Singapore, resigned on 7th December.

Dr. J. S. ENGLISH, assumed duty as Professor of Midwifery on 26th February, 1922.

Dr. G. HARROWER, was appointed Professor of Anatomy on 19th April, 1922.

Dr. K. BLACK, who was originally engaged as a Medical Officer with special qualifications on 21st April, 1921, was appointed Professor of Surgery on 21st April, 1922. On his return from leave in September, Dr. J. S. WEBSTER, assumed duty as Professor of Medicine.

Dr. L. W. EVANS, Medical Officer, arrived from home on the 3rd of January, 1922, and was posted for duty as House Surgeon at the General Hospital, Singapore.

Dr. J. PORTELLI, was appointed Medical Officer on the 3rd of March, 1923, and posted at the General Hospital, Penang.

Dr. A. B. JESSER COOPE and Dr. R. B. HAWES, were appointed temporary Medical Officers on 1st May, 1922, and 19th June, 1922, respectively vice Dr. L. J. PAVILLET and Dr. W. F. TODD whose services were dispensed with.

Dr. JESSER COOPE, was seconded for service in Trengganu on 7th October, 1922.

Mr. M. JAMIESON, was appointed an Assistant Analyst in Singapore on 15th March, 1922.

Dr. H. W. FURNIVALL, who was seconded as Residency Surgeon, Kelantan, on 24th September, 1921, returned to the Colony and resumed duty as Medical Officer, Butterworth, Province Wellesley, on 21st November, 1922.

Dr. J. R. McVAIL, was seconded for service in Kelantan, on 18th November, 1922.

The following officers proceeded on leave during the year:—

<i>Name.</i>	<i>Appointment.</i>	<i>Date.</i>
Dr. F. R. Sayers	Senior Health Officer, Penang	9th February, 1922.
Dr. (Mrs.) S. Winstedt	Lady Medical Officer	4th April, 1922.
Dr. J. W. Adams	Surgeon, Penang	20th April, 1922.
Dr. W. A. Taylor	Chief Medical Officer, Malacca	15th September, 1922.

The following officers returned from leave during the year:—

<i>Name.</i>	<i>Appointment.</i>	<i>Date.</i>
Dr. J. R. McVail	... Medical Officer	... 21st January, 1922.
Mr. J. W. Haddon	... Assistant Analyst	... 5th February, 1922.
Dr. W. H. Fry	... Chief Medical Officer, Penang	... 25th May, 1922.
Dr. G. H. Macalister	... Principal, College of Medicine	... 17th June, 1922.
Dr. J. S. Webster	... Professor of Medicine	... 3rd September, 1922.
Dr. J. W. Adams	... Surgeon, Penang	... 6th November, 1922.
Dr. (Mrs.) S. Winstedt	... Lady Medical Officer	... 3rd December, 1922.

A. L. HOOPS,
*Principal Civil Medical Officer,
Straits Settlements.*

APPENDIX A.
SINGAPORE.

I.

GENERAL HOSPITAL.

REPORT BY JOHN GRAY, B.A., M.D., *Chief Medical Officer, Singapore.*

1. Dr. W. A. TAYLOR acted as Chief Medical Officer until May 27 and Dr. W. H. FRY, from that date until November 6, when Dr. J. GRAY assumed administrative charge.

2. *Work done*:—A comparative table from 1918 to 1922 is attached.

Year.	Number of patients treated in 1st and 2nd Class Wards.	Died.	Percentage.	Number of patients treated in 3rd Class Wards.	Died.	Percentage.
1918	1,206	59	4·89	4,683	499	13·01
1919	1,558	83	5·32	4,771	470	9·85
1920	1,812	91	4·96	5,925	518	8·74
1921	1,638	87	5·37	6,532	579	7·94
1922	1,832	76	4·14	6,010	451	7·50

3. *Maternity Wards*:—Dr. J. S. ENGLISH, Professor of Midwifery was in charge. There were 540 admissions as compared with 615 in 1921.

The nationalities of the cases were as follows:—

Europeans	...	...	...	...	122
Eurasians	...	...	...	...	27
Chinese	...	...	...	...	276
Tamils	...	...	...	...	52
Sikhs and Northern Indians	...	...	...	...	32
Japanese	...	...	...	...	23
Other Nationalities	...	...	...	...	8
Total	..	..	..	..	540

4. The work of the X-ray Department continues to increase, 1077 cases were radiographed during the year as against 734 in 1921 and 468 in 1920. Dr. J. S. WEBSTER, Professor of Medicine, was in charge of this department, and of the medical wards.

5. *Chief Diseases*:—The chief medical diseases treated in the wards are stated below and compared with the previous years.

Diseases.	1922.	1921.	1920.	1919.	1918.
Malaria	542	760	977	766	1,067
Enteric fever	46	68	6	65	118
Phthisis	130	217	210	209	160
Dysentery	115	120	123	205	84
Venereal Disease	420	615	621	432	373
Beri-beri	85	90	20	65	95
Pneumonia (Lobar)	167	213	174	137	119
Pneumonia (Broncho)	106	122	152	62	92
Ankylostomiasis	401	439	172	143	195

6. *Asiatic Police*:—The principal diseases treated amongst the police were:—

Pyrexia of uncertain origin 211, venereal diseases 98, Skin diseases 70, Injuries 75, Malaria 23, Bronchitis 43, Asthma 29, Ankylostomiasis 73.

7. *Helminthiasis*:—

The stools of 3,647 patients were examined during the year with the following results:—

Round-worm ova	759
Ankylostome ova	401
Ankylostome and Round-worm ova	205
Round and Whip-worm ova	175
Whip-worm ova	162
Ankylostome and Whip-worm ova	66
Ankylostome, Whip and Round-worm ova	50
Negative	1,829
Total	3,647

8. It is interesting to note that the cost of the spirits used in the treatment of patients during the year was \$801.15 as compared with \$2,337.05 in the previous year.

9. During the year an Ophthalmic Department was opened under Mr. K. BLACK, F.R.C.S., Professor of Surgery: the attendances at his clinic are steadily increasing.

10. Mr. C. J. SMITH, F.R.C.S. (Edin), Senior Surgeon, and Professor of Clinical Surgery was in charge of the Surgical wards.

SURGERY—GENERAL HOSPITAL—1922. REPORT BY MR. C. J. SMITH,
Senior Surgeon.

Pathological condition and Nature of Operation.	Nationality.	No. of cases.	Result.	Remarks.
GYNÆCOLOGICAL OPERATIONS:—				
Ovariectomy ...	A	5	C	
Cystic disease ...	A	1	D	Suppurating Cyst and Peritonitis.
	E	3	C	
	E	1	D	Adhesion; admitted with acute obstruction. Death 13 days later from Sinus Thrombosis.
<i>Hysterectomy—</i>				
Total for Carcinoma ...	A	1	D	Shock.
Sub-total ...	A	5	C	
	E	4	C	
Total not Malignant ...	E	2	C	
Vaginal ...	E	1	C	
<i>Cæsarean Section</i> ...				
Ectopic Gestation Ruptured	E	2	C	All had live children.
	A	1	C	
	A	6	C	
<i>Salpingectomy—</i>				
Pyosalpinx ...	E	2	C	Large Pelvic Abscess ruptured and spreading peritonitis.
	E	1	D	
<i>Uterine Displacements—</i>				
Shortening of ligaments				
Baldy Operation ...	E	5	C	
Alexander Adams Operation	E	1	C	
<i>Perinæorrhaphy—</i>				
Vaginal Cyst (Mullerian) ...	E	1	C	
Amputation of Uterine Cervix	E	1	C	
Induction of Labour or abortion ...	A	2	C	Morbus Cordis at request of physicians.
	E	1	C	
Sterilization section of tubes	A	1	C	Morbus Cordis.
Epithelioma of Valva Excision ...	A	1	C	
Elephantiasis Valva Excision ...	A	1	C	
ABDOMINAL OPERATIONS:—				
<i>Liver and bile passages—</i>				
Cholecystectomy for Cholecystitis ...	E	2	C	
Lithiasis ...	A	1	D	Gangrenous Gallbladder also stone in C.B.D.
	A	1	D	Died of Cholemia.
Cholecystostomy Lithiasis ...	E	1	C	
Cholecyst-Gastrostomy ...	A	1	D	Carcinoma of Pancreas obstruction of C.B.D. Cholemia.
Division of Cholecystoduodenal Ligament ...	E	1	C	
Liver Abscess ...	A	1	C	
	A	1	D	Rupture to Bronchus before operation and in feeble condition.

1.—(A) Asiatic. (E) European. 2.—(C) Cured. (D) Died. (R) Relieved.

SURGERY—GENERAL HOSPITAL—1922. REPORT BY MR. C. J. SMITH,
Senior Surgeon—Ctd.

Pathological condition and Nature of Operation.	Nationality.	No. of cases.	Result.	Remarks.
ABDOMINAL OPERATIONS—Ctd.				
Liver Abscess ...	E	1	D	Large abscess shock after operation Transthoracic.
Splenectomy Rupture ...	A	1	C	
Gastro Intestinal Gastro Jejunostomy for pyloric Ulcer ...	E	1	C	
Excision of Ulcer ...	A	1	C	
Gastrostomy ...	E	1	D	Carcinoma of œsophagus Ulceration to posterior mediastrum.
Closure of Fæcal Fistula ...	E	1	D	
Intestinal Obstruction (Acute Adhesions) ...	E	1	C	
	A	1	R	Carcinoma of Sigmoid inoperable.
	A	1	D	Carcinoma Splenic flexure being late
	E	1	R	Transverse Colostomy.
Resection of bowel for intussusception ...	A	2	D	Carcinoma Resection.
	E	1	D	Child 4 years old Ilio-ilac intussusception of 48 hours duration 3 feet resected.
Lateral Anastomosis for fistula of colon ...	E	1	C	Child 22 months old Compound intussusception Resection and end to end Anastomosis (3½ feet.)
	A	1	C	
Exploratory Laparotomy Trauma Hæmorrhage ...	E	1	D	Motor Cycle accident Rupture of mesenteric vessels, Extensive intra and retroperitoneal hæmorrhage
Ascites Cachexia ...	E	1	R	Diffuse carcinomatosis of peritonitis secondary to ovarian carcinoma
Pregnancy ...	A	1	C	Labour induced later.
Chronic Obstruction ...	E	1	C	Adhesions.
For Stab Wounds Penetrating Viscera ...	A	1	D	Multiple (12) perforation of bowel, Gun shot wound. Peritonitis.
	A	1	D	Stab involving stomach and, interior Vera Cava Suture of wounds extensive hæmorrhage.
	A	1	C	Stomach penetrated.
	A	1	D	Wound of stomach.
	A	1	C	Stab wound of liver.
	A	1	D	Wound of liver and colon.
	A	1	D	Wound of bowel.
	A	1	C	Diaphragm and liver sutured,
	A	1	D	Multiple wounds of bowel.
	A	1	D	Cæcum 2 places. Peritonitis.
	A	1	D	Kidney diaphragm and colon peritonitis.
	A	1	D	Liver extensive hæmorrhage.
	A	1	D	Intestine Liver and Kidney Death on table. Shock.

SURGERY—GENERAL HOSPITAL—1922. REPORT BY DR. C. J. SMITH,
Senior Surgeon—Ctd.

Pathological condition and Nature of Operation.	Nationality.	No. of cases.	Result.	Remarks.
ABDOMINAL OPERATIONS—Ctd.				
Simple penetration with prolapse of omentum ...	A	2	C	No. injury to viscera.
For Appendicitis Interval	A	17	C	
	E	12	C	
	E	35	C	
Acute ...	A	4	C	
With Abscess ...	E	10	C	
	E	1	D	Metastatic abscess in lung and brain.
With Spreading Peritonitis	A	8	C	} Peritonitis
	A	1	D	
	A	4	D	
	A	5	C	
	E	2	D	
Hernia Inguinal ...	E	2	C	
	E	23	C	
Strangulated ...	A	10	C	
	A	6	C	
	A	1	D	Large hernia reaction of 3 feet of bowel 18 inches gangrenous Death on table
Umbilical ...	A	1	D	Bowel gangrenous resection.
Strangulated ...	E	2	C	
Perforation of Typhoid Ulcer	A	1	C	
A	A	2	D	
Operations on the Kidney—				
Stab wound ...	A	1	C	
Decortication and fixation	E	1	C	
Nephrectomy ...	E	1	C	
Bladder Suprapubic Litho- lomy ...	E	2	C	
Litholapaxy ...	E	1	C	
URATHRA :—				
External Urethrotomy ...	E	2	C	
	A	1	C	
	A	1	D	Uræmia following prolonged Chronic and Acute Retention.
Suture for Rupture ...	A	1	C	
Operations on the testicles and coverings orchide- ctomy ...	A	1	C	
Vaginal Hydrocele Redical Operation ...	A	2	C	
Varicocele ...	E	3	C	
Hæmatocele ...	A	2	C	

SURGERY—GENERAL HOSPITAL—1922. REPORT BY DR. C. J. SMITH,
Senior Surgeon—Ctd.

Pathological condition and Nature of Operation.	Nationality.	No. of cases.	Result.	Remarks.
Scrotum for Elephantiasis Excision	A	2	C	
<i>Operations upon the Lymphatic glands—</i>				
Secondary carcinoma to lip and lower jaw	A	1	D	Glands suppurating both triangles of neck dissected shock and infection.
For tuberculosis glands of neck	E	1	C	Secondary to tongue. Operation for carcinoma. Both triangles of neck.
	A	1	C	
	E	1	C	
	E	8	C	
Croin	A	4	C	
<i>Thyroid—</i>				
Hemithyroidectomy	E	1	C	
Parotid	A	1	C	
Skull Trephining	A	3	C	Compound depressed fracture.
Spine Spina bifida	E	1	C	Child one day old with large meningomyelocele.
<i>Thorax—</i>				
Carcinoma of (Stiles) Radical Operation	A	2	C	
Tracheotomy	A	2	C	Lower tracheotomy Broncho- pneumonia.
	A	1	D	
Tooth plate extracted from oesophagus	A	1	C	
BLOOD VESSELS:—				
Aneurysm External Iliac Excision of sac	A	1	C	
Arterio Venous of side of neck	A	1	D	On table large pulsating mass covering side of neck from clavicle to skull. Shock loss of blood.
Extensive skin grafting	A	2	C	
<i>Rectum and Anus—</i>				
Prolapse Abdominal Procto- pexy	A	2	C	Very large prolapse resisted other treatment.
Plastic on mucosa	A	1	R	
Hæmorrhoids	A	9	C	
	E	9	C	
Polypus excision	A	1	C	
Extensive fistula	E	1	C	
<i>Tongue—</i>				
Hemiexcision for carcinoma	A	1	D	Extensive suppurating glands of neck one stage operation.
Face—Carcinoma of Lip	E	1	D	On table from Chc. 13 Involving cheek orbit and nose.
Rodent Ulcer	A	1	C	
Epithelioma of forehead	A	1	C	
Sarcoma of lower jaw	A	1	C	
Carcinoma of cheek	A	1	C	

SURGERY—GENERAL HOSPITAL—1922. REPORT BY DR. C. J. SMITH,
Senior Surgeon—Concluded.

Pathological condition and Nature of Operation.	Nationality.	No. of cases.	Result.	Remarks.
<i>Antrum of Highmore Exploration and diagnostic—</i>				
Washing	6	R	
Radical Antrum operation	1	C	
<i>Tonsil—</i>				
Enucleation	25	C	
Septum Submucous Resection	9	C	
Radical Mastoid operation (Heaths)	5	C	
<i>For Rhinosporidium—</i>				
Radical Excision	1	C	
For Adenoids	15	C	
<i>Frontal Sinus—</i>				
Radical operation	2	C	
<i>Radical Ethmoidal—</i>				
Sinus operation	3	C	
Extraction of foreign body from ear	1	C	
Abscess of tonsil incised	1	C	
<i>Eye Operations—</i>				
Enucleation of eye	3	C	
Cornea foreign body extrac- tion	1	C	
Cataract extraction	1	C	
Cataract needling	1	C	
Lachrymal Sac. excision	1	C	

Total major operations performed in 1922 numbered	334
Total mortality	39
Percentage	11.6%
Minor operations numbered	2,640
Total mortality	2

They included 43 cystoscopies.

Twelve Diagnostic catheterization of ureter;
Forty-eight Injections of Silver Nitrate into kidney pelvis;
Forty-seven Uterine curettings;
Thirty-one Setting of fractures;
and 20 Minor amputations.

II.

Free Maternity Hospital.

REPORT BY J. S. ENGLISH, M.D., L.M. (Rot), *Professor of Midwifery.*

During the year under report 646 patients were delivered, an increase of 169 over the previous year. 19 others received ante-natal treatment.

There were born 307 males and 342 females.

Nationalities were as follows:—

Chinese 629, Tamils 20, Eurasians 5, Japanese 6, Malays 3, Other 2.

There were seven adult deaths due to:—Eclampsia 1, Pneumonia 1, Cerebral Malaria 1, Beri-Beri 1, Concealed Accidental Haemorrhage 1, Pulmonary Embolus 1, Sepsis Puerperal 1.

There were 20 still-born babies and 16 macerated; 10 infants died of whom 5 were premature.

There were 83 complicated cases.

During the year all the beds were almost constantly full; at times many patients had to be sent away to other hospitals.

III.

Singapore Prison Hospital.

REPORT BY A. LOGAN MURISON, M.R.C.S., L.R.C.P.

1. There remained in Hospital on 31st December, 1921, 20 patients. 814 patients including 3 Europeans, and 3 Eurasians, were admitted during the year making a total of 834 patients as compared with 647 patients in 1921. The average daily number of sick was 26.40 as compared with 20.42 for the previous year.

2. *The principal diseases treated were:*—Beri-beri 10, Dysentery 19, Malaria 49, Pyrexia of uncertain origin 113, Venereal Diseases 63, Pulmonary Tuberculosis 20, Diarrhœa 95, Injuries 72 and Ulcers 31.

3. The number of deaths during the year was 35, giving a death rate of 4.1 per cent as compared with 41 deaths and 6.3 per cent in 1921. Most of the Dysentery cases were relapses of the disease contracted prior to admission into the Prisons. All the Beri-beri cases had the disease on admission.

Grades of those who died were:—20 long sentence prisoners, 7 short sentence prisoners, 4 revenue grade prisoners, 1 vagrant, and 3 banishees. Of the deaths, 4 occurred within 48 hours of admission. Excluding these the death rate was 3.7 per cent.

4. No deaths occurred in the Cells of the Prisons.

5. Eleven cases were transferred to the General Hospital for Major Operations, of these 2 died viz:—one General Peritonitis from perforation of the bowel and one Intestinal Obstruction; the latter refused operation.

6. Two hundred and twenty-four Vagrants suffering from serious complaints were transferred to the Tan Tock Seng's Hospital and Kandang Kerbau Hospital for treatment.

7. *Suicides by Hanging.*—There were two, one in the Prison Hospital an old vagrant suffering from Chronic Dysentery, and one in the Civil Prison—a remand prisoner.

8. Executions nine. 5 Chinese, 2 Malays (from Labuan), 1 Tamil and 1 Sikh.

IV.

Tan Tock Seng's Hospital, Singapore.

REPORT by R. B. MACGREGOR, M.B., Ch.B.

1. *Work done*:—

Remained on 31st December, 1921	...	...	604
Admitted during 1922	...	...	10,734
		Total	11,338
<hr/>			
Discharged	9,070
Died	1,578
Remained on 31st December, 1922	690
		Total	11,338
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2. The average daily sick was 689.20 as compared with 703.80 in 1921.

3. The percentage of deaths to the total treated was 13.92.

4. The total number of deaths during the year was 1,578; of these 166 died within 24 hours of admission. Deducting these, the death-rate was 12.64 per hundred.

5. The average stay in hospital of those discharged was 29.31 days of those dying 22.16 days and of those remaining 95.31 days.

6. A large number of the patients came to hospital in a starved condition; this contributed to the high death-rate.

7. *Malaria*.—1,820 cases were treated with 168 deaths, a death-rate of 9.23 per cent.

Types of Malaria.—

			<i>Cases treated.</i>	<i>Deaths.</i>
Benign Tertian	...	...	286	9
Malignant Tertian	...	...	725	102
Quartan	...	...	172	5
Mixed	...	...	71	3
Chronic	...	...	402	43
Unclassified	...	...	164	6
		Total	1,820	168
				<hr/>

Blood examinations were carried out in all fever cases; the results were as follows:—

Blood Examinations.—

Malignant Tertian	...	...	...	896
Benign Tertian	...	...	...	306
Quartan	...	...	...	229
Mixed	...	...	...	163
Negative	...	...	...	3,375
		Total	...	4,969
				<hr/>

In the Malaria Ward 3,674 intravenous injections of quinine were given.

Seasonal incidence of Malaria.—The number of admission for Malaria per month was lowest in February, 86, increased steadily to a maximum of 230 in July, then falling to 148 in December.

8. *Dysentery.*—There were 525 cases treated during the year; 305 died, a death rate of 58·09%.

Types of Dysentery.—

					Deaths.
Amœbic	...	...	282	...	178
Bacillary	...	...	157	...	117
Unclassified	...	...	88	...	8

9. *Beri-beri.*—There has been an increase in the number of beri-beri admissions, due to removal of rice control and to starvation from unemployment. 730 cases were treated during the year, with 107 deaths, a death rate of 14·57%. 98 cases were transferred to Pasir Panjang.

Comparative figures for the four years:—

			1919.	1920.	1921.	1922.
Cases	...	...	700	136	297	730
Deaths	...	...	78	14	75	107
Percentage Mortality	...	...	11·14	10·0	25·25	14·57

The admissions for Beri-beri per month rose from 32 in January to a maximum of 105 in October, then fell to 60 December. With the last 200 cases admitted, enquiry was made as to whether the patient's food was provided by his employer or contractor, or whether he provided it himself; during the period of 3 months before admission to hospital. 54% of the cases had their food supplied by the employer. It would be interesting to find how this compares with the percentage fed by employers in the coolie class as a whole.

10. *Enteric Fever.*—Thirty-three cases were treated, with 22 deaths, a death-rate of 68·75 per cent.

11. *The Venereal Diseases were as follows:*—

			Cases.	Deaths.
Syphilis	Primary	...	181	1
„	Secondary	...	886	11
„	Tertiary	...	179	6
„	„ with Hepatic Cirrhosis	...	21	19
„	Tertiary affecting Circulatory System	...	20	20
„	Tertiary affecting central nervous system	...	20	8
	Total	...	1,307	65
Chancroid	...	...	127	—
Gonorrhœa, Urethritis	...	...	121	—
Gonorrhœa, Other Manifestations	...	...	132	7

The increase in the number of deaths from Syphilis, compared with last year, is due to their being classified according to the cause *i.e.*, Syphilis—instead of being classified according to the organs affected.

The number of admission for Syphilis has decreased considerably, since July, maximum 170 in July, minimum 75 in November. This is probably due to the opening of the Venereal Clinics at the Out-door Dispensaries.

Treatment of Syphilis.—During the year 2,198 injections of Mercurial preparations and 8,330 injections of Organic Arsenical preparations were given.

12. *Helminthiasis.*—During the last four months of this year the stools of every patient were examined microscopically, with the following results:—

Ankylostoma ova	...	...	...	454 cases.
Ankylostoma ova + Round-worm	...	...	...	110 ..
Ankylostoma ova + Whip-worm	...	...	...	98 ..
Round-worm only	...	...	...	252 ..
Ankylostoma ova + Round-worm and Whip-worm	...	...	...	66 ..
Round-worm and Whip-worm	...	...	...	112 ..
Whip-worm only	...	...	...	278 ..
Negative	...	...	...	2,168 ..
Total				3,538 cases.

