

Annual report on the Medical Department / Sierra Leone.

Contributors

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SIERRA LEONE.

Annual MEDICAL AND SANITARY REPORT

FOR THE
YEAR ENDING 31st DECEMBER, 1920.



CONTENTS.

	PAGE
I.—ADMINISTRATIVE—	
Staff	3-6
Financial	6
 II.—PUBLIC HEALTH—	
(a) General Remarks	7
(b) European Officials—Sick, Invaliding and Death Rates	7, 8
(c) Native Officials—Sick, Invaliding and Death Rates	8, 9
(d) Prisoners	9
(e) European Non-Officials	10
(f) Health of Imperial Troops stationed in Sierra Leone—	
European	10, 11
Non-European	11
 III.—SANITATION—	
(I) Administration and Legislation	12-14
(II) Preventive Measures—	
(1) Insect-borne Diseases	14, 15
(2) Infectious and Epidemic Diseases... ..	15, 16
(3) Port Sanitary Work	16
(III) General Measures	16-19
(IV) Recommendation for future work	19
Annual Sanitary Report on the Sherbro' District	20-22
 IV.—METEOROLOGICAL	
	23
 V.—HOSPITALS AND DISPENSARIES	
	24, 25
 VI.—SCIENTIFIC	
	26
TABLE	
I.—Staff	27, 28
IV.—Summary of Routine Sanitary Work done during the year	29-33
V.—Meteorological Returns for the year	34-37
VI & VII.—Return of Diseases	38-43
VIII.—Surgical Operations	44
 APPENDIX—	
Report on some experiments with Barium Carbonate and Tincture of Squill for the destruction of rats	45, 46
Report on Bilharzia	47-50
Rules for Hill Station Cantonment Residents	51, 52

SIERRA LEONE.

ANNUAL MEDICAL REPORT FOR THE YEAR ENDED 31ST DECEMBER, 1920.

I.—ADMINISTRATIVE.

STAFF.

MEDICAL STAFF.

European.

One Principal Medical Officer.
One Provincial Medical Officer.
Two Senior Medical Officers.
Seven Medical Officers (nine vacancies).

Promotion.—Nil.

Transfers.—Three Medical Officers—Dr. J. M. Clark to Tanganyika Territory; Dr. W. A. Young to Nigeria; Dr. H. M. Newport re-transferred to Nigeria.

Invalided.—One Senior Medical Officer, Dr. E. W. Wood-Mason.

Death.—Nil.

Retirement.—One Principal Medical Officer, Dr. E. H. Tweedy.

Appointments.—One Principal Medical Officer, Dr. W. I. Taylor from Nigeria; Provincial Medical Officer, Dr. J. B. Bate from Nigeria; two Medical Officers, Dr. J. A. Mackay and Captain M. Jackson; one Dental Surgeon, Dr. J. M. Carr.

Seconded.—Nil.

African.

Four Medical Officers.

SANITARY STAFF.

European.

One Senior Sanitary Officer.
One Sanitary Officer.
One Medical Officer of Health.
Three Superintendent Sanitary Inspectors.

Promotion.—Nil.

Transfer.—Nil.

Termination of Appointment.—One Superintendent Sanitary Inspector.

West Indian.

One Senior Sanitary Inspector.

Termination of Appointment.—One Senior Sanitary Inspector.

African.

One Second Grade Clerk.

Five Third Grade Clerks.

One Clerical Assistant.

Nineteen Sanitary Inspectors and Sub-Inspectors of Nuisances.

Nineteen Vaccinators.

Resignations.—Five Sanitary Inspectors.

Dismissals.—Three Vaccinators.

Termination of Appointments.—Two Sub-Inspectors of Nuisances.

Transferred to other Departments.—One Second Grade Clerk ; One Third Grade Clerk.

Appointments.—Three Sub-Inspectors of Nuisances ; Two Vaccinators.

Death.—One Third Grade Clerk.

NURSING STAFF.

European.

Two Senior Nursing Sisters (one Matron of Colonial Hospital).

Four Nursing Sisters.

New Appointment.—One Nursing Sister.

Termination of Appointment.—One Nursing Sister.

African.

Nineteen Male Nurses and Apprentice Nurses.

Fourteen Senior Female Nurses.

Fifteen Female Nurses and Probationer Nurses.

New Appointments.—Four Apprentice Nurses ; Nine Female Probationer Nurses.

Promotion.—One Second Class Male Nurse to First Class Male Nurse.

Dismissal.—One First Class Nurse.

Resignations.—Three First Class Male Nurses ; Two Male Apprentice Nurses ; One First Class Female Nurse ; Four Second Class Female Nurses ; Two Female Probationer Nurses.

Termination of Appointments.—One Apprentice Nurse ; One Female Probationer Nurse.

Death.—Nil.

STOREKEEPING AND DISPENSING STAFF.

European.

Nil.

African.

One Storekeeper.
 One Assistant Storekeeper.
 One Chief Dispenser.
 One Assistant Chief Dispenser.
 Eight First Class Dispensers.
 Eight Second Class Dispensers
 • Twelve Third Class Dispensers

New Appointment.—Nil.

Promotion.—Nil.

Resignation.—Nil.

Dismissal.—One First Class Dispenser.

Death.—Nil.

CLERICAL STAFF.

European.

Nil.

African.

One First Grade Clerk.
 One Second Grade Clerk.
 Six Third Grade Clerks.
 One Temporary Clerk.

New Appointment.—Nil.

Transfer.—One First Grade Clerk to Treasury Department.

Resignation.—Nil.

Termination of Appointment.—Nil.

Dr. J. Beringer acted as Principal Medical Officer from 13th March to the end of the year.

Major W. H. Peacock acted as Senior Sanitary Officer from 13th March to 18th July, 1920, and from 29th November to the end of the year.

Dr. W. Allan acted as Sanitary Officer from 13th March to 28th July, and as Senior Sanitary Officer from 18th July to 29th November.

Dr. J. C. Murphy acted as Senior Medical Officer from 26th August to the end of the year.

Dr. W. A. Young acted as Medical Officer of Health from 18th July to 19th September.

Dr. J. M. Mackay acted as Medical Officer of Health from 20th September to the end of the year.

Temporary Assistance.—Dr. T. C. Maxwell, African Medical Practitioner, was temporarily employed during the year with the exception of the month of August.

The European Nursing Sisters.—Miss I. Stevens acted as Matron of Colonial Hospital from the beginning of the year to the 2nd of May; Miss C. Littlewood acted as Senior Nursing Sister of the Government Nursing Home from 14th August to 27th December.

LEAVE.

European Staff.—The following went on leave during the year: Dr. E. H. Tweedy, Principal Medical Officer; Drs. C. H. Allan and E. W. Wood-Mason, Senior Medical Officers (the latter being invalided home on sick leave); Drs. J. C. Murphy, H. M. Newport, J. S. Pearson, W. A. Young, J. Y. Wood, J. C. McConaghy, R. Semple, Medical Officers; Major W. H. Peacock, Sanitary Officer.

European Nursing Sisters.—Misses L. R. Stevens, Senior Nursing Sister and Matron of Colonial Hospital; K. G. Appleton, Senior Nursing Sister of the Nursing Home; I. Stevens, E. Lankester and V. Bell, Nursing Sisters. Miss L. Blaber accompanied Dr. Tipper (S.M.O. Nigeria) to England on duty.

African Medical Officers.—Drs. W. O. Taylor and M. C. F. Easmon.

Subordinate Staff.—The following members of the African Subordinate Staff went on leave: Dispensers W. A. Macauley (Keeper of the Lunatic Asylum, Kissy), I. B. Doherty, T. L. Hooke, W. D. Hedd, G. C. Heroe, and E. T. Ajax; Laboratory Assistant J. T. Roberts, and K. A. King, Assistant Storekeeper; First Class Nurses N. T. Olushoga, E. D. Morgan, S. J. Cole, O. J. Pitt and M. E. Smith; Second Class Nurse C. K. Williams; Senior Female Nurses Mrs. E. Fyne and Miss L. E. Johnson (Bonthe); First Class Female Nurse Miss Mary Thomas; Second Class Female Nurses Misses M. E. George, P. P. Palmer, M. C. Wilson, and M. Davies; Female Probationer Nurses Misses P. M. Young, A. Williams and R. Wyndham.

Clerical Staff.—The following members of the Clerical Staff went on leave: Mr. M. P. Cole, First Grade Clerk; Messrs. E. T. Wilson and V. F. O. Lake, Third Grade Clerks.

FINANCIAL.

REVENUE.

				£	s.	d.
Hospital Receipts	...	...	...	94	1	1
Nursing Home Receipts...	...	...	...	690	0	5
Sale of Medicines	...	...	...	182	17	2
Druggists' Fees	...	...	...	2	0	0
Maintenance of Lunatics	...	...	...	459	5	5
Sale of Government Stores	...	...	...	5	7	6
Departmental Fines	...	...	...	4	18	10
Total	...	...	...	<u>£1,438</u>	<u>10</u>	<u>5</u>

EXPENDITURE.

				£	s.	d.
Personal Emoluments	...	...	...	27,783	6	9
Other Charges	...	...	...	19,045	15	8
Total	...	...	...	<u>£46,829</u>	<u>2</u>	<u>5</u>

II.—PUBLIC HEALTH.

