

Annual report on the Medical Department / Sierra Leone.

Contributors

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SIERRA LEONE.

Annual Report

ON THE

MEDICAL AND SANITARY DEPARTMENT

FOR THE

YEAR ENDED 31ST DECEMBER, 1919.



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SIERRA LEONE.

ANNUAL REPORT ON THE MEDICAL DEPARTMENT FOR THE YEAR ENDED 31ST DECEMBER, 1919.

The writer of the present Report is handicapped by two points ; he was only in the Colony for the last four days of the year under review, and all the records of the Department were burnt in the fire which destroyed the Colonial Hospital on the 3rd February, 1920.

2. Duplicate reports have been obtained from out-stations, but nearly all those for Freetown are irrevocably lost.

I.—ADMINISTRATIVE.

STAFF.

3. When up to full strength, the Medical Staff consists of :—

The Principal Medical Officer.
The Senior Sanitary Officer.
The Provincial Medical Officer.
Two Senior Medical Officers.
One Sanitary Officer.
One Medical Officer of Health.
Eighteen Medical Officers.
One Dental Surgeon (shared with all other British West African Colonies).
Four African Medical Officers.

4. The Staff was much under strength during the year :—

There was no Senior Sanitary Officer until the 27th December, no Provincial Medical Officer at all, no Sanitary Officer until the 26th of September, and the Medical Officers were at about half strength.

5. The following Medical Officers were engaged outside the Colony during the year :—Drs. H. E. Arbuckle, E. H. Mayhew, F. E. Whitehead, R. Semple, P. A. Clearkin, and J. McK'Clark.

6. The following acted as Principal Medical Officer :—Dr. C. H. Allan, from 2nd February to 2nd August.

7. The following acted as Senior Sanitary Officers :—Major Peacock, Major Farrar, R.A.M.C. (T.F.), and Dr. W. Allan.

8. The following acted as Provincial Medical Officers at different periods during the year :—Drs. C. H. Allan, E. W. Wood-Mason and J. S. Pearson.

9. The following acted as Senior Medical Officers :—Drs. J. S. Pearson, J. Y. Wood, and W. A. Young.

10. The following acted as Sanitary Officer :—Dr. W. Allan.

11. The following acted as Medical Officer of Health, Freetown :—Major Farrar, R.A.M.C. (T.F.), Dr. J. Y. Wood.

12. *Transfer*.—Dr. T. F. G. Mayer, to the Gambia.

13. *Temporary Assistance*.—Drs. T. C. Maxwell, and G. N. Metzger, African Medical Practitioners, were temporarily engaged.

14. *Resignation*.—Dr. Deane.

15. *Obituary*.—Nil.

16. The European Nursing Staff consists of two Senior Nursing Sisters, and three Nursing Sisters.

17. Miss I. Stevens acted as Matron of the Colonial Hospital, and Misses Littlewood and Lancaster as Senior Nursing Sisters of the Nursing Home.

18. The Native Subordinate Staff consists of :—

One Chief Dispenser.

One Assistant Chief Dispenser.

Eight First Class Dispensers.

Eight Second Class Dispensers.

Twelve Third Class Dispensers.

One Store Keeper, who must be a Dispenser.

One Assistant Store Keeper, who must be a Dispenser.

Nineteen Male Nurses and Apprentice Nurses.

Four Senior Female Nurses.

Fifteen Female Nurses and Probationers.

Nine Clerks.

One Assistant Keeper, Lunatic Asylum (the Keeper is a Dispenser).

All the above are pensionable except Probationers and Apprentices. There are in addition cooks, washmen, porters, lunacy assistants, etc., all of which posts are unpensionable.

19. The Medical Institutions of Freetown and of Kissy, the latter being practically a suburb of Freetown, are :—

Colonial Hospital for Native patients.

Nursing Home, the European section of the Colonial Hospital, which is temporarily housed in the Government Rest House.

Lunatic Asylum.

Male Infirmary, formerly known as the Male Incurable Hospital, with a section for Male Lepers.

Female Infirmary, formerly known as the Female Incurable Hospital. Infectious Diseases Hospital.

Cline Town Dispensary for the Eastern section of Freetown, in which are situated the Railway workshops and the homes of most of the European Railway Officials.

Cape Sanitary Station, some miles to the west of Freetown, is the Quarantine Station.

20. The Kissy Infirmaries have aptly been called "a disgrace to Sierra Leone." Their rebuilding has been under consideration for years, and would no doubt have been carried out ere this but for the war.

21. The new Colonial Hospital begun before the war was not touched during the year.

22. Outside Freetown, there are Hospitals and Dispensaries as follows :—

A. COLONY.

Bonthe, with a Senior Medical Officer.

Kissy, with a Medical Officer. (Kissy is practically a suburb of Freetown.)

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.

Goderich and Hastings, which had been temporarily closed, were reopened during the year.

In addition, Wellington is visited by a Medical Officer twice a week, but there is no dispensary, a school-room being used for the purpose.

B. PROTECTORATE.

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

Daru	...	...	Railway District.
Makene	...	...	Bombali Sub-District.
Bo	...	...	Railway District.
Moyamba	...	...	Ronietta District.
Pujehun	...	...	Northern Sherbro District.

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

Kennema	...	...	Railway District.
Kanre-Lahun	...	...	Railway District.
Sembehun	...	...	Ronietta District.
Bandajuma	...	...	Northern Sherbro District.
Sumbayah	...	...	Northern Sherbro District.

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

Kaballa	...	...	Koinadugu District.
Port Lokkoh	...	...	Karene District.
Batkanu	...	...	Karene District.

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

Kanre-Lahun.

Bandajuma.

Kaballa.

Batkanu.

23. FINANCIAL.

REVENUE, MEDICAL DEPARTMENT, 1919.

				£	s.	d.
Hospital Receipts	...	...	...	156	18	0
Nursing Home Receipts...	...	...	...	747	15	6
Sale of Medicines	...	...	...	285	18	10
Druggists' Fees	...	...	...	7	0	0
Maintenance of Lunatics	...	...	...	523	17	1
Total	...	...	...	£1,721	9	5
Total Expenditure	...	...	...	£34,403	7	9

II.—PUBLIC HEALTH.

24. *Malaria*.—The number of admissions into hospital, and the total, attendance at the different dispensaries again show a decrease. The total, 2,283, is 214 below that of the year 1918.

25. *Small-pox* in a mild form occurred in various parts of the Colony and Protectorate; 6 cases were admitted to the Kissy Infectious Diseases Hospital, and 6 cases came under observation at the District Dispensaries. (NOTE.—The Senior Sanitary Officer names 8 cases of Small-pox, but 2 of these were apparently finally diagnosed as Chicken Pox.)

26. No case of Yellow Fever was reported; nor of Enteric, Plague, Cerebro-Spinal Meningitis and Trypanosomiasis. It must not be taken from this that Sierra Leone is free from the last named disease. It is not one for which the native usually seeks relief at a dispensary; it has to be looked for, and Medical Officers were few.

27. Reports of Dysentery and Beri-beri in the Sierra Leone Prison by Drs. Butler and McConaghy respectively, are included in this report.