Percentage of infection with:—

Ankylostomes (including Mixed infections)	...	20.6%
Round-worms	...	15.3%
Whip-worms	...	15.4%

The total number of stools examined during the year was 6,095 with the following results:—

Anky. Ova	...	...	...	881
Anky. and Round-worm ova	...	...	...	193
Anky. and Whip-worm ova	...	...	...	199
Anky. Round and Whip-worm ova	...	...	...	110
Round-worm ova	...	...	...	478
Round and Whip-worm ova	...	...	...	174
Whip-worm ova	...	...	...	432
Negative	...	...	...	3,420
Amœbae	...	...	...	208

13. *Ankylostomiasis.*—The number of cases of Ankylostomiasis was 294, with 28 deaths, a death-rate of 9.52 per cent. These are cases in which Ankylostomiasis was the principal disease.

Effect of Ankylostomiasis on the Hæmoglobin Index.

Average hæmoglobin index before treatment,	...	...	...	62.37
from 227 cases	...	...	...
Average hæmoglobin index after treatment,	...	...	...	70.33
from 112 cases	...	...	...

The difference in the number of cases is due to the number who absconded or left before the treatment was completed. For the purpose of comparison the Hæmoglobin Index was estimated from groups of patients suffering from other condition—with the following results:—

Malaria.—Forty cases average Hæmoglobin Index 59.5. Sixty general cases, Surgical and Medical, taken at random on admission.

Average Hæmoglobin Index 69.5.

Treatment of Ankylostomiasis.

During the first half year, the routine treatment was with oil of chenopodium in emulsion, dosage being 2 cc of the o.l. In the second half year, carbon tetrachloride was used; with, in some cases, Oil of Chenopodium as a test treatment. In these cases, the oil of chenopodium was given in a capsule, one dose of 2 cc or 3 cc according to the weight and strength of the patients.

Carbon Tetrachloride.—This preparation is cheap and can easily be obtained.

Method of Administration.—The taste is not so objectionable as that of oil of chenopodium; the drug can be swallowed undiluted, or preferably covered with a little water. After swallowing, a burning sensation is felt and there is slight nausea and abdominal discomfort.

Dose.—The dose given to adults was 3 to 4 cc. 6 cc. have been given without causing any unpleasant symptoms.

The following routine has proved the most satisfactory:—

No special preparation the previous day.

Dose of 3—4 cc in about 4 cc of Castor Oil at 6 a.m.

No food during the morning. After 3 hours, at 9 a.m., half an ounce of Magnesium Sulphate is given. It is not necessary for the patient to be in bed, and food may be taken in the afternoon.

Stools are sieved for worms for four days after the treatment, and then, if negative, are examined microscopically for ova for 3 days. If ova are still present a second course of treatment is commenced on the eighth day.

Unfortunately in this hospital a large number of the patients abscond as soon as they feel able to go out: so that in many cases it has not been possible to complete the treatment.

Results of treatment:—

A. Cases treated with 1 dose of Carbon Tetrachloride.

Cases	...	...	...	...	...	154
Worms recovered	...	...	...	...	...	1,596
Number cured	...	...	...	...	...	99

B. Cases treated with 2 doses of Carbon Tetrachloride.

Cases	...	...	...	...	...	63
Worms	...	...	...	...	...	834
Number cured	...	...	...	...	...	34

Test treatment.—Forty-seven cases were treated with Chenopodium after completion of carbon tetrachloride treatment.

From 47 cases 126 worms were recovered. 5 cases still had hookworm ova after treatment with chenopodium.

Deaths.—Nine cases who had been under treatment with Carbon Tetrachloride died: one from Ankylostomiasis; one suicidally, and seven from other diseases.

In 6 of these cases, hookworms were still found in the gut

Only one of them had a heavy infection with ankylostomes. He had received two doses of Carbon Tetrachloride, each of 2.5 cc. During life 364 worms were passed: he died 5 days after the second treatment. At the post mortem examination over 300 ankylostomes were found attached to the duodenum.

None of the cases who died, showed on microscopic examination any degenerative changes in the liver and kidneys such as have been described as following the administration of Carbon Tetrachloride.

Conclusions.—Carbon Tetrachloride is a useful anthelmintic for the treatment of Ankylostomiasis. Its advantages are that it is easily given, no elaborate preparation of the patient being required. It is cheap and as far as can be ascertained, is quite safe in doses of less than 4 cc.

The results of treatment with it are not better than those obtained with Oil of Chenopodium, but, so far as ankylostomes are concerned seem to be equally good. In most cases a succession of treatments is required before a cure is obtained. It is not effective in expelling Round-worms and Whip-worms.

14. *Tuberculosis*.—Six hundred and seventy cases of Tuberculosis were treated during the year, of these 621 were cases of Pulmonary Tuberculosis. There were 382 deaths, a death rate of 57·01%.

Two thousand six hundred and one specimens of Sputum were examined, Positive 640. Negative 1961.

15. *Ulcers*.—There were 1,113 cases of Ulcers. Treatment by intravenous injection of Tartar Emetic was given in over 300 cases. Dosage 2 cc of a 2% solution intravenously twice weekly, the dose being increased to a maximum of 4 cc. 1,020 injections were given. The treatment is valuable in starting the cure of large septic ulcers, especially those of a sloughing, gangrenous type, but its usefulness is limited to this class of ulcers.

16. *Plague*.—There were 13 cases of plague, 9 Bubonic, 1 Pneumonic, and 3 Septicaemic. Five died shortly after admission, and 8 were transferred to Middleton Hospital.

17. *Medicolegal*.—Eighty bodies were sent by the Coroner for Post Mortem examination. 1095 cases were sent by the Police for treatment and 178 cases for observation as to insanity. Of the latter 99 were certified as lunatics.

18. *Japanese*.—The number treated was 176. There were 5 deaths, a mortality rate of 2·8%.

19. *Dressers*.—All dressers now live on the premises. Regular courses of instructions were given to the dressers and periodical examinations were held. There has been no difficulty in filling vacancies for Apprentice Dressers.

20. Dr. V. B. KYLE, was in charge until 4th April, 1922, when Dr. R. B. MACGREGOR, took over from him.

21. *Surgery*.—REPORT BY MR. K. BLACK, F.R.C.S., ENGLAND, Professor of Surgery, Medical College:—

<i>Operations.</i>	<i>Total.</i>	<i>Cured.</i>	<i>Relieved.</i>	<i>Died.</i>
1. Face, Mouth and Jaws ...	14	13	—	1
2. Skull and Brain ...	4	2	—	2
3. Eye (Cataract, Trephine, Iridectomy) ...	58	53	5	—
4. Nose and Ear ...	6	5	1	—
5. Neck ...	8	4	2	2
6. Thorax ...	59	24	33	2
7. Abdominal (Laparotomy)	37	21	5	11
8. Genito Urinary ...	139	89	49	1
9. Rectum and Anus ...	60	57	3	—
10. Hernia ...	18	18	—	—
11. Extremities—				
(a) Amputations ...	29	25	—	4
(b) Bones and joints ...	60	50	10	—
(c) Vessels and nerves ...	6	5	1	—
(d) Muscles and Tendons	15	12	3	—
(e) Skin, Subcutaneous tissues, bursal ...	946	946	—	—
Total ...	1,459	1,324	112	23

Percentage of deaths to total of all operations 1'57%.

Percentage of deaths to total Major Operations 4'07%.

Many of the cases unfortunately seek treatment at the hospital in a late stage of disease.

V.

Leper Asylum, Singapore.

REPORT BY R. B. MACGREGOR, M.B., CH.B.

1. Male Camp—(McNair Road)—

Remained on 31st December, 1921	16
Admitted during 1922	57
		Total	73
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Discharged for repatriation to China	1
Transferred to Pulau Jerejak	28
Absconded	4
Died	9
Remaining on 31st December, 1922	32
		Total	72
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The immediate causes of death were:—

Acute Nephritis	1
Acute Bacillary Dysentery	1
Chronic Amœbic Dysentery	3
Sapraemia from Leprous Ulcers	4
		Total	...	9
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The general health of the inmates is good. The accommodation at the camp is adequate, and the buildings are in fair condition. A large part of the ground at the camp is cultivated by the patients as a vegetable garden, with marked benefit to them because of the exercise and occupation, and the addition to their dietary that this provides.

2. Female Leper Camp:—

TEMPORARILY AT KANDANG KERBAU HOSPITAL.

Remained on 31st December, 1921	...	...	42
Admitted	7
		Total	49
<hr/>			
Discharged	—
Transferred	—
Absconded	—
Died	7
		Remaining	42
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The general health of the inmates has been fair. The present building is too small to accommodate all the cases, of whom no less than 6 suffered from Pulmonary Tuberculosis (2 deaths) during the year.

3. A special report on the treatment in these institutions is attached.

Treatment of Lepers.

1. The preparations used were:—

- (a) Solution of Sodium Hydnocarpate 3%.
- (b) E. C. C. O. "Muir's" consisting of Ethylesters of the fatty acids of chaulmoogra Creosote Camphor and Olive Oil.
- (c) Solution of Tartar Emetic 2%.
- (d) Osecol Stibium—a colloidal antimony preparation.

During the year, approximately 4,000 injections were given.

During the first half of the year, Sodium Hydnocarpate and Tartar Emetic Solutions were used. In the second half year E. C. C. O. was substituted for Hydnocarpate in some cases and the Tartar Emetic was replaced by "Osecol Stibium".

2. Method of Administration and reactions:—

- (a) Sodium Hydnocarpate in 3% solution was injected intravenously, twice a week; the initial dose of 1 cc. was increased weekly by $\frac{1}{2}$ cc. up to 5 cc. In many cases, especially with the females, thickening and induration of the veins and tissues at the sites of injection rendered continued intravenous injection impossible and the injections had to be given intramuscularly.
- (b) E. C. C. O. The use of this preparation was commenced in July, 1922. It was given to all cases in the female camp and to 14 selected males. The initial dose was .25 cc. intramuscularly given twice a week, the dose being increased at each injection up to 2 cc.

The intramuscular injections caused very little pain and no necrosis of the tissue except in the case of two small boys, each of whom developed one necrotic area in the deltoid region. This sloughed and left a clean ulcer which healed in about two weeks.

After the dose of 2 cc intramuscularly had been reached intravenous administration was started. With the first dose of .5 cc. the immediate reaction was very severe—so severe that intravenous administration was not continued with the females, who continued to receive 3 intramuscular injections of 2 cc per week. With the males, intravenous injection was continued twice a week the dose being gradually increased to 1.5 cc.

Reaction after intramuscular injections.

With the larger doses there was in most cases slight malaise and fever for 24 hours after the injection. In few cases the fever lasted longer and the nodular eruptions became more marked. In such cases treatment was stopped for one week and then continued with reduced dosage.

Reaction after intravenous injection.

During the injection, within half a minute of its commencement, the patient has a severe fit of coughing, sometimes followed by retching and vomiting. He feels suffocated and giddy. With repeated injections the reaction becomes less severe, but in no case was it possible to give more than 1.5 cc intravenously. In two cases slight haemoptysis was noted the day after injection. One case (a Bengali boy—aged about 17) became violently delirious and maniacal, five minutes after an intravenous injection of 1.5 cc. The attack lasted for about 10 minutes, then he became normal.

Tartar Emetic.—2% solution was given intravenously twice a week in doses of from 1 to 4 cc. to cases who had foul sloughing ulcers. Under this treatment the ulcers became clean and covered with healthy granulations, usually after about 2 weeks treatment. At this stage it is advisable to stop the injections.

- (d) *Oscol Stibium.* During the second half of the year this preparation was given to patients with ulcers, instead of Tartar Emetic, dose one cc. increasing to 5 cc. intravenously twice a week. The effects of *Oscol Stibium* are similar to those of Tartar Emetic, but the immediate reaction after injection is less severe, and in most cases the healing process occurs more quickly than with Tartar Emetic.

Operative Treatment.—In four cases with Chronic Perforating ulcers of the feet, the ulcers, and the underlying bone were excised. In two cases the lesions are now completely cured, and in the other two are improved.

Results of treatment:—

	<i>Females.</i>	<i>Males.</i>
Cured	—	1
Cases showing marked improvement ...	3	2
Cases showing improvement ...	18	15
Cases showing no improvement ...	22	13

of the 35 cases showing no improvement 16 have been under treatment for less than 3 months.

The notes of cases mentioned in detail in last year's annual report are here continued:—

- (1) Scott.—Condition practically the same as last year, in spite of continued use of Sodium Hydncarpate.

Lepra Bacilli present.

Forty-three Intravenous injections of Sodium Hydncarpate this year.

- (2) Chua Chye Hoa.—Shows continued improvement. There is still a faint discolouration of the cheeks; the pale areas on the buttocks are just visible. No anaesthesia, Smears for *Lepa Bacilli* Negative. Number of injections given this year 35 E. C. C. O. and 24 Sodium Hydncarpate = 59.

- (3) Chong Yeng.—Condition practically the same, slightly raised muscular eruption on face, ears and limbs, sensation intact. *Lepa Bacilli* present. Number of injection given this year 34 E. C. C. O. and 36 Hydncarpate = 70.

The following cases are of special interest.

- (4) Salimar.—Indian female aged 34. Up to May, 1922, this case showed great improvement; beyond a slight thickening of the skin on the malar regions, the lesion had disappeared. From

May her condition has become worse, the thickening over the malar regions has become more marked, and nodules have developed on her hands. Number of injections in this year, E. C. C. O. 33 and Hydnocarpate 21.

- (5) Chua Boon Chong.—Male, aged 37. Admitted in April, 1922. On admission he had perforating ulcers on both feet, slight thickening of ear lobules and small ulcer on the dorsum of the left hand. In November the ulcers on the feet with the underlying metatarsal bones were excised. The feet are now completely healed and the only lesion remaining is slight thickening of the ear lobules. Lepra Bacilli still present. Number of injections—E. C. C. O. and Sodium Hydnocarpate thirty.
- (6) Lim Tuah.—Male, aged 42. Condition on admission in June, 1922: thickening of ear lobules, nodules on left side of nose. Numerous nodules on back, no anaesthesia. Lepra Bacilli present. At present all the lesions have healed. No lepra bacilli found in smears. He is apparently cured. Number of injections—Sodium Hydnocarpate 26 E. C. C. O. 30.

VI.

LUNATIC ASYLUM.

REPORT BY H. J. GIBBS, M.R.C.S., L.R.C.P., *Medical Superintendent.*

1. There remained on 31st December, 1921, three hundred and fifty males and eighty females.

Two hundred and fifty-seven males and sixty-four females were admitted.

The total treated was seven hundred and fifty-two.

2. Of the admissions twenty-four males and eight females had previously been under treatment in this Asylum.

3. Of the total treated one hundred and one males and nineteen females were discharged as recovered; sixteen males and seven females as relieved; fifty-two males and twenty-three females as not improved; ten males absconded and sixty-three males and twelve females died.

4. Of the fifty-two males and twenty-three females shown as not improved thirty-nine males and fifteen females were transferred to Tanjong Rambutan and two males and four females to Johore, the others were handed over to the care of their relations.

5. There remained on 31st December, 1922, three hundred and sixty-five males and eighty-four females.

6. The average daily numbers were three hundred and seventy-five males and eighty-five females.

7. The maximum and minimum daily numbers were respectively four hundred and ninety-four and four hundred and twenty-one.

8. The Nationalities of the admission are:—

	<i>Males.</i>	<i>Females.</i>
British	4	1
Other Europeans	2	0
Eurasians	2	4
Chinese	164	41
Tamils	54	5
Malays and allied races	22	9
Others	9	4
Total	257	64

9. The physical condition of those admitted are shewn as:—

	<i>Males.</i>	<i>Females.</i>
Good	104	15
Fair	69	22
Impaired	55	19
Greatly impaired	29	8

10. Ten patients died within a month of their admission.

11. As to the causes assigned for the mental alienation of the admissions; Syphilis is again well to the fore; no fewer than eighty-eight of the admissions were found to be infected. The Wassermann Reaction was performed on all admissions, and of these sixty-three gave positive results. Alcoholic intemperance accounted for thirty-two of the admissions. Thirty-six patients suffered from previous attacks of insanity.

12. The recovery rate for the year was 37.07%.

13. *Criminal Population.*—There remained on 31st December, 1921, thirteen Lunatic Criminals and twenty Criminal Lunatics. There were admitted during the year twenty-nine of the former class and two of the latter.

Of the seventy criminals treated the sentence of four expired four recovered and were returned to Prison, one absconded and six died.

There remained on 31st December, 1922, twenty-six lunatic criminals and nineteen criminal lunatics. Two of the former and two of the latter are females.

Deaths.—The death rate, based on the average daily number resident, was 16.30 per cent; on the total treated it was 9.97 per cent. Dysentery took a very heavy toll; no fewer than 28 males and four females dying of this complaint.

Industries. Seven thousand four hundred and forty-eight yards of cotton cloth were woven by the male patients from which the female patients made clothing and bedding for the Asylum inmates. From canvas purchased from the Crown Agents seventy-five strong rugs and eight combination suits were made.

Revenue.—The revenue received from paying patients amounted to \$18,117.05 cents.

The kitchen garden furnished 35,946 lbs. of vegetables and a large quantity of fruits and sugar cane for the patients. The saving to Government was \$1,517.84 cents.

TABLE I.
LUNATIC ASYLUM.

Table showing the Admissions, Discharges and Deaths during the Year 1922.

—	Male.	Female.	Total.	Male.	Female.	Total.
In the Asylum on 1st January, 1922	...	...	...	350	81	431
Cases admitted :—						
First Admissions	...	...	...	233	56	289
Not First Admissions	...	...	...	24	8	32
Total cases under care during the year	...	...	...	607	145	752
Cases Discharged :—						
Recovered	101	19	120	...	...	...
Relieved	16	7	23	...	...	...
Not Relieved	52	23	75	...	...	...
Absconded	10	...	10	...	...	...
Died	63	12	75	...	...	...
Total cases discharged and died during the year	...	...	...	242	61	303
Remaining in the Asylum on 31st December, 1922	...	...	...	365	84	449
Average number resident during the year	...	...	...	375	85	460

TABLE II.
LUNATIC ASYLUM.
Showing the Causes of Deaths during the Year 1922, together with the Ages at Deaths.

CAUSES OF DEATH.	Under 15 years.		15 and under 20 years.		20 and under 25 years.		25 and under 30 years.		30 and under 35 years.		35 and under 40 years.		40 and under 45 years.		45 and under 50 years.		50 and under 55 years.		55 and under 60 years.		60 and under 65 years.		65 and under 70 years.		70 and under 75 years.		75 and under 80 years.		TOTAL.		
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	
GENERAL DISEASES.—
Dysentery
Tubercle	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sapremia
Carcinoma
Gangrene
Pyemia
Pneumonia
NERVOUS SYSTEM.—
Acute delirious Mania
Cerebral Haemorrhage
Cerebral Syphilis
General Paralysis of the Insane
RESPIRATORY SYSTEM.—
Acute Congestion of the lungs
DIGESTIVE SYSTEM.—
Peritonitis
URINARY SYSTEM.—
Renal Calculi
Acute Nephritis
CONNECTIVE TISSUE.—
Cellulitis
PARASITES.—
Ankylostomiasis
Self-cutting Strangulation
TOTAL	1	1	7	2	9	3	12	16	2	18	7	2	9	7	1	8	7	1	8	2	2	2	5	5	1	1	1	1	63	12	75

TABLE III.

LUNATIC ASYLUM.

Table showing the Length of Residence of those Discharged, Recovered and of those who Died during the Year 1922.

Length of Residence.	Recovered.			Died.		
	Male.	Female.	Total.	Male.	Female.	Total.
Under one month	11	...	11	8	2	10
From one to three months	19	4	23	17	2	19
" three to six months	29	9	38	15	3	18
" six to nine months	19	3	22	5	...	5
" nine to twelve months	10	1	11	4	...	4
" one to two years	10	2	12	6	3	9
" two to three years	3	...	3	3	1	4
" three to five years ... ..	...	...	...	1	...	1
" five to seven years ... ..	...	...	...	...	...	...
" seven to ten years ... ..	...	...	...	2	1	3
" ten to fifteen years ... ..	...	...	...	1	...	1
" twenty-five to thirty years ... ..	...	...	...	1	...	1
TOTAL	101	19	120	63	12	75

VII.

BERI-BERI HOSPITAL, PASIR PANJANG.

REPORT BY H. J. GIBBS, M.R.C.S., L.R.C.P. *Medical Superintendent.*

1. There remained on 31st December, 1921, thirty-six patients.
2. During 1922, one hundred and thirty-six were admitted giving a total treated of one hundred and seventy-two.
3. Of this number one was discharged cured; 58 relieved, twenty-four absconded, and fourteen died.
4. There remained on 31st December, 1922, seventy-five patients.
5. The average daily number was fifty-six.

VIII.

BLIND WARD, PASIR PANJANG.

REPORT BY H. J. GIBBS, M.R.C.S., L.R.C.P. *Medical Superintendent.*

1. There remained on 31st December, 1921, sixty-nine males.
2. During 1922, fifteen males were admitted giving a total treated of eighty-five.
3. Of this number 2 were discharged relieved, 2 were transferred to the General Hospital for surgical treatment, 30 absconded and six died.
4. There remained on 31st December, 1922, forty-five patients.
5. The average daily number was 56.
6. The fifteen admissions consisted of:—

Corneal opacity 6; ulceration of cornea, two; staphyloma, two; cataract, three; optic atrophy, one; and disorganisation of eyeball, one.

7. The causes of death were:—

Dysentery, three; valvular disease of heart, two; and aneurysm of aorta, one.

Broom making was carried on to a small extent.

IX.

KANDANG KERBAU HOSPITAL FOR FEMALES.

REPORT BY MRS. L. S. O'MAY, M.B., Ch.B., *Lady Medical Officer.*

Inpatients:—

Remained 31st December, 1921	...	...	79
Admitted 1922	...	...	740
			819
		Total treated	819

(of whom 151 had syphilis). Discharged 599. Transferred 10. Absconded 24. Died 93. Remained at end of year 93. Percentage of deaths to total treated 11'35.

The nationalities were:—Chinese 488, Malays 59, Indians 173, Japanese 19, Europeans and Eurasians 80.

One hundred and seventy-one were children. Operations done numbered 46, and included two cases of ruptured tubal gestation.

The average daily number was 88.61 compared with 66.05 in 1921. The number of inpatients for the year 819 does not bear a normal proportion to the figure partly because of the prolonged treatment often required by the venereal cases and partly because there are a number of decrepits who are kept in the Hospital permanently—

Number of N. A. B. injections given	...	...	1,337
Number of Tartar Emetic injections given	...	...	528
Number of Gonococci vaccine injections given	...	...	42

Microscopical work—

Examinations of specimens	In-patients	...	2,087
	Out-patients	...	1,042

X.

HEALTH OF SINGAPORE POLICE FORCE.

REPORT BY A. L. MURISON, M.R.C.S., L.R.C.P., POLICE SURGEON.

1. The general health of the Singapore Police Force, on the whole, continued satisfactory during the year, 1922. The authorised strength was 1,687. The average daily number in the Police Force was 1,486 as compared with 1,194 in 1921.

2. The number of cases treated at the Outdoor Government Dispensary was 5,650, i.e., 44 more than in 1921. This shows a substantial comparative reduction in the percentage of sickness.

Malaria is somewhat less prevalent.

Thirty-five cases of Gonorrhœa, compared with 70 cases in the previous year, shows that much concealment of this disease exists.

The number of primary and secondary syphilitic cases treated has increased from 51 to 72.

This may be accounted for on the assumption that those affected are refraining from concealing their sickness.

There were 108 cases of Ankylostomiasis as against 45 in 1921.