(a) GENERAL REMARKS.

There were no epidemics recorded during the year. There has been an increase over 1919, of 6,589 in the total number of cases of disease observed and treated. The most prevalent diseases treated have been Malaria, affections of the Digestive System, Venereal Disease, Rheumatic affections, Dysentery, Diarrhœa and Constipation, Ulcers, Intestinal Parasites and minor injuries.

On the whole, the general health of the community may be said to compare favourably with former years.

(1) GENERAL DISEASES.

These are rare. Anæmia as a primary disease is not common. Gout is rare. Four cases of Exophthalmic Goitre, only, were seen.

(2) COMMUNICABLE DISEASES.

Insect-borne Diseases.

Malaria of the Aestivo-Autumnal type heads the list of these diseases. Six cases of Blackwater Fever occurred. No new case of Trypanosomiasis was observed; one case appears in the returns, but this remained under treatment from 1919.

No Yellow Fever was reported.

Infectious and Epidemic Diseases.

Twenty-four cases of Small-pox were reported from Kaballa, but it did not assume epidemic form. Only 25 cases of Chicken Pox were reported from various stations—a very low incidence. No case of Influenza was observed.

Four hundred and four cases of Dysentery occurred; a considerable decrease on previous years.

Helminthic Diseases.

These are common but call for no special comment. Almost all natives harbour one or more of them.

(b) EUROPEAN OFFICIALS.

Table showing the Sick, Invaliding and Death Rates of European Officials.

Total number of Officials resident	...	...	...	233
Average number resident	...	...	...	133
Total number on Sick List	...	...	...	166
Total number of days on Sick List	...	...	...	1,784

Average daily number on Sick List	4.87
Percentage of Sick to average number resident ...	3.66
Average number of days on Sick List to each patient	10.74
Average Sick time to each resident	13.4
Total number Invalided	10
Percentage of Invalidings to total residents	4.29
Percentage of Invalidings to average number resident	7.51
Total Deaths	4
Percentage of Deaths to total residents	0.86
Percentage of Deaths to average number resident ...	1.50

Causes of Invalidings and Deaths of European Officials.

Cause.	Invalided.	Died.
Neurasthenia	1	—
Cardiac Dilatation	1	—
Alcoholism	1	—
Fracture of Humerus	1	—
Hæmaturia	1	—
Cerebral Hæmorrhage	1	—
Arterio Sclerosis	1	—
Fracture of Clavicle... ..	1	—
Scalds	1	—
Myocarditis	1	—
Ptomaine Poisoning	—	1
Cerebral Malaria	—	1
Total	10	2

(c) NATIVE OFFICIALS.

Total number of Officials resident	850
Average number resident	750
Total number on Sick List	1,862
Total Number of days on Sick List	5,742
Average daily number on Sick List	15.68
Percentages of Sick to average number resident ...	2.09
Average number of days on Sick List to each patient	3.08
Average Sick time to each resident	7.6
Total number Invalided	23
Percentage of Invalidings to total resident	2.70
Percentage of Invalidings to average number resident	3.06
Total Deaths	9
Percentage of Deaths to total residents	1.05
Percentage of Deaths to average number resident ...	1.20

Causes of Invaliding and Deaths of Native Officials.

Cause.	Invalided.	Died.
Paralysis	1	1
Cirrhosis of Liver	2	—
Gonorrhœa and its sequelæ	1	—
Pneumonia	1	—
General Debility	4	1
Tuberculosis	7	4
Chronic Bronchitis	1	—
Cardiac Affection	6	2
Total	23	9

(d) PRISONERS (FREETOWN PRISON).

Total number of Prisoners admitted	1,386
Average strength	435
Total Deaths	12
Total number of Prisoners on Sick List	464
Daily average number on Sick List	22
Sick Rate per 1,000 of average strength	50·6
Death Rate per 1,000 of average strength	27·6

Causes of Deaths among the Prisoners.

Chronic Bright's Disease	2
Beri-beri	2
Tuberculosis	2
Diarrhœa	2
General Paralysis of the Insane	1
Aortic Disease	1
Acute Bronchitis... ..	1
Amœbic Dysentery	1
Total	<u>12</u>

The general health of the prisoners was satisfactory, the majority of ailments being of a minor nature. Apart from a mild outbreak of Dysentery there was no epidemic disease.

The sanitary condition of the Prison is excellent and the food and cooking arrangements leave nothing to be desired.

(e) EUROPEAN NON-OFFICIALS.

Causes of Invaliding and Deaths of European Non-Officials.

Cause.	Invalided.	Died.
Malaria	13	—
Blackwater Fever	4	2
Dyspepsia	1	—
Iritis	1	—
Sunburn	1	—
Fracture (Pott's)	1	—
Bright's Disease	1	—
T.B. of Knee	1	—
Neurasthenia	2	—
Hernia	1	—
Adenitis	2	—
Cardiac Debility	2	—
Alcoholism	2	—
Hæmatenesis	1	—
Gunshot Wound	—	1
Liver Abscess	1	1
Motor Accident	—	1
Total	34	5

(f) HEALTH OF IMPERIAL TROOPS STATIONED IN SIERRA LEONE.

EUROPEAN.

Invalided	1
Deaths... ..	Nil.

Table showing Causes of Illness.

Disease.	No.	Disease.	No.
Dysentery	1	Brought forward	37
Diarrhœa	1	Dermatitis	1
Cow Pox	3	Impetigo	5
Adenitis Groin	1	Malaria	140
Anæmia	15	P.U.O.	28
Debility... ..	1	Syphilis	13
Jaundice	2	Soft Sore	7
Rheumatism	2	Gonorrhœa	16
Synovitis Knee, R.	5	Balanitis	2
Tonsillitis	2	Conjunctivitis	2
Paraphimosis	1	Inf. Mid. Ear, R.	3
Chronic Alcoholism	2	Otitis Media	1
Delirium Tremens	1	D.A.H.	1
Carried forward	37	Hæmorrhoids	3
		Carried forward	259

Diseases.	No.	Diseases.	No.
Brought forward	259	Brought forward	292
Urethritis	4	I.C.T., Ear	1
Abrasion, Knee, R.	1	Lymphadenitis Groin	5
Ulcerated Gums	1	I.C.T., Arm	3
Bronchitis	1	Constipation	1
Incised Wound, Wrist..	1	Pharyngitis	1
Enteritis	2	Inf. Ear. Ext. Meatus	1
Gastritis	6	D.A.H. (Stenois Aortic Orifice)	1
Contused Wound, Leg...	2	Old Injury, Knee	1
Sprained Ankle	5	Headache	2
I.C.T., Groin	4	Venon of Culex (Mosquito)	1
Trench Fever	1	Fracture, Fibula	1
I.C.T., Leg and Foot	4	Corns	1
Cut Forehead	1	Boil	1
Carried forward	292	Total	312

NON-EUROPEAN.

Invalided	...	...	...	...	Nil.
Deaths	...	...	...	...	1

Table showing Causes of Illness.

Disease.	No.	Disease.	No.
Brought forward	36	Brought forward	36
Paraphimosis	1	Inf. Lym. Glands, Neck	2
Syphilis	5	" " " Groin	9
Soft Sore	2	Injury to Toe (Great)	1
Gonorrhœa	4	I.C.T., Chest	1
Conjunctivitis	1	" Buttock...	2
Fatty Degeneration Heart	1	" R. Thigh	2
Hæmorrhoids	1	" Foot	5
Injury to Eye, R.	1	" R. Leg	1
Wound, Face	1	Old Injury, Wrist	1
Ing. Hernia	8	Contusion, L. Elbow	1
Pleurisy	1	Lacerated Wd., Eye	1
Adenitis Groin	3	G. S. Chest, L.	1
Tubercular Meningitis...	1	I.C.T., Hand	3
Frac. Metacarpal Bone	1	Abscess, R. Buttock	3
Yaws	1	" R. Heel	1
Empyema	1	I.C.T., Groin	1
Hydrocele	3		
Carried forward	36	Total	71

III.—SANITATION.

I.—ADMINISTRATION AND LEGISLATION.

1. Dr. J. A. Beringer, Senior Sanitary Officer, was appointed Acting Principal Medical Officer from the 13th of March, and continued to act in that capacity until the end of the year.

2. Major W. H. Peacock, Sanitary Officer, acted as Senior Sanitary Officer from the 13th of March to the 17th of July, when he went on leave and returned on the 29th November, relieving Dr. W. Allan as Acting Senior Sanitary Officer.

3. Dr. W. Allan, Medical Officer of Health, acted as Sanitary Officer from the 13th of March to the 17th of July, when he was appointed Acting Senior Sanitary Officer, and was relieved by Major Peacock on the 29th of November, and proceeded on leave on the 4th December.

4. Dr. W. A. Young, Medical Officer, arrived from leave on the 11th of July, and was seconded to the Sanitary Department, and acted as Medical Officer of Health from the 12th to the 17th of July. He acted as Sanitary Officer from the 17th of July to the 19th September, when he was transferred to Nigeria.