28. Venereal Diseases treated, excluding those in Freetown, records of which were lost in the Hospital fire, were:—

Gonorrhœa	...	...	...	...	...	1,078
Syphilis	...	...	...	...	...	715

Many were treated with Galyl injections.

29. Twenty-nine cases of Tuberculosis are shown in the return of patients, but as those for Freetown are missing the figure is of little value.

30. HILL STATION.

The total number of Europeans resident at Hill Station, the European reservation lying some 800 to 900 feet above Freetown, were 57. They were divided as follows:—

Government Officials	...	...	...	...	...	38
Military	...	...	...	...	...	7
Missionary	...	...	...	...	...	1
Non-Officials, including the wives of Civil and Military Officials	...	...	...	...	...	11

31. EUROPEAN CIVIL OFFICIALS.

Total Number resident in the Colony and Protectorate	202
Average number resident	...
Deaths (Blackwater Fever)	...
Invalided	...

32. EUROPEAN MILITARY.

Total Number resident	679
Deaths (both Malignant Malaria)	2
Invalided (Appendicitis, 3; Neurasthenia, 2; and one each of Dupuytren's Contraction of Hands, Alcoholism, Tachycardia, Disordered Action of the Heart, Malignant Malaria, Pernicious (Tretian) Malaria, Gastric Ulcer, Debility following Influenza, Bacillary Dysentery, Heat Stroke, Mitral Disease, Anaemia, Blackwater Fever)	18

33. EUROPEAN NON-OFFICIALS.

Total Number resident in the Colony and Protectorate	295
Total Deaths	9
Total Invalided	13

34. ALL EUROPEANS.

Total Number	1,176
Total Deaths	12
Total Invalided	35

35. The figures for the non-official Europeans include those of the well-known Trading Firms and Missionary Societies only. There are a small number of others of whom it is difficult or impossible to obtain accurate figures.

36. One European died on board ship, and six landed from vessels died on shore, the diseases being Thrombosis of Longitudinal Sinus, Hyperpyrexia, Nephritis and Uræmia, Malaria and Sunstroke, Influenza and Pneumonia, Hæmatemesis following Carcinoma, Malaria.

37. NATIVE OFFICIALS.

Total Number of Native Officials resident in the Colony and Protectorate	650
Total Deaths	4
Total Invalided	6

38. The usual statistics giving death rates, invaliding rates, number on sick list, etc., cannot be given owing to the destruction of records in the fire.

III.—HOSPITALS AND DISPENSARIES.

39. Reports or extracts on the following Hospitals and Dispensaries, etc., are appended :—

- A. Colonial Hospital, Freetown.
- B. Nursing Home (European section of the Colonial Hospital), Freetown.
- C. Maternity (King-Harman's) Ward, Freetown.
- D. Clinical Laboratory, Freetown.
- E. Prison, Freetown.
- F. Kissy, with its Institutions, Wellington.
- G. Dysentery in Sierra Leone.
- H. Beri-beri in Freetown Prison.
- I. Cline Town Dispensary.
- J. Bonthe, etc.
- K. Bo, etc.
- L. Moyamba, etc.
- M. Daru, etc.
- N. Kennema.
- O. Pujehun.
- P. Sumbayah.
- Q. Port Lokkoh.
- R. Makene.
- S. Sembehun.
- T. Bandajuma.
- U. Batkanu.
- V. Kaballa.
- W. Kent.
- X. Hastings.
- Y. Goderich.
- Z. Regent.
- AA. York.
- AB. Banana Islands.
- AC. Waterloo.

40. A table of cases treated during the year at all hospitals and dispensaries is appended. Cases for Freetown, by far the largest number, cannot be included owing to the records having been destroyed.

The Sanitary Report follows.

J. BERINGER,
Acting Principal Medical Officer.

COLONIAL HOSPITAL,
FREETOWN,
12th September, 1920.

A.—ANNUAL REPORT ON THE COLONIAL HOSPITAL, FREETOWN, 1919.

Drs. C. H. Allan and E. W. Wood-Mason acted as Provincial Medical Officers.

Drs. J. Y. Wood and W. A. Young acted as Senior Medical Officers. The following were in charge of the Wards:—

Drs. Wood-Mason, Pearson, Wood, Deane and Wright.

Dr. W. A. Young was in charge of the Laboratory.

Dr. E. J. Wright was in charge of King-Harman's (maternity) Ward.

Drs. Maxwell and Easmon were in charge of the Out-Patients Department in succession.

The total number of patients treated in the wards during the year was 1,477; of these 1,375 were males and 102 females. There were 102 deaths.

All records were burnt in the fire which destroyed the Hospital.

B.—ANNUAL REPORT OF THE NURSING HOME, 1919.

During the year 1919 there were 268 patients treated in the Nursing Home. The majority were suffering from Malaria.

There was one major operation performed, viz.: the opening of the abdomen for the relief of a Volvulus. This case which was complicated by a broken collar-bone made a good recovery.

The Medical Officers in charge of patients during the year were:—Drs. Wood-Mason, Young, Pearson and Wood; and

The Sisters in charge were:—Misses Appleton, Littlewood, and Lancaster.

C.—KING-HARMAN'S WARD, 1919.

Owing to the destruction of the Hospital Buildings by fire, this report will be incomplete.

The general register for the ward and all the bed-head tickets of the patients were destroyed. Fortunately one register was saved—the one that contains notes of all the completed labours for the year. From this record this report is made.

Whilst I was on leave, Dr. Young took charge of the ward.

During the year there were admitted to the ward besides labour cases, the following:—complicated pregnancies including false pains, malaria, ante-partum eclampsia without delivery, abortions both threatened and inevitable; none of these are included in this report.

I think it worthy of note that many of the pregnancies complicated by malaria continued uninterrupted with the administration of Quinine, orally in five-grain doses thrice daily.

Of the labour cases, the record is as follows:—93 cases admitted, of which 71 were normal and 22 abnormal.

Of the total admissions 6 were cases of twins.

Exactly one-third of the labour cases were primiparæ, out of which 10 were abnormal.

Of the remaining two-thirds (multiparæ) 12 cases were abnormal. That is to say :—

Patients.	Number of Admissions.	Abnormal.	Died.
Primiparæ	31	10	—
Multiparæ	62	12	3

A normal labour, for the purposes of this report, has been considered one which terminated naturally without aid with a living child and no lacerations of the perinæum requiring suturing.

The abnormal cases were made up as follows :—

Case.	No.	Remarks.
Cæsarian Section	1	Still-born ; maternal death 5th day. Transverse presentation with tonic contraction of Uterus—arm prolapsed.
Version	1	Podalic Version for transverse presentation. Still-birth.
Instrumental	12	5 Forceps ; Dystocia ; Living children. 2 Forceps ; still-born children. 1 Forceps ; Brow ; still-born child. 1 Transverse podalic version ; Forceps on after-coming head still-born child. 1 Breech ; forceps on after-coming head. 2 Craniotomy.
Torn Perinæum	4	4 Sutured.
Still-Birth	4	—

In the list no case has been counted twice, and no distinction between a still-born and a dead-born child has been made.