3. The Nationalities of the outpatients were:—

(a) Europeans	...	...	...	...	55
(b) Eurasians	...	...	...	...	4
(c) Sikhs	...	...	...	...	913
(d) Other Indians	...	...	...	...	1,439
(e) Malays	...	...	...	...	2,879
(f) Chinese	...	...	...	...	355
(g) Japanese	...	...	...	...	5

4. The total number admitted to the General Hospital, Singapore was 905 compared with 1,067 in 1921:—

1. Europeans	...	...	...	...	12
2. Malays	...	...	...	...	332
3. Sikhs	...	...	...	...	244
4. Other Indians	...	...	...	...	221
5. Javanese	...	...	...	...	23
6. Chinese	...	...	...	...	70
7. Siamese	...	...	...	...	2
8. Japanese	...	...	...	...	1
				Total	905

5. The number (and nationality) of Recruits admitted to the Police Force was:—

1. Europeans	...	...	...	...	6
2. Eurasians	...	...	...	...	1
3. Sikhs	...	...	...	...	34
4. Other Indians (not Sikhs)	...	...	...	...	30
5. Malays	...	...	...	...	124
6. Javanese	...	...	...	...	14
7. Chinese	...	...	...	...	19

Only 14 candidates were rejected. Total ... 228

6. At several stations new quarters have been erected and at others considerable alterations and repairs have been carried out causing much improvement in the sanitary conditions and general smartness.

7. There were 13 cases of notifiable diseases including measles (5), Phthisis (3), Small-pox (2) and Influenza (3).

Vaccination was carried out systematically.

APPENDIX B.

PENANG.

REPORT BY W. H. FRY, M.R.C.S. L.R.C.P.

Population.—The estimated population of Penang Island is 163,951, Province Wellesley 130,580 and for the Dindings 12,639.

Births.—The number of births recorded for Penang Island was 5,177, for Province Wellesley 4,533, and for Dindings 352, the nationalities being:—

European	...	...	...	...	59
Eurasian	...	...	...	...	58
Chinese	...	...	...	...	3,186
Malay	...	...	...	...	1,306
Dravidian	...	...	...	...	506
Other Indian	...	...	...	...	37
Others	...	...	...	...	25
Total					5,177

Deaths.—The number of deaths recorded for Penang Island was 5,293, for Province Wellesley 4,251, and for the Dindings 315.

Birth and Death-rates, for the last 5 years:—

<i>Penang.</i>	<i>Birth-rate.</i>	<i>Death-rate.</i>	<i>Infantile Mortality.</i>
1918	27'18	44'01	237'23
1919	30'16	41'71	252'66
1920	29'55	35'30	228'86
1921	32'00	31'58	179'47
1922	31'58	32'28	173'07

<i>Province Wellesley.</i>	<i>Birth-rate.</i>	<i>Death-rate.</i>	<i>Infantile Mortality.</i>
—	—	—	—
1918	29'45	40'68	172'55
1919	30'90	25'04	138'73
1920	30'77	27'52	155'57
1921	35'48	28'61	144'25
1922	34'71	32'55	154'64
<i>Dindings.</i>	<i>Birth-rate.</i>	<i>Death-rate.</i>	<i>Infantile Mortality.</i>
—	—	—	—
1918	30'90	64'64	223'49
1919	22'87	29'88	178'33
1920	27'14	34'77	228'17
1921	27'92	30'69	186'19
1922	27'85	24'92	142'05

Zymotic Disease.—The number of deaths from influenza in Penang Island was 33 as compared with 48 in 1921 and 123 in 1920.

Through the medium of ships 19 deaths from influenza took place at the Quarantine Island, 152 cases being landed there with this disease.

Four hundred and eighty ships were inspected: 6 ships were infected with small-pox comprising 6 cases with 2 deaths.

Small-pox.—The number of small-pox cases in Penang Island was 7 with no death, compared with 3 cases with 2 deaths last year. In Province Wellesley there were 26 cases with 8 deaths compared with 4 cases with no death in 1921.

Vaccination.—Five thousand and forty-nine vaccinations were performed by the Government outside municipal limits and 3,542 by the Municipality.

Plague.—There was no case of plague in the Settlement.

Cholera.—There was no cholera in Penang Island. In Province Wellesley, 2 cases occurred with one death compared with 4 cases with 3 deaths in 1921.

Malaria.—In Penang the deaths reported as malaria for the past five years have been:—

					<i>Deaths</i>
1918	...	...	...	...	723
1919	...	...	...	...	752
1920	...	...	...	...	672
1921	...	...	...	...	620
1922	...	...	...	...	224

The average death-rate per annum from malaria in quinquennial periods has been:—

1901—1905	... 244 deaths.	1911—1915	... 590 deaths.
1906—1910	... 843 deaths.	1916—1920	... 716 deaths.

The appointment of a Senior Health Officer, Penang, was made in 1917. Investigations on rural areas in which anopheles are found are proceeding and work is being undertaken on these as funds permit. The moat round the Fort was filled in during the year.

HOSPITALS.

The number of admissions and deaths in all hospitals in Penang Island and the Hospitals at Quarantine Island for the past 5 years were:—

Years.	Admissions.	Deaths.
1918	10,061	1,452
1919	12,036	1,724
1920	11,385	1,168
1921	11,103	1,146
1922	10,618	991

The Chief diseases treated in these hospitals for the same period were:—

Diseases	1918.		1919.		1920.		1921.		1922.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Phthisis	354	175	320	176	299	189	445	180	287	137
Malaria	1,379	137	2,107	175	2,557	150	2,342	121	2,119	107
Dysentery	337	132	493	192	367	105	334	96	412	150
Diarrhœa	150	21	161	20	157	10	147	4	49	2
Ankylostomiasis	360	90	207	42	261	46	614	68	660	40
Venereal Diseases	771	52	764	31	1,002	24	1,149	13	1,041	17
Influenza	964	195	472	177	937	118	145	7	177	22
Tetanus	3	3	1	1	6	2	4	4	6	3
Plague	28	17	5	4	...	...	..	...	...	...
Cholera	80	55	285	190	...	...	3	...	...	...
Small-pox	58	16	352	108	19	9	45	7	9	2
Enteric Fever	20	13	13	4	13	5	8	3	39	1
Cerebro-Spinal Fever	...	...	...	...	...	...	20	9	44	4
Diphtheria	...	...	...	...	...	...	2	2	23	1

Lunatics.—The number of persons certified as of unsound mind and transferred to Singapore Lunatic Asylum was 94 comprising 74 males and 20 females compared with a total of 91 (76 males and 15 females) last year.

Meteorological.

Rainfall.—

Penang	... District Hospital	3192'	Millimetres.
Province Wellesley	Butterworth	1883'	..
	Bukit Mertajam	2937'	..
	Sungei Bakap	2545'70	..
	Penaga	2452'	..
Dindings	... Lumut Hospital	1804'50	..

Driest month.—

		<i>m-m.</i>	
Penang	... Balik Pulau	38'50	February.
Province Wellesley	... Butterworth	46'25	"
	... Bukit Mertajam	121'00	"
	... Sungei Bakap	65'50	June.
	... Penaga	25'00	January.
Dindings	... Lumut	33'00	June.

Wettest month.—

Penang	... Prison	508'	September.
Province Wellesley	... Butterworth	316'	August.
	... Bukit Mertajam	480'	October.
	... Sungei Bakap	379'	December.
	... Penaga	390'	September.
Dindings	... Pangkor	1347'	December.

The average day temperature.—

				<i>F.</i>
Penang Island	...	...	...	82'4
Province Wellesley	...	...	...	90'4
Dindings	...	...	...	87'5

The average night temperature.—

Penang Island	...	...	...	80'2
Province Wellesley	...	...	...	72'01
Dindings	...	...	...	74'3

Dr. W. H. FRY resumed duty as Chief Medical Officer, Penang, on November 9: Dr. J. GRAY who acted as Chief Medical Officer until then, assumed the duties of his appointment as Chief Medical Officer, Singapore.

I.

GENERAL HOSPITAL, PENANG.

1. Numbers treated during the last five years:—

<i>Years.</i>	<i>1st and 2nd Class Wards.</i>	<i>Deaths.</i>	<i>Percent-age.</i>	<i>3rd Class.</i>	<i>Deaths.</i>	<i>Percent-age.</i>
1918	... 503	35	6.95	2,633	232	8.91
1919	... 462	21	4.58	2,994	291	9.75
1920	... 485	36	7.42	2,901	254	8.75
1921	... 398	21	5.27	2,826	220	7.78
1922	... 428	25	5.84	2,418	176	7.27

Of the 25 deaths in the 1st and 2nd class wards 8 took place within 48 hours of admission. Of the 176 deaths in the 3rd class wards 55 were within 48 hours: deducting these the death-rates were 4'04 and 5'12 respectively. The number of police admitted during the year was 240 as compared with 322 in 1921.

The number of free patients treated in the wards of General Hospital was 1,304 compared with 980 the previous year, the majority of these were "Police Cases".

Twenty-two school children were admitted and treated free.

II.

MATERNITY HOSPITAL, PENANG.

1. This hospital, previously under Municipal control, was taken over with its staff by Government on 1st January, 1922. It can accommodate 31 women, *i.e.*, 12 in the first and second class and 19 in the free wards. There is in addition a children's ward with 4 cots, and an isolation block of 4 beds for septic cases.

2. At times during the year the hospital was quite full.

3. Table of work done in 1922:—

Particulars.	Europeans.	Eur Asians.	Chinese.	Indians.	Others.	Totals.
No. of patients admitted ...	66	10	484	120	7	687
„ of babies delivered ...	54	10	367	108	6	545
„ of still-born cases ...	1	...	19	11	1	32
„ of deaths ...	...	...	22	2	...	24
„ of abortion cases ...	1	...	3	2	...	6
„ of patients admitted and left before confinement ...	...	...	5	8	1	14
„ for examination ...	1	...	...	...	...	1
„ for curetting ...	10	...	2	...	...	12
„ of sick babies admitted ...	...	...	74	10	...	84
„ of sick babies died ...	...	...	34	3	...	37

4. Out-door attendances number 237. The chief diseases treated were fever and bronchial troubles.

5. Twenty midwives were trained during the year, viz:—

European ...	1	Malay ...	2
Chinese ...	16	Tamil ...	1

6. Miss MACDONALD remained in charge throughout the year and was confirmed in the post of Matron.

III.

PRISON HOSPITAL.

1. The sanitary condition of the prison and the health of the prisoners were satisfactory.

2.—(a) There remained 8 patients in hospital at the beginning of 1922 and 295 cases were admitted during the year making a total of 303 cases treated as compared with 362 in 1921.

(b) The daily average of sick was 15.73 as compared with 17.32 of the previous year.

(c) Nine hundred and seven prisoners were treated as out-patients during the year with a daily average attendance of 26.25.

(d) Ten deaths occurred during the year—giving a death-rate of 3.3 as compared with 15 deaths and a death-rate of 4.14 for 1921.

The causes of death were:—

Dysentery ...	1	Valvular disease of heart ...	1
Pneumonia ...	2	Ankylostomiasis ...	1
Pulmonary Tuberculosis ...	2	Hemiplegia ...	1
Suicidal hanging ...	1	Shock and hæmorrhage from ruptured spleen ...	1

There were also 2 cases of judicial hanging.

(e) Sixty-five vagrants were admitted to hospital during the year. One remained from the previous year making a total of 66 treated. Six deaths occurred amongst vagrants.

IV.

DISTRICT HOSPITAL, PENANG.

REPORT BY J. C. TULL, M.D., M.R.C.P., *Government Pathologist.*

1. There remained in Hospital, on 31st December, 1921, 329 patients and 5,693 were admitted in 1922, making a total of 6,022 for the year compared with 6,596 in 1921.

The number of deaths during the year was 489, giving a death-rate of 7.92 per cent as compared with 8.45 per cent in 1921 and 10.4 per cent in 1920.

The principal diseases treated were:—

	Cases.	Deaths.	Rates.
Malaria ...	1,149	78	6.08%
Ankylostomiasis ...	512	13	2.05%
Syphilis ...	472	22	4.06%
Amœbic Dysentery ...	180	81	45.00%
Ascariasis ...	659	5	0.75%
Pulmonary Tuberculosis ...	155	114	73.00%
Lobar Pneumonia ...	132	79	59.08%

The average daily number of patients in Hospital was 298.28, as compared with 306.98 in 1921, and 304.53 in 1920.

The number of minor operations performed during the year was 534 as compared with 613 in 1921.

During July and August there was a mild outbreak of Cerebro-spinal Meningitis, but the hospital has not admitted any large number of serious contagious or infectious disease.

2. The personnel of the Hospital:—

There have been three Medical Officers attached to the hospital, Dr. W. F. TODD until the end of April, Dr. JESSER COOPE from May to October; and Dr. J. PORTELLI since October.

Dr. J. C. TULL, Government Pathologist, has been in direct charge of the hospital throughout the year

3. The New Pathological Laboratory will probably be ready for occupation in April, 1923. It is situated in the grounds of the District Hospital which is a suitable location since most of its investigations will be on cases from this hospital.

In the meantime the Laboratory work has been carried out in a small room in the District Hospital, and in the small Laboratory in the General Hospital. A chart of the record of the work of the Laboratory and a report on the post-mortem diagnoses for the year is attached. The mortuary of the hospital has been used as the public morque during 1922.

4. Work done in the Ophthalmic Ward:—Dr. J. GOSSEP was in charge. One hundred and fourteen patients were treated during the year of whom 94 were in-patients, and 20 out-patients.

Diseases amongst in-patients comprised:—

(1) Conjunctivitis	...	...	...	...	21
(2) Granular Conjunctivitis	...	...	...	...	1
(3) Trachoma	...	...	...	...	12
(4) Ophthalmia	...	...	...	...	2
(5) Ulcercornea	...	...	...	...	13
(6) Leucoma	...	...	...	...	5
(7) Iritis	...	...	...	...	23
(8) Optic Atrophy	...	...	...	...	5
(9) Cataract	...	...	...	...	7
(10) Disorganised eye	...	...	...	...	1
(11) Entropion	...	...	...	...	1
(12) Blepharitis	...	...	...	...	3
					<hr/>
				Total	94
					<hr/>

Sixteen operations were performed viz:—

(1) Cataract Extraction	...	...	...	...	12
(2) Pterygium Excision and Cauterized	...	...	...	...	2
(3) Entropion plastic operation	...	...	...	...	1
(4) Enucleation	...	...	...	...	1
					<hr/>
				Total	16
					<hr/>

5. Five hundred and twelve cases of Ankylostomiasis were treated. The routine started in August, 1921, was continued in 1922.

(1) All Hook-worm cases are admitted to a separate ward set apart for the treatment of such cases. It is a rigid rule in this hospital that the stools of all patients must be examined microscopically as soon after admission as possible. By assembling all Hook-worm patients in one ward the necessary routine measures for their treatment are more conveniently carried out.

(2) All such patients undergo a thorough physical examination, including the examination of a blood film, and the estimation of their Hæmoglobin. Any concurrent diseases are noted, and, if acute, such patients are transferred to the General Medical Ward. This measure is adopted in order that the more urgent diseases may receive special attention first.

Routine treatment.—(1) No food after 4 P.M. of the day preceding the administration of Chenopodium. Water may be taken ad libitum.

(2) At 8 P.M. half an ounce of Magnesium Suphate is given in one ounce of water.

(3) At 7 A.M. fifteen minims of oil of Chenopodium is given in a capsule. All capsules are filled fresh on the morning they are going to be used.

(4) At 8 A.M. a similar capsule is given.

(5) Two hours later one ounce of Magnesium Sulphate is given in two ounces of water.

(6) All patients are urged to lie quietly on their beds after the Chenopodium has been taken.

(7) Each patient is provided with a chamber pot with a suitable cover, and is instructed that all his stools must be passed into this chamber pot.

(8) No food is to be taken until the bowels have been well opened, and then milk diet or tea only for 24 hours, the idea being to have the stools as little bulky as possible.

(9) No alcohol is to be given while the patient is under the influence of *Chenopodium*.

(10) Any patient showing signs of collapse during the treatment is at once to receive 0.5 cc. extract of pituitary body hypodermically.

(11) The stools from each patient are collected, and washed in a sink next morning. This is done by putting the stools in a fine meshed sieve in the sink, and allowing water to run gently over the stools, thus breaking up the faecal matter. This emulsion is then placed in a large black photographic tray, where the worms are easily recognised, picked out and counted. The operator should wear rubber gloves, and use a pair of forceps for picking up the worms.

(12) The daily washing of the stools from each patients is continued until no worms are found. The stools are then examined for ova, and, if negative, the examination is repeated, at the end of 3 days. If still negative the patient is then sent to a convalescent ward, for 3 days, when his stools are re-examined for ova. If the ova of *Ankylostoma* are present the treatment is repeated, within 5 to 10 days.

(13) The Hæmoglobin index of each patient is recorded on admission and on discharge, and once weekly while in hospital.

The carrying out of the above routine measures requires patience and constant supervision but an intelligent dresser can readily be taught to carry them out. The average Tamil patient will try to avoid using his chamber pot, and has to be carefully watched.

Five hundred and twelve cases of *Ankylostomiasis* out of total admissions of 5,693 patients—approximately 9 per cent.

There were 13 deaths.—A mortality of approximately 2.5 per cent.

Nationalities of patients were 238 Chinese, 244 Indians, and 20 Malays.

The oldest patients treated was 75 and the youngest 7.

The number of cases admitted each month was.—January 45, February 33, March 51, April 49, May 68, June 50, July 19, August 40, September 22, October 18, November 73, and December 44.

Symptoms of admission.—Two hundred and seventy-nine of the cases sought admission complaining of fever and general malaise: 93 sought treatment for ulcers on their legs: 69 complained of general œdema: and 36 of diarrhoea.

Associated diseases.—One hundred and fifty-six patients had malarial parasites in their blood: 111 had ascariasis as well as *ankylostomiasis*: 81 had bronchitis: 6 had definite signs of pneumonia: 4 had pulmonary tuberculosis, and 82 had syphilis.

Number of worms expelled.—From the 512 cases 38,966 worms were recovered, giving an average of 76 approximately from each patient. The largest number recovered from any one patient was 609.

In spite of strict supervision it is not possible to recover all the worms. Patients will defaecate in the latrines, instead of using their chamber pots, so that the above figures are undoubtedly low.

Hæmoglobin on admission and discharge.—The average on admission was 47 per cent. The average on discharge was 58 per cent. The number of cases with a hæmoglobin estimation of less than 30 per cent on admission was 89.

The rapid increase in hæmoglobin content following the expulsion of the worms is remarkable, and is safe guide as to the success of treatment. There were 46 patients, whose hæmoglobin rose from between 10 (or less) and 15 per cent to 35 per cent in less than 17 days after their stools ceased to contain hook-worms.

Number of treatments.—Four hundred and twenty-eight patients required only one treatment: 72 required 2, 10 required 3, and 2 required 4 treatments.

Length of stay in Hospital.—The average time was 16 days and the longest time any one patient was in hospital was 98 days.

This patient had Cardiac disease as well, and was admitted with his compensation markedly broken, and required prolonged rest before he was well enough to receive treatment by Chenopodium.

Comparison of treatment by oil chenopodium and by carbon tetrachloride:—Of a series of 80 cases, 40 were treated by oil of chenopodium and 40 by Carbon Tetrachloride, with the following results:—

- (1) The average number of days in hospital for the 40 cases treated (a) by Chenopodium was 17 days, (b) by carbon Tetrachloride 23.
- (2) Number out of 40 cases cured by one treatment of (a) Chenopodium was 36, (b) Carbon Tetrachloride 29.
- (3) Number out of 40 cases treated by Chenopodium in which one treatment did not cure, and in which a subsequent dose of Carbon Tetrachloride resulted in stools being negative to ova, was one.
- (4) Number out of 40 cases treated by Carbon Tetrachloride in which one treatment did not cure, and in which a subsequent dose of Chenopodium resulted in stools being negative to ova was 6.
- (5) Many patients complained of Epigastric burning after the ingestion of Carbon Tetrachloride, but did not mind the oil of Chenopodium given in capsules.

The above series of cases is too small for definite conclusion to be drawn but it does not appear that Carbon Tetrachloride is as effectual as is oil of Chenopodium.

There can be no doubt of the efficiency of oil of Chenopodium in the treatment of Ankylostomiasis. There has been no case in which the ova of Hook-worm were present in the stools, in which oil of Chenopodium failed to produce Hook-worms in the stools. The rapid rise in the Hæmoglobin content of the blood, with the disappearance of general œdema, and the marked improvement in the general condition of the patient all bear witness to the efficiency of the treatment.

The question of reinfection has not presented itself in this hospital in 1922. But, it is obvious that the successful prevention of the disease lies in improved sanitary conditions, preventing soil pollution.

Analysis of fatal cases of Ankylostomiasis.—(1) Tamil aet. 7. Admitted in state of extreme amaciation. Severe diarrhœa. No amœbæ present. No Chenopodium given. Hæmoglobin under 10 per cent. No improvement under general care, and death 19 days admission to hospital.

(2) Chinese aet. 39. General weakness for 15 days. Oedema legs and face and abdominal wall. Hæmoglobin under 10 per cent. Gums spongy. No malaria. Died 3 days after admission. No Chenopodium given.

(3) Adult Tamil. Fever for 3 days before admission. Unconscious at time of admission. Pulse imperceptible. Definite polymorphonuclear leucocytosis. Died 4 hours after admission. Hæmoglobin 15 per cent. Post-mortem abundant hook-worms present. No other cause for death found.

(4) Malay aet. 40. Admitted with general anasarca. Heart dilated. Hæmoglobin under 10 per cent. Abundant albumin and casts in urine. In hospital 24 days. Received Chenopodium. Post-mortem large kidney with cortex much swollen: heart muscles very friable. No hook-worms in gut.

(5) Chinese aet. 28. Admitted for cough and dyspncea for 17 days. Signs aortic insufficiency. Hæmoglobin 35 per cent. Oedema lungs. Given Chenopodium. Died 11 days after admission. Post-mortem marked chronic aortic endocarditis. Few hook-worms in gut.

(6) Bengali aet. 50. Admitted with diarrhoea for 20 days. Much emaciated. Hæmoglobin 20 per cent. Died 8 days after admission. Chenopodium given.

(7) Chinese aet. 40. Admitted with general oedema, and marked emaciation. Died within 24 hours of admission. No Chenopodium given.

(8) Chinese aet. 33. Blind General Malaise for 3 days. Very weak. Definite rigidity neck. Lumbar puncture negative. Died 6 days after admission. Half dose Chenopodium given. Post-mortem left frontal cerebral abscess.

(9) Tamil aet. 35. Admitted with general weakness. Oedema legs. Hæmoglobin under 10 per cent. Ascariasis also present. In hospital 36 days. Progressive asthenia. Chenopodium given.

(10) Tamil aet. 30. Admitted with diarrhoea for 10 days. In hospital 5 days. Given Chenopodium. Two days later he absconded, and was brought back 24 hours later moribund. Post-mortem numerous hook-worms present. Cardiac dilation and oedema lungs.

(11) Tamil aet. 40. Admitted with diarrhoea and oedema legs for 4 months. Hæmoglobin 35 per cent. In hospital 31 days. Given Chenopodium. Progressive asthenia and death.

(12) Chinese aet. 39. General oedema 2 months. Hæmoglobin 20 per cent. In hospital 3 days. No Chenopodium given. Lungs oedematous. Post-mortem heart muscle very friable. Diffuse hepatic cirrhosis.

(13) Tamil aet. 58. Senile. Diarrhoea 3 months. Very emaciated. Hæmoglobin under 10 per cent. No Chenopodium given. Died 36 hours after admission.

6. Treatment of Gonorrhœa by intravenous injection of Acriflavine.

(NOTES BY ASSISTANT SURGEON J. R. JACOB, L.M.S. AND ASSISTANT SURGEON K. V. VERASENGAM, L.M.S.)

Between July 1, 1922, and December 31, 1922, thirty cases were treated by this method.

The first ten cases were treated with a 1 in 1,000 solution in normal saline; the subsequent twenty cases were treated with a 1 in 500 solution of the drug in normal saline.