5. Dr. J. M. Mackay, Medical Officer, arrived in the Colony on the 21st August, and was seconded to the Sanitary Department. He acted as Medical Officer of Health from the 21st August to the 19th of September, Sanitary Officer from 19th September to 29th November, and from 5th December to the end of the year.

6. Mr. D. S. Bowen, Superintendent Sanitary Inspector, went on leave on the 20th November.

7. Mr. H. A. Reeve, Superintendent Sanitary Inspector, went on leave on the 29th January, and his appointment was subsequently terminated.

8. Mr. E. T. E. Nash, Senior Sanitary Inspector, was invalided on 4th June, and this post was subsequently abolished and replaced by that of an additional Superintendent Sanitary Inspector.

9. This was filled by the appointment of Mr. G. V. Herd, from January 1st, 1921. Mr. Herd had previously been employed since 22nd October, 1919, as a Supernumerary Superintendent Sanitary Inspector, and his salary up to the time of his appointment to the regular establishment, was met from a special vote for Anti-Malaria Measures, which was instituted in 1918.

10. By Order in Council, No. 3 of 1920, Cerebro-Spinal Meningitis was made a notifiable disease for a period of six months from 22nd March, 1920.

11. By Order in Council, No. 5 of 1920, Influenza was made permanently notifiable. Influenza Regulations (Nos. 11 and 12) were passed by the Governor in Council, in order to give the Sanitary Department adequate powers to take precautions against importation or exportation of Influenza.

12. Owing to shortage of Sanitary Staff, and to the increase of the Garrison in that locality during the war, Sanitary control of the Wilberforce and Murray Town area was handed over to the Military Authorities in 1917.

By Order in Council, No. 7 of 1920, this area was restored to the administration of the Sanitary Department.

13. Certain Townships on or near the Railway—Kennema, Blama, Segbwema, Pendembu, and Kanre Lahun—were declared Sanitary Districts under the Public Health (Protectorate) Ordinance.

14. A number of additional Rules were applied to Bo, to which place a Sanitary Inspector had been posted at the beginning of the year.

15. Approval having been given, in 1919, for the appointment of a Medical Officer to instruct and supervise the work of Protectorate Vaccinators, Dr. E. Taylor Cummings, African Medical Officer, was appointed for this purpose in July.

16. This provided an opportunity for taking steps to improve the sanitation of the Protectorate Villages, and a scheme for this purpose was drawn up by Dr. W. Allan. Its application was limited to areas remote from the railway and centres of trade, as it was considered advisable that the more civilized communities with a mixed population should be supervised by Sanitary Inspectors trained in Freetown. The present Vaccinators were to be trained as Village Sanitary Inspectors for the purpose of the scheme.

17. It was decided, in the first instance, to select in each Province a village well situated and satisfactorily laid out, and in the district of a Chief who was keen on sanitation, and to convert it into a model village.

18. The first place chosen was Mabunti, about 18 miles from Makump, in the Northern Province. Dr. Cummings was in residence there during the last three months of the year, and gave a course of instruction in Vaccination and Elementary Sanitation to the Vaccinators of the Northern Province. At the same time the Sanitation of Mabunti was taken in hand, special attention being paid to drainage, refuse disposal, filling in of water holes, and clearing of bush around the town.

19. Towards the end of 1919 a despatch was received from the Secretary of State for the Colonies requesting that Committees should be formed to investigate the causes of the high death rate in many of the gaols of East and West Africa. A Committee was appointed consisting of Major Peacock, Sanitary Officer, and Major Dawes, of the West African Frontier Force, and

these officers visited the gaols in the Colony and the majority of those in the Protectorate, and subsequently drew up a Report containing a number of recommendations for the purpose of improving the sanitary condition of the gaols.

20. As a result of the Influenza Epidemics of 1918 and 1919, the importance of reporting promptly outbreaks of infectious diseases in various parts of the world was very fully realised. In Sierra Leone it was decided to issue a bi-monthly bulletin of infectious diseases, giving place of occurrence and number of cases of each of the following diseases reported during the period in question:—Small-pox, Influenza, Pneumonia, Yellow Fever, Plague, Cerebro-Spinal Meningitis, Cholera, Typhus Fever, Sleeping Sickness, Dysentery, Relapsing Fever, and Acute Poliomyelitis. Telegrams are received from each of the districts at the end of each half-month.

The Bulletin was started in September, 1920, and has been issued regularly since then.

II.—(1) PREVENTIVE MEASURES AGAINST INSECT-BORNE DISEASES.

MALARIA.

21. Anti-Malarial measures, both temporary and permanent, were carried out fairly extensively in Freetown during the year.

22. The following is a summary of work done on pools, drains and gutters:—

1. No. of pools dealt with by draining or filling up	414
2. No. of pools cleared	43,365
3. No. of drains and gutters cleared (in feet) ...	102,563

23. The four principal streams in the Municipal area, viz., Alligator Brook, Nicol's Brook, Saunders Brook and Moore's Brook, were canalised and regulated at the end of the dry season, and all mosquito breeding places in the vicinity of these streams were obliterated.

24. The filling in of compounds in the Western area was continued and completed. In all 30 compounds, representing an area of roughly 16 acres, were raised and drained. This work was carried out in conjunction with the construction of surface drains in that area.

25. Oiling of cesspits, wells, pools, etc., was carried out by the oiling gangs.

Record of Work done:—

Number of times cesspits oiled	7,646
„ „ drains and pools oiled	83,020
„ „ wells oiled	10
„ „ boats and canoes oiled	825

26. The closing of wells in Freetown was continued, and the total number closed during the year was 176, leaving about 55 still open.

27. A certain amount of permanent surface drainage, which will be described later, was carried out, principally in the Western area of the town.

28. A Mosquito Larvæ Index was taken at the end of each quarter, when the following results were obtained:—

March	Nil.
June	8.85
September	2.28
December	2.85

350 compounds were examined in each case, 25 being taken in each of the 14 sections into which the town is divided.

29. During the year 90,876 houses and compounds were inspected for Mosquito Larvæ, resulting in the discovery of 438 mosquito breeding places. Prosecutions followed in every case, with the result of 403 convictions, and fines amounting to £69 14s., or an average of approximately 3s. 6d. per case.

YELLOW FEVER.

30. No case of Yellow Fever was reported in Sierra Leone during the year, nor was any other West African Port declared to be infected with this disease.

TRYPANOSOMIASIS.

31. No fresh case was reported during the year.

(2) PREVENTIVE MEASURES AGAINST INFECTIOUS AND EPIDEMIC DISEASE.

CEREBRO-SPINAL MENINGITIS.

32. No definite case of Cerebro-Spinal Meningitis was reported. A suspicious case occurred at the Princess Christian Hospital, but, unfortunately, the patient was removed by relatives and died before the diagnosis was verified. Examination of the contacts proved to be negative.

DYSENTERY.

33. The closing of most of the wells has probably led to a considerable diminution in the amount of Dysentery in Freetown, and this is supported by the hospital statistics. Records for 1919 are not available owing to the fire at the Colonial Hospital, but the figures for 1918 and 1920 are as follows:—

1918.	No. of cases of Dysentery treated at Colonial	
	Hospital and Cline Town Dispensary	... 129
1920.	Do. do do do	... 50

PLAGUE.

34. 7,540 rats were destroyed during the year, and were paid for by the Sanitary Department at the rate of 3d. per head. During the latter part of the year experiments on various rat poisons were carried out.

The rat varnish recommended by Dr. Howarth, Medical Officer of Health of the City of London, was experimented with indoors, and proved most successful. Once a rat was caught by this varnish it was never known to escape.

Some experiments on the effects of Barium Carbonate and Tincture of Squill, carried out by Dr. J. M. Mackay, Acting Medical Officer of Health, Freetown, are described in an appendix.

SMALL-POX.

35. Freetown was comparatively free from Small-pox during the year. Six cases were admitted to the Infectious Diseases Hospital at Kissy, and there were three deaths. All these cases occurred during the months of August, September and October, in the Western District of the town, within an area of about $\frac{1}{4}$ square mile.

36. In the Protectorate there were a few sporadic cases and one or two minor outbreaks, but the disease never occurred in epidemic form.

37. Record of vaccinations performed:—

	1920.	1919.
Number vaccinated	26,672	47,702
„ successful	9,819	14,461
„ unsuccessful	5,430	6,785
„ not inspected... ..	11,423	26,456

(3) PORT SANITARY WORK—FREETOWN.

38. The port was never in quarantine during 1920, and no infectious case was discovered on any ship in the harbour.

39. The following West African Ports were declared infected during the year owing to the presence of Small-pox:—

Nigeria.—Lagos, Port Harcourt, Calabar, Degama, Abonema, and Warri.

Gold Coast.—Accra (three times), Winnebah, and Sekondi.

Dakar, which had been in quarantine owing to Plague since October 30th, 1919, was declared free from infection on January 2nd, 1920. All ships arriving at Freetown from any of the above ports were boarded and examined by the Port Health Officer before pratique was granted.

III.—GENERAL MEASURES.

(a) DISPOSAL OF REFUSE.

40. *Freetown*.—The same method of disposal of refuse prevails as in former years. Throughout the year a daily average of 35 tons of refuse (combustible) was removed from the streets and dust bins, and an average of 12 canoe loads daily of tins, bottles and other incombustible material was taken out to sea.