The mortality of the patients cannot be given as the average stay of a patient in the Maternity Ward does not exceed 48 hours.

Very many patients insist on leaving the Hospital within twelve hours of delivery ; this is especially noticeable among the Kroom women.

I think this early activity after child-birth accounts for a large proportion of the chronic pelvic troubles so commonly seen amongst the women in Freetown.

As in previous years, Ophthalmia Neonatorum is hardly ever seen. Again the short stay of the patients in the ward does not allow observation on this point being reliable, but even in the Hospital Out-patients and private practice a case is rarely seen, although Gonorrhœa is extremely prevalent.

E. J. WRIGHT.

D.—SHORT REPORT ON THE WORK DONE IN THE COLONIAL HOSPITAL CLINICAL LABORATORY, 1919.

Unfortunately, owing to a fire in February, all records have been destroyed. Dr. Young was in charge in the beginning of the year; he was followed by Dr. Butler, who in turn was relieved by me in November.

It is impossible to give a detailed report of the work done, but briefly it was as follows:—

Examination of Blood.
 „ „ Faeces.
 „ „ Sputa.
 „ „ various secretions and excretions of body in general.
 Chemical and Bacteriological analysis of water.
 Various media were made in the Laboratory.
 Stock cultures of the Dysentery and Typhoid groups were kept, and agglutination tests were performed.

Dr. Butler succeeded in isolating *B. flexner* and *B. shiga* from the faeces of patients suffering from Dysentery.

J. McCONAGHY,
M.O. i/c Laboratory.

August 31st, 1920.

E.—MEDICAL REPORT ON THE FREETOWN PRISON, FOR THE YEAR ENDING DECEMBER 31st, 1919.

Dr. Young was in charge till September 20th, when he was relieved by Dr. Wood. The latter was relieved by Dr. Pearson on October 31st, who in turn was relieved by Dr. McConaghy at the end of the year.

Mr. Nylander was Dispenser in charge during the year.

Prison Staff.—The *European* Staff consists of two, namely, Superintendent and Assistant Superintendent. Neither of these officers was on the sick list.

Of the *Native* Staff, 57 were treated for various illnesses, chiefly Malaria; 14 of these were admitted to the Colonial Hospital (2 for Dysentery), one died (phthisis), 2 were invalided (cardiac disease, defective vision).

Prisoners.—All new comers were carefully examined on arrival; it was found that 15 per cent. of them had Gonorrhœa, and that valvular disease of the heart was common. One was isolated for leprosy. A microscopic examination of the faeces was made as a routine, and the ova of ankylostomata and ascaris were found in many cases. A certain number of cases showed the cystic forms of *amœba hystolitica*.

761 new comers were vaccinated. All prisoners were weighed on arrival and on discharge, and, if long sentence men, every month during their detention.

114 prisoners were admitted to hospital for dysentery; there were 3 deaths from this disease.

Two prisoners were sent to the Kissy Lunatic Asylum on emergency certificates, and two permanently.

The total number of deaths was 8 as compared with 23 in 1918. 32 prisoners were treated with Galyl.

There was an outbreak of Beri-beri early in September; 54 were attacked in the Freetown Gaol and 2 at the Cape Station, making a total of 56. There were over 400 prisoners in the Gaol at the time. The disease was chiefly of the dry type. There were no deaths.

Measures adopted—the congestion was relieved by transferring some of the prisoners to the Cape Station; increased diet was ordered for the prisoners as a whole, and special diet for those suffering from the disease.

The Sanitary condition of the prison was excellent.

One operation was performed under general anaesthesia, viz.: Circumcision.

Minor operations were as follows:—

Extraction of teeth	...	...	...	...	40
Incision of Buboës and Abscesses	...	...	...	...	19
Tapping of Hydrocele...	...	...	...	...	10
Removal of foreign body from finger	...	...	...	...	1

One post-mortem examination was made.

The Honourable the Principal Medical Officer made several visits during the year.

J. McCONAGHY,

M.O. Prison.

March 4th, 1920.

STATISTICAL REPORT FOR THE YEAR 1919.

IN-PATIENTS.

In Hospital at the end of 1918	...	...	...	...	19
Admitted during the year...	...	...	...	...	483
Total	...	...	...	...	<u>502</u>

	March Qtr.	June Qtr.	Sept. Qtr.	Dec. Qtr.	Total.
Admitted	90	107	179	107	483
Cured	36	61	84	78	259
Relieved	33	52	70	54	209
Died	2	1	4	1	8

IN HOSPITAL AT END OF 1919.

Taken under observation and treatment:—

March Qtr.	June Qtr.	Sept. Qtr.	Dec. Qtr.	Total.
78	69	66	65	278

CAUSES OF DEATH.

- 1 Chronic Amœbic Dysentery—Syphilis—Splenitis.
- 2 " " "
- 1 Senility and hastened by Cystitis due to B. Coli in urine.
- 3 Myocarditis.
- 1 General Paralysis.

OUT-PATIENTS.

March Qtr.	New cases treated	352	Subsequent attendances	504
June	" " "	396	" "	584
Sept.	" " "	504	" "	691
Dec.	" " "	479	" "	684
Total	...	<u>1,731</u>	" "	<u>2,463</u>

Daily average number of patients:—	Males	...	...	...	343
"	Females	...	...	...	5
	Total	...	...	...	<u>348</u>

Average weight of prisoners ... 130 lbs.

Examined as to fitness for:—

	New comers Examined.	Remands and Trials Examined.	Solitary Confinement.	Corporal Punishment.	Executions.
March Qtr....	215	78	31	—	—
June " ...	221	95	35	—	1
Sept. " ...	406	150	39	1	—
Dec. " ...	341	152	64	1	—
Total ...	1,183	475	169	2	1

F.—ANNUAL REPORT ON KISSY AND ITS INSTITUTIONS AND ON WELLINGTON.

Police.—Health good, one policeman on sick list for 3 days.

Non-Official Native Population.—The presence of intestinal worms in a very large proportion of the population is noticeable.

Vital Statistics.—

Approximate population	...	Kissy 3,000
"	...	Wellington 900
" deaths—Kissy	164	(including 139 in the Institutions).
" births—Kissy	39.	

Sanitation.—There is no regular sanitary gang for this District nor any Sanitary Inspector stationed here. Therefore no special preventive work has been done during the year. The labourers attached to the various Institutions keep the compounds and approaches clean, and see after the night-soil (pail system). The water supply is good. The Headman of Kissy has £30 voted to him out of the tax and with this attempt is made to keep the main streets, the market, the cemetery and some of the water supplies clean. There are five stand-pipes giving an intermittent supply of

water. The greater part of the village gets its water from small springs on the hill side. Round these the Headman is making a shallow receiving well to prevent the water being contaminated.