Technique.—The water was distilled in the Pathological Laboratory and 0.875 per cent sodium Chloride added, and the whole sterilised. To this solution one part in five hundred (or one in one thousand) of Acriflavine was added.

All injections were given on a fasting stomach with 24 hours rest in bed subsequently.

Dosage.—First dose 100 cc. intravenously.

Second dose 150 cc. intravenously 2 days later.

Third dose 200 cc. intravenously 3 days later.

Fourth dose 200 cc. intravenously 4 days later.

Fifth dose 200 cc. intravenously 4 days later.

Cases with anterior urethritis only, received no irrigations.

Cases with posterior urethritis received daily irrigations with Potassium Permanganate, and prostatic massage.

Classification of cases.—(1) Cases which had had a urethral discharge for less than two weeks. Of such there were 10 cases.

(2) Cases which had had a urethral discharge for 2 to 4 weeks. Of such there were 5 cases.

(3) Cases which had had a urethral discharge for more than 4 weeks. Of such there were 15 cases.

(4) Cases seen in their first attack of gonorrhœa. Of such there were 23 cases.

(5) Cases seen in other than their first attack of gonorrhœa. Of such there were 7 cases.

Complications present at the time of admission.—

(1) Orchitis	...	...	...	2 cases.
(2) Urethral stricture	...	...	...	2 cases.
(3) Periurethritis with effusion	...	...	...	2 cases.

Conditions essential before all these cases were discharged as cured:—

- (1) Discharge must have ceased completely.
- (2) Examination of prostatic discharge after massage must be negative to gonococci.
- (3) Complement fixation test must be negative.

Results obtained under above conditions.—

<i>Duration of disease on admission.</i>	<i>Average length of time for cure.</i>	<i>Average No. of Acriflavine injections.</i>
Under 2 weeks	10 days	3
2 to 4 weeks	16 days	4
Over 4 weeks	21 days	5

Results.—Cured 26. No discharge. Complement fixation test negative. Relieved 3. No discharge. Complement fixation test positive. No improvement 1. Discharge persistent. Complement fixation test positive.

Two cases developed evidence of district effusion into a Knee joint, as well as a peri-arthritis. Under strict aseptic technique the effected knee joint in each of these cases was aspirated, and 15 cc. of the Acriflavine solution was injected. Two weeks later a similar injection was given. No further effusion occurred, and the patients were discharged with good function in these joints.

None of the usual ordinary antiseptics were given to any of these 30 patients.

No untoward symptoms were observed in any of the patients from these injections.

Conclusions.—In the early cases successful and rapid results are obtained. In cases with evidence of acute urethral inflammation with painful micturition and local œdema, and extreme tenderness, all local remedies with attendant pain are obviated. The patients stay in hospital is shortened.

In cases of posterior urethritis the best results are obtained by combining the intravenous with local treatment.

The series of cases is small, but the results sufficiently encouraging to warrant further trial.

7. Sixty-nine cases of non-venereal ulcers were treated by intravenous injection of a solution of Tartar Emetic.

(NOTES BY ASSISTANT SURGEON P. E. PEREIRA, L.M.S.)

The solution used was a 2 per cent sterilised solution of Tartar Emetic, with 1 per cent Carbolic Acid in distilled water.

With the usual aseptic precautions, 2 cc. of this solution was injected intravenously. Four days later 2.5 cc. was injected, and 4 days later 3 cc. No cases received more than 3 injections. The total number of injections given was 196.

All patients showed a negative Wassermann before treatment was begun.

General Results.—Usually after the second injection the dirty, sloughing ulcer had discarded its slough, and showed a characteristic intensely red base, and edges. No further benefit was observed from subsequent injections after this stage had been reached:—on the contrary subsequent injections delayed healing. Effects observed on various ulcers:—

(1) Large sloughing, dirty ulcers.

Number treated 45.

Number markedly improved after two or three injections 25.

Number slightly improved 17.

Number discharged cured 3.

The benefit obtained is really more than would appear from above results, because of the difficulty of persuading the patient to remain in hospital long enough for complete healing. As soon as an ulcer ceases to be painful, and not offensive, the average patient takes his departure.

(2) On acute, fairly "clean", granulating ulcers.

On three such cases no improvement was noticed.

(3) On old, chronic, indurated ulcers. Of six such cases two showed slight improvement, assuming a semblance of the characteristic red appearance, and 4 showed no change, after three injections.

One of these cases subsequently died of septicæmia.

(4) On syphilitic ulcers.

Fifteen such cases with a strongly positive Wassermann received 3 injections each, without the slightest beneficial result.

Conclusion.—(1) The treatment is of undoubted value in dirty, sloughing ulcers, of non-venereal origin.

(2) More than 3 injections seem to be useless.

(3) The treatment is of doubtful benefit to the ordinary "clean" ulcer.

(4) It is of no benefit to syphilitic ulcers.

(5) In class (1) the length of stay in hospital of the patient is distinctly shortened; a saving in dressings is also effected.

V.

BALIK PULAU HOSPITAL.

REPORT BY W. H. FRY, M.R.C.S., L.R.C.P.

The Hospital was in charge of Dresser Mohamed Ghouse during the year.

One hundred and sixty-nine cases were admitted, this with 14 cases remaining from the previous year made a total of 183 cases treated in all.

The average daily number of sick was 14.98 compared with 15.20 in 1921.

There were 22 deaths during the year including 7 from Malaria and 4 from Dysentery. The percentage of death to total treated is 11.4 as compared with 11.6 in 1921.

From January, 1922, all the Vernacular Schools in the District were visited and children treated. Schools were supplied with Quinine and in many instances children took home quinine for their parents.

Most of the children treated suffered from Scabies, Yaws or Chronic Malaria.

One thousand five hundred and sixty-eight children were treated during the year and treatments were carried out at 24 different schools.

There are twenty-one Vernacular Schools, two Chinese and one English School in the District.

VI.

LUMUT HOSPITAL.

REPORT BY W. H. FRY, M.R.C.S., L.R.C.P.

Building.—During the year a new female ward and a covered way between the male and the female wards were built. Quarters for an Assistant Surgeon, two dressers and three attendants were also completed.

Work done.—Assistant Surgeon H. MEHTA was in charge.

There were 498 admissions, which with 18 remaining for the previous year made a total of 516 as compared with 605 of the previous year. The decrease was due to few malarial admissions.

The daily average number of patients was 20·22 as compared with 25·44 of the previous year.

The principal diseases treated:—

			<i>Cases.</i>	<i>Death.</i>
Ankylostomiasis	...	...	7	1
Dysentery	...	...	18	3
Malaria	...	...	142	3
Pneumonia	...	...	19	7
Phthisis	...	...	16	6
Venereal disease	...	...	24	1
Ulcers	...	...	66	—
Influenza	...	...	17	3

Blood films of all fever cases and those who had enlarged spleen were examined.

Eight hundred and fifty-one intravenous injections of quinine and cacodylate were given for malaria.

Sixty-six intravenous injections of neosalvarsan were given for yaws and syphilis.

One hundred and forty-four intravenous injections of Iodine were given for pneumonia and influenza.

Deaths.—There were 33 deaths, of these 13 died within 48 hours of admission.

The percentage of deaths to total treated was 6·4 as against 4·9 in 1921. The percentage of deaths excluding those dying within 48 hours of admission was 3·8 against 3·4.

Infectious Diseases.—There was one fatal case of tetanus.

VII.

FEMALE LEPER WARD.

REPORT BY W. H. FRY, M.R.C.S., L.R.C.P.

Twenty-nine patients remained at the end of 1921.

During the year 19 female lepers were admitted.

Five were lepers from the Colony and 14 being lepers sent from Perak—making a total of 48 cases treated in all.

There were 5 deaths during the year giving a death-rate of 10.41.

The average daily number of sick for the year was 32.49.

The new ward built on the ground adjacent to the old ward was first occupied by a batch of 12 lepers from Perak in the month of August.

During the year a course of treatment with injections of "Moogrol" was tried for short time—on 31 cases—211 injections were given in all. This remedy was given intramuscularly twice a week and was found to be painful—pain at sites of injections lasting for 3—4 days in majority of cases—and injections were discontinued.

The patients were then put on a course of injections of E. C. C. O.—given intramuscularly twice a week—in doses beginning with $\frac{1}{4}$ cc. to $\frac{1}{2}$ cc. gradually increasing doses up to $2\frac{1}{2}$ and 3 cc.

Four hundred and forty-three such injections were given.

Fifteen selected cases with chronic obstinate ulcers were given injections of "Oscol Stibium"—an average of 4 injections to each case. Slight improvement in the condition of the ulcers followed these injections.

VIII.

LEPER ASYLUM, PULAU JEREJAK.

I. Statistics.—

Remained on 31st December, 1921—

Colonial	...	...	...	...	218
Perak	...	...	...	...	157
Selangor	...	...	...	...	51
Kedah	...	...	...	...	24
				—	450

Admitted during 1922—

Colonial	...	...	...	...	68
Perak	...	...	...	...	82
Selangor	...	...	...	...	70
Kedah	...	...	...	...	29
				—	249

Total inmates .. 699

Discharged during 1922—

Colonial	...	...	...	...	2
Kedah	...	...	...	...	1
				—	3

Transferred during 1922—

Nil.

Absconded during 1922—

Colonial	...	...	...	...	9
Perak	...	...	...	...	1
Selangor	...	...	...	...	1
Kedah	...	...	...	...	1
				—	12

Deaths during 1922—

Colonial	...	...	...	...	67
Perak	...	...	...	...	71
Selangor	...	...	...	...	34
Kedah	...	...	...	...	14
					— 186

Remaining on 31st December, 1922—

Colonial	...	...	...	...	208
Perak	...	...	...	...	167
Selangor	...	...	...	...	86
Kedah	...	...	...	...	37
					— 498

2 *Staff.*—Mr. A. H. WHEATLEY continued to do excellent work as Resident Assistant Surgeon.

3. *Inmates.*—

(a) Since February two wards in the Old Quarantine Station have been used to accommodate 60 additional lepers from Selangor.

(b) *Treatment for Leprosy.*

Three hundred and fifty-seven cases are undergoing special treatment as compared with 146 in 1921. The drugs used have been Sodium Hydnocarpate et Soyate 3 per cent Solution, Muir's E. C. C. O. and 2 per cent Solution Tartar Emetic.

Three cases have been discharged apparently cured and two more are qualifying for discharge. The results are encouraging to the other inmates.

The tables, etc., appended are:—

- Giving the number of admissions, total number of deaths, and daily average for 1922.
- Giving the nationality of the inmates.
- Record of treatment for Leprosy with illustrative cases.

TABLE A.

Showing the number of admissions, total number of deaths, total number of inmates and the daily average for 1922.

Year.	Remained from previous year.	Admissions.				Total.	Deaths.	Percentage of Deaths.	Daily average patients.
		Colonial.	Perak.	Selangor.	Kedah.				
1922.	450	68	82	70	29	699	186	26.60	49.86

TABLE B.

Nationality.	Colonial.	Perak.	Selangor.	Kedah.	Total.
Chinese ...	238	214	117	36	605
Eurasian ...	7	1	...	...	8
Malay and Javanese ...	2	...	1	...	3
Tamil ...	33	24	3	17	77
Kling Islam ...	4	...	...	...	4
Bengalee Islam ...	1	...	...	...	1
Philipino ...	1	...	...	...	1
Total ...	286	239	121	53	699

TABLE C.

REPORT ON TREATMENT BY A. H. WHEATLEY, *Resident Assistant Surgeon in charge.*

Treatment for Leprosy:—

Cases remaining under treatment at the end of 1921 ...	146
New cases seeking treatment ...	211
Total under treatment during the year ...	357

The chief drug used has been E. C. C. O. (the ethyl esters of the fatty acids of the oil of *Hydrocarpus Wightiana*, with camphor, creosote and Olive oil) commencing with 0.25 cc. twice weekly, intramuscularly the dose is increased by 0.25 cc. till a re-action is produced, usually in acute nodular cases with 1 cc. as long as there are only mild re-action, the dose is increased, but if a severe re-action, such as high fever, or increase of rash ensues, the dose is decreased immediately and even suspended, commencing again on the last smaller dose, one or two weeks after the re-action has passed off. Each case has to be studied for his own dose. Usually in nodular cases up to 5 cc. twice weekly, and in nerve lesion cases as much as 6 C.Cs. have been given. The best results are obtained in acute nodular cases, with mild re-action, but the majority of cases shew some improvement with this drug. Ulcers heal, there is a general feeling of well-being, and although the nodules swell up, after a re-action, there is usually improvement for when the re-action is over they shrink and subside. With the exception of one case, all are under this E. C. C. O. treatment now, as the lepers prefer this drug to any other. They say it makes them feel stronger, and it gives the quickest results.

Sodium Hydnocarpate et soyate 3 per cent Solution. At the end of the half year ending June, 1922, there were 133 cases on this drug, $\frac{1}{2}$ C.C. given intravenously twice weekly and gradually increased to 5 C.Cs. In three cases, who had been 4 and 2 years in the asylum, the lesions disappeared. Two of these cases have been discharged apparently cured and one absconded free from all clinical signs.

Two per cent Solution Tartar Emetic was given to 60 ulcerative cases; in the majority of cases the ulcers became cleaner, they were then put on treatment with E. C. C. O. The usual commencing dose has been 2 C.Cs. gradually increased till 5 C.Cs. was reached.

Illustrative cases.—(1) T. VALASCO, Portuguese Eurasian, 24 years of age, admitted 4th January, 1918. Duration of Leprosy was given as one year. Condition on admission.

He was in a very debilitated state, unable to walk, with marked oedema of feet. There was nodular thickening of ears, cheeks and forehead. Complete anæsthesia of hands and feet and anæsthetic patches on buttocks and thighs. The ring and little fingers of right hand were contracted, nasal cavity was ulcerated, and smears showed numerous *Lepra bacilli*.

Treatment was commenced with Sodium Gyno-cardate A and then in 1921 with Sodium Hydnocarpate et Soyate, all intravenously, with periods of three weeks cessation, every three or four months. There was steady improvement throughout; his condition now is, all clinical signs of leprosy have disappeared, sensation has returned in all anæsthetic areas: there is no ulceration of nasal cavity, there is no contraction of the fingers; smears show no *Lepra bacilli* (confirmed by Dr. TULL, the Government Pathologist on 13th September, 1921, and 1st March, 1922). VALASCO discharged and is now working as an apprentice dresser at the New Leper Wards in the Asylum.

(2) MURUGAN, Tamil, 27 years of age, admitted on 30th September, 1920. Duration of disease 4 years, was a tapper on a rubber estate in Kedah. Condition on admission. Marked nodular thickening of face and ears. Large anæsthetic patches on buttocks. Anæsthesia of forearms, hands, legs and feet. Ulceration of fingers. *Lepra bacilli* in great numbers in nasal smear. He was treated first with Sodium Hydnocarpate and then with Sodium Hydnocarpate et soyate—All clinical signs of Leprosy disappeared. Sensation returned completely, ulcers healed; Smears were sent to the Government Pathologist, Penang, who reported them on two occasions, to be negative. He was discharged apparently cured on 25th January, 1922, and returned to his home in India. He has written to the Assistant Surgeon three times, saying he was keeping fit and free from all signs of the disease.

(3) MYDIN, Islam Tamil, admitted on 27th March, 1920, 4 years ill with leprosy.

Condition on admission. There were light pink nodules, on face, marks over malar bones; ears were thickened. There were anæsthetic patches, on buttocks and outer part of the thighs, and there was anæsthesia of hands, legs and feet. Both fingers and feet were ulcerated. *Lepra bacilli* present in nasal smear.

Treatment. He was first treated with intravenous injections of Sodium Soyate 3 per cent solution. The clinical signs began to clear, the ears becoming less thickened and the nodules disappeared. Sensation was returning: *Lepra bacilli* were absent on six occasions from nasal smears. He was then placed on Sodium Hydnocarpate et soyate, as there was still loss of sensation in fingers and buttocks, and this was returning when he absconded.

(4) KOOMERASAMY, a Tamil reported in Annual Report of 1921 was doing well on Sodium Soyate treatment but unfortunately took ill with lobar pneumonia to which he succumbed.

(5) Vellian, Tamil, 35 years of age, admitted on 1st April, 1914, duration of disease 7 years.

Condition in July, 1921, *lepra bacilli* present nodular thickening of cheeks, forehead and ears, anæsthetic patches, lower extremities up to knees. Ulceration of feet, and a perforating ulcer of right sole. Treated Sodium Hydnocarpate et soyate was begun on 3rd March, 1921.

Condition in December, 1921. Nodules greatly decreased, ears less thickened sensation returning to anæsthetic patches, ulceration healing, perforating ulcer much cleaner: he was placed on E. C. C. O. on 11th January, 1922. Condition on 31st December, 1922. Nodular thickening of face hardly perceptible, left ear slightly thickened still. Sensation returned, much stronger bodily, ulcers healed. Is at work in charge of the labour work party.

(6) CHAN HIN, Khék, admitted on 1st June, 1921, 34 years of age, duration of disease 3 years.

Condition on admission. *Lepra bacilli* present. Small pinkish tubercles on ears, face and forearms, contraction of ring and little fingers of left hand, anæsthesia of both hands and forearms and both feet. Put on E. C. C. O. on

10th December, 1921. Condition on June 30, 1922. Small tubercles on ears only, slight contraction still of fingers of left hand. Anæsthesia of left hand and forearms.

Condition on December 31, 1922. Free from all clear signs of leprosy; return of sensation; contraction of fingers disappeared: Ulnar nerve still slightly thickened. Smears negative. Has put on weight, and increased in muscular development.

(7) YAP CHAN HONG, Khek, 15 years of age duration of disease 2 years, admitted on 27th August, 1921.

Condition in December, 1921. Ears thickened, tubercles on malar bones, and right cheek, large anæsthetic patches on back and outer part of thighs very thin and debilitated. Put on E. C. C. O. Condition in December, 1922. Tubercles disappeared, ears still slightly thickened, sensation has returned to all previous anæsthetic areas much stouter and full of life.

(8) SON TONG, 33 years of age, duration of disease 3 years. Condition on admission, ears much thickened, large pinkish nodular masses on face and body. Large pinkish lepra tumour size of a small cocoanut on left lumbar region: smears from nodules, and tumour shew numerous lepra bacilli.

Placed on Sodium Hydnicarpate et soyate treatment, there was slight improvement, nodules on face and body decreased, ears were less thickened. Tumour remained same size. He was put on E. C. C. O. on 6th January, 1922, and the result has been excellent, nodules on face and body have almost disappeared, ears have decreased greatly, the large lepra tumour is almost flush with the surrounding healthy skin. The general health has greatly improved. Lepra bacilli are still present but in fewer numbers. This case re-acted very severely to a dose of 3 C.Cs. and all treatment had to be stopped for a month, commencing again with a smaller dose, and on reaching 2 C.Cs. again another very severe re-action occurred, so the dose has not exceeded 1 cc. for past two months, and he is doing well on this.

(9) HONG KONG FOO, Hylam, 25 years of age, admitted 12th February, 1919: with great inducement he agreed to start treatment this year: he said his case was hopeless and his face was too disfigured to ever get well. Put on E. C. C. O. on 11th July, 1922. Condition at commencement of treatment, ears very thickened, marked nodular thickening of forehead and over malar bones, slight contraction of fingers of left hand, small nodular patches on body, anæsthesia of hands and feet. Smears showed Lepra bacilli. Condition 31st December, 1922. Thickening of ears and face greatly decreased patches on body disappeared, rapidly improving in bodily health. Still some anæsthesia of feet; fingers quite normal, no contraction.

(10) YONG YONG, Khek, 45 years of age, admitted on 8th February, 1922, duration of disease one year.

Treatment with E. C. C. O. commenced on 12th February, 1922. Both ears very thickened, skin over malar bones thickened, anæsthetic patches on back, numbness of hands and feet. Lepra bacilli present in great numbers in smears from nasal septum.

Condition on 31st December, 1922, after ten months' treatment. Thickening both ears greatly decreased, left ear almost normal, right ear still some thickening of lobule.

Thickened skin of face greatly decreased—sensation returning in hands and feet, and in anæsthetic patches on back. Nasal smear shows some lepra bacilli still, but in fewer numbers. Still under treatment.

(11) KUNJUNINAR, Malayalam, admitted on 17th June 1922, duration disease 6 months. Condition on admission both ears very thickened, nodular thickening of forehead, anæsthetic of hands, and feet B. Lepra bacilli present; put on E. C. C. O. on 24th June, 1922. Condition on 31st December, 1922.

Ears still slightly thickened, nodular thickening on forehead disappeared, sensation returning fast—still under treatment. Will not have his photo taken as he has a vow, not to cut his hair, till he is cured.

(12) LOW AH HONG, Hylam, 14 years of age, admitted 3rd October, 1922, duration of disease one year.

Condition on admission. Both ears very thickened, extensive nodular patch on right cheek, ulcers on hands, legs and feet B. lepra present. Put on E. C. C. O. on 7th October, 1922. Has shown marked improvement in two months, ulcers healed right ear thickening greatly decreased nodular patch on right of face greatly reduced. Has put on weight rapidly.

(13) RAJOO, Tamil, aged 36 years, admitted on 6th November, 1921, B. Lepra present.

Condition on 31st December, 1921, when treatment was commenced with Sodium Hydnocarpate et soyate; nodular thickening of face, ears thickened small perforating ulcer of right sole—anæsthetic patches on back and outer part of thighs, hands and feet anæsthetic.

Condition on 30th June, 1922, skin of face smooth almost normal, ears slightly thickened, sensation returned in anæsthetic areas. Ulcer healing. From 22nd July, 1922, stopped treatment altogether. Returned for further treatment on 13th September, 1922, complaining of pricking pains in hands, with contraction of all the fingers of left hand, and very shaky. Put on E. C. C. O. and, Mist Ferri et Strych: internally. Condition on 31st December, 1922 has grown much stouter, skin of face smooth, ears still slightly thickened, contraction of fingers decreasing—Pricking pains absent. Still under treatment.

(14) VONG AH CHIN, Chinese, 18 years of age, admitted on 20th January, 1921, B. Lepra present. Condition when treatment was commenced on 14th June, 1921, with intravenous injections of Sodium Hydnocarpate—large pinkish lepra tubercles on face, ears enormously thickened and standing out, ulcers fingers and toes. Anæsthesia of lower extremities up to knees and of both hands and forearms.

Very morose in nature. Put on Sodium Hydnocarpate et soyate, at end of 1921, with slight improvement. Put on E. C. C. O. on 16th January, 1922. Condition on 31st December, 1922. Large tubercles face decreased greatly, ears are greatly reduced but still thickened, ulcers have all healed—sensation has returned to previous anæsthetic areas: takes a greater interest in life, plays football, and has become an expert fisher-boy.

(15) VENGKETRAMA, Tamil, admitted on 27th April, 1921, 40 years of age, but looks much older. B. Lepra present.

Condition on 30th June, 1921. Nodular thickening of skin of face, leonine expression, ears very thickened, anæsthetic patches body, forearms, hands, legs and thighs. Perforating ulcer right sole. Put on Sodium Hydnocarpate et soyate, with some improvement; thickening of face lessened, leonine expression not so marked. Sensation returned in hands and feet. Condition then became stationery—Put on E. C. C. O. on 24th June, 1922, condition now greatly improved—Thickening of face much decreased, ears very slightly thickened sensation has returned to anæsthetic patches on body, but there is some loss of pigment and these patches are lighter. Perforating ulcer smaller.

APPENDIX C.

PROVINCE WELLESLEY.

REPORT BY H. W. FURNIVALL, M.B., B.S. (Dunelm).

Population.—Vital statistics for the entire Province:—

Year.	Population.	Births.	Deaths.	Birth-rate p.m.	Death-rate p.m.
1918	139,538	4,109	5,676	30.40	42.08
1919	141,115	4,361	3,533	30.89	25.03
1920	142,710	4,391	3,928	30.76	27.57
1921	136,335	4,624	3,730	35.47	28.61
1922	130,478	4,533	4,251	34.74	32.58

Infantile deaths numbered 701, a ratio per mille of 154.64 for 1922, against 144.25 for 1921. Twenty-six cases of small-pox with 5 deaths occurred. There were 62 cases of chicken-pox: no deaths.