41. *Bo.*—Six concrete dust bins and one incinerator were erected during the year, and at the end of the year a second incinerator was in course of construction.

(b) DRAINAGE.

42. The following permanent surface drainage work was carried out mostly in the Western area of the town :—

New concrete drains :—

Garrison Street	...	...	...	228 feet.
Adelaide Street area	...	...	...	1,101 „
Fergusson Street	„	...	...	4,467 „
Priscilla Street	„	...	...	405 „

(c) SANITARY INSPECTIONS.

43. During the year 4,642 notices were served to remove insanitary conditions of premises. 176 persons were fined for not removing insanitary conditions after notice. These fines amounted to £48 10s. 6d.

(d) MEAT AND FOOD INSPECTION.

44. 2,930 cattle, 381 sheep, 13 goats, and 1 swine were slaughtered in the Public Slaughter House for public sale.

808 cattle, 19 sheep, and 3 goats were slaughtered in the Imperial Slaughter House for the Imperial Government, and 183 cattle were slaughtered for the Colonial Hospital.

Total animals slaughtered during the year :—

Cattle	...	...	...	...	3,921
Sheep	...	...	...	...	400
Goats	...	...	...	...	16
Swine	...	...	...	...	1

45. One sheep, one sheep's liver, one bullock and 26 quarters of beef were condemned and destroyed by order of the Police Magistrate, mainly on account of infection with *Cysticercus Bovis*.

46. The attention of the Government was drawn, by Dr. W. A. Young, to the high proportion of female cattle slaughtered, amounting at times to 80 per cent. of the total.

47. *Food.*—50 barrels of Pork, 100 tins of Tomatoes, 14 bags of Fish, and 281 cases of Onions were condemned and destroyed.

(e) WATERWORKS.

48. Mr. W. S. Cole, Superintendent of Waterworks, Freetown, has kindly supplied the following information showing progress made during the year 1920 :—

(1) *New Mains.*—In order to augment the water supply in the Western section of the City about 250 yards of three mains with hydrants were laid along Smythe Street to Fergusson Street junction.

- (2) *Lowering of Distributing Mains.*—About 4,000 feet of distributing mains in various parts of the City, which, on account of the rocky nature of the soil were originally laid near the surface, were lowered to a depth of 30 inches.
- (3) *New Services.*—Thirty new private services were laid during the year. Quite as many more could not be laid owing to lack of material. There are now 322 services to private and 56 to Government and Municipal premises.

Only three new Public Standpipes were erected, making a total of 206.

- (4) *Venturi Meters.*—Two Venturi Meters—7" and 8"—have been installed recently in connection with the Waterworks. It is now possible to record accurately not only the total consumption of water in the City, but also the hourly rate of consumption. These instruments enable the department to detect quickly, locate and control any excessive consumption of water, and to prevent undue waste.
- (5) *Average Consumption of Water.*—Average daily consumption of water in Freetown is 392,000 gallons.

Average maximum consumption per hour	...	43,600	gallons.
„ minimum	„ „ „	1,800	„

(f) HILL STATION SANITATION.

49. The following information is supplied by Dr. Beringer, who was in charge of Hill Station Sanitation during the year.

The average strength of the Sanitary Gang during the year was 3 headmen and 25 labourers, rather more labour being employed in the latter half of the year owing to the wet season.

The following work was carried out :—

- (1) The clearing, levelling, grading, and planting with short grass of the area to the North-east of the bungalows was resumed after an interval of some years.
- (2) Servants' latrines were erected in the compounds of the Railway bungalows.
- (3) With the assistance of a small advisory committee, appointed by the Hill Station Club at the request of the Senior Sanitary Officer, a number of trees were cut down where they appeared to be too dense.
- (4) The area immediately in front of the club grounds was improved by grading, clearing, and beginning the building of a semi-circular terrace.
- (5) The routine emptying of latrines, rubbish collection and destruction, keeping down of bush and grass, sweeping, and anti-mosquito work was carried out.

- (6) Revised Rules for the Hill Station European Reservation were approved by the Governor in Council. A copy of the Rules forms an appendix to this Report.

50. Lectures in Elementary Sanitation were given, by the Medical Officer of Health, during the year to the Native Staff. In all, three courses of lectures were given, the third course being on the lines laid down in Regulations No. 3 of 1915, which have been approved for the re-organisation and training of the Native Sanitary Staff.

51. Hygiene and Sanitation continue to be taught in the schools of the Colony.

IV. RECOMMENDATIONS FOR FUTURE WORK.

52. (1) It is very desirable that a complete survey should be made with a view to the preparation of a comprehensive scheme of drainage for the City of Freetown and its vicinity. This needs to be considered in conjunction with a Town Planning Scheme, which is equally urgently required. The cost would no doubt preclude much progress being made in the immediate future, but the work might be spread over a number of years and dealt with in sections. Unless some such scheme is prepared and approved, and the lines on which Freetown is to be developed in the future definitely laid down, it is difficult to recommend any immediate programme of permanent drainage, although the need for it is very great.

Nearly a quarter of a century after the cause of Malaria was discovered, Freetown is still very malarious, and yet, there can be no doubt that the complete abolition of malaria in the town is perfectly feasible. Against the cost of such an undertaking has to be considered the capitalised cost of labour and material now being expended on temporary measures.

(2) Measures to diminish overcrowding in Freetown.

(3) Introduction of more modern methods of refuse collection and disposal in Freetown.

(4) Continuation of scheme for training and re-organising Native Sanitary Staff and, as trained men become available, provision of additional Sanitary Inspectors for important districts and towns in the Protectorate.

W. H. PEACOCK,

Acting Senior Sanitary Officer.

SANITARY OFFICES,

FREETOWN, SIERRA LEONE,

5th July, 1921.

C.T.H.L.

[196731]

ANNUAL SANITARY REPORT ON SHERBRO' DISTRICT.

Work of a permanent nature has been confined during the year to alteration of the old type of dust bins, to the remaking of one large concrete bridge, the raising to above high water mark of a considerable area of that part of Heddle swamp that lies nearest to the estuary and the drainage of a large swamp at the Baoma and Bimbi Roads.

No new roads or bridges were constructed, but Otto Street was extended to the south-west to meet the Bimbi Road. A proper motor road will probably be made in later years, as the best site for European Bungalows can be found on the Government land in this direction.

DUST BINS.

In Bonthe there are nine of the new type and seven of the old. At an expense of less than one pound each, the latter have been converted so that the rubbish can be easily shot under the roof from nearly any direction, and therefore remains dry in the rainy season. The woodwork to a height of eighteen inches from the ground has been painted with Brunoleum preservative, to try to save them from the fate of the six dust bins which collapsed from the effects of white ants about a year previously.

LATRINES.

Repairs to all land and river latrines were carried out. The south end latrine over the estuary being almost entirely rebuilt.

WATER TANKS.

Two of the larger ones were repaired on account of leakage. Potassium Permanganate solution was used to wash the roof of these.

DEATH RATE.

The death rate shows great improvement if taken from the Registrar's figures; only eighty-four deaths were registered. On the other hand, ninety-three people were buried in the three cemeteries. Forty-six births, only, were reregistered, which is probably less than half the number which took place. If, approximately, only eighty per cent. of deaths and sixty per cent. of births are registered, it is quite time that some drastic change took place, especially as 1921 is the year of the decennial census. The remedy for this state of affairs would be for the local Registrars of Births and Deaths, who are mostly Dispensers, to be placed under the sole control of the Principal Medical Officer instead of the Registrar General.

VACCINATION.

Although the Vaccinator has been stationed here for over eight months, less than three hundred successful vaccinations have been performed on the Island of Sherbro'. The total figures for this district being seven hundred and fifty-four vaccinations performed, two hundred and seventy successful, one hundred and eighty-one unsuccessful and three hundred and three not seen. Timdale and Bapp chiefdoms, on the mainland, were visited and their figures are included in the above.

METEOROLOGICAL OBSERVATIONS.

These have been taken without a break, the highest temperature in the shade being 97 degrees in April, and the lowest, 60 degrees in January. The rainfall was only 125.07 inches, which is seventeen inches below the average for the past ten years.

INSPECTION OF THE PRISON.

No nuisances were discovered during the year, no infective diseases were discovered except one case of relapsed Dysentery and the case of Chicken Pox mentioned in the Medical Report. The cells were considerably over crowded during the hungry season, and it is to be hoped that either more cell accommodation will be made or else the New Prison, on the site selected over ten years ago, opposite the Hospital, will soon be built.

INSPECTION OF MEAT.

This was carried out and only one bullock was condemned, and this was for *Cysticercus*. A total of forty-three bullocks, forty-five pigs, seven sheep, and seven goats were killed.

PROSECUTIONS BEFORE THE DISTRICT COMMISSIONER.

These numbered thirty-one with a total of twenty-seven convictions. The fines amounted to ten pounds two shillings.

CHANGES IN STAFF.

Two of the sub-inspectors have had to have their services terminated. One properly trained sub-inspector has been sent from Freetown.

YORK ISLAND.