<i>Vaccination.</i> —				1919	1918
Total	...	...	...	66	30
Total successful...	...	...	not inspected		27

Administrative.—The following officials were in charge during the year:—

Drs. Campbell and Easmon.
 Dispensers Smith and Lewis and Acting Dispenser Rogers.
 The Keeper, Lunatic Asylum.
 Assistant Keeper, Lunatic Asylum, and Temporary Assistant Keeper (Mr. Bailey).
 Six Female Nurses (Nurse A. Williams relieved Nurse Thomas).
 Two Dressers.
 Six Attendants.
 Five Temporary Attendants (one for the Gambia patients).
 Three Cooks.
 One Laundress.
 Ten Labourers.

Public Health.—The general health of Kissy and Wellington has been good. There have been no epidemics and no return of the Influenza of 1918.

European Officials.—There has only been one European Official in this District at Wellington for a short time; he has not been ill.

Native Officials.—

Total on sick list	...	...	...	...	131
No. of days spent on sick list	...	...	...	...	769

Recommendations for future work.—1. Increase in the number of stand-pipes for Kissy.

2. A pipe-borne water supply for Wellington.

3. The appointment of a Sanitary Inspector for this District.

4. The increase of the grants to the headman as at present it is quite inadequate.

Meteorological.—There was a marked diminution in the rainfall as compared with previous years. The total was 74.45 inches, as compared with 104.90 inches of 1918, a decrease of 30.45 inches. No rain fell in January, February and December. The highest shade temperature was 94 degrees on the 18th, the lowest temperature was 66 degrees on July 9th and March 5th, and the greatest daily range of temperature 24 degrees on March 5th and July 8th.

HOSPITALS AND DISPENSARIES.

(a) *The Lunatic Asylum.*—The general health of the inmates was good and there was no outbreak of epidemic disease. There was one case of Bacillary Dysentery (Shiga). This was a patient, admitted from Robin Island Asylum, Cape Town, for repatriation to Nigeria. Fortunately there was no spread to the other inmates no doubt due to the marked absence of flies in the compound. Two patients escaped, one only being retaken.

The commonest causes of death were General Paralysis of the Insane, Diarrhoea and Marasmus.

	Males.	Females.	Total.
Remaining on January 1st	105	43	148
Admitted	27	14	41
Discharged	12	6	18
Died	23	4	27
Remaining on December 31st	97	47	144

(b) *The Infirmarys.*—On the occasion of the visit of the Acting-Governor, the inmates made a petition as a result of which the names have been officially altered to Male and Female Infirmarys instead of Incurable Hospitals.

These Institutions correspond with the Workhouse Infirmarys of England as they contain both sick and destitute poor.

1. *Male Infirmarys.*—Although the daily average number of patients has been much the same as in 1918, a larger number has been treated (335 in 1919 to 277 in 1918 a difference of 38); owing to the greater number of moribund cases admitted from Freetown. The commonest cases treated were Ulcers, Diarrhoea, Paralysis and Syphilis. The commonest causes of death were Paralysis, Diarrhoea and Senility. There were 8 deaths from Pulmonary Tuberculosis which runs a very acute course here.

Remaining on January 1st	68
Admitted	267
Discharged	147
Died	106
Remaining December 31st	82

A portion of the Male Infirmary is set apart for lepers.

Remaining on January 1st	3
Admitted	6
Discharged (on repatriation to the Gold Coast)	1
Absconded	2
Died	3
Remaining on December 31st	3

2. *Female Infirmary.*—The increase in numbers still continues and the Lazaretto was used as an overflow ward throughout the year and the services of the temporary nurse retained. The commonest cases treated were Ulcers, Diarrhoea and destitute old women.

Remaining on January 1st	51
Admitted	86
Discharged	61
Died	32
Remaining December 31st	44

(c) *Infectious Diseases Hospital.*—The number of cases treated was much smaller than in 1918. The majority of the Chicken-pox cases were treated in the "Huts."

	Small-pox.	Chicken-pox.
Remaining on January 31st	—	1
Admitted	6	19
Discharged	5	20
Died	1	—
Remaining on December 31st	—	—

Kissy Dispensary.—Total number of cases treated, including old cases—Males 1,023, Females 1,175, a decrease of 1,111 as compared with 1918 due to the absence of the Influenza Epidemic. Commonest diseases were Intestinal Worms, Dyspepsia, Malarial Fevers, Constipation, Rheumatism and Bronchitis.

Wellington Dispensary.—The number of cases treated, including old cases—Males 437, Females 543, an increase of 45 over 1918. Commonest diseases were, Constipation, Worms, Dyspepsia, Ulcers, Bronchitis and Rheumatism.

M. C. F. EASMON.

G.—A REPORT ON DYSENTERY IN SIERRA LEONE.

During my tenure of office as Medical Officer to the Freetown Jail in 1914, a severe outbreak of Dysentery occurred and resulted in several deaths; this was sufficiently impressive to make me attempt to elucidate the causation. I was struck by the almost invariable absence of Amœbae showing motility, though on some occasions I found what I took to be dead Amœbae. My attempts, on about a dozen occasions, to isolate Dysentery bacilli, failed ignominiously. Cases occurred in which death took place within 48 to 72 hours of onset, and in spite of my failure to recover Dysentery bacilli, I felt convinced I was dealing with the bacillary type of the disease.

It was owing to this conviction that I determined to try and throw some light on the question, in spite of the fact that the Dysentery bacilli had never previously been isolated in Sierra Leone, and in spite of the fact that Dysentery there had almost always been regarded as Amœbic in type.

Without doubt, I think, one of the most impressive sights to the worker newly in the tropics is the Amœba crawling about in a portion of a Dysenteric stool, but I would like to point out what, in my experience, are frequent causes of error of diagnosis :—

(a) So many cells in the exudate seen in a Dysenteric stool can resemble an immobile Amœba in general appearance even to the engulfed red cells, that I never feel justified in diagnosing their presence in the absence of definite motility ;

(b) The presence of the cysts of *Entamoeba Hystolitica* is evidence of infection, but is not necessarily evidence of disease. A very high percentage of Sierra Leone natives harbour Ankylostomes, but definite Ankylostomiasis is rare, in the same way they may show the presence of *Hystolitica* cysts without having or ever had or likely to have Amœbic Dysentery ;

(c) The rapid improvement in an attack of Dysentery under the administration of Emetine is no evidence of its Amœbic character, for cases of Dysentery in which all the evidence supports the bacillary side, even to the isolation of the Dysentery bacillus, occur which clear up just as quickly without any Emetine.

No one will deny that the Amœbic type of Dysentery is quite common in Sierra Leone, but I hope to show that the bacillary type is equally common.

Material.—This report is based on a consecutive series of cases of Dysentery or alleged Dysentery from the Colonial Hospital and Prison at Freetown. The investigation extended over a period from July to November,

1919. Only 53 cases have been examined, and this report is only put in because my transference to another Colony prevents me obtaining further material from these sources.

The presence of mucus in a stool has been the chief deciding factor as to the suitability of the material, and every case has been plated out, whether *Amoebae* had been found or not; this has formed a useful check on one's results.