Health.—Though the general death-rate and infantile mortality rate for the year showed an increase on the previous year for the whole Province, the hospital death-rates were not increased.

The Health Condition of the Estates was fairly good.

School Inspection.—The 49 schools in Northern and Central Districts were inspected by the Medical Officer at least once, and in certain instances revisited to supervise the treatment of the school children. In addition a dresser attended each school and carried out the treatment ordered by the Medical Officer.

Work thus done showed.—

Total Scholars examined	...	...	...	3,233
Percentage of sick and requiring treatment	...	...	...	25.30%
Spleen incidences	...	...	...	6.13%
Teeth defective	...	...	...	4.33%
Eye Disease	...	...	...	1.33%
Tonsils and (or) Adenoids	...	...	...	2.84%

In connection with School Inspections the popularisation of treatment of cases of Yaws by intravenous injections of 914 was commenced towards the year's close. Notices were distributed by Notice Servers and Penghulus, etc., anent the efficiency of this method of treatment that it was free, not a compulsory measure, and could be carried out in the houses of patients as well as at the Out-door Dispensaries.

Staff.—Dr. McVAIL, stationed at Butterworth supervised the Northern and Central Districts from 21st January, 1922. Dr MASON took over charge of the Southern District and resided at Sungei Bakap Hospital. Dr. H. W. FURNIVALL, relieved Dr. McVAIL in November, 22nd.

I.

BUTTERWORTH HOSPITAL.

REPORT BY H. W. FURNIVALL, M.B., B.S. (Dunelm).

Work done.—(a) Sixty-six patients remained from the previous year, which with 1,246 admissions during the year gives a total of 1,312 cases treated during the year as against 1,394 for 1921. The average daily number of sick was 59.35. The number of deaths to total treated was 108, of whom 11 died within 48 hours of admission. The percentage of deaths to total treated was 8.30 as compared with 8.10 for 1921.

Excluding those dying within 48 hours of admission, the percentage was 7.45 against 7.10 for the previous year. Sixty-two patients remained at the end of the year.

(b) Principal diseases treated were:—

Malaria ...	200	Pneumonia ...	28
Ankylostomiasis ...	88	Tuberculosis ...	26
Syphilis ...	85	Diarrhœa ...	25
Dysentery ...	62	Asthma ...	16
Bronchitis ...	50	Scabies ...	15
Gonorrhœa ...		35	

(c) A systematic examination of the stools and blood of patients admitted into hospital was carried on during the year.

The result of stool examination was as follows:—

	Percentage.
Hook-worm ova ...	99
Whip-worm ova ...	64
Round-worm ova ...	50
Amœba Coli ...	31
Comma Bacillus ...	1

The results of blood examination were:—

	Percentage.
Benign Tertian ...	71
Subtertian ...	55

(d) Two hundred and ninety-five operations, were performed during the year, of which 230 cured, 65 relieved and none died.

(e) One hundred and twenty cases of venereal diseases were treated during the year. Of these 110 were males and 10 females.

II.

BUKIT MERTAJAM HOSPITAL.

REPORT BY H. W. FURNIVALL, M.B., B.S. (Dunelm).

Work done.—Fifty-eight patients remained at the end of 1921, which with 1,291 admissions during the year makes a total of 1,349 treated during the year, as against 1,000 in 1921. The average daily number of sick was 66.74 as compared to 56.8 in 1921. The number of deaths to total treated amounted to 108 of these 21 died within 48 hours of admission. Percentage of deaths to total treated excluding those dying within 48 hours of admission was 6.55 per cent as compared to 8.15 per cent in 1921. Fifty-six patients remained at the end of 1922.

Principal diseases treated with the number of deaths were as follows:—

	Number of cases.	Number of deaths.	Ratio percentage.
Ankylostomiasis ...	80	23	28.75
Malaria ...	437	14	3.02
Dysentery ...	66	16	24.02
Diarrhœa ...	8	Nil	Nil
Venereal disease ...	83	Nil	Nil
Phthisis ...	40	18	45.00
Nephritis ...	14	4	28.05
Pneumonia ...	24	11	48.05
Small-pox ...	5	2	40.00

Stools of all admissions were examined. Out of 1,292 stools examined 149 or 11.53 per cent showed ova of *Trichocephalus Dispar*. 1 showed ova of *Distoma Hepaticum* and 1 showed *Comma Bacillus*. The blood of all admissions were also examined. Out of 1,291 films 44 or 3.4 per cent showed full grown Benign Tertian Parasite, 24 or 1.8 per cent showed Benign Tertian Rings, 33 or 2.55 per cent showed Malignant Tertian Rings, 10 or .77 per cent showed Crescents and 4 or .03 and showed Quartian.

III.

SUNGEI BAKAP HOSPITAL.

REPORT BY J. B. MASON, L.R.C.P., L.R.C.S.

Hospital Statistics.—There were 38 patients remaining at the beginning of 1922.

Total patients admitted	...	...	...	1,175
Total patients treated	...	...	...	1,213

As compared with:—

Total patients treated 1921	...	...	...	730
Percentage of deaths to total treated 1922	...	...	...	9.81
Percentage of deaths to total treated 1921	...	...	...	9.43
Number of deaths within 48 hours of admission	...	...	...	33
Average daily number of sick	...	...	...	69.18
Number of patients remaining at the end of 1922	...	...	...	70

Principal Diseases treated with the number of deaths and percentage of deaths from each disease:—

Disease.	No. of cases	Deaths.	Percentage 1922.	Deaths 1921.
Ankylostomiasis	232	33	14.65	23.21
Diarrhoea	23	...	...	...
Dysentery	35	12	34.29	26.34
Malaria	136	11	8.08	8.49
Nephritis	8	3	37.50	nil.
Pneumonia	25	15	60.00	50.00
Venereal disease	38	...	...	...
Small-pox	19	3	15.78	nil.
Tuberculosis	18	11	61.11	50.00
Injuries and Wounds	80	2	2.50	nil.

A routine examination of the stools of patients admitted into hospital was carried on during the year. The positive results were as follows:—

Ankylostomiasis Hook-worm	...	...	...	249
Ascaris Lumbricoides	...	...	...	179
Oxyuris Vermicularis	...	...	...	2

IV.

ESTATE HOSPITAL STATISTICS, PROVINCE WELLESLEY.

Name of Estate.	Total treated.	Deaths.	Percentage.
Caledonia	1,815	72	3.96
Vald'or	111	9	8.10
Bakap	51	4	7.84
Simpang	31	2	6.45
Sempah	43	6	14.51
Sungei Kechil	27	5	18.51
Malakoff	239	4	1.67
Bertam	298	17	5.7
Prai	24	6	25.
Batu Kawan	68	8	11.76
Total	2,707	133	4.91

APPENDIX D.

MALACCA.

REPORT BY RICHARD DESMOND FITZGERALD, M.C., B.A., M.D., D.T.M. & H.

The population of Malacca is composed as follows:—

Europeans	458
Eurasians	1,812
Chinese	46,897
Malays	88,501
Indians	19,301
Others	271
Total	157,240

Births.—The total number of births for 1922 was 4,992 as compared with 6,104 in 1921, 5,315 in 1920 and 5,934 in 1919.

The following table shows the nationalities:—

	Male.	Female.	Total
Europeans	5	3	8
Eurasians	36	40	76
Chinese	671	607	1,278
Malays	1,652	1,508	3,160
Indians	168	152	320
Others	85	65	150
Total	2,617	2,375	4,992

The birth-rate per mille was 31.75.

Deaths.—Four thousand one hundred and twenty-eight deaths were registered during the year as compared with 4,468 in 1921, 4,808 in 1920 and 4,970 in 1919.

The following table shows the nationalities:—

		Male.	Female.	Total.
Europeans	...	2	1	3
Eurasians	...	24	25	49
Chinese	...	931	339	1,270
Malays	...	1,159	1,052	2,211
Indians	...	367	169	536
Others	...	42	17	59
Total	...	2,525	1,603	4,128

Comparison of death-rate with the preceding five years:—

1922	...	...	...	26.25
1921	...	...	...	27.71
1920	...	...	...	31.18
1919	...	...	...	32.48
1918	...	...	...	50.04
1917	...	...	...	48.97

Vaccinations.—The total number of vaccinations performed was 23,184. Forty-three cases of small-pox occurred in the Settlement.

The estimated population for the Municipality for 1922 was 30,999.

There were 882 births and 702 deaths within the Municipal Limits.

I.

DURIAN DAUN HOSPITAL.

1. *Staff.*—Dr. R. D. FITZGERALD, acting Chief Medical Officer, went on leave on the 24th of January, 1922, and was relieved by Dr. J. HARRISON, who died in Malacca on the 21st March, 1922. Dr. V. B. KYLE, then acted from 5th April until the 24th May, 1922. Dr. W. A. TAYLOR, the substantive holder of the post, performed the duties from 27th May, 1922, until he went on leave on 6th September when he was again relieved by Dr. FITZGERALD.

2. *Buildings.*—(a) Two new observation cells were erected.

(b) Two Dressers' quarters were completed; four more are under construction.

3. *The year's work.*—

Patients remained on 31st December, 1921	...	229
Patients admitted during the year	...	3,048
Discharged	...	2,591
Transferred	...	29
Absconded	...	54
Died	...	365
Remained on 31st December, 1922	...	238

The average daily number of sick was 257.91.

The number of deaths within 48 hours of admission 104.

The percentage of deaths to total treated 11.13.

The percentage of deaths excluding those dying within 48 hours of admission 8.22.

The number of European patients admitted during the year was 60 males and 13 females. There were 2 deaths.

The principal diseases treated and their mortalities were as follows:—

			<i>Cases.</i>	<i>Deaths.</i>
Ankylostomiasis	...	...	244	28
Beri-beri	...	...	166	23
Broncho Pneumonia	...	...	14	9
Cirrhosis of Liver	...	...	17	8
Dysentery	...	...	138	61
Influenza	...	...	63	—
Malaria	...	...	607	54
Pneumonia Lobar	...	...	60	15
Tuberculosis	...	...	160	75
Ulcers	...	...	35 ¹	—
Wounds	...	...	145	7
Venereal Diseases	...	...	337	5

4. Forty-two Autopsies were held on patients dying in the Hospital during the year.

5. *Surgery*.—There were 1,552 surgical operations performed during the year, of which 90 were Major and 1,462 Minor.

6. *Medico-legal*.—(a) Seventy-three dead bodies were sent for post-mortem examination by the Coroner.

(b) The Police brought in 234 cases for examination and treatment.

(c) Forty-one persons were brought in by the Police for observation of insanity and 7 persons for examination for Leprosy.

7. *Laboratory work*.—(a) Number of specimens of stool on admission examined were 3,048. Ova of Ankylostome discovered in 310 cases showing the infection of 10·16 per cent; ova of Ascaris in 564 cases representing 18·50 per cent infection; ova of Tricocophalus Dispar in 276 representing 9·05 per cent infection; ova of Oxuris Vermicularis in 60 representing 1·96 per cent infection; ova of strongyloides stercoralis in 66 representing 2·16 per cent infection.

(b) Number of blood films examined 1,154.

Benign Tertian parasites in 232.

Sub-Tertian parasites in 278.

(c) Number of Sputa examined 324

Tubercle Bacilli were found in 117.

(d) Smear for Lepra bacilli 23

Bacilli Lepra positive in 7.

(e) Smear for Gonococci 114

Gonococci positive in 52.

(f) Nineteen specimens of urine were examined for bacilli coli communis with positive results in all.

(g) Six cases of C. S. fluid were examined and in 3 cases diplococci intracellularis were demonstrated.

II.

QUARANTINE CAMP.

Total number of cases admitted for treatment	...	21
Total number for Isolation	... ..	52

The diseases treated were as follows:—

				<i>Deaths.</i>
Small-pox	...	...	12	Nil
Chicken-pox	...	...	4	Nil
Cerebro-spinal fever	...	...	3	3
Erysipelas	...	...	2	1
			—	—
			Total ... 21	4
			—	—

III.

JASIN HOSPITAL.

Staff.—Assistant Surgeon H. R. SARAVANAMUTHU was in charge throughout the year.

The year's work.—Patients remained on 31st December, 1921 ... 43

Total number of admissions during 1922	...	726
Total number of discharges	...	623
Total number of transfers	...	5
Total number of absconder _s	...	19
Total number of deaths during 1922	...	70

Remaining on 31st December, 1922, 52.

The daily average number of sick was 49.28.

The percentage of death to total cases treated was 9.10.

The number of deaths within 48 hours of admission was 9.

The percentage of death to total cases treated excluding those dying within 48 hours of admission was 7.93.

Malaria was the chief disease treated i.e. 164 cases with 17 deaths.

There were 81 admissions for Venereal Diseases.

Total number of Estate coolies treated	...	164
Total number of Government servants treated	...	105
Total number of Free cases	... ..	496

Surgical work.—

Total number of Minor operations	...	46
Total number of Intravenous Arsenical injections	...	198

Medico-legal work.—

Total number of bodies sent by Police for post-mortem	...	13
Total number of Police cases treated	...	54
Percentage of Ankylostome ova found in stools examined	...	28.6
Percentage of ova ascaris found in stools examined	...	11.4

IV.

PRISON HOSPITAL.

There were 77 admissions during the year with 1 death from dysentery.

V.

THE MALACCA AGRICULTURAL MEDICAL BOARD.

1. The Board has justified its existence and has done everything possible to improve and maintain the good health of the staffs and labour forces of all estates in the Settlement.

2. The principle upon which the Board works is that doctors live in and are responsible for a definite district. This ensures efficient service and provides for close supervision of the Health conditions of the Estate Labour Forces.

3. The Board now has six doctors. Dr. FERGUSSON at Tebong Dr. FISHER at Sungei Bharu; Dr. AMNER at Merlimau; Dr. MCPHERSON at Rim; Dr. KWONG KIM CHEONG at Pegoh; Dr. TAN SENG TEE at Malacca Town. All are full time officers of the Board except Dr. TAN SENG TEE. The Chinese doctors deal with Chinese Estates.

4. The Board is working smoothly and co-operates closely with the Government Medical Department.

5. The Board are publishing their own Annual Report.

6. A steady improvement has taken place in the health of Estates. Malaria still continues to cause most deaths and the spleen rate on several Estates is high. It is hoped that both of these rates will be reduced now that Estate Managers are recognising the danger of engaging labour without first submitting the coolies to a Medical Examination. Pneumonia claims many victims, and ulceration of the skin causes much disability.

In connection with the two last mentioned diseases the lack of suitably trained dresses on estates is seriously hampering an energetic and capable staff of doctors. The Health on Chinese Estates has been on the whole, good; the malarial rate is low. This being due no doubt to the fact that the labour is chiefly Chinese supplemented by Malays. Mosquito surveys have been made almost everywhere and all ravines and breeding places have been marked down.

The cutting of new drains, clearing of old ones, filling in of useless wells and constant oiling have met with much success. Larger and more expensive measures, have had, naturally, to be postponed till better times.

VI.

VACCINATION.

Annual Return of Vaccination and Re-vaccination in the Settlement of Malacca for the year ending 31st of September, 1922:—

	No. of Vaccinations.	RESULT.		Failed.	Not seen.
		Perfect.	Modified.		
Town	12,783	1,230	2	4	11,547
District	10,401	2,231	76	132	7,962
Total	23,184	3,461	78	136	19,509

Ages of those vaccinated during the year 1922:—

Under one year.	One to ten years.	Ten to twenty years.	Above twenty years.	Total.
2,893	2,665	5,155	12,471	23,184

APPENDIX E.

OUTDOOR DISPENSARIES, S.S.

A. SINGAPORE.

I.—(North Canal Road.)

1. Assistant Surgeon K. C. SINHA was in charge. The number of patients treated during the year was 15,217 against 14,112 in 1921.

The number of attendances was 39,239 as compared with 34,899 in the previous year.

The Dispensary was open for 294 days: the average daily attendance was 133.38 as against 117.18 in the year before.

2. The nationalities of those treated were:—

			Males.	Females.
Europeans	...	...	107	11
Eurasians	...	...	159	85
Chinese	...	...	5,416	1,236
Malays	...	...	3,550	202
Indians	...	...	3,990	352
Others	...	...	87	22
Total	...	...	13,309	1,908

3. *The principal diseases treated were.*—Malaria 599, Beri-beri 71, Neuritis 220, Dysentery 87, Other Bowel complaints 1,069, Pneumonia 34, Broncho-Pneumonia 89, Pulmonary Tuberculosis 74, Bronchitis 971, Venereal Diseases 493, Skin diseases 1,070, Ulcers 1,350 Wounds and injuries 1,438.

II.—VENEREAL CLINICS.

(North Canal Road and Tanjong Pagar.)

Drs. R. B. MACGREGOR and R. B. HAWES were in charge during the year.

The Clinic at Tanjong Pagar Dock was in operation for the whole year every afternoon except Sundays.

The Clinic at the Out-door Dispensary at North Canal Road was opened on July 18.

The figures for the year are:—

Attendances.	1st Half-year.	2nd Half-year.	Total.
Tanjong Pagar	742	1,427	2,169
North Canal Road	—	3,533	3,533
Total	...	...	5,702
Individuals treated.	1st Half-year.	2nd Half-year.	Total.
Tanjong Pagar	136	341	477
North Canal Road	—	675	675
Total	...	...	1,152

Only 52 Seamen were treated during the year at Tanjong Pagar.

Numbers by diseases:—

	<i>Syphilis.</i>	<i>Gonorrhœa.</i>	<i>Other Venerea Diseases.</i>
Tanjong Pagar ...	292	96	89
North Canal Road ...	495	62	118

Wassermann Tests were done when necessary by the Government Pathologist.

Syphilis.—In addition to mercury, and organic arsenical preparations, Tartrate of Bismuth was extensively tried 157 individuals receiving 513 injections of this drug. It was found that patients almost invariably ceased to attend when their symptoms disappeared; though probably non-infective such cases cannot be regarded as cured.

III.—KANDANG KERBAU DISPENSARY.

REPORT BY L. S. O'MAY, M.B., *Lady Medical Officer.*

1. The treatment of Government servants and their families was in charge of Assistant Surgeon, F. RODRIGUEZ. The number of such out-patients treated by him was:—

<i>New cases.</i>	<i>Repetitions.</i>	<i>Total.</i>
—	—	—
3,812	681	4,493

Visits to patients in their own homes—283.

Total number of prescriptions dispensed 14,196.

2. Women and children's Dispensary.

This branch was opened in June 30th, 1921, and has been in charge of Lady Medical Officer, Mrs. L. S. O'MAY throughout.

Returns for the half year 1921 were:—

<i>New cases.</i>	<i>Repetitions.</i>	<i>Total.</i>
—	—	—
469	601	1,070

Of these 469 new cases—251 were children.

In 1922 the numbers were:—

<i>New cases.</i>	<i>Repetitions.</i>	<i>Total.</i>
—	—	—
4,948	4,526	9,474

Of these 4,948 new cases—2,506 were children. There were 139 cases of Syphilis and 90 of Gonorrhœa.

Nationalities were.—Chinese 1,764, Eurasians 1,782, Tamils 718, Malays 356, Jews 229, Japanese 40, Sikhs 27, Bengalis 19, Europeans 7 and others 6. Total 4,948.

Venereal Disease among Out-patients.—The number of cases treated was 229 against 21 for 1921.

Child Welfare.—More than half of these out-patients are children and the hospital is also receiving many more children as in-patients (171 out of 819 in-patient admissions). The current practices among the population in general are quite appalling and to a great extent they represent simple

ignorance with only conservatism behind it rather than a system of superstitions which would be a still more tedious obstacle. Ever since the Dispensary was opened a very great proportion of the time spent with out-patients has been directed to giving information concerning the diet suitable for children and the avoidance of causes of unnecessary bad health.

IV.—Outdoor Dispensary, Paya Lebar.

1. This was the first of 5 projected rural dispensaries to be completed and was opened on the 8th November, 1922, with Assistant Surgeon N. N. MITRA in charge.

Work done.—The number of patients during the 7 weeks under report, was 533, and the number of attendances 1,463. The daily average was 33.2.

Principal diseases treated were:—

Malaria	...	...	62	Ulcers	...	...	65
Syphilis	...	...	12	Worms	...	...	45
Minor injuries			...	54			

In all "fever cases" blood films are taken and the slides sent to the Tan Tock Seng's Hospital laboratory for examination. A separate book is kept for malarial cases, in which the patients' addresses are noted down: the Sanitary Inspector then visits the localities affected and takes the necessary action.

An attempt is being made to induce people to come in for early treatment of venereal diseases, and to impress upon them the dangers of concealment.

B. PENANG.

I.—Chowrasta Outdoor Dispensary.

REPORT BY ASSISTANT SURGEON LAU PECK HIONG, L.M.S., IN CHARGE.

The patients treated during the year numbered 9,956 against 8,899 in 1921; the total number of visits was 18,500.

The patients included 8,949 males and 1,007 females. Three thousand one hundred and sixty-six of the patients were Malays, of whom 123 were females.

The Dispensary was open for 312 days, the daily average number of visits were as follows:—

The principal diseases treated as compared with that of the preceding year was 59.29 against 50.21 in 1921.

	1921.	1922.
Influenza	71	7
Dysentery	68	61
Malaria	264	1,150
Venereal Diseases	991	911
Bronchitis	565	729
Diarrhœa	222	82
Ulcers	984	1,548
Injuries	487	493
Yaws	2	7

II.—Outdoor Dispensary, Balik Pulau and Bayan Lepas, Penang.

During the year 5,271 persons presented themselves for treatment.

(1) Number of attendances at Out-door Dispensary Balik Pulau	3,394
(2) Nuber of attendances at Out-door Dispensary Bayan Lepas	309
(3) Number of School children attended at the Out-door Dispensary Balik Pulau	935
and Bayan Lepas	633
	5,271
One thousand five hundred and sixty-eight children were also treated in their schools	1,568
	6,839

Dresser MOHAMED GHOUSE was in charge.

III.—Outdoor Dispensary, Butterworth.

1. One thousand three hundred and sixty-three cases were treated during the year as compared with 2,032 for 1921. Of these 567 were paying patients, 379 indigent and 417 Government servants. The number of visits paid was 2,135.

2. Principal diseases treated were:—

Malaria ...	186	Venereal Disease ...	53
Bronchitis ...	104	Ascariasis ...	29
Rheumatism ...	54	Dysentery ...	28
Diarrhoea ...	41	Asthma ...	23
Scabies ...	31	Ringworm ...	13
Colic ...	10		

3. Nationalities of patients treated were:—

<i>Nationalities.</i>	<i>Males.</i>	<i>Females.</i>
Europeans ...	93	49
Eurasians ...	41	25
Chinese ...	326	64
Malays ...	179	21
Natives of India ...	409	143
Others ...	12	1
Total ...	1,060	303

IV.—Outdoor Dispensary, Penaga.

1. One thousand three hundred and thirty cases were treated during the year including 914 Malays. Of these 66 were paying patients, 1,090 indigent, and 174 Government servants. The number of visits paid was 2,659. The Dispensary was open twice a week, and managed by the Senior Dresser of Butterworth Hospital.

2. Principal diseases treated were:—

Malaria ...	146	Syphilis ...	41
Scabies ...	139	Asthma ...	38
Ring-worm ...	103	Ascariasis ...	29
Bronchitis ...	70	Anæmia ...	29
Rheumatism ...	68	Ankylostomiasis ...	18
Yaws ...	63	Phthisis ...	9

V.—Outdoor Dispensary, Bukit Mertajam.

The number of patients treated during the year was 2,457, with 4,736 attendances, 1,952 patients were treated in 1921.