On account of shortage of sub-inspectors, a court messenger had to act in this capacity for several months. There was extreme difficulty in getting

labourers, but one of the Firms kindly supplied men after the strike, which enabled a certain amount of permanent work to be performed, as well as keeping the town clean. The pay of our labourers had to be raised to one shilling and six pence per diem, but even then we only had young boys and cripples. No constructive work was done, and none required, except for the sinking of the large water tank at the end opposite the service tap. A new overflow pipe at this end will be required before next rainy season. This tank also leaks rather badly.

(Sgd.) C. H. ALLAN,
Senior Medical Officer.

C.T.H.L.

IV.—METEOROLOGICAL.

The year 1920 was characterised by an extremely low rainfall, the total for the year, 106·85 inches, being the lowest on record with the exception of 1918, when the rainfall was 103·43 inches. With the exception of two or three slight showers towards the end of April, there was no rain during the first four months of the year. July, with a rainfall of over 40 inches, was wetter than usual. In August there was a distinct break in the rains, not uncommon in other parts of West Africa but unusual in Sierra Leone.

The tornadoes appeared to be slighter than usual.

Returns from four stations which are thought to be most representative of the general Meteorological conditions of the Colony and Protectorate are included as Table V.

V.—HOSPITALS AND DISPENSARIES.

On the 3rd of February, 1920, the Colonial Hospital was totally destroyed by fire.

The old Law Courts buildings were taken over and after structural alterations were used as a temporary Hospital, which contains one large Male Ward, containing eighteen beds, and one cot and a Midwifery Ward with four beds, Out-patient Department and Dispensary besides offices for the Principal Medical Officer, the Provincial Medical Officer, and duty room for Matron.

During the year there were 710 in-patients treated, with 53 deaths. Of these, 531 were males and 179 females.

There were 5,632 males and 2,520 females, a total of 8,152 new cases, treated in the out-patient's department, a total subsequent attendances of 13,270.

Sixty-two Surgical operations were performed, with seven deaths.

In the Maternity Ward, 117 maternity cases were treated, of which 16 were complicated, 42 were primiparæ, 92 were normal, and 25 abnormal.

Of the births, three were twins—one both male, one both female, and one mixed. Of single births 63 were males and 46 females. There were 11 still-births. The admissions to the Maternity Ward exceeded previous years.

The construction of the new Freetown Colonial Hospital is progressing and it is hoped that two blocks will be ready for occupation next year.

The Nursing Home (European Hospital) remains in the building which was formerly the Government Rest House.

The number and status of those receiving treatment as in-patients in this institution are as follows :—

Government Officials	...	...	...	...	78
Members of Mercantile Firms	...	...	...	...	49
Shipping	...	...	...	...	71
Miscellaneous	...	...	...	...	6
Ladies	...	...	...	...	5

There were five deaths.

THE KISSY INSTITUTIONS.

At the Lunatic Asylum there were 186 lunatics cared for. There were 44 deaths.

At the Hospitals for Incurables there were 484 inmates, of whom 144 died.

Seven cases of Small-pox and 13 of Chicken-pox were isolated and treated at the Infectious Diseases Hospitals.

Outside Freetown there are Hospitals and Dispensaries as follows :—

A.—COLONY.

Bonthe, with a Senior Medical Officer (Hospital).
 Kissy, with a Medical Officer.
 Bananas, with a Dispenser in charge.
 Goderich, with a Dispenser in charge.
 Hastings, with a Dispenser in charge.
 Regent, with a Dispenser in charge.
 York, with a Dispenser in charge.
 Waterloo, with a Dispenser in charge.
 Kent, with a Dispenser in charge.

In addition, Wellington is visited by a Medical Officer twice a week, but there is no Dispensary, a schoolroom being used for the purpose.

B.—PROTECTORATE.

(a) With a Medical Officer, some for part of the year only :—

Bo, Central Province ("Bush" Hospital).
 Daru, Central Province (Hospital).
 Moyamba, Central Province ("Bush" Hospital).
 Pujehun, Southern Province (Hospital).
 Makene, Northern Province.

(b) With a Dispenser, but visited by a Medical Officer periodically :—

Kennema, Central Province.
 Kanre Lahun, Central Province.
 Sembahun, Central Province.
 Sumbuya, Southern Province.
 Bandajuma, Southern Province.

(c) With a Dispenser in charge, but rarely or never visited by a Medical Officer :—

Kaballa, Northern Province.
 Port Lokko, Northern Province.
 Batkanu, Northern Province.

Some of the Stations in the Protectorate now in charge of Dispensers formerly had Medical Officers, but shortage of staff rendered this impossible :—

Kanre Lahun.
 Bandajuma.
 Kaballa.
 Batkanu.

VI.—SCIENTIFIC.

Owing to the destruction of the Laboratory by the fire, little has been done beyond routine clinical examination.

A report by Dr. J. M. Mackay, M.C., on some experiments with Barium Carbonate and Tincture of Squill for the destruction of rats, and a report on the prevalence of *Bilharzia* among the boys of Bo School, by Dr. J. Y. Wood, are included in the Appendix.

W. I. TAYLOR,

Principal Medical Officer.

TABLE I.

MEDICAL STAFF ON 31ST DECEMBER, 1920.

Principal Medical Officer	...	...	...	...	Dr. W. I. Taylor.
Provincial Medical Officer	...	...	...	...	„ J. B. Bate.
Senior Medical Officer	...	...	...	...	„ C. H. Allan.
„ „ „	...	...	...	...	„ E. W. Wood-Mason.
Medical Officer	...	...	...	...	„ J. C. Murphy.
„ „ „	...	...	...	...	„ J. S. Pearson.
„ „ „	...	...	...	...	„ J. McConaghy.
„ „ „	...	...	...	...	„ J. Y. Wood.
„ „ „	...	...	...	...	„ R. Semple.
„ „ „	...	...	...	...	„ M. Jackson.
„ „ „	...	...	...	...	„ J. M. Mackay, M.C.
„ „ „	...	...	...	...	„ W. F. Campbell.
„ „ „	...	...	...	...	„ W. O. Taylor.
„ „ „	...	...	...	...	„ M. C. F. Easmon.
„ „ „	...	...	...	...	„ E. J. Wright.
„ „ „	...	...	...	...	„ E. H. T. Cummings.
„ „ „	...	...	...	...	„ G. N. Metzger.
„ „ „	...	...	...	...	„ E. Awunor Renner.
Dental Surgeon	...	...	...	...	Mr. John Carr.

NURSING STAFF ON 31ST DECEMBER, 1920.

Matron and Senior Nursing Sister...	...	...	...	Miss L. R. Stevens.
Senior Nursing Sister	...	...	...	„ K. G. Appleton.
Nursing Sister	...	...	...	„ I. Stevens.
„ „	...	...	...	„ C. Littlewood.
„ „	...	...	...	„ L. Blaber.
„ „	...	...	...	„ V. Bell.
Male Nurses and Apprentices	...	...	...	17.
Female Nurses and Probationers	...	...	...	20.
Laboratory Assistant	...	...	...	J. T. Roberts.

PRINCIPAL MEMBERS OF SUBORDINATE STAFF.

First Grade Clerk	...	...	...	...	Vacant.
Second Grade Clerk	...	...	...	...	M. W. Frazer.
Third Grade Clerks	...	...	...	...	7.

DISPENSING STAFF.

Chief Dispenser	...	...	...	...	O. E. King.
Storekeeper	...	...	...	...	E. G. Luke.
Assistant Chief Dispenser	...	...	...	...	D. T. Betts.
First Class Dispenser	...	...	...	...	W. A. Macauley.
"	"	"	...	...	I. H. Wright.
"	"	"	...	...	D. M. Thomas.
"	"	"	...	...	O. E. Nylander.
"	"	"	...	...	H. E. Frazer.
"	"	"	...	...	P. J. John.
"	"	"	...	...	T. L. Hooke.
"	"	"	...	...	M. O. Frazer.
Second Class Dispenser	...	...	...	...	M. P. Neville.
"	"	"	...	...	E. F. Smith.
"	"	"	...	...	P. Q. A. John.
"	"	"	...	...	T. M. Taylor-Scott.
"	"	"	...	...	S. B. Williams.
"	"	"	...	...	J. C. Fewry.
"	"	"	...	...	I. B. Doherty.
"	"	"	...	...	J. C. May.
Third Class Dispensers	...	...	...	...	8.
Asst. Storekeeper (Third Class Dispenser)	...	...	...	...	K. A. King.

SANITARY STAFF ON 31ST DECEMBER, 1920.

Senior Sanitary Officer	...	...	...	Dr. F. J. A. Beringer.
Sanitary Officer	...	...	...	Major W. H. Peacock.
Medical Officer of Health	...	...	...	Dr. W. Allan.
Superintendent Sanitary Inspector	...	...	...	D. S. Bowen.
"	"	"	...	G. V. Herd.

PRINCIPAL MEMBERS OF SUBORDINATE STAFF.

Second Grade Clerk	...	...	...	Vacant.
Third Grade Clerks	...	...	...	3.
Sanitary Inspector	...	...	...	R. A. Tickel.
"	"	...	...	E. A. Nicholson.
"	"	...	...	C. E. King.
Public Vaccinators	..	...	...	16.

TABLE IV.

SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR IN THE TOWN.