The materials from the wards of the Hospital have yielded most of the positive results which can be explained on the mere freshness of the samples, owing to the proximity of the wards to the Laboratory. In the case of the samples from the Prison, the specimens have usually been about 6 hours old and naturally have not yielded many positive results, in fact, the only positive cases from the Prison have been found when the specimens have arrived early.

Procedure.—Specimens from the wards have been sent down intact in bed pans, but those from the Prison arrived in small bottles, and are not very satisfactory. The procedure has been to examine a portion of blood and mucus microscopically, repeating 2 or 3 times if negative to *Amoebae*. A portion has then been plated on to Conradi-Drigalski, medium care being taken that the medium is dry, especially for the second and third plates. On the next day, agglutination with specific sera is carried out direct from the plate of any suspicious looking colonies. Organisms from the suspected colony are then examined morphologically and by Gram's stain, and if satisfactory, are inoculated into Peptone water and examined in about 6 hours for motility, when, if non-motile, inoculation into the following sugar Media, Glucose, Lactose, Mannite, Maltose and Saccharose, as well as on to an Agar slope is carried out from the Peptone water growth. The Agar slope is used the next day for making an emulsion in formalinized saline, in order to estimate the agglutinability of the strain isolated. Examination for Indol has not been regularly carried out, for it seemed so unsatisfactory with the chemicals that I had at my disposal.

The Media used have been those ordinarily in use in Laboratories, though I have found advantage in Conrad's medium, which contains less crystal violet than that usually described, any excess seeming to hinder preliminary agglutination direct from the plate. McConkey's medium in my hands yields too small colonies to deal with comfortably.

Maltose has appeared to be rather an unsatisfactory sugar to deal with.

The agglutinating sera used were at first those obtained from Burroughs and Wellcome, and later those that were obtained through the Lister Institute. Those from the former were a Shiga and a Flexner strain, while those from the latter were a Shiga and Flexner-Y strain. Stock dilutions of 1 in 100 of these sera were used for the preliminary agglutinations from the plates. Fresh dilutions of the sera were made whenever the agglutinability of a strain was being estimated. Agglutination of an isolated organism by the patients own serum has been done on only a few occasions, because a general investigation on this subject I had hoped to carry out, but has been prevented by my leaving the Colony.

Results.—All results are Laboratory obtained, and unfortunately I have not been able to follow the cases clinically except in one case, which happened to be my own personal servant, and is worth recording to show how rapidly a bacillary case can recover. S, a Timnee personal servant, was taken ill on October 12th with acute abdominal griping, a temperature of 101.2°, and the passage of frequent stools of pure blood and mucus, which, on microscopical

examination, showed much cellular exudate and no trace of Amœbae; this material was plated out within half-an-hour of being passed, and yielded nearly a pure culture of bacillus dysenteriae of the Flexner-Y type. He received nothing but Glauber's Salts for treatment, and within 48 hours had ceased to pass blood and mucus, and reported fit for duty on October 16th. If this case had not been investigated bacteriologically and had been given Emetine, it would have been regarded as a wonderful result from Emetine and been recorded as an Amœbic case.

In all, 53 cases have been investigated, and I have classified them under the following headings as the presumable cause of the Dysentery:—

(a)	Amœbic cases	...	...	...	...	14
(b)	Bacillary cases	...	...	...	...	19
(c)	Diagnosis indefinite	...	...	...	...	20

These will be dealt with briefly in the above order.

(a) *Amœbic cases*.—This diagnosis can be accepted definitely for 14 out of the 33 positive cases, this represents 42 per cent. roughly, which is a low percentage in view of the fact that bacillus dysenteriae dies out so rapidly in a stale specimen, and therefore unlikely to be recovered.

- Case 1.—A native, definite Amœbae showing red cells and motility.
 Case 2.—A native, definite Amœbae with motility only, has Taenia also.
 Case 6.—A European, Amœbae doubtful, no red cells or motility, but cysts.
 Case 9.—A European, with red cells and motility.
 Case 18.—A native, Amœbae show red cells and motility.
 Case 20.—A native, Amœbae show red cells and motility.
 Case 27.—A native, Amœbae showing red cells and motility.
 Case 28.—A native, scanty Amœbae showing red cells and motility.
 Case 33.—A native, Amœbae show red cells and motility.
 Case 35.—A native prisoner, Amœbae few, but show red cells and motility.
 Case 43.—A native, many Amœbae with red cells and motility.
 Case 45.—A native, scanty Amœbae, also has Lamblia and Subtertian Malaria.
 Case 48.—A native, Amœbae with motility but no red cells.
 Case 51.—A native, Amœbae with red cells and motility, stool like liver abscess pus.

In every one of these cases, except one, pretty definite Amœbae were found, the majority showing engulfed red cells and well marked motility; the exception occurred in a European, who only showed the presence of cysts, but in view of his nationality, I have accepted the Amœbic causation of his illness in the absence of other evidence.

Every one of these stools were plated out, and in not a single case was any colony found suggestive at all of the Dysentery group. This is interesting in view of the fact that double infections have usually been presumed to be common, though I believe Manson-Bahr has recently shown them to be rare.

The description of these stools is worth mentioning:—

Much mucus blood and cellular exudate in	...	...	...	4
Almost pure blood and mucus, but slight cellular exudate in	...	...	...	2
Yellowish mucoid stool with slight blood, no other cells in	...	...	...	2
Red brown material, like liver abscess pus in	...	...	...	1
Faecal stool with specks of mucus only in	...	...	...	1
Faecal stool with specks of mucus and blood in	...	...	...	3

It will be seen that the type of stool varies considerably, and none seems particularly characteristic.

(b) *Bacillary cases*.—The evidence was pretty conclusive, for 19 out of the 33 cases that gave definite results, that is about 58 per cent. This is not high in view of the fact that many stools examined are so stale that the isolation of bacillary dysenteriae becomes unlikely.

The following types were isolated :—

		Glucose.	Lactose.	Mannite.	Maltose.	Cane Sugar.
1	Shiga type ...	Acid ...	0 ...	0 ...	Acid ...	0
14	Flexner-Y type ...	Acid ...	0 ...	Acid ...	Acid ...	0
3	Inagglutinable type (a) ...	Acid ...	0 ...	Acid ...	Acid ...	0
1	" (b) ...	Acid ...	0 ...	0 ...	Acid ...	0

The description of the stools in these cases is as follows :—

Entirely mucus blood and cellular exudate in ...	12
Almost pure pus and mucus in ...	6
Yellow mucus, not much cellular exudate in ...	1

All these stools are characterised by the absence of faecal matter and the invariable presence of cellular exudate, usually in considerable amount, and nearly always with the presence of blood cells. I am inclined to state, from this result, that a stool consisting of no faecal material, but only of mucus, blood and much cellular exudate is in the majority of cases likely to be of the bacillary type.

The Agglutinations.—The B. and W. Flexner serum had a titre of 1 in 1280. The Lister Flexner-Y serum had a titre of 1 in 1000. The B. and W. Shiga serum had a titre of 1 in 1280.

All agglutinations have been carried out on Garrow's agglutinator, the procedure is extremely quick, and Captain Garrow informs me that the readings are within one dilution of that obtained with Dreyer's technique.