The nationalities of the patients were:—

<i>Nationalities.</i>	<i>Males.</i>	<i>Females.</i>
Europeans	38	21
Eurasians	31	24
Chinese	527	192
Malays	834	113
Indians	562	115

The principal diseases treated were:—

Malaria 217	Conjunctivitis 38
Dysentery 51	Bronchitis 192
Other bowel diseases 83	Phthisis 19
Rheumatism 52	Wounds 52
Anæmia 99	Ascariasis 74
Venereal Disease ... 116	Yaws 148

VI.—Outdoor Dispensary, Sungei Bakap.

Total number of patients treated in 1922—1,515 against 1,072 in 1921.

Attendances—2,170.

Nationalities of patients treated:—

<i>Nationalities.</i>	<i>Males.</i>	<i>Females.</i>
European	11	16
Eurasian	4	2
Chinese	522	138
Malays	255	32
Natives of India	406	117
Others	2	10

Principal diseases treated.—Ulcers 244, Malaria 385, Helminthiasis 93, Injuries, etc. 55, Diarrhœa 23, Dysentery 22 and Venereal Disease 24.

VII.—Outdoor Dispensary, Nibong Tebal.

Total number of patients 1922—1,019 attendances 1,501.

Total number of patients 1921— 637.

<i>Nationalities.</i>	<i>Males.</i>	<i>Females.</i>
Chinese	316	51
Malays	266	11
Natives of India	392	87
Others	3	5

The principal diseases treated were.—Malaria 260, Ulcers 255, Helminthiasis 55, Injuries and Wounds 39, Diarrhœa 17, Dysentery 16, Yaws 17 and Venereal Disease 34.

VIII.—Outdoor Dispensary, Lumut.

The total number treated was 904 as against 803 in previous year. The total visits were 1,285 as against 1,081.

Of the patients treated 145 were suffering from malaria and 79 from Yaws.

Three hundred and sixty-four Malays attended the dispensary as against 390 in previous year.

The principal villages and all schools were regularly visited and free drugs were given to the sick.

C. MALACCA.

I.—Government Outdoor Dispensary, Central Division, Malacca.

Four thousand four hundred and ninety-one cases were treated in the Dispensary as contrasted with 3,935 in 1921.

The following is the table of Nationalities:—

<i>Nationalities.</i>			<i>Males.</i>	<i>Females.</i>
—			—	—
Europeans	...	...	83	37
Eurasians	...	...	993	807
Chinese	...	...	711	301
Malays	...	...	941	90
Indians	...	...	433	92
Others	...	...	2	1

Ulcers, Intestinal parasite skin diseases, malaria and bronchial troubles were the commonest complaints.

II.—Outdoor Dispensary, Durian Daun Hospital.

Six hundred and twenty-six individuals were treated (152 malaria), and made 792 attendances.

III.—Outdoor Dispensary, Jasin.

Total number of cases treated	...	...	975
Total number of Visits	...	...	1,302
Total number of Males	...	...	729
Total number of Females	...	...	246

The chief diseases treated were Venereal Diseases, Skin lesions, Yaws and Malaria.

Intravenous Injections of N. A. B. to out-door cases at Jasin:—

<i>Diseases.</i>	<i>Number of cases treated.</i>	<i>Number of Injections.</i>	<i>Malays.</i>	<i>Chinese.</i>
—	—	—	—	—
Yaws	... 90	92	88	2
Syphilis	... 45	54	45	—

IV.—Alor Gajah Dispensary.

Nine hundred and thirty-five out-patients received treatment and made 1,206 attendance Males 793 and Females 142.

Nationalities.—Malays 503, Chinese 176, Tamils 170, Eurasians 41, Europeans 19 and Others 26.

Skin lesions and malaria were the commonest diseases.

D. LABUAN.

One thousand five hundred and one out-patients were treated as against 1,115 in 1921.

Nationalities.—Europeans 71, Eurasians 16, Malays 1,033, Indians 237, Chinese 115 and Others 27.

Chief diseases.—Malaria, Skin lesions, Bronchial troubles and intestinal parasites.

APPENDIX F.

GOVERNMENT HEALTH DEPARTMENT, S.S.

A. SINGAPORE.

BY GILBERT BROOKE, M.A., L.R.C.P., D.P.H.

Chief Health Officer, Singapore.

I.—Resume of Port and Quarantine Work, 1922.

Shipping.—

Tonnage entering Singapore	...	...	9,137,814
No. of different world ports from which steamers arrived	...	...	361
Visits to Ships	...	...	1,552
Crew examined	...	...	128,860
Passengers examined	...	...	240,212
Ships infected	...	...	16
Outgoing pilgrim inspected	...	...	5,783
Chinese Immigrants inspected	...	...	132,886
Water-boats examined	...	...	47
"Undertakings" issued to cabin passengers	...	...	228
Corpses inspected in harbour	...	...	36
Fumigations by disinfecting launches	...	...	685

Quarantine Station.—

Passengers sent to Quarantine Station	...	15,343
Greatest number of passengers admitted to Quarantine Station in one day	...	1,715
Total sick treated in Quarantine Station hospital.	...	247
Deaths on Quarantine Station	...	33
Death-rate amongst total treated	...	11.74%
Vaccinations on Quarantine Station	...	6,754
Water distilled on Quarantine Station	...	76,650 gallons.
Singapore water used on Quarantine Station	...	975,120 gallons.

II.—Resume of Rural Work, 1922.

	District C. Pasir Panjang.	District D. Bukit Timah.	District E. Seletar.	District F. Payah Lebar.	District G. Siglap	District H. Marine.	Total or Means.
DATA.							
Estimated Population ...	7,931	10,088	8,458	16,983	17,388	9,584	70,432
" No. of Houses ...	1,925	2,450	1,625	4,234	3,697	...	13,931
" inhabitants per house ...	4.0	4.05	4.0	3.9	4.5	...	...
No. of Police Stations ...	3	2	2	2	3	...	12
" Malay Vernacular Schools ...	1	...	...	1*	5	1	...
" Markets ...	...	...	...	...	1†	...	1
" Incinerators ...	5	3	3	5	9	...	25
Registered dairies and Milk Sellers ...	...	...	...	...	22	...	22
" Piggeries ...	132	20	32	86	161	...	431
WORK DONE.							
Houses visited by Sanitary Inspectors ...	1,600	1,759	963	2,950	3,150	...	10,422
No. of Notices served ...	9	22	5	33	48	...	117
Prosecutions (Sanitation) ...	2	7	4	6	23	...	42
Cub. ft. of rubbish consumed ...	175,200	87,600	65,700	122,640	240,900	...	692,040
Average daily amount for each Incinerator ...	96 cft.	80 cft.	60 cft.	67 cft.	73 cft.	...	76 cft.
No. of Dog Licenses 1922 ...	413	184	149	328	1,376	...	2,450
No. of Dogs Destroyed ...	147	68	51	105	569	...	740
Plague cases ...	...	1	...	...	1	...	2
Cholera cases ...	...	...	...	...	...	...	Nil.
Small-pox cases ...	1	3	...	6	18	...	28
Vaccinations performed in Rural Areas ...	549	776	136	1,087	1,962	...	4,510
Dispensary Attendances ...	...	...	...	1,463†	...	...	1,463
Malaria admissions to Hospital from Rural Areas ...	10	166	27	108	32	...	343
Expenditure on Anti-malarial works including Expenditure on oiling ...	\$1,053	\$11,560	\$338	\$3,134	\$3,265	...	\$19,350
Water samples sent for Analysis ...	2	3	1	15	6	...	27
Cinema demonstrations ...	1	2	1	2	5	...	11

REMARKS:—* Private. † Opened on 6th November. ‡ This is Chinese not Malay.

The Birth Rate for Rural Districts was 28.01 and the Infantile Mortality Rate 209.5.

III.—Report on Rural Areas, Singapore.

EXTRACTS FROM REPORT BY J. W. SCHARFF M.B., D.P.H.

The Rural District of Singapore contains an area of 188.5 sq. miles with an estimated population of 70,432. The average density of the population is 380 persons to the sq. mile but portions of the North and North-west of the island are practically uninhabited, being for a great part mangrove swamps.

The following table shows comparative figures with those of 1921:—

	Popu- lation.	Total Deaths.	Death Rate.	Total Births.	Birth Rate.	Infantile Mor- tality Rate.
1921 ...	68,003	2,164	36.08	1,942	28.56	198.6
1922 ...	70,432	1,984	28.17	2,043	29.01	209.5

Details have been collected during the year of the localities from which all cases of malaria have come to the Government Hospitals in Singapore.

The figures show that a large proportion of the malaria of Singapore comes from places rural areas and that more than 80 per cent of the malaria patients have become infected within the confines of Bukit Timah and Paya Lebar Sanitary Districts.

It was found also that over 50 per cent of the deaths registered in the Bukit Timah and Paya Lebar Districts are recorded as due to *Fever* while from all other districts there is an average of only 30 per cent. The registered causes of death are inaccurate owing to the comparatively small number of deaths certified by qualified medical men. It will be seen later that deductions based upon a complete mosquito survey of the Rural District confirms the opinion that the presence of *Anopheles maculatus* in the Bukit Timah and Paya Lebar districts is the cause of their large malaria figures.

Infectious Disease.—

Small-pox.—

28 cases occurred during the year.

4 in January.

8 in February.

11 in March.

1 in April.

3 in May.

1 in June.

Eighteen of the cases came from the Geylang Sanitary District but the infection in more than 70 per cent of the cases was traced to contact with patients within the Municipal Limits. The bodies of two victims of small-pox were found dumped by the road side. The usual methods of disinfection, vaccination of contacts and quarantine were adopted. Patients were removed by Municipal Ambulance to the Middleton Hospital.

Vaccinations—

Total number of Infantile vaccination in Rural Areas	...	1,383
Total number of Adult vaccination in Rural Areas	...	3,127
Vaccinations in Quarantine Station	...	6,754
		Total ... 11,264

The Rural Area was remarkably free from other dangerous infectious disease. The following were registered at scattered intervals during the year:—

4 cases of Cerebro-spinal Meningitis.

2 cases of Bubonic Plague.

5 cases of Diphtheria.

9 cases of Chicken-pox.

4 cases of Enteric Fever.

With regard to Enteric Fever the cases came from the neighbourhood of Upper Serangoon Road. This is the site where a large amount of the night-soil, coming from the city, is dumped.

Lepers.—There are 4 registered lepers in the Rural Districts. One of these was recommended for removal to the Leper Camp, and was sent to Penang.

Visits were paid to the registered lepers once each quarter and in each case they were found to be living consistently within the confines of their premises.

Sanitation, Sanitary Administration and Surveys.—The general sanitation and scavenging of villages continues to form an important item in the sanitary administration of the Rural District.

The sanitary centres were established in the Rural Police Station of each of the 5 Districts. Towards the close of the year the Dispensary in Paya Lebar village was opened and it now forms the sanitary centre for that District.

Housing.—During the year 1922 the site and plans of 101 houses built within the second schedule areas were investigated. Forty-two were approved: 52 were altered according to the requirements of the site, and applications were refused in 7 cases. The continued growth of the Siglap district makes it imperative that a town planning system be introduced into the area.

Building by-laws were brought into force in the Rural Area on the 7th July, 1922.

Routine inspections of 10,422 houses were made during the year and specially prepared sanitary cards were distributed in about half of them. The sanitary cards and the sanitary record sheet have been of value in educating the people as to what standard of cleanliness is required of them.

5. *Anti-Malarial Measures.*—The observations conducted since April, 1921, upon malarious patients coming to the Government Hospitals in Singapore and the investigation of the history of each case has given a valuable series of figures upon which to base future anti-malarial work in the Rural District.

The patients whose malaria is traced to infection from the Rural Area are relatively more than twice as numerous as those from the Urban District. The majority of the malaria patients who have lived in the Urban District can give no history of their infection, which may or may not have arisen within Municipal limits.

It appears that the Rural Area is markedly malarious only within very definite limits: Thus 277 of the total (342) cases or more than 80 per cent of the malaria arises in the Bukit Timah and Paya Lebar Sanitary Districts. Study of the incidence of Malaria in the Rural District and in town indicates a rise in the incidence of malaria during certain months of the year but a comparison with the rainfall gives no definite relationship between an excess of rain and rise or fall in malaria cases.

Investigations have been carried out during the year upon the spleen rates of children of all the Sanitary Districts.

The boys in the Vernacular Schools at Siglap and Pasir Panjang were examined and children were taken wherever possible in the other districts as follows:—

<i>Date.</i>	<i>School.</i>	<i>Children examined.</i>	<i>No. with Enlarged Spleens.</i>	<i>Spleens rate.</i>
August, 1922 ...	Siglap School ...	38	1	2.1 %
May, 1922 ...	Pasir Panjang School ...	54	3	5.5 ..
June and July, 1922	Bukit Timah Village and quarry ...	106	42	39.6 ..
May, 1922	Paya Lebar Police Station and Anglo Chinese School ...	38	10	26.3 ..
June, 1922 ...	Seletar Chinese School ...	15	...	...

A record of the mosquito fauna of the island is complete with the exception of the Gaylang and Changi Districts.

A complete anti-malarial zone had been formed towards the close of the year for half a mile around Bukit Timah and for 20 chains on either side of the Upper Serangoon Road from the 5th to the 7th mile; this zone will gradually be extended.

IV.—Resume of Singapore Meteorology 1922.

	Barometer mb.	SHADE TEMPERATURE F°.				Mean sea Temp.	Highest wet Bulb.	M. M.	Inches.
		Highest Max.	Lowest Min.	Mean Max.	Mean Min.				
January ...	1,015.0	88.0	75.0	84.7	76.7	80.0	153.25	6.03	
February ...	1,013.7	87.0	75.0	84.6	72.6	79.5	198.05	7.81	
March ...	1,014.7	87.0	75.0	84.2	76.9	81.0	158.05	6.24	
April ...	1,013.5	87.0	77.0	82.1	78.4	81.0	168.05	6.63	
May ...	1,013.3	86.0	75.0	83.7	78.2	81.0	357.75	14.08	
June ...	1,013.2	86.0	76.0	84.4	78.4	81.0	127.60	5.00	
July ...	1,013.6	87.0	75.0	84.9	78.1	81.5	86.00 (Driest month.)	3.39	
August ...	1,014.5	88.0	72.0	84.8	76.3	80.0	293.5	11.56	
September ...	1,015.0	91.5	72.5	87.8	75.6	80.5	144.5	5.69	
October ...	1,015.4	90.0	72.0	78.8	74.2	81.5	269.5	10.61	
November ...	1,014.6	91.0	72.0	87.0	76.8	82.0	423.75 Wettest month.)	16.68	
December ...	1,014.5	90.0	70.0	86.4	75.4	83.0	216.5	8.52	
Totals or Means of Extremes ...	1,014.2	...	...	84.4	76.5	83.0	2,587.25	102.24

REMARKS:—Rain has been recorded for 61 years. The wettest year was 1913 with 3,442.37 millimeters (135.92 inches). The driest year was 1,877 with 1,482.7 millimeters (58.37 inches). Mean for 61 years = 2,396.5 millimeters (94.39 inches).

Average mean shade temperature for 54 years has been 80.7° F.

B. PENANG.

REPORT BY F. R. SAYERS, M.D., D.P.H. (Dublin), *Senior Health Officer.*
Penang.

1. For Public Health Administration, the Settlement (extra Municipal) is divided into 8 districts which are under the supervision of the Senior Health Officer.

These districts and the officials responsible for routine health duties in connection with them are:—

District.	Official directly in charge.
Penang Harbour ...	Port Health Officer.
Quarantine Station Pulau Jerejak ...	Health Officer, Quarantine Station (resident).
Penang North Eastern ...	Senior Health Officer.
Penang South Western ...	Do.
Province Wellesley Northern ...	Medical Officer, Province Wellesley.
Do. Central ...	North and Central.
Do. Southern ...	Medical Officer, Province Wellesley South.
The Dindings ...	Assistant Surgeon, Lumut.

A Sanitary Inspector is attached to each of the Rural districts. In addition there is a Chief Sanitary Inspector in charge of Penang districts. In each Rural district there is a small gang of sanitary coolies whose principal work is in connection with village sanitation and anti-malarial measures.

1.—Shipping and Port.

2. During the year 480 ships were inspected and the numbers of crew and passengers examined were 59,945 and 137,634 respectively.

3. Six ships arrived "infected"; all with small-pox. Of these 5 came from Madras and 1 from Jeddah.

4. Ten Pilgrim ships and 4,664 pilgrims were examined previous to their sailing for Jeddah.

5. Seven Pilgrim ships and 4,290 pilgrims from Jeddah were inspected on their arrival, one of these ships was infected with small-pox.

6. Forty-two Immigrant ships bringing 13,124 Indian Immigrant coolies from Madras or Negapatam were boarded and they and 58,674 coolies or passengers were examined. Of these ships 5 were "infected" with small-pox.

7. Three hundred and seven Immigrant ships from Chinese ports and 16,024 coolies were examined. None of these ships was infected.

8. Twenty-one corpses were inspected on ships or tongkangs in the Harbour.

Permits to bury were issued after each inspection.

9. Nineteen water-boats supplying the shipping of the Port were examined and certified to be clean.

10. The disinfecting launch "Kite" was in use on 8 occasions for the fumigation of ships.

11. *Statistics concerning 18 years' work.*—

Years.				Vessels.	Units of crew and passengers inspected.
1905	...	...	...	869	214,136
1906	...	...	...	675	204,988
1907	...	...	...	633	219,839
1908	...	...	...	1,205	176,119
1909	...	...	...	503	161,971
1910	...	...	...	526	217,967
1911	...	...	...	1,144	277,151
1912	...	...	...	634	287,373
1913	...	...	...	818	272,473
1914	...	...	...	1,040	215,067
1915	...	...	...	405	148,662
1916	...	...	...	662	213,726
1917	...	...	...	367	203,757
1918	...	...	...	551	173,813
1919	...	...	...	493	210,839
1920	...	...	...	432	207,424
1921	...	...	...	461	197,448
1922	...	...	...	480	197,579
Total ...				11,898	3,800,332

12. The duties of Port Health Officer were performed by Dr. W. W. MARTIN from 1st January, 1922 to 8th February, 1922, and by Assistant Surgeon J. H. L. WESTERHOUT from 9th February, 1922 to 31st December, 1922.

Office Work.

13. Bills of Health to the number of 530 were issued and 2,645 were received for them. Fees amounting to \$812 were charged for the use of the disinfecting launch "Kite".

14. Permits to import, tranship or export human remains were granted in 18 instances.

Quarantine Station, Pulau Jerejak.

15. During the year 31,247 coolies or passengers from 125 ships were admitted. Of these 13,124 were "Indian Immigrant coolies" and 18,123 were ordinary deck-passengers.

16. The greatest number of suspects in residence on any one day was 3,118 on 25th September, 1922, and the smallest number was 3 on 29th December, 1922. The Station was occupied daily throughout the year. The average daily number present was 567.46.

17. From 6 Small-pox infected ships 6,140 Contacts were detained. No further cases were developed.

18. From 119 Non-infected ships 25,107 suspects were deducted. None of them developed the particular dangerous infectious disease in connection with which they were quarantined but 179 developed Influenza.

19. Except for Influenza and Small-pox no dangerous infectious disease was present.

20. During the year 26,675 vaccinations and 6,443 re-vaccinations were performed.

21. Routine Anti-malarial work was continued.

22. In the Station Hospital 635 patients were treated. At the Dispensary 655 minor ailments were attended to. These included 27 mild cases of influenza.

23. There were 45 deaths in the Hospital, giving a Hospital death-rate of 70·86 per mille and a Station death-rate of 1·21 per mille. Of these deaths 7 took place within 48 hours of admission to the Station.

24. Three Indian women gave birth to three children during their detention.

25. *Return of Diseases, Cases and Deaths at Station Hospital.*—

<i>Disease.</i>	<i>Cases of</i>	<i>Deaths from</i>
Chicken-pox	26	1
Dysentery	60	4
Influenza	152	19
Malaria	157	3
Measles	25	1
Pneumonia	7	1
Small-pox	6	2
Other Diseases (all non-infectious)	202	14
Total	635	45

26. The total rainfall was 20·37 millimetres.

Rain fell on 109 days. The maximum fall in any one day was 0·74 millimetres on 15th May, 1922.

27. Routine Chemical Analysis of the Water Supply showed a continued excellence.

28. *Statistics concerning 18 years work.*—

Years.	Number admitted.	Average daily number present.	Vaccinations performed.	Cholera cases.	Plague cases.	Small-pox cases.
1905	10,406	171	Not recorded.	1	Nil.	10
1906	23,288	461	6,490	8	2	16
1907	17,650	116	5,652	24	1	4
1908	21,875	366	5,691	9	2	51
1909	23,059	359	5,614	2	1	25
1910	71,876	1,584	12,205	33	2	62
1911	134,957	3,740	63,988	387	1	109
1912	55,493	1,111	38,297	4	4	75
1913	53,937	120	37,276	12	1	11
1914	48,399	116	32,609	9	Nil.	171
1915	23,176	478	21,562	Nil.	"	3
1916	42,736	817	36,806	1	"	11
1917	37,595	820	36,808	12	"	11
1918	33,481	720	29,526	80	"	7
1919	50,733	1,189	39,941	264	"	6
1920	43,733	932	41,230	8	"	4
1921	19,653	353	10,377	3	"	42
1922	31,247	567	26,675	Nil.	"	6
Total	743,294	14,020	450,757	857	14	624

29. The health of the Staff was good.

30. Assistant Surgeon P. M. MEHTA carried out the duties of Health Officer, Quarantine Station, and Mr. E. O'SULLIVAN those of Lay Superintendent throughout the year.

II.—Rural Areas.

Districts.	Estimated Population.	Births.	Deaths.	Infantile Deaths.	Crude Birth Rate per mille.	Crude Death Rate per mille.	Infantile Mortality per mille.
Penang (extra-municipal) ...	38,117	1,439	2,063	274	37.75	54.12	190.41
Province Wellesley ...	130,580	4,533	4,251	701	34.71	32.55	154.64
Dindings ...	12,639	352	315	50	27.85	24.92	142.05
Total ...	181,336	6,324	6,629	1,025	33.43	37.19	162.36

2. There were 33 cases of "dangerous infectious disease".

The return shows details for each district. Cases of Influenza are not included as an accurate return is not feasible.

	Penang North East District.	Penang South West District.	Province North District.	Province Central District.	Province South District.	Dindings.	Total.
Cerebro Spinal Fever	3	...	...	3
Cholera	1	1	...	...	2
Plague
Small-pox	2	...	5	21	...	28
Total	2	1	9	21	...	33

3. Vaccinations or re-vaccinations against Small-pox amongst infants and adults performed as follows:—

District.	Total.
Quarantine Station, Pulau Jerejak ...	33,118
Penang, North-eastern ...	978
Penang, South-western ...	4,616
Province Wellesley, Northern ...	4,094
Province Wellesley, Central ...	2,718
Province Wellesley, Southern ...	5,184
The Dindings ...	2,137
Total ...	52,845

4. Routine anti-mosquito measures (clearing, oiling, drainage) were carried out.

5. Twelve additional coolies were employed from October by the Rural Board, Penang. They were engaged in anti-mosquito work at Tanjong Bungah where many breeding places of *Anopheles Maculatus* have to be dealt with.

6. Various mosquito-surveys were made, in particular by Assistant Surgeon D. C. RICHARDS of Tanjong Bungah and Ayer Etam, Penang and the anti-malaria works at Lumut.

Dr. HACKER, Medical Entomologist, Federated Malay States, made a special mosquito-survey of Pulau Jerejak in connection with the proposed enlargement of the Leper Asylum to provide increased accommodation for Federated Malay States lepers.

7. Villages were cleared up by the various gangs of sanitary coolies under the immediate supervision of the Sanitary Inspectors. Notices were issued concerning cowsheds, latrines, milk, nuisances, pigstyes and white-washing. Neglect to obey these notices resulted in prosecutions.