1. Name of Town: Freetown.

				Approximate area.	Number of proclaimed open spaces.
1918	...	...	...	} 2 $\frac{3}{4}$ sq. miles.	2 Public Recreation Grounds.
1919	...	...	
1920	...	...	

2. Population.

	No. of Natives.		No. of Europeans.		Total.
	Males.	Females.	Males.	Females.	
1911 Census	33,363 and 169 Asiatics.		558		34,090

3. Housing.

				Number occupied by Europeans.	Number occupied by Natives.
Number of Houses:—					
1918	...	...	...	120	—
1919	...	...	...	120	—
1920	...	...	...	151*	6,241 + 67 unoccupied.

Number of Huts:—

1918	} Included in Number of Native Houses.
1919	...	...
1920	...	...

4. Mosquito Protection of Houses.

	1918.	1919.	1920.
Number of European houses wholly mosquito-protected	One room at Nursing Home and one at old Colonial Hospital.		One room at Nursing Home.
Number of European houses with mosquito room			
Number rendered during the year wholly mosquito-protected			
Number rendered during the year partially mosquito-protected			

5. Erection of New Buildings during the Year.

	1918.	1919.	1920.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings.	—	—	—
Number of houses erected with sanction as to site, construction, and relation to other buildings.	184	79	96
Number of huts erected with sanction as to site, construction, and relation to other buildings.	—	—	—
Number of houses built without sanction	12	—	—
Number of huts built without sanction	—	—	—

* Excluding Hill Station and Tower Hill Barracks but including Cline Town Reservation.

Action taken.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1918	—	—	—	—
1919	—	—	—	—
1920	—	—	—	—

6. Markets.

	Total Number.	Number paved and drained.	Number unpaved.
1918	10	8	2
1919	10	8	2
1920	10	8	2

7. Slaughter-houses.

	Total Number.	Total paved and drained.	Number unpaved.
1918	2	2	—
1919	2	2	—
1920	2	2	—

8. Latrines.

	For Males.		For Females.	
	Number.	Number of Seats.	Number.	Number of Seats.
Number of Public Latrines :—				
1918...	11	71	11	48
1919...	11	83	11	50
1920...	12	89	12	64
Number of New Public Latrines erected during year :—				
1918...	—	—	—	—
1919...	1	12	1	12
1920...	2	17	2	12
Number of Public Latrines repaired during the year :—				
1918...	4	—	4	—
1919...	6	—	6	—
1920...	3	—	3	—
Number of Public Latrines demolished during the year :—				
1918...	—	—	—	—
1919...	1	4	—	—
1920...	1	8	—	—

	1918.	1919.	1920.
Number of Private Latrines	250	268	307
Average number of pails of nightsoil removed daily	307	320	343
Average number of soiled pails removed and clean pail substituted	—	—	—
Number of nightsoil men employed to clean latrines and remove excreta	Prisoners employed.		
Number of cesspools	4,034	4,200	4,269
Number of cesspools cleansed	1,013	1,921	1,055
Number of new cesspools constructed or repaired during the year	498	422	403
Number of old cesspools abolished	89	339	36
Number of cesspools oiled regularly by Department	669	670	760

9. Removal of refuse.

	1918.	1919.	1920.
Number of dust-bins	72	66	73
Number of carts (if employed) at work, etc.	7	7	5
Amount of refuse removed daily from streets	A b o u t 3 5 t o n s .		
Number of carts (if employed) at work daily, etc.	7	7	5
Amount of refuse removed daily, etc.	—	—	—
Number of men employed for removing refuse (average) ...	175	175	175

10. Mode of disposal of excreta, refuse and offal.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of slaughter-house and market offal.		
	1918.	1919.	1920.	1918.	1919.	1920.	1918.	1919.	1920.
Burial or trenched									
Burnt									
Thrown into Sea									
*Otherwise dealt with									

* State mode of disposal.

11. Average daily number of canoe-loads of tin cans, bottles, broken crockery and other incombustible material removed from houses, huts and compounds, and taken out to sea.

1918.	1919.	1920.
12	12	12

12. Water Supply.

Nature of Water Supply.	1918.	1919.	1920.
Pipe-borne water :—			
Source (river, lake or spring) :—			
Number of linear yards	} Upland	Surface Reservations.	206
Number of stand pipes along roads ... ..				193	201
Number of stand pipes in compounds and houses	257	287	378
Wells :—			
Public :—			
Number	1	1	1
Number with pumps protected against surface water and mosquito-protected	—	—	—
Private :—			
Number	581	183	55
Number protected against surface water and mosquito-protected	50	50	31

12. Water Supply—*continued.*

Nature of Water Supply.	1918.	1919	1920.
Tanks :—			
Public :—			
Number underground	1	1	1
Number mosquito-protected and served by pumps ...	1	1	1
Number above ground	4	4	4
Number mosquito-protected	—	—	—
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons	5	5	5
Private :—			
Number underground	—	—	—
Number mosquito-protected	—	—	—
Number above ground	17	16	31
Number mosquito-protected	8	8	11
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons	—	—	—
Nature of tanks :—			
Wood	—	—	20
Iron	16	9	9
Concrete	9	7	7
Barrels :—			
Number	868	945	1,039
Number mosquito-protected	131	125	251

13. Drainage.

Nature of Drainage.	Public.	Private.
Masonry Drains :		
Lineal yards of masonry drains :—		
1918	8,147 yds.	—
1919	9,130 yds.	—
1920	11,197 yds.	—
Lineal yards reconstructed during the year :—		
1918	—	—
1919	—	—
1920	—	—
Lineal yards repaired during the year :—		
1918	—	—
1919	—	—
1920	—	—
Lineal yards of new drains constructed during the year :—		
1918	—	—
1919	983 yds.	—
1920	2,067 yds.	—
Earth drains or ditches :—		
Number of linear yards of ditches cleaned :—		
1918	1,600 yds.	—
1919	21,000 yds.	—
1920	43,375 yds.	—
Number of linear yards of ditches dug and graded :—		
1918	55,565 yds.	—
1919	44,621 yds.	—
1920	60 yds.	—
Average frequency of clearing ditches of grass :—		
1918	Twice annually.	—
1919		—
1920		—
	Thrice annually in centre of Town; twice in outskirts	

14. Clearance of undergrowth, long grass and jungle.

—	1918.	1919.	1920.
Average frequency of clearance of rank vegetation on same area	} Twice annually. {		} Thrice annually in centre of Town; twice in outskirts

15. Excavations and low-lying land.

—	1918.	1919.	1920.
Number of pools and excavations	—	—	—
Number of excavations filled up	5,069	3,815	414
Amount of low-lying and marsh land raised and drained	—	—	} 30 compounds (about 16 acres)
Number of pools, marshes, streams, etc., fish-stocked	—	—	—
Number of cubic yards of material used for filling up pools and excavations	—	—	—
Number of persons fined for making new excavations	—	—	—
Average number of men daily employed in filling up pools, etc.	—	—	—

16. Oiling.

—	1918.	1919.	1920.
Number of drains oiled	} 110,181	} 239,642	} 83,020
Number of pools and excavations oiled			
Number of tanks and barrels oiled	—	—	—
Average number of men daily employed for oiling drains, pools, water-tanks or barrels	10	10	2

17. Inspections and Prosecutions.

—	1918.	1919.	1920.
Number of inspectors employed	29	31	19
Number of houses inspected	98,294	157,258	90,876
Number of houses where larvæ were found	402	571	438
Number of notices served to remove conditions causing the breeding of larvæ	539	505	153
Number of persons fined for having mosquito larvæ on premises	332	524	403
Number of notices served to remove insanitary conditions on premises	7,809	7,993	4,642
Number of persons fined for not removing insanitary conditions after notice	186	343	176
Number of soda and aerated water factories inspected	—	—	—

TABLE V.

STATION—FREETOWN (TOWER HILL).

Latitude 8° 29' N. Longitude 13° 9' W.

	Absolute shade Maximum.	Absolute shade Minimum.	Average Maximum.	Average Minimum.	Relative Humidity.	Rainfall in Inches.
January	92	69	89	74	70.5	Nil
February	99	71	91	74	65.5	Nil
March	99	70	89	74	65	Nil
April	91	71	89	74	67.5	0.31
May	92	65	89	74	72.5	5.67
June	89	69	85	73	81.5	13.91
July	88	69	82	72	85.5	40.03
August	85	70	82	71	76.5	11.52
September	87	68	85	72	81.5	25.33
October	90	69	87	71	75	7.69
November	91	69	88	72	73.5	2.25
December	93	69	90	73	69	0.14
The Year	99	65	87.2	72.8	73.6	106.85

STATION.—DARU.

Latitude 8° N. Longitude 10° 53' W.

	Absolute shade Maximum.	Absolute shade Minimum.	Average Maximum.	Average Minimum.	Relative Humidity.	Rainfall in Inches.
January	93	53	89.9	62.9	73.7	0.21
February	97	55	94.1	64.2	67	2.58
March	99	60	97.9	67.4	67.3	2.70
April	100	64	90.6	68.8	64.9	4.97
May	100	67	95.4	69.6	80.4	9.31
June	94	67	91.3	70	80.5	12.41
July	90	62	85.1	68.8	85.2	7.58
August	89	68	84.5	69.1	84	9.60
September	94	68	87.8	69.5	85.6	12.35
October	92	65	87.7	69.3	81.5	20.01
November	92	64	89.3	68.5	80.5	7.90
December	91	55	88.1	66.6	80	.55
The Year	100	53	90.8	67.9	77.5	90.17

STATION.—KABALLA.