In using the B. and W. antisera which I first employed, the following dilutions were more conveniently made :—

$$\frac{1}{20} \quad \frac{1}{40} \quad \frac{1}{80} \quad \frac{1}{160} \quad \frac{1}{320} \quad \frac{1}{640} \quad \frac{1}{1280} \quad \text{etc.}$$

The end points for the first 8 strains of Flexner-Y isolated using the B. and W. sera were :—

- 5 cases at 1 in 640 (*i.e.*, within 1 dilution of the full titre).
- 3 cases at 1 in 1280 (this is the full titre).

In using the Lister Institute sera, the following dilutions were more conveniently made :—

$$\frac{1}{100} \quad \frac{1}{200} \quad \frac{1}{400} \quad \frac{1}{800} \quad \frac{1}{1600} \quad \frac{1}{3200}$$

The end points for the remaining Flexner-Y strains isolated were :—

- 4 cases at 1 in 400 (the full titre being 1 in 1000).
- 2 cases at 1 in 800 (" " " " " ").

The end point of the only Shiga strain isolated at first was only 1 in 320, though on subculture it subsequently rose to 1 in 1280, which was the full titre.

The Inagglutinable Strains.—Four of these were isolated, though one became definitely agglutinable on subculture. Three fermented, both mannite and maltose, and the one that became agglutinable, belonged to this group.

The one other inagglutinable strain fermented maltose, but not mannite, and remained completely inagglutinable. Of course, glucose was fermented in all cases.

The following table states all the results:—

AGGLUTINATIONS.

										B. and W. Sera.		Lister Sera.		On Subculture		
										Shiga.	Flexner.	Shiga.	Flexner-Y.			
Case	3	...	Glucose.	...	0	...	Acid	...	Mannite.	...	Acid	...	Maltose.	...	Cane Sugar.	
	3	...	Acid	...	0	...	Acid	...	Acid	...	0	...	0	...	0	
31	5	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
32	11	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
33	19	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
34	23	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
35	24	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
36	25	...	...	...	0	...	0	...	...	...	0	...	0	...	0	
37	26	...	...	...	0	...	Acid	...	...	...	0	...	0	...	0	
38	30	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
39	32	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
40	34	...	...	...	0	...	0	...	...	...	0	...	0	...	0	
41	40	...	...	...	0	...	Acid	...	...	...	0	...	0	...	0	
42	41	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
43	42	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
44	44	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
45	46	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
46	50	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
47	52	...	...	...	0	...	...	...	...	...	0	...	0	...	0	
48	53	...	...	...	0	...	...	...	...	...	0	...	0	...	0	

Shiga strain—Case 25.

Flexner-Y strains—Cases 3, 5, 11, 23, 24, 26, 30, 32, 40, 41, 42, 44, 46, 50.

Inagglutinable strains—Cases 19, 34, 52, 53.

All the above cases were examined for Amœbæ and failed to reveal their presence.

(c) *Diagnosis Indefinite*.—This group contains 20 cases that could not be definitely cleared up as to their causation, though a possible cause is suggested.

1. Two cases (4 and 8) consisted solely of scybala coated with mucus and a definite diagnosis was scarcely expected.

2. Two cases (10 and 39) had been five days under Emetine treatment, but had not improved much. They may have been Amœbic, but more, probably bacillary.

3. Two cases (16 and 36). One was a liquid brown stool containing slight mucus and a few red cells, and also a few bodies that might have been dead Amœbæ. The other was a stale stool from the Prison, consisting of yellowish mucus and slight blood, containing what may have been dead Amœbæ. Both these cases may have been Amœbic.

4. Three cases (14, 15 and 38), in which there was gross contamination with urine, and nothing could be decided about them, though the urine itself in one case contained blood and casts.

5. One case (21), a child of three years, harbouring many *Ascaris*, and the mucus in the stool may have resulted from treatment.

6. One case (47), a semi-liquid stool with slight mucus, but apparently containing much Castor Oil, and this may have been the cause of the mucus.

7. One case (31), a yellow mucoid stool without blood, but many Flagellates were present, and they may have caused the condition.

8. One case (29), with liquid offensive stool and practically no mucus, harboured many subtertian malaria parasites in the blood, and they may have been the causative agent.

9. Seven cases (7, 12, 13, 17, 22, 37 and 49). Three of these were from the Prison, one showing an entirely blood mucus and cellular exudate stool, and the other two simply a purulent mucoid stool. Three others showed liquid brown stools with slight mucus specks; two of these were Europeans who had Dysentery in the Dardanelles. The final case was an old man of 65 with a purulent mucoid stool. They all may have been chronic cases of either Amœbic or Bacillary Dysentery. All these undiagnosed cases failed to reveal the presence of either Amœbæ or Dysentery bacilli.

Conclusions.—The cases are undoubtedly far too few to dogmatise on, but I think it may be conceded that:—

1. Bacillary Dysentery of both the Shiga and Flexner-Y group are present in Sierra Leone. I believe this is the first occasion on which they have been isolated here. I personally do not think that the war can be blamed for their presence in Sierra Leone, but rather the previous lack of technical knowledge of the investigators which chiefly includes myself.
2. If a stool consists entirely of blood mucus and cellular exudate, the case is more likely to be one of Bacillary Dysentery, and will only reveal its true nature if it is examined fresh.
3. Double infections of Amœbic and Bacillary have not been met with, and seem to be rare.

G. G. BUTLER,
M.O. i/c Laboratory.

FREETOWN,
November, 1919.

H—REPORT ON AN OUTBREAK OF BERI-BERI WHICH OCCURRED IN THE FREETOWN PRISON TOWARDS THE END OF 1919.

At that time, owing to the scarcity of native rice, the contractors were allowed to supply Indian rice instead; and at the same time the Prison was overcrowded owing to the food riots.

Within six weeks from the substitution of Indian rice for native, the first signs of the disease were seen; the exact date was August 7th, 1919, on which a prisoner reported ill with swollen legs and abdomen; he complained of pains and a feeling of heaviness in the limbs; the heart was then normal and there was no albuminuria; temperature was slightly elevated. He was admitted to hospital. A week later, three similar cases were seen and admitted. Two more cases occurred between 25th and 30th August. Eight more cases were discovered on September 8th, and seven further cases on the following day.

The Medical Officer in charge of the Prison at that time gave instructions that, as in his opinion there was an outbreak of Beri-beri, the diet scale of the prison should be altered for the time being; the amount of rice to be

reduced to one half and a pound of bread given instead, and that meat should be increased from three ounces to five ounces. He also advised that no rice should be given to infected cases, who were given hospital diet, milk, etc., according to circumstances.

Fresh cases were occasionally admitted until October 9th, when the outbreak ceased.

There were altogether 56 cases treated, inclusive of two which occurred at the Cape Sanitary Station. 46 were of the "wet" type and 10 of the "dry." In the dry form severe symptoms predominated, *e.g.*, pains, tenderness, loss of muscular power and lack of co-ordination. In the wet form there were Cardiac symptoms and marked œdema of both abdomen and legs.