Five incinerators were built in village areas.

8. Special inspections were made by the Acting Senior Health Officer of Bukit Panchor Reservoir, Bukit Seraya Reservoir, Sungei Bakup, Bakup Rubber Estates and Prai Railway Water-service. He paid three visits to the Dindings.

9. The writer sailed on furlough on 9th February, 1922, and was relieved by Dr. W. W. MARTIN who continued to act for the remainder of the year.

C. MALACCA.

By F. WOOLRABE, M.R.C.P., F.R.C.S., D.P.H., *Health Officer, Malacca.*

1. The headings of Malarial Fever, Unspecified Fever and Convulsions account for 62'98 of total deaths as against 64'48 in 1921.

The figures for the last three years are:—

	<i>Malarial Fever.</i>	<i>Unspecified Fever.</i>	<i>Convulsions.</i>	<i>Total.</i>
1920	1,293	736	947	2,976
1921	834	753	1,294	2,881
1922	765	796	1,040	2,601

It will be noted that the reduction in Malaria mortality of former years is kept up.

Tetanus.—The number of deaths from Tetanus was 45 as against 51 in 1921. Of these 33 were among infants in the Municipal area.

2. *Milk.*—Ten samples of milk were examined, of which 3 contained added water. Prosecution was undertaken in these cases.

3. *Water.*—Fifty-nine samples were examined chemically. Monthly analysis were made of the Municipal pipe water supply from Ayer Kroh, as well as quarterly analysis of the three Bukit China wells, from which water is sold in the Town and Fort.

In one instance the Municipal water showed an extraordinary rise in free and albuminoid ammonia with a normal chlorine figure. On one occasion there was, a rise in free ammonia in all three Bukit China wells, which were consequently pinked and became normal.

Owing to scarcity of water two wells near the jail were examined. The water was contaminated but after being cleaned out and pinked several times improved greatly.

The Bukit China wells are pinked systematically.

It is satisfactory to record that a subsidiary water supply at Ayer Kroh has been established, as the few safe wells in town are quite inadequate in emergency.

As noted in former reports the water supply on Estates is generally good and carefully guarded; even on the small estates it may be said that the majority of wells is safe from any but intentional contamination.

4. *Estates*.—Three hundred and fifteen visits were made to estates.

The late depression caused the closure of many Estates and the reduction of the labour force of others. Most estates that carried on found it possible to carry out only absolutely necessary repairs. It is gratifying to record that Managers in nearly every case sought to make up for diminished expenditure by care and supervision of their lines and labour forces.

Much harm has been done by clearing ravines by small holders. Knowledge of the danger of doing so is not as a rule acquired till after the event.

5. *Police Stations*.—Fourteen visits were paid to Police Stations and nine different Stations were visited.

6. *Dairies*.—Two visits were paid to two dairies.

7. *Schools*.—All the schools in the Town and Fort were inspected with the exception of the Anglo-Chinese School and the Portuguese Convent School, all the buildings were satisfactory.

Medical Inspection of School children was undertaken late in the year.

It was not found possible to inspect any Schools except the High School and St. Francis School. The spleen rate was practically nil but a high percentage of children had bad teeth.

8. *Villages*.—Ninety-five visits were paid to eighteen villages.

9. *Mosquito Surveys*.—On all large Estates periodic mosquito surveys are made by the Board Medical Officer.

Extensive surveys at Jasin and Pringgit were made by Assistant Surgeon RICHARDS. Smaller surveys have been made in various places particularly at Relau, Pengkalan Balak, and Pulau Sebang.

Regular oiling and occasional filling is done in the Town and Fort with considerable effect.

10. *Infective Diseases*.—No case of Plague or Cholera occurred.

There were 3 cases of Cerebro Spinal Meningitis, all fatal. No contact case occurred.

Small-pox.—Sixteen thousand nine hundred and seventy-two vaccinations were performed by the Government Health Staff. There were seven distinct foci of small-pox, with 43 cases and 4 deaths. The Quarantine Camp Malacca was opened to receive 11 cases and 52 contacts.

Influenza.—There were a few cases of influenza of a mild type.

Estate Mortality Return for the year 1922.

Name of Estate.	Total admissions into Estate Hospital.	DEATHS.				DEATHS.	Total number in Labour Force.
		Dysentery.	Malaria.	Phthisis.	Pneumonia.			Ankylostomiasis.	Other Causes.
Bukit Kajang Estate	331	...	2	1	1	1	487
Batulang Estate	221	...	1	1	...	4	259
Asahan Estate	197	...	5	...	...	6	600
Bertam and Krubong Estate	71	1	...	...	1	1	187
Diamond Jubilee Estate	474	1	4	...	4	7	760
Devon Estate	547	3	2	...	2	5	875
Chempadak Estate	200	...	...	...	...	1	110
Gadek Estate	111	...	2	...	2	2	234
Garing Estate	105	...	2	...	...	5	208
Jasin Estate	12	...	...	...	...	2	204
Jasin Lallang Estate	303	3	3	...	2	14	495
Kemuning Estate	54	...	1	...	2	9	320
Lendu Estate	132	1	1	...	...	1	217
Merlimau Estate	546	2	3	1	4	10	905
Pegoh Estate	428	...	3	...	1	4	326
Rim Estate	270	...	4	...	1	4	450
Rembia Estate	210	...	2	...	...	4	250
Serkam Estate	135	...	...	...	...	1	540
Tebong Estate	416	3	8	...	3	3	565
Tebolang Estate	229	...	2	...	6	...	242
Union Estate	42	...	...	...	...	...	100
Total	5,034	14	45	3	31	84	8,334

APPENDIX G.

MEDICAL INSPECTION OF SCHOOL CHILDREN.

I.—Singapore Boys Schools.

REPORT BY R. B. HAWES, M.R.C.S., L.R.C.P., *School Medical Officer, Singapore.*

1. The School Inspection Officers during the year have been, in the first half-year Drs. R. B. MACGREGOR and PAVILLET, and in the second Dr. R. B. HAWES.

2. *Routine Inspections.*—These were carried out and cards filled up for each boy at the Anglo-Chinese School, St. Joseph's Institution, Victoria Bridge School and Anglo-Tamil School.

Total number of routine inspections 3,964.

3. *Special Inspections.*—

Special Cases.

558

Re-examinations.

2,076

Attendances at the Medical Officer's House for treatment during the year were 1,101.

Victoria Bridge School was visited in February owing to an outbreak of Scabies.

Raffles Institution was visited for the purpose of testing the eyesight of the boys.

Pearl's Hill School was visited to see and arrange for the treatment of a number of boys with sores.

Number of individual children inspected no child being counted more than once 4,522.

4. *Return of defects.*—

	<i>Routine</i>	<i>Special.</i>
	<i>Inspections.</i>	
<i>Eye-sight.</i> —Marked defective eye-sight	... 395	31
Dental Disease	... 2,774	
Hernia	... 41	
Enlarged Tonsils and Adenoids	... 680	

I attach very little importance to a long catalogue of defects especially in a town such as Singapore where compulsory education is not in force and the total number of defective children at any age cannot be calculated. For instance it is useless to try and calculate the total percentage with defective eyesight as those with severe defects are kept at home.

Again, with enlarged tonsils and adenoids, all grades of enlargement are seen, and the line between the slightly prominent and possible pathological enlargement naturally varies with the observer.

It would be better here to get some definite standards so that different countries and different nationalities may be compared.

The only system on these lines at present is that introduced by Professor Dreyer; of his measurements the most useful in that of vital capacity, or maximum amount of air expelled in one respiration.

5. *Dental Disease.*—It is among the Chinese that the amount of dental disease is abnormally large.

Dental Caries is extremely common during the first dentition among Chinese children and is followed by caries in the permanent teeth.

The condition of many of the children's mouths is very bad. My own opinion is that the initial defect is due to defective feeding in the early years of childhood.

Congenital Syphilis is probably more prevalent among the Chinese than in the circumcised nationalities in Singapore, but I do not think sufficiently so to account for the caries in the first dentition.

The excess of carbohydrates given to the children is an error not by any means confined to the Chinese.

The factors that might be a cause are excessive use of lard, overcooking, lack of vegetables, and use of over-polished rice.

An unsuccessful attempt was made to find if the years when under-milled rice only was sold in Singapore had left discoverable effect on the Children's teeth.

The time to get treatment is from 7 to 9 years old, before the permanent teeth have had time to decay.

Cleansing of the mouth should be taught in all the schools. The parents at present are accustomed to champing their own septic gilded gums, and see no reason why their children should not do likewise.

The Anglo-Chinese School has already started instruction in mouth hygiene.

Private dentists were approached by some schools and asked if they would attend the boys at very reduced fees.

The Anglo-Chinese School and Victoria Bridge School made fairly satisfactory arrangements that have worked but St. Joseph's Institution has not yet done so.

Until a Government Dentist is available this will be the only way of getting some work done; it should help to lessen the amount of damage done by the native dental jewellers.

6. *Eye-sight*.—A total of 426 boys were found to have marked defective eye-sight, *i.e.*, 9.4 per cent.

This is not high percentage compared to the numbers in England which vary from about 15 per cent to 7 per cent in 1920. But in Singapore a certain proportion only are examined and not all children of school age.

I have been surprised to find the number of boys with marked defective eye-sight who are placed in back rows.

In many cases the parents were seen and told that it was necessary for the boys to wear glasses. The older boys were instructed personally. Mr. K. BLACK, F.R.C.S., Government Ophthalmic Surgeon, examined a large number and gave them prescriptions. Mr. DUKE has kindly supplied poor boys with glasses at very cheap rates.

No arrangements are yet possible whereby very poor boys can get glasses free. If any charitable undertaking starts this work I would suggest that they should be given only after searching inquiry.

In arranging for boys to get glasses I have attempted to find out the financial position of their parents.

The schools usually have only a vague idea; and a number of boys who state their fathers are earning only \$30 to \$40 a month with six children and upward in the family is enormous; but the same boys on finding that they cannot get gold-rimmed glasses for nothing readily pay the full price for a

fancy pair of spectacles. In this connection and especially if a Government Dentist is to be engaged I would suggest that all boys' parents should be rated when the boy is put to school, *e.g.*—

- (a) Parents who are poor.
- (b) Parents who are only able to pay a few dollars for hospital fees, spectacles or dental treatment.
- (c) Parents who are well able to afford private practitioners or full fees in hospital.

7. *Defects requiring operative interference.*—In this category I include hernias, enlarged tonsils and adenoids, cleft palate, phimosis, etc.

Except at the Anglo-Chinese School very little progress has been made in persuading parents to get these defects treated. It is hoped to get more done this year by examining new boys and refusing them admittance until severe defects of this nature are remedied.

Unqualified practitioners assist the natural opposition of the parents and are responsible for a great deal of damage to children.

8. *Foods.*—I have strongly objected to the system of allowing hawkers to supply food.

Many of the children are underfed and they have no knowledge of how to pick and choose what is good for them, even if they were so abnormal as to want to do so.

I would like to see canteens run in all schools where a good wholesome meal is sold at a cheap rate.

The Anglo-Chinese School and St. Joseph's Institution are making a start in this direction and once started it can be gradually improved

9. *Physical Development.*—Insufficient attention was being given to this in some schools.

The Anglo-Chinese School has a member of the mission as a sports-master.

St. Joseph's Institution is now employing a physical instructor.

An ideal would be sports-master attached to every school or group say of 1,000 boys.

10. The only justification of a School Medical Service is its ability to prevent disease, as the teachers themselves in most cases pick out those children who require treatment. The callous indifference of many parents in Singapore to the actual suffering of their children is appalling. Every help has been given by the school authorities; the difficulty with Oriental Teachers is mainly due to the fact that they do not yet understand school sanitation as there was no such fuss made about it when they were at school.

II.—Singapore Girls' Schools.

REPORT BY L. S. O'MAY, M.B., CH.B., *Lady Medical Officer.*

Four Schools were examined, namely:—

	<i>Children.</i>
The Methodist Girls' School	455
The Singapore Chinese Girls' School	188
The Raffles Girls' School	323
The St. Anthony's Convent School	215
Total number of children examined ...	1,181

The percentage of children classified as being well nourished and in fair general condition varied from 77 per cent in the Raffles Girls' School to 42 per cent in the Singapore Chinese Girls' School.

There was a noteworthy absence of malarial indications. Practically no enlarged spleens were observed in any school.

Nearly all the children had been vaccinated during the small-pox epidemic of August, 1921 or later.

The following percentages summarise the observations made by Dr. LEE:—

Dental caries in	...	...	47	per cent of the children.
Anæmia	...	...	32	" " "
Pyorrhœa	...	...	6	" " "
Defective Vision	...	...	5	" " "
Skin affections	...	...	5	" " "
Adenoids	...	...	4	" " "
Tonsils (enlarge)	...	...	55	" " "

The Schools were asked to send the girls requiring medical and surgical treatment to the Out-door Dispensary, Kandang Kerbau Hospital. There are difficulties in getting the girls to attend a Dispensary, especially if regular attendance is necessary, as they are not readily allowed to go out alone.

The conclusions drawn from the experience of the two years 1921/1922 are the following:—

There is one outstanding avoidable cause of bad health, namely the bad condition of the children's teeth.

The percentage of girls found to have carious teeth varied this year from 40 per cent to 58 per cent. Improvement in the domestic care of the teeth may be hoped for—and as a result some reduction in the amount of disease, but only a limited improvement. Even where tooth brushes are used regularly caries is a common complaint.

This disease with its ruinous effects on general health and consequent feeble resistance to other disease, must remain common until it receives operative treatment. That is, in practice, until a government dentist is provided to give the treatment needed.

2. A good deal of harm must result from the unsuitable food obtained from stalls. If each school could provide a lunch room in which the children could buy good milk, soup and solid wholesome food of the kinds customary to their own nationality, instead of cakes and so on, many of them would no doubt be healthier.

3. The treatment given at the Dispensary must be largely wasted until there is a School nurse to visit the children's homes and see that the treatment given is carried out.

4. The hours in the Singapore Chinese Girls' School are 9-30 to 2-30. It would, I consider, be better if these could be changed to 8 to 1 as elsewhere; especially for the sake of the younger children.

III.—Penang Schools.

REPORT BY F. R. SAYERS, M.B., B.Ch.M.D., D.P.H.

In the various parts of the Settlement 109 schools and 9,749 pupils were inspected.

Detailed returns have been submitted separately.

Treatment of the diseases discovered amongst the Teachers or Pupils was carried out with the means available. When necessary recommendations regarding the Sanitation of the Schools were forwarded to the Inspector of Schools, Penang.

The duties of Medical Officer, schools, were allotted in each Rural District to the Official directly responsible for the health of that district. Within the Municipal Area, Penang, these duties were shared with the Senior Health Officer by Dr. J. W. ADAMS (from December) and Assistant Surgeon D. C. RICHARDS (from September).

Grand Total for Penang Settlement.

Schools Examined.	109
Pupils N o. E x a - m i n e d.	9,741
General condition not good.	2,633
Vaccination needed.	2,913
Cardiac Disease.	88
Anaemia.	516
Diseases of Respira- tory system.	44
Scabies.	438
Ulcers.	78
Ringworm.	104
Yaws.	232
Syphilis.	8
Poor eye sight 1 eye less than 6/8.	398
Conjunctivitis.	40
Granular conjuncti- vitis.	26
Discharge of ears.	32
Enlarge tonsils and Adenoids.	656
Teeth more than 3 bad.	1,957
Enlarged spleen.	893
Deformities.	38
Specific Infectious diseases.	203
Ankylostomiasis.	45

IV.—Malacca Schools.

REPORT BY F. W. WOOLRABE, M.R.C.P., D.P.H., *Health Officer, Malacca.*

Altogether 978 pupils of the High School and St. Francis' School were examined.

General condition :—One hundred and seventy boys were less than "fair".

Vaccination :—Absent or unsatisfactory marks 21.

Uncompensated cardiac Lesions :— 0.

Respiratory system, Phthisis :— 0.

Skin Scabies 36. Acne 1. Yaws 0.

Eye Visual acuity less than 6/9 in one or both eyes 72. Strabismus 2. Wearing glasses 7. Astigmatism 2. Slight cases of astigmatism might easily escape detection.

Ear Deafness including slight dullness in one or both ears 8. No cases of discharge.

Throat and Nose :—Enlarged tonsils including slight cases 162. Nasal obstruction 2. Mouth breathing cases 25. Cleft palate and harelip 2.

Teeth. Teeth decayed :—including commencing decay but excluding treated cases and cases with teeth missing 516. Teeth irregular but sound 37.

Spleen palpable :—One, it is possible that some slight cases escaped notice as many children become rigid as a board on palpation. Anæmia 19.

Treatment All minor cases except those of bad teeth receive treatment. Eye cases were in some cases treated by the Chief Medical Officer, in others by private medical attendants.

APPENDIX H.

GOVERNMENT ANALYSTS DEPARTMENT.

A. SINGAPORE.

REPORT BY FRANKLAND DENT, M. SC., PH.D., F.I.C., *Government Analyst.*

Petroleum.

(a) KEROSENE.

The following gives a comparison between the quantities tested on importation into the Island of Singapore during the years 1921 and 1922:—

Description of Oil.	1921.			1922.		
	Number of Consignments.	Tins.	Tons.	Number of Consignments.	Tins.	Tons.
<i>Case Oil.</i>						
American Oil.	Devoe's ...	6	10,000	...	6	35,894
	S. Arrow ...	11	27,307	...	19	91,920
	Tiger ...	11	35,800	...	15	27,509
	Comet ...	...	...	...	1	20
	White Rose ...	...	...	...	1	20
	Elephant ...	...	...	...	1	570
	Eagle ...	1	360	...	...	...
Langkat Oil.	Crown ...	93	358,623	...	85	359,358
	Dragon ...	15	46,376	...	26	35,257
	Cross ...	18	19,200	...	30	25,048
	L. Glass ...	6	4,253	...	2	2,000
	Fish ...	9	14,800	...	20	15,934
Total ...	170	516,719	...	206	593,530	...

Eight consignments for Malacca, Port Swettenham and Hongkong were tested for their flash-points.

(b) MINERAL TURPENE AND DRIALENE.

Six hundred tins each of Mineral Turpene and Drialene were imported into Singapore as against 413 tins of the former and 900 tins of the latter respectively in 1921.

(c) OTHER PETROLEUM PRODUCTS.

Four samples of liquid fuel, 3 of benzine and 3 of lubricating oil were sent in for special tests.

(d) TESTING VESSELS FOR DANGEROUS PETROLEUM.

Thirty vessels as against 45 in 1921 were tested for inflammable vapour by means of Redwood's Standard Instrument, either before being allowed to enter Port-limits under Rule 23, made under the "Petroleum Ordinance, 1908" or to enter Dry-dock under By-law 77 of "The Straits Settlements Ports Ordinance, 1912".

Explosives.

Eleven consignments were tested on importation into Singapore in accordance with the Rules under "The Arms and Explosives Ordinance, 1913". All passed the prescribed tests.

The following table gives the details of these, and for the purpose of comparison, those imported, and tested during the two preceding years:—

Year.	Number of consignments.	Number of packages of 50 lbs. each.				Total.
		Dynamite.	Felignite.	Blasting Gelatine.	Gelatine Dynamite.	
1920	6	1,550	2,120	1,550	...	5,220
1921	9	698	3,140	1,089	...	4,927
1922	11	1,810	2,070	1,300	...	5,180

Fifty-six casks of detonators 30 of canister powder and 150 kegs of blasting powder were also imported.

Five unexploded bombs were received from the Police for investigation.

Monopolies' Department.

(a) CHANDU REVENUE ORDINANCE.

Exhibits in 65 cases from Singapore, 10 from Johore and 5 from Malacca instituted under the above Ordinance were examined and certificates issued.

In addition 10 lots of samples comprising 919—3 hoon packets, 4 pots of Chandu, a sample of Opium and an "Opium Cure" were examined and reported on.

The number of check-samples of Government Chandu received for assay from the Opium Factory amounted to 66.

Four thousand five hundred of Chandu dross weighing 19,783 tahils were weighed and valued for the Monopolies' Department.

(b) LIQUORS REVENUE ORDINANCE.

(a) BHANG.

One exhibit was received from the Superintendent Chandu Monopoly, Johore Bharu.

(b) INTOXICATING LIQUORS.

The spirit strengths of 4,018 samples of Liquors from Singapore and 380 samples from Malacca were determined for assessment of duty.

In addition to the above 81 samples of Brandy and 56 of other descriptions of liquors were fully examined with a view to their correct classification for duty purposes.

Thirty sets of exhibits comprising 62 samples of illicit liquors and 3 samples of yeast were sent in and reported upon.

Thirty-two samples of cheap liquor purporting to be of European origin were examined in a case of selling liquor under false trade descriptions.

(c) METHYLATED SPIRIT.

Consignments of arrack were methylated for industrial purposes on 47 occasions. They consisted of 490 large drums and 10 small ones containing in all about 71,262 gallons as against 67,986 gallons in 1921.

Counterfeit Coins.

Twenty sets of exhibits from Singapore, 4 from Johore and 1 from Malacca were sent in by the Police. They included 591 counterfeit 5-cent pieces, 1,265 10-cent pieces, 486 20-cent pieces, 55 50-cent pieces and 13 1-dollar pieces, also a large number of moulds and other apparatus and material used in their manufacture. The coins were for the most part made of Lead-Antimony alloy.

In addition a number of counterfeit 5 and 10-cent pieces made of brass and plated with silver were also received for examination.

Twenty-five Prisoners were examined for the presence of stains and other marks on their clothings and persons which might have connected them with the manufacture of Counterfeit Coins.

Toxicology.

Twenty-three specimens of stomach contents, washings, etc., were received from Singapore, 3 specimens from Malacca and 1 specimen from Johore.

Opium or some extract of the same was detected in 6 cases and alcohol, tuba-root, white arsenic (13 $\frac{3}{4}$ grains) and caustic soda in one case each.

Three specimens of dogs' stomach-contents were received from the Government Veterinary Surgeon. No poison was detected.

Poison.

Nine sets of exhibits were received from Singapore, 2 sets from Malacca and 1 set from Johore.

Atropine was found in 2 cases and crude caustic soda, an extract of tuba-root and white arsenic in one case each. A powder alleged to contain morphine proved to be boric acid.

Drugs.

Fifteen specimens of various drugs were sent in for analysis. Eight $\frac{1}{4}$ -oz. bottles described as containing "morphia" were found to contain a mixture of chalk and rice starch.

In a seizure by the Monopolies' Department were found 157 oz. of cocaine and 35 oz. of morphine hydrochlorides.

Metals and Minerals.

Sixteen samples were received for identification and assay, four of which were of monazite sand.

Water.

Forty-eight samples were sent in for analysis as to their suitability for drinking purposes, 7 of these were for complete mineral analysis.

Milk.

Forty-two samples of fresh milk and 12 samples of tinned milk were analysed and reported upon.

Miscellaneous.

Other samples, not included under any of the above heads, which were sent in for analysis and report, included:—

Twenty-one specimens of test meals, 6 samples of wood preservatives, 5 of sticklac, 3 each of opium, jelutong and gambier, 2 each of illipe-nuts and sealing wax and 1 each of brandy, whisky, guano, nutmeg, rubber, cutch and disinfectant, 3 sets of exhibits were sent in for the detection of blood stains, and on 3 occasions "blinding" powders were received from the Chief Police Officer for examination. One sample tin of salmon was sent in for evidence as to damage by sea-water or otherwise.