Latitude 9° 37' N. Longitude 11° 33' W.

	Absolute shade Maximum.	Absolute shade Minimum.	Average Maximum.	Average Minimum.	Relative Humidity.	Rainfall in Inches.
January	93	35	89.3	58.7	71.7	Nil
February	99	56	93.8	62.9	68.2	Nil
March	99	62	95.8	65.6	75	1.15
April	98	63	96.9	66.2	73.7	4.08
May	98	64	89.9	67.6	81	8.65
June	90	62	86.5	65.3	80.6	16.85
July	85	63	83.2	65.3	82.7	14.50
August	85	62	81.8	64	82.2	8.02
September	87	62	84.5	64.2	82.2	10.13
October	88	62	86.1	63.9	81.2	9.80
November	90	55	86.2	61.5	80.9	4.00
December	90	52	86.9	57.3	74.1	Nil
The Year	99	52	88.4	63.5	77.8	77.18

STATION.—BONTHE (SHERBRO').

Latitude 7° 32' N.

Longitude 12° 30' W.

	Absolute shade Maximum.	Absolute shade Minimum.	Average Maximum.	Average Minimum.	Relative Humidity.	Rainfall in Inches.
January	92	64	87.2	68.6	82.4	0.02
February	96	64	90.9	69.3	77.2	0.08
March	97	66	92.8	70.6	71.9	1.12
April	97	68	93.8	71.6	72.3	4.16
May	94	68	91.4	71.5	81.9	9.03
June	94	62	86	70.2	84.7	15.19
July	86	68	83.6	70.8	85.8	30.34
August	85	68	82.3	69.7	82.5	12.71
September	88	68	82.8	70.9	90.5	31.87
October	91	67	86	70.3	88	9.89
November	92	67	85.9	70.4	84.6	10.10
December	90	63	88.3	70.2	78.8	0.56
The Year	97	62	87.6	70.3	81.7	125.07

TABLE VIII.

SURGICAL OPERATIONS PERFORMED.

Total Number.	Cured.	Relieved.	Unrelieved.	Died.
95	87	—	—	8

APPENDIX.

REPORT ON SOME EXPERIMENTS WITH BARIUM
CARBONATE AND TINCTURE OF SQUILL
FOR THE DESTRUCTION OF RATS.

1. 5-10-20. Two rats (*Rattus rattus*) were fed on a paste made of one part Barium Carbonate to eight parts of bread, and were given Tinct. Scillæ to drink (one part Tinct. Scillæ and one part water).
2. 7-10-20. Three rats (two *Rattus rattus* and one *Rattus norvegicus*) were fed on the same paste and had the same to drink. The two rats of the type *Rattus rattus* died in two-and-a-half hours. The *Rattus norvegicus* did not eat, but drank the Tinct. Scillæ and died in 24 hours.
3. 9-10-20. Five rats (two *Rattus rattus* and three *Rattus norvegicus*) would not eat nor drink. The three *Rattus norvegicus* attacked and ate the two *Rattus rattus*.
4. 12-10-20. Five rats (three left from 9-10-20 and two new ones, two *Rattus rattus* and three *Rattus norvegicus*) were fed on bread soaked in undiluted Tinct. Scillæ. Three (two *Rattus rattus* and one *Rattus norvegicus*) died, one in one-and-a-half hours, the other in two hours. One was killed and eaten by a large *Rattus norvegicus*, which lived for fourteen days and eventually died of pyæmia.
5. 27-10-20. Seven rats (five *Rattus rattus* and two *Rattus norvegicus*) were fed on Ba. Carb. paste and given undiluted Tinct. Scillæ to drink. Three died in three hours and two died in six hours. The two *Rattus norvegicus* did not eat but drank and died in 36 hours.

CONCLUSIONS.

It was noted that the rats had to be very hungry before eating the Ba. Carb., and the *Rattus rattus* ate more readily. *Rattus rattus* appears to be very susceptible to the Ba. Carb. and died in from one-and-a-half to six hours. The Tinct. Scillæ (undiluted) had the same effect on *Rattus rattus*.

Neither the Ba. Carb. nor the Tinct. Scillæ had the desired effect on the *Rattus norvegicus*. This type, as a rule, would not touch the Ba. Carb. unless they are extremely hungry. When they did eat, it appeared to affect the nervous system, causing hyper-excitability on the least stimulus.

The Tinct. Scillæ did not act as a poison to *Rattus norvegicus*.

Rattus norvegicus.—The rat (*Rattus norvegicus*) which lived for fourteen days and eventually died of pyæmia, had eaten about one pound of bread and Ba. Carb. (in the proportion of one part by bulk of Ba. Carb. to eighth parts bread).

For the first three or four days after its first meal this rat exhibited marked nervous symptoms, showing hyper-excitability on the slightest stimulus, *e.g.*, the slightest noise caused the rat to jump about a foot into the air. This was followed by a general trembling fit. These symptoms gradually diminished and several days before death had almost disappeared.

Several other rats (*Rattus norvegicus*) shewed these symptoms in a lesser degree.

(Sgd.) J. M. MACKAY,

Ag. M.O.H.

REPORT ON BO SCHOOL FOR SONS OF CHIEFS,
DURING 1920—JANUARY TO JULY.

From January to July, 1920, I examined the urine of all boys in Bo School. It was first tested for albumen. The second portion was then centrifuged and the deposit examined microscopically under 2/3 and 1/6. If necessary three slides were examined and, in cases where albumen or the presence of blood or pus raised suspicion, specimens were taken on three different occasions and three slides examined on each occasion. In a few cases six and even twelve slides were gone over. Where albumen, pus, or blood were found, and no bilharzia eggs, a thorough search was then made for other causes. The total number examined was 150. Of these 46, *i.e.*, 30.6%, were infected, as shown by the presence of Bilharzia eggs in the urine. In four cases eggs were found and no albumen, in fourteen eggs but no blood or pus; eight cases were severe. Practically none reported sick for the condition during the nine months I was in charge.

Previous Examinations.—Dr. Butler, in 1914; Dr. Ward, in 1917. I have not seen Butler's complete report, but Ward gives his result as 107 examined, with 14, *i.e.*, 13%, infected. I have been able to trace 49 boys examined by Butler, and now re-examined. Of these, 46 were examined by Ward. Two boys found negative by both are now infected. One was admitted in 1911 and the other in 1914. In one shown infected, by Butler repeated examinations failed to find any trace. Otherwise all remain infected, *i.e.*, 14. Ward found two infected which are not confirmed by Butler or myself. I attach a table of the 49 in full.

LIST OF 49 CASES EXAMINED BY BUTLER, WARD, AND SELF.

	Negative = —.	Positive = +.	
	BUTLER, 1915.	WARD, 1917.	SELF, 1920.
1.	—	not ex.	—
2.	—	not ex.	—
3.	—	+	—
4.	—	—	—
5.	+	—	+
6.	+	+	+
7.	+	—	+
8.	+	+	+
9.	—	—	—
10.	+	+	+
11.	+	+	+
12.	+	not ex.	+
13.	+	+	+
14.	—	—	—

	BUTLER, 1915.	WARD, 1917.	SELF, 1920.
15.	—	—	—
16.	—	—	—
17.	—	—	—
18.	+	—	+
19.	—	+	—
20.	—	—	—
21.	—	—	—
22.	—	—	—
23.	—	—	—
24.	—	—	+
25.	+	—	+
26.	—	—	—
27.	—	—	—
28.	+	—	+
29.	+	—	+
30.	—	—	—
31.	—	—	—
32.	—	—	—
33.	—	—	—
34.	—	—	+
35.	+	—	+
36.	—	—	—
37.	—	—	—
38.	—	—	—
39.	+	—	—
40.	—	—	—
41.	—	—	—
42.	—	—	—
43.	+	—	+
44.	—	—	—
45.	—	—	—
46.	—	—	—
47.	—	—	—
48.	—	—	—
49.	—	—	—
Total infected	15	7	16

GROUPED BY TRIBES.

	Foullahs.	Gallinas.	Kissis.	Konnohs.	Kerankos.
Examined ...	4	2	5	18	6
Infected ...	—	—	3 (60 %)	10 (55·5 %)	2 (33·3 %)
	Krims.	Lokkobs.	Mendis.	Sherbros.	Susus.
Examined ...	4	2	70	4	2
Infected ...	—	1 (50 %)	24 (34·3 %)	—	—

	Limbas.	Yalunkas.	Mandingos.	Timinis.
Examined ...	4	6	2	21
Infected ...	2 (50 %)	2 (33·3 %)	1 (50 %)	1 (4·7 %)
Examined ...	...	...	Total	150
Infected ...	...	...	Total	46 (30·6 %)

GROUPED ACCORDING TO YEAR OF ADMISSION.