Repeated examination of the urine was made, and only a trace of albumen found in one case. A few had tender and bleeding gums.

In about a fortnight some recovered and were discharged from Hospital, and others in about a month. Four cases developed Cardiac and Renal Disease; of these two have since died, and two still remain in Hospital.

General Measures Adopted.—Over 100 prisoners were removed to the Cape Sanitary Station.

Infected prisoners were isolated.

Diet was increased and altered, very little Indian Rice being given.

Rice was forbidden to Hospital patients, and those prisoners under observation.

Treatment.—Absolute rest in bed.

Digitalis, Strychnine, etc., according to indications.

Yeast administered when obtainable, massage later on.

Diet.—Bread, 1 lb.; Meat, 8 ounces; Milk, 2 pints; fresh Fruit.

Ground Nut Soup was served daily to every prisoner.

J. McCONAGHY.

I.—REPORT ON CLINE TOWN DISPENSARY FOR THE YEAR ENDING DECEMBER 31st, 1919.

Dr. C. H. Allan was in charge from the beginning of the year until August 11th, when he was relieved by Dr. Butler.

The latter was relieved by Dr. McConaghy on November 17th.

Dispenser Wright was in charge of the Dispensary during the year.

There were 62 European Officials in the Station, of whom 42 were for varying periods on the sick list; the chief diseases being Malaria, Bronchitis, Abscess, Coryza and Gastritis.

Nineteen of these 42 were treated in the Nursing Home, chiefly for Malaria.

There were 20 West Indians and 436 natives employed during the year at Cline Town. Of these 150 were placed on the sick list, the chief diseases being Malaria, Gastritis, Chicken-pox, Tonsillitis, Diarrhoea and Rheumatism, etc.

CLINE TOWN DISPENSARY.

The total number of cases treated was 5,359, *i.e.*, 2957 new cases and 2,402 subsequent attendances. These numbers show a decrease of 1,615 as compared with last year's returns. The greater number of cases last year was due to the Influenza Epidemic.

The prevalent diseases were Malaria, Bronchitis, Dyspepsia, Rheumatism, Constipation, Boils, Neuralgia, Ulcers, Wounds and Intestinal Worms.

The Sanitary condition of the Station was good.

J. McCONAGHY,

CLINE TOWN,
January 29th, 1920.

Medical Officer, Cline Town.

J.—ANNUAL REPORT FOR THE YEAR ENDING 31st DECEMBER,
1919, BONTHE STATION, SHERBRO.

The Station has been in charge of J. C. Murphy, Medical Officer, who writes this report for the whole of the year 1919.

Dispenser C. H. A. Johnson has been Dispenser for the greater portion of the year, until October 24th, 1919.

Male Nurse E. D. Morgan and Female Nurse Lucinda Johnson for the whole period.

Male Nurse (1st Class) E. D. Morgan has held the post of Acting Dispenser during the leave of Dispenser Johnson, also holds it now and since Dispenser Johnson ceased to act, October 24th, 1919.

The Hospital was inspected by His Excellency the Governor in January, 1919. The telephone which connects the Hospital and S.M.O.'s quarters is a great convenience.

Public Health.—The weather in the early part of 1919 was fine, and during that time there was not much sickness except the usual Muscular Rheumatism and Lumbago.

This being a river-side community, most of the natives are of the fisher and long shore type, and their employment in and about the river, especially in the usual mist of early morning, keeps them damp, etc., and pre-dispose to Rheumatism and allied diseases, even in fine weather. This tendency is, of course, aggravated in the wet season.

There was not any recurrence of special disease such as Influenza, etc., but towards the end of (October) the wet season and lasting until now, though diminishing, there has been a noticeable amount of colds in the head, sore throat, etc., causing debility and a feeling of lethargy out of all proportion to the apparent severity.

These symptoms were described to me by people who were here for the Influenza Epidemic of 1919, as similar to the prodromal symptoms of that disease in Bonthe in 1918.

They may have greatly exaggerated. I was not in the Colony for the Epidemic, so cannot say. So far no apparent ill results have followed their colds in the head.

In Sherbro during most years there is a scarcity of food both native and imported from outside Colony. Sherbro Island is not nearly able to support its population—sandy, poor soil and large population. This year the scarcity at times approached famine, and towards the end of the wet season, which is also the hungry season, greatly effected the general health, physical and possibly mental of the population, reducing resisting power, and predisposing to disease.

Since Sanitation was enforced and carried out, the general health has improved, for all people alike, especially Europeans. One firm (continental) has applied the lesson in its dwelling house, etc., of having a house suitable to its surroundings; other houses both official and private, are much as they were before Sanitation was taken seriously.

Much the same diseases are seen at York Island, which is about three miles from Bonthe; inhabitants are about 500 natives and 16 Europeans (for convenience these are all included in Bonthe returns). This is equally low lying with Bonthe; but being more exposed, is cold, and gets all breezes that blow. Bonthe does not, but in other respects it is very bad.

A weekly visit is paid by the Medical Officer (and when staff permits, accompanied by Dispenser), who brings stock medicines, etc. There is no Dispensary, but a room in the police barracks is used. The total number of cases treated, in and out, and subsequent attendances (Bonthe and York Island), 5815

Deaths (including a small child just admitted) 7

New Cases—1919 2,534

„ „ —1918 3,243

of which about 757 were Influenza cases.

Opportunities for Surgical treatment were few, and confined nearly altogether to stitching up wounds, some serious, the result of attempted murder.

General Diseases, etc.—The most common general diseases are Bronchitis, Constipation, Rheumatism, Debility, Lumbago, Ascaris, Gonorrhœa, etc. Syphilis not many.

Communicable Diseases.—Insect-borne Malaria, Filariasis. No Sleeping Sickness, though tse-tse fly abundant.

Infectious and Epidemic.—Chicken-pox, Measles, a form of Dysentery; no Small-pox. Helminthic:—Round and Tape Worms only. (There is inspection of meat before sale, and restriction as to swine keeping.) The wet season, which is also the hungry season, is the more unhealthy; there was no special severity of diseases in general or recurrence. There was no Influenza.

The Harmattan, which locally is credited with influencing health, came early and lasted long. This is said to be a favourable sign for the following year.

European Officials.—Two civilians and one military for a few months. The health of the European Officials (averaging two) has been from fair to good. One official was on sick list. Malaria and Debility, and assisted by unexpected heavy and worrying work; to prevent repetition, the health of every one, including Europeans (except prisoners), has suffered from scarcity and want of variety in food during the whole of 1919.

Total number of European Officials on sick list (cases) during the year, 2.

Total number of days spent by European Officials on sick list, 5.

Native Officials.—The health of the Native Officials has been good; no serious sicknesses amongst them. One senior official injured his foot, but otherwise had good health.

Total number of native officials on sick list (cases) during the year, 16.

Total number of days spent by native officials on sick list during the year, 88. (This total is candidly a senior official having his foot attended to; it was not ordinary sickness; his usual health was good over the 30 days on sick list.,

Soldiers, W.A.F.F.—Fair; about 40 soldiers have been stationed here for some months; they have suffered from the usual diseases, Rheumatism, Debility, Bronchitis, etc. No very serious diseases arose. A change of climate from inland and home conditions, to a strange part, low-lying, damp, and away from homes, together with scarcity of food, has influenced their health adversely.