B. PENANG.REPORT BY J. C. COWAP, B.SC., F.I.C., *Deputy Analyst, Penang.*

Details of Revenue and Expenditure for the Department for 1922 are given in the following table together with the Revenue for 1921:—

Revenue.	1921.	1922.	Expenditure, 1922.
	\$ c.	\$ c.	\$ c.
Petroleum Inspection Fees	2,448 50	1,970 00	Personal Emoluments 11,429 15
Miscellaneous ...	1,530 50	1,161 50	Stores ... 379 14
Certificate for Export of Petroleum Fees ...	194 50	162 50	Miscellaneous ... 186 63
			Transport & Travel- ling Allowances ... 197 12
Total ...	4,173 50	3,294 00	Total ... 12,192 04

The fall in revenue is to be attributed to the general depression of trade.

Four hundred Reports on general analytical work, and 47 reports on the testing of Petroleum were issued.

Petroleum.

The following table shows the amount of Kerosene and Heavy Petroleum imported and tested during the year. All samples passed the Standard tests.

A. KEROSENE.

	Number of Consign- ments.	Tons.	Gallons.
East Indian Oil in Tins ...	9	...	26,680
American Bulk Oil ...	1	...	1,200,000
American Oil in Tins ...	4	...	256,196
East Indian Bulk Oil ...	19	8938'6969	...
Total ...	33	8938'6969	1,482,876

B. HEAVY PETROLEUM.

East Indian in Bulk ...	7	8253'7231	...
East Indian in Drums ...	9	...	29,250
Total ...	16	8253'7231	29,250

C. DANGEROUS PETROLEUM.

The examination of each consignment of petrol has been discontinued, occasional inspections only being made.

Liquors.

One thousand two hundred and thirteen samples of imported or locally manufactured liquors were examined for their alcoholic strength. Of these samples 387 were done for the Kedah Government and the rest for the Monopolies Department.

Eighty samples of other liquors were examined. These were either Brandy or Toddy which received a complete analysis, or exhibits in illicit liquor cases.

Opium, Chandu and Bhang.

Exhibits in 25 Court cases were examined for the Monopolies Department. These consisted of Chandu Dross, Opium or Bhang. In addition the whole of the Chandu dross bought by the Monopolies and the Kedah Government from Chandu shop-keepers was examined before purchase.

Milk.

Forty-four samples of fresh cow's milk were analysed. Of these 20, all of them purchased by the Municipal Health Department from licensed milk sellers, were adulterated by the addition of water. The sophistication of milk inside the Municipal area now appears to be kept within fairly reasonable limits although one sample contained 86 per cent of added water. Seven samples of condensed tinned milk, one sample of sterilised milk and one sample of milk powder were examined. The sample of sterilised milk had obviously been diluted until it would just pass the English Standard. The brand is not now on the local market.

Water.

Eighteen samples only of water were received for analysis none presenting any interesting features.

Counterfeit Coins.

Five cases of counterfeit coining were investigated. The materials examined were the usual moulds, acids, base metal, etc. The total number of coins found to be counterfeit was 224.

Explosives.

Only two consignments of explosives were imported during the year the total weight being 40,000 lbs. All samples passed the required tests. Three locally and illegally manufactured bombs were examined for the Police. They consisted of a mixture of heavy broken glass, potassium chlorate, sulphur, and arsenic sulphide wrapped in cloth and bound with string.

Toxicology.

Specimens of human or animal viscera were examined in 16 cases. The poisons discovered were opium (3 cases), caustic soda (2), alcohol (2), arsenic (2), acetic acid (1) and potassium cyanide (1).

A sample of powder administered as a medicine was found to consist of a mixture of arsenic and gound glass.

A curious case was reported from the Dindings where a woman had cooked and, with her family had eaten a small portion of the liver of an unknown fish. The woman died within one hour and three children within 12 hours. No known poison could be identified in any of the viscera and the remainder of the fish was not forthcoming for examination. It is probable that the deaths were due to a natural poison secreted in the liver of the fish.

Miscellaneous.

A large number of miscellaneous substances were examined. These include rubber (many samples) rice, lime, sugar, paper, acetic acid, cements, disinfectant, tobacco, kerosene, deleterious drugs, fertilisers, spices, etc. During the last two months of the year a number of samples of rubber latex were received for the determination of the percentage of dry rubber.

Staff.

I was in charge throughout the year.

APPENDIX I.

KING EDWARD VII COLLEGE OF MEDICINE, SINGAPORE.

REPORT BY G. H. MACALISTER, M.D., D.P.H., *Principal*.

College Council.—The College Council lost one of its oldest members by the death of Mr. TAN KHEAM HOCK. The deceased gentlemen had been associated with the Council almost since the time of the original inception of the school, and had served for many years as trustee of the Permanent Fund.

Mr. SEE THIONG WAH was elected temporarily under Ordinance XV of 1905, paragraph 8 (2) to fill the seat of the late Mr. TAN KHEAM HOCK.

Dr. CHEONG CHEE HAI nominated by the British Medical Association as their member in place of Dr. LIM BOON KENG took his seat on the Council.

The nominee of Chief Secretary, Federated Malay States, Dr. R. DOWDEN went on leave and was replaced by Dr. F. E. WOOD.

Staff.—Dr. J. S. ENGLISH arrived in the Colony and assumed duties as Professor of Midwifery and Gynecology.

Dr. G. HARROWER arrived and assumed duties as Professor of Anatomy.

Mr. K. BLACK was appointed Professor of Surgery. The engagement of Lieutenant-Colonel HULL as Lecturer in Clinical Surgery was discontinued.

Dr. R. B. MACGREGOR continued to give systematic lectures in Medicine and Clinical Instruction until the return of Dr. G. H. MACALISTER in June.

Dr. G. A. FINLAYSON and Dr. V. KYLE also took part in the Clinical teaching during the first three months of the year.

Mr. C. J. SMITH, Senior Surgeon was appointed to the part time post of Professor of Clinical Surgery, and Dr. G. H. MACALISTER, Principal was appointed Professor of Clinical Medicine (unpaid) in addition to his substantive appointment.

Dr. J. S. WEBSTER returned from leave in September, and assumed duties as Professor of Medicine.

No changes in the staff of part-time lecturers took place. At the close of the year Dr. H. J. GIBBS, lecturer in mental diseases, forensic medicine and materia medica, severed his long standing connection with the college prior to his retirement.

Students.—Ten students completed their course and passed the final examination, thus qualifying for the diploma of L. M. S.

The total number of licentiates at the close of the year was 134.

There are at present in the college 135 students distributed between the various years as follows:—

Final Year	...	...	...	...	38
Fourth Year	...	...	...	...	33
Third Year	...	...	...	...	18
Second Year	...	...	...	...	30
First Year	...	...	...	...	16

Of these, six are Straits Settlements Government students and forty-seven are Federated Malay States Government students.

Discipline.—The discipline of the students has been satisfactory. There are no suspensions or dismissals to report.

Curriculum.—There have been no changes of importance in the arrangement of the curriculum. In view of the expansion of the course anticipated for 1923 in accordance with the revised General Medical Council regulations, it was considered advisable to direct attention to the improvement of the existing courses, rather than to introduce new classes.

Students are now detailed in rotation for responsible ward duties at the General Hospital and at Tan Tock Seng's Hospital; and the Professor of Midwifery has reorganised the system for practical work in Midwifery.

Equipment.—The orders for supply of new apparatus and books have now been completed; and with the exception of the two departments of pathology and of physics, the equipment is adequate.

APPENDIX J.

PATHOLOGICAL DEPARTMENT, SINGAPORE.

REPORT BY DR. G. A. FINLAYSON, M.A., M.B., M.R.C.P.,

Government Pathologist.

Laboratory, Sepoy Lines.

Total number of specimens examined	...	...	3,698
Widal reaction for specimens "Enterica"	...	...	394
Enteric fever	positive reaction	...	38
	partial "	...	57
	negative "	...	292
Para-typhoid B	positive "	...	2
	negative "	...	7
Widal reaction for Dysentery-bacillary	...	...	21
	positive reaction	...	11
	negative	...	10
Malaria	...	...	90
	parasite present	...	14
	" not observed	...	76
Syphilis	Wasserman reaction	...	2,163
	positive	... + + + ...	1,033
	"	... + + ...	235
	"	... + ...	49
	negative	...	846
Diphtheria	throat swab.	...	69
	bacillus present	...	25
	" absent	...	44
Gonococcus	diplococcus present	...	89
	" absent	...	22
Sputum for T. B.	...	...	67
	bacillus present	...	82
	" absent	...	16
		...	64
Leprosy	...	...	23
	bacillus present	...	4
	" absent	...	19
Meningococcus	diplococcus present	...	8
	" absent	...	6
		...	2
Faeces	...	...	457
	Entamœba histolytica present	...	1
	B.—Dysenteriae isolated	...	3
	Ova observed	...	336
	negative result	...	117
Urine	...	...	150
	casts, albumin, etc.	...	56
	organisms, B Coli etc.	...	94
Varied including:—	...	...
	Vaccines prepared	...	5
	Blood culture for organisms	...	11
	Histological sections	...	76
	Examination of pus, etc.	...	57
	Treponema pallidum	...	3

Several samples of water were examined and reports forwarded.

The greater number of the samples of stool were forwarded by the Medical Officer i/c Reformatory who was desirous of testing the efficiency of Carbon Tetrachloride on intestinal worms.

While the drug appeared to have the desired effect on the Hook-worm, its action on the Round-worm and the Whip-worm was not so apparent.

Tan Tock Seng Hospital.

In addition to the considerable number where a partial examination only was conducted to confirm diagnosis a complete autopsy was made in 679 cases.

Return showing immediate cause of death:—

Beri-beri	...	...	...	...	80
Plague	...	...	...	...	5
Lobar Pneumonia	...	...	...	...	70
Cerebro Spinal Meningitis	...	...	...	...	2
Encephalitis Lethargica	...	...	...	...	1
Accidents etc.	...	...	...	...	47
Poisoning	...	...	...	...	3
Malaria	...	...	...	...	33
Blackwater fever	...	...	...	...	1
Kala-azar	...	...	...	...	1
Tuberculosis	...	...	...	...	35
Melioidosis	...	...	...	...	1
Enteric fever	...	...	...	...	14
Dysentery	...	...	...	...	62
Suppurative Peritonitis	...	...	...	...	33
Septic conditions varied	...	...	...	...	32
Ankylostomiasis	...	...	...	...	8
Schistosomiasis	...	...	...	...	5
Neoplasm	...	...	...	...	23
Leprosy	...	...	...	...	2
Lymphatic Leukæmia	...	...	...	...	1
Splenic anæmia	...	...	...	...	3
Diseases of the Nervous System	...	...	...	...	15
" the Circulatory System	...	...	...	...	67
" the Respiratory System	...	...	...	...	53
" the Alimentary System	...	...	...	...	46
" the Genitourinary System	...	...	...	...	16
Tetanus	...	...	...	...	3
Too decomposed	..	...	...	...	4

Percentage death-rate Tan Tock Seng's Hospital:—

Year.	Total No. p.m.	Malaria.	Dysentery.	Tuberculosis.	Beri-beri.
1920	1,306	182	188	277	14
1921	1,530	205	238	318	75
1922	1,578	168	305	382	107

As noted in prior reports the noticeable feature is the continued alarming increase in the number, both gross and percentage, who died of pulmonary tuberculosis. As was expected, the death-rate from Beri-beri shows a distinct rise, while that from malaria has fallen.

Staff.

Mr. BARDHAN was on leave during the greater part of the year. During his residence in England he secured the diplomas—D. P. H. (London) and D. T. M. and H. (England).

In his absence Mr. GOPALAN carried out the duties in an efficient manner: he proceeded on leave on Mr. BARDHAN'S return.

APPENDIX K.

MEDICAL DEPARTMENT, LABUAN.

REPORT BY T. C. A. CLEVERTON, M.R.C.S., L.R.C.P.

Population and Health.—Table showing estimated Population, with the birth and death-rates, for the years 1920 to 1922.

Year.	Estimated Population.	Births.	Deaths.	Birth-rate.	Death-rate.
1920	6,970	206	152	29.55	21.80
1921	5,909 (actual)	203	199	34.35	33.67
1922	5,922	211	201	35.62	33.94

The Birth-rate was highest during the 3rd quarter and the Death-rate during the 1st Quarter. Of the total number of deaths, Malaria accounted for 34, Convulsion 63, Phthisis 53, Debility and Age 14.

The number of deaths under 1 year of age was 63 (49 Malays and 14 Chinese) as against 53 in 1921.

Malaria.—The prevalence was about that of last year.

Fifty-two cases were admitted as against 69 in 1921.

Three hundred and nineteen cases were treated as Out-patients against 175 in 1921.

Fifteen of the cases admitted to Hospital in 1922 had been less than 2 months in Labuan, and of these 15 cases 10 came from Brunei and the remaining 5 from British North Borneo and Sarawak (Lawas) 20 of the remaining 37 cases had been less than 1 year in Labuan, and all of these cases had suffered from fever in the countries from which they had come.

One hundred and twenty-four School-boys who were examined for enlargement of the spleen showed 20 with splenic enlargement making a percentage of 16 as against a percentage of 16.5 for last year.

One hundred and sixty-two Blood Films were examined with 79 positive results. One hundred and thirty stools were examined with 73 positive results. Thirty-eight Sputums were examined with 17 positive results. Eighteen Smear for Gono-cocci were examined with 12 positive results. Five Blood Films for Filaria were examined with negative results.

Ankylostomiasis.—All patients admitted to Hospital had their Stools examined for Ankylostome Ova from April; in all 130 Stools were examined with 27 positive results. Only 4 cases of pure Ankylostomiasis were treated in Hospital. The others were suffering from other diseases.

A sum of \$992.43 was spent by the Rural Board for clearing and draining, etc., in connection with Anti-malarial work.

Beri-beri.—Only one case was treated in 1922 (this case came from Brunei) as against 42 cases in 1917. No cases were seen by this Department in 1920 or 1921. There was one case in 1919.

Port Health Work.—Four Steamers and 1 Tongkang were inspected and Pratique granted. Fifty Bills of Health were issued.

Police Force.—

	1921.	1922.
	—	—
Number of admissions to Hospital ...	112	50
Number of Out-patients ...	334	487
Number of admissions for Malaria ...	38	26
Number of Out-patients for Malaria ...	42	81

Prisoners.—

	1921.	1922.
	—	—
Number of admissions to Hospital ...	14	9
Number of Out-patients ...	72	23
Number of admissions for Malaria ...	7	1

Vaccination.—Two hundred and twenty-two children were vaccinated during the year as against 184 in 1921. Of these 211 were successful 3 modified and 8 failed.

Meteorological.—The North-east monsoon blew from January to the beginning of March. During March the prevailing wind was due South. From April to October, the South-west monsoon prevailed. In November, the North-east monsoon started.

The total rainfall during the year was 2971.1 m.m. as against 3415.9 m.m. in 1921. The North-east monsoon was again the driest monsoon the first 3 months of the year showing a far smaller rainfall. The driest month was February. The wettest month was October, when 440.0 m.m. fell. The greatest rainfall in 24 hours for the year was 124.5 m.m. on the 10th September. The maximum temperature was 91 on 16th of March, 29th April, and 11th June. The maximum temperature was 71 on 20th August, 21st and 25th September and 9th October. The maximum mean temperature was 87.0. The minimum mean temperature was 76.0. The mean temperature was 81.5.

Hospital.—The total number of admissions during the year was 168 as against 278 in 1921. There were 10 deaths giving a percentage mortality to the total treated of 5.58 as against 4.79 in 1921.

The chief diseases treated were Dysentery, 4 with 2 deaths, Malaria 53 with no deaths, Phthisis 7 with 3 deaths, Syphilis 9 with no deaths.

The admissions to Hospital show a falling for the year under review; this I believe to be due to the generally bad condition of trade, etc., in Labuan and the neighbourhood, and particularly on account of coolies not being required for the obtaining of raw produce.

Operations.—Thirteen Operations were performed under Chloroform of which 6 were major. Nine Incisions of abscess, etc., were done in addition.

Thirteen N. A. B. intravenous injections were given and 24 Mercuric Arsenious Iodide intravenous injections.

SINGAPORE.

Return of the Statistics of Population for the Year 1922.

			Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.
Number of inhabitants in 1922	...	...	6,433	5,635	56,606	327,484	33,528	5,928	435,614
" Births during the year 1922			240	338	9,820	14,733	2,290	302	27,723
" Deaths " 1922			76	212	7,441	16,492	3,348	235	27,804
" Immigrants " 1922		}	Not available.						132,886
" Emigrants " 1922									
Number of inhabitants in 1921	...	...	6,064	5,360	53,818	314,523	32,180	5,914	417,859
Increase	...	...	...	...	...	232	...	...	Decrease
Decrease	19	28	906	...	288	20		1,049.

Meteorological Return for the Year 1922.

	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Millimetres.	Degree of Humidity.	General Direction.	Average Force.	
	°F	°F	°F	°F	°F	°F	M. M.	%			
January	148.1	...	84.7	76.8	7.9	80.0	153.25	84	N.		
February	152.7	...	84.6	76.2	8.4	79.6	198.50	82	N.		
March	146.4	...	84.2	76.0	7.3	79.8	158.50	84	N.		
April	150.7	...	82.1	78.4	3.7	79.9	168.50	83	S.W., N. & N.E.		
May	143.0	...	83.7	78.2	5.5	80.4	357.75	86	S.S.W.		
June	142.2	...	84.4	78.4	6.0	80.8	127.00	85	S.W., S.S.E.		
July	140.9	...	84.9	78.2	6.7	80.8	86.00	80	S.W., S.E.		
August	136.6	...	84.8	76.3	8.5	79.7	293.50	82	S.E., S.W.		
September	143.0	71.8	87.8	75.6	12.2	80.6	144.50	76	S.W., S.S.E.		
October	140.5	71.8	87.8	74.2	13.6	79.7	269.50	82	S.W., N.W.		
November	132.0	72.6	87.1	76.8	10.3	81.0	423.75	84	W.N.W.		
December	135.3	72.6	86.4	75.4	11.0	79.9	206.50	84	N. W.		
Mean	142.6	72.2	84.4	76.5	7.9	79.7	2,587.25	83	—		

PENANG AND DINDINGS.

Return of the Statistics of Population for the Year 1922.

	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.
Number of inhabitants in 1922 (P.) ...	1,160	1,577	36,971	99,550	23,229	1,464	163,951
.. Do. (D.) ...	23	17	5,503	2,972	4,105	19	12,639
.. Births during the year 1922 (P.)	59	58	1,306	3,186	543	25	5,177
.. Do. (D.)	1	...	181	70	100	...	352
.. Deaths 1922 (P.)	17	40	1,169	3,196	830	41	5,293
.. Do. (D.)	1	...	156	79	78	1	315
.. Immigrants 1922	...	...	...	...	58,674	...	} (P.)
.. Emigrants 1922	...	...	...	...	56,743	...	
Number of inhabitants in 1921 (P.) ...	1,148	1,561	36,601	98,554	22,996	1,450	162,310
.. Do. (D.) ...	22	16	5,193	2,804	3,874	18	11,927
Increase ... (P.) {	12	16	370	996	233	14	} 1,641
OR Decrease ... (D.) {	...	...	...	...	...	...
Increase ... (P.) {	1	1	310	168	231	1	} 712
OR Decrease ... (D.) {	...	...	...	...	...	...

Meteorological Return for the Year 1922.

	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in mms.	Degree of Humidity.	General Direction.	Average Force.	
January ...	F. 160	F. 68	F. 94	F. 70	F. 24	F. 81.5	139	88.9	N.W.	Not recorded.	
February ...	162	68	93	70	23	81.1	64	83.2	N.W.		
March ...	165	66	93	67	26	80.5	325	87.3	N.W.		
April ...	185	66	93	67	26	82.1	205	87.4	N.W.		
May ...	153	69	94	70	24	81.3	354	88.7	N.W.		
June ...	152	71	92	68	24	80.8	235	80.5	N.W.		
July ...	154	71	92	70	22	80.8	173	86.6	S.		
August ...	150	70	93	69	24	80.2	272	87.3	S.		
September ...	156	70	91	70	21	79.8	499	89.3	N.W.		
October ...	155	70	92	69	23	80.3	293	89.7	S.		
November ...	151	70	91	70	21	80.4	327	83.8	N.W.		
December ...	150	70	92	70	22	80.4	306	87.6	N.		
Mean ...	185	66	94	67	26	80.7	3,192	86.6	N.W.		

MALACCA.

Return of the Statistics of Population for the Year 1922.

	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.
Number of inhabitants in 1922	458	1,812	88,501	46,897	19,301	271	157,240
„ Births during the year 1922	8	76	3,160	1,278	320	150	4,992
„ Deaths „ 1922	3	49	2,211	1,270	536	59	4,128
„ Immigrants „ 1922	}	No data available.					
„ Emigrants „ 1922							
Number of inhabitants in 1921	447	1,770	86,452	45,811	18,854	265	153,599
Increase or Decrease	11	42	2,049	1,086	447	6	3,641

Meteorological Return for the Year 1922.

	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Millimetres	Degree of Humidity.	General Direction.	Average Force.	
	F.	F.	F.	F.	F.	F.	M.M.	%			
January	133.0	—	88	73	15	—	75.00	81	N.		
February	136.0	—	88	73	15	—	99.50	81	N.		
March	122.0	—	87	73	14	—	140.00	82	N.W.		
April	127.0	—	89	75	14	—	229.00	84	N.W.		
May	122.0	—	89	74	15	—	157.00	80	N.W.		
June	126.0	—	88	74	14	—	203.00	82	N.W.		
July	127.0	—	88	74	14	—	101.00	81	N.W.		
August	121.0	—	87	73	14	—	215.00	83	N.W.		
September	129.0	—	88	74	14	—	172.00	82	N.W.		
October	123.0	—	87	74	13	—	284.00	83	N.W.		
November	115.0	—	86	74	12	—	303.00	83	N.		
December	117.0	—	87	73	14	—	162.00	82	N.		
Mean	...	—	...	...	...	—	...	...	...

LABUAN.

Return of the Statistics of Population for the Year 1922.

	Europeans.	Eurasians.	Malays.	Chinese.	Indians.	Other Nationalities.	TOTAL.	
Number of inhabitants in 1922	28	16	4,087	1,626	118	47	5,922	
„ Births during the year 1922	...	2	147	55	6	1	211	
„ Deaths „ „ 1922	...	1	155	43	2	...	201	
„ Immigrants „ „ 1922	} No data available.							
„ Emigrants „ „ 1922								
Number of inhabitants in 1921	...	25	15	4,095	1,614	114	46	5,909
Increase	3	1	...	12	4	1	} 13	
or Decrease ... ..	...	...	8	...	...	...

Meteorological Return for the Year 1922.

	TEMPERATURE.						RAINFALL.		WINDS.		REMARKS.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Millimetres.	Degree of Humidity.	General Direction.	Average Force	
		F.	F.	F.	F.	F.	M. M.	%			
January	151.9	73.2	85.8	76.5	9.3	81.1	167.5	81	N.E.	2	
February	150.9	71.8	85.7	75.7	10.0	80.7	89.5	80	N.E.	2	
March	147.9	72.1	86.9	76.7	10.2	81.8	172.0	78	S.	2	
April	146.0	73.5	88.3	77.0	11.3	82.6	100.0	77	S.	2	
May	145.1	73.0	87.7	76.4	11.3	82.0	317.0	81	S.W.	2	
June	139.7	72.8	87.7	76.1	11.6	81.9	355.5	80	S.	2	
July	136.3	73.6	87.7	76.7	11.0	82.2	116.5	78	S.	2	
August	140.6	73.1	87.4	75.8	11.6	81.6	311.0	80	S.W.	2	
September	144.2	73.5	87.7	76.2	11.5	81.9	321.2	80	S.W.	2	
October	145.4	74.0	87.2	74.9	12.3	81.0	444.0	81	S.W.	2	
November	133.4	74.0	85.8	75.2	10.6	80.5	379.0	84	N.E.	2	
December	135.1	75.3	86.4	75.6	10.8	81.0	197.9	82	N.E.	2	
Mean	143.0	73.3	87.0	76.0	10.9	81.5	247.6	80.1		2	