	1910.	1911.	1912.	1913.	1914.	1915.
Examined ...	3	7	7	10	22	25
Infected ...	1	1	—	3	7	10
	1916.	1917.	1918.	1919.	1920.	
Examined ...	10	27	6	18	15	... Total 150
Infected ...	5	9	1	5	4	... „ 46

The four admitted during 1920 were examined practically immediately on admission.

GROUPED ACCORDING TO AGE AT THE TIME OF EXAMINATION.

	6 to 9 Years.	9 to 12 Years.	12 to 15 Years.	Over 15 Years.
Infected ...	14 (30·5 %)	12 (26 %)	12 (26 %)	8 (17·5 %)

GROUPED BY DISTRICTS.

	Railway.	Konnoh.	Karene.
Examined ...	70	... 20	... 22
Infected ...	24 (34 %)	... 11 (55 %)	... 2 (9 %)
	Koinadugu.	Ronietta.	Northern Sherbro.
Examined ...	15	... 8	... 15
Infected ...	6 (40 %)	... —	... 3 (20 %)

LIST OF INFECTED CHIEFDOMS WITH THE TOWN OR TOWNSHIP.

Jawi (Daru), Bambarra (Panguma), Gawara (Sandaru), Bandajuma (Pujehun), Kabellia (Gania), Wundeh (Faniema), Tuakia (Gorahun), Warrawarra South (Kaballa), Sengbeh (Bendugu), Bullom (Petifu), Kailahun (Kailahun), Symbara (Boadjibu), Batkanu (Batkanu), Barri (Bandajuma), Gourama (Kangamu), Malema (Manema), Mando (Baiima), Jahama (Jahama), Bensay (Yandu), Niminikoro (Jahama), Deang (Kondembia), Kennema (Kennema), Sando (Kayiema), Faiama (Jagbwema), Tungia (Baiima), Kama (Dia), Bamasaru (Kangama), Koia (Borborabu), Kamakeh (Serakuli), Dodo (Dodo), Leppiama (Jenneh), West Big Bum (Timini), Fullasahu (Kamba), Luawa (Kailahun), Sekkawi (Boma), Bardya (Gorahun), Tikonko (Tikonko).

It will thus be seen that nearly one third of the school are infected and that the infection extends to practically all the tribes represented. The three tribes present in any number—the Konnoh infection is 55·5%, Mendi 34·3,

and Timini 4.7%. The last figure is certainly surprising, only one case out of 21 boys. The chiefdoms from which the infected boys come are widely scattered, showing the disease to be fairly widespread. It should be remembered that these boys are drawn from the best families, being all sons or nominees of ruling chiefs. I do not think much of the infection takes place in the school, since only 5 of the 27, *i.e.*, 18.5% admitted during the first four years are infected, against 19 out of 66, *i.e.*, 28.8% admitted during the last four years, including 4 out of 15, *i.e.*, 26.6% examined during 1920 almost immediately after admission. The age groups should be noted, the numbers infected decreasing as the boys grow older. Very few of the older infected showed much cystitis, while many of the younger ones did. There certainly seems to be a certain amount of tolerance. Is it possible that the disease dies out in the adult? No treatment has been given except for urgent symptoms, yet the cystitis apparently clears up.

(Sgd.) JOHN Y. WOOD, *W.A.M.S.*,

14th June, 1921.

Medical Officer.

RULES FOR HILL STATION CANTONMENT RESIDENTS.

A.—WATER.

1. The occupier shall see that all taps are in order. Any defect in the taps and pipes must be at once reported to the Public Works Department or the representative of that department at the Station.

2. Except for immediate use or for such time as the supply is cut off at the main, the storage of water is strictly prohibited.

3. No collections of water either in pools or in any kind of vessel shall be allowed within any compound as they favour the propagation of mosquitoes. Occupiers shall therefore satisfy themselves that all hollows are carefully filled up and that all tins, and other receptacles capable of holding water are thrown into the dust-bins provided, for removal by the sanitary labourers.

4. During the dry season it shall be the duty of the occupier to see that no wilful waste of water takes place. The quantity of water used should be carefully regulated, as the supply is limited.

B.—SURFACE DRAINAGE.

1. The occupier shall see that all the drains are swept daily.

2. The surface drains are intended only to carry off rain, bath and surface water; on no account are urine and liquid sewage to be emptied therein.

3. If the supply permits all drains shall be flushed daily with clean water and afterwards swept.

C.—DISPOSAL OF EXCRETA.

1. The occupier shall see that all latrine buckets are emptied and cleaned daily and that all earth boxes are kept supplied with dry earth by the sanitary labourers and shall report at once to the Health Officer any neglect or irregularity in the performance of this duty.

2. The occupier shall report any neglect in the maintenance of the dry earth supply. A box of not less capacity than that of the ordinary case holding two kerosene tins should be provided in each latrine.

3. To effectually deal with the excreta, from two to four scoopfuls of dry earth are necessary on each occasion the latrine is used. The contents of the pan should be kept as dry as possible, and no slop water should be thrown into it. The room should be kept well ventilated.

D.—DISPOSAL OF HOUSEHOLD REFUSE.

1. Each bungalow should be provided with a dust-bin for the reception of dry rubbish such as old tins, bottles, kitchen refuse, dust, etc. Any refuse that can be burned should be so disposed of in the kitchen stove.

2. The dust-bins are emptied daily and neglect on the part of the sanitary labourers to do so should be at once reported to the Health Officer.

3. The dust-bins are receptacles for rubbish of a solid character only, and it is very essential that no urine or water be thrown into them; they should always be kept carefully covered.

E.—SANITARY CONDITION OF YARDS AND HOUSES, ETC.

1. Occupiers are responsible for the sanitary condition of the whole of their premises, including yards, compounds, gardens, and servant's quarters. No native children are allowed to remain in any part of the Cantonment; their presence is strictly forbidden. No native women, whether they are the wives of Government or of residents' employees or not shall reside or sleep in any part of the Cantonment.

2. Occupiers shall keep their compounds free from high grass and weeds, stagnant water, old bottles and tins, and all other kinds of rubbish likely to become a nuisance or dangerous to health. The sanitary gang will remove all rubbish from premises that has been placed in the

dust-bins and garden refuse, *e.g.*, tree and hedge clippings, cut or pulled grass and weeds that has been piled in a heap in some convenient spot within the compound. It is not the duty of the sanitary gang to collect or remove rubbish other than what has been placed in the dust-bins or in heaps named in the previous sentence.

3. The portion of street contiguous to the compounds shall be kept free from weeds and rubbish by the sanitary gang for a distance of six feet from the boundary fences.

4. No occupier of a bungalow shall keep animals, birds, fish, or reptiles as pets at the Hill Station, without the consent of the Health Officer, and no animals, etc., shall be so kept as to be a nuisance to occupiers of other bungalows.

5. The owner or occupier of a building or premises wherein or whereon any horse or other beast of draught or burden, or any animal may be kept, shall provide in connection with such building or premises a suitable receptacle to be approved of by the Health Officer, for dung, manure, soil, filth, or other offensive matter which may from time to time be produced in the keeping of any such animal, in such building or upon such premises.

6. The owner or occupier shall cause such receptacle to be constructed in such a manner and of such material and to be maintained at all times in such a condition as to prevent any escape of the contents thereof. He shall provide a proper covering for such receptacle and keep it covered when not required.

7. He shall provide in connection with such building or premises, a properly constructed septic tank or other means of dealing with urine and sewage if and as required by the Health Officer, and he shall maintain it in such a sanitary condition as shall satisfy the Health Officer and shall comply with all regulations made by the Health Officer for such maintenance.

8. He shall flush such drains thoroughly every day, if the water supply permits.

9. The occupier shall see that any receptacle for such animal's refuse be daily emptied, and no excuse for the neglect of these rules will be accepted.

10. No building shall be erected at Hill Station or on the Government land surrounding the same without the consent of the Governor.

F.—INSPECTIONS BY THE HEALTH OFFICER TO THE HILL STATION.

1. The Health Officer to the Hill Station shall be the Senior Sanitary Officer, or in his absence, any Medical Officer deputed by the Principal Medical Officer.

2. The Health Officer or any officer authorized by him has power of entry, to inspect any house or compound from 8 a.m. to 6 p.m. These officials are in no way to be hindered in their inspections.

G.—GENERAL.

1. Trees and other plants, if they are in the opinion of the Health Officer inimical to health, may be trimmed or cut down or otherwise dealt with by the Health Officer, but if any are within a compound he shall give notice to the occupier, if any, of his intention to cut down or destroy any tree or plant. No person shall trim or cut down any tree or shrub or plant not inside a compound without the authority of the Health Officer.

2. All owners and occupiers of premises are subject to such portions of the Public Health and other Ordinances as apply to Hill Station.

3. No person shall make or cause or allow to be made a borrow-pit in any part of the Cantonment without the authority in writing of the Health Officer, and any person doing so shall fill up such borrow-pit and in default the Health Officer may fill it up and recover the cost of the work from the occupier of the premises responsible.

F. J. A. BERINGER,
Acting Principal Medical Officer.

W. B. STANLEY,
Acting Colonial Secretary.

N.B.—These Rules should be permanently fixed in a conspicuous place in every house, the bath-room is suggested as convenient.