Police, Civil.—Fair; no special diseases; scarcity of food, non-permanence of residence.

Court Messengers.—Good; mostly natives, permanent residence; comparatively more in touch with native population than civil police, with consequent better food arrangements.

Prisoners.—Good; a few cases of Measles and Chicken-pox, which do not affect health. They are the only inhabitants of Bonthe not effected by scarcity of food.

Non-Official European Population.—Owing to overtime, prolongation of hours, there was some sickness amongst these; Malaria, Anaemia, Debility. None died in Africa, but one European had Blackwater twice, and two died shortly after arriving home on leave.

Both of these had done overtime, also Blackwater case for second attack) Scarcity of food, animal and vegetable, and want of variety in food, abnormally affected health.

Syrians.—About 20 men, women and children. Health fair.

Non-Official Population.—No special diseases; Rheumatism, Lumbago. especially in the wet season; general health probably effected by scarcity of food, at times approaching famine.

Vital Statistics.—

Estimated population, Bonthe and York Island	...	5,000
" " Sherbro	...	13,200
Total Births and Birth Rate—103	...	48.54
Total Deaths and Death Rate—103	...	48.54

Infant Mortality, 41. Total Births and Deaths registered came to the same figure.

Hospital and Dispensary.—Bonthe, Bonthe Bai (Isolation Camp) and York Island. There has not been anything unusual in work done, or amount this year. Fortunately, there were no epidemics, Influenza, Small-pox, etc., as in 1918. The prevailing diseases included Rheumatism, Lumbago, Bronchitis, etc.

The Colonial Hospital, Bonthe, and Isolation Hospital, Bonthe Bai, are old and worn out buildings. In the former the wood work is ant-eaten and

rotten, and will not hold patches. Many minor repairs are needed, but for some reason or so cannot be done. No improvements are recommended to the existing buildings. It would be money wasted.

The pump and well in the compound require attention and renewal, as the large concrete tank is needed for the dry season drinking water. There are no Medical and Sanitary buildings in York Island (except one concrete tank, incinerator and dust bins). Medical visits paid weekly, and medicines dispensed, the police barracks being used as a dispensary, which arrangement is not altogether satisfactory as a medical room. The diseases are those seen in Bonthe.

Official Quarters.—The Dispenser and Male Nurse have houses in the Hospital grounds. They are modern and in good condition. The Female Nurse lives in the Hospital building itself.

The situation of the S.M.O.'s quarters is convenient (connected by wire to Hospital) to potential patients, but the house itself is bad; moth and wood-boring insects and dry rot; it is also very hot; it was built for and occupied by natives before purchased by the Government.

J. C. MURPHY,
Acting S.M.O.

BONTHE,

January 9th, 1920.

K.—ANNUAL REPORT FOR THE YEAR 1919, BO RAILWAY DISTRICT.

During the year under review, Bo Station was in charge successively of Drs. Taylor, Bissell, McConaghy and Wood, the last furnishing the report. Dr. Taylor remained in charge from the beginning of the year until June. Lt.-Col. Bissell was resident for short periods until October, when Dr. McConaghy arrived, and he in turn was relieved by Dr. Wood in November. It will thus be seen to be impossible to give any account of any real value of the general health of the Station during the year.

2. *General Diseases.*—These were of the ordinary type calling for no special mention.

3. *Communicable.*—Malaria does not appear to have been more prevalent than usual. *Ascaris lumbricoides* is a common parasite, especially of children. Seventeen cases of Chicken-pox were treated.

4. *European Officials.*—The average number resident including Railway Officials at Nattru, Gerihun and Blama was 12. Fever, especially Malaria, accounted for the majority of cases on the sick list.

Total number of European Officials on the sick list	41
Transferred to Government Nursing Home, Freetown	5
Total number of days spent on sick list in Bo ...	215

The increase in numbers over 1918 was probably due to the greater number of officials present, including those passing through Bo and merely resident for a few days. No deaths occurred among them in Bo.

5. *Native Officials.*—There were 66 on the sick list for a total of 497 days, chiefly for Rheumatism, Malaria and diseases of the digestive tract.

6. *Soldiers.*—A small number of the W.A.F.F. troops were stationed at Bo for several months. Their health was fairly good.

7. *Bo School for sons of Chiefs.*—No serious disease appeared among the boys. There was no opportunity to carry further investigation on Bilharziasis. The chief diseases were Tonsilitis, Malaria, Digestive troubles and Ulcers.

8. *Non-Official Europeans.*—There appear to have been an average of 13 residents but owing to the scattered nature of the trading and missionary communities it is difficult to collect statistics. From general reports, fever, probably Malarial, was the most prevalent disease.

9. *Non-Official Natives.*—There was no special disease calling for mention among the small community of Syrians; Amœbic Dysentery and Hepatitis is prevalent, and among the children Malaria, although the Syrians at Bo are very regular as regards prophylactic Quinine.

10. *Out-Patients.*—

		1917	1918	1919
New Cases		2,639	3,473	3,215
Subsequent Attendances	...	1,264	5,532	5,658
Total		3,903	9,005	8,873

The abolition of Out-Patient fees would therefore appear to have had little effect on the number treated. Chief diseases in order of frequency:—Rheumatism or Neuralgia, Bronchitis, Malaria, Digestive diseases and Dysentery, Venereal Diseases.

11. *Hospital In-Patients.*—Sixty-four natives were admitted to hospital during the year; one died from Strangulated Hernia. Nineteen were operated on.

12. *Operations.*—Phimosis, 12; Caries of Teeth, 1; Strangulated Hernia, 1; Abscess, 2; Carcinoma, 1; Fibroma of Neck, 1; Osteitis of Tibia, 1.

13. *Sanitation of Bo.*—Owing to the frequent changes of Medical Officers, and absences from the Station, the sanitation of the town became extremely bad. The Sanitary Authority, the Paramount Chief, has no interest whatever in the subject, and the greatest pressure is necessary to make him clean even his own private ground. Two years ago Bo was declared a Sanitary District, but the regulations have never been enforced. Towards the end of the year a beginning was made in this direction; 43 natives were fined in the Chief's Court, sums varying from 2s. 6d. to 7s. 6d.; while 12 non-natives were summoned before the District Commissioner at Kennema. Ten were fined from 2s. 6d. to 10s. with costs, while three were withdrawn.

The Sanitation of the Government Compound was kept up to its usual state of excellence.

14. *Water Supply.*—From the beginning this has been the great difficulty at Bo, water being brought here during the dry season from Kennema by rail in a large truck this year. From tests made at the close of the year the new railway water supply appears to be sufficiently pure, with the usual tropical precautions, to enable this difficulty to be got over at last.

15. *Meteorology.*—

Highest Maximum Shade Temperature	101 on December 22nd.
Lowest " " " "	61 on February 7th.
Total Rainfall	139·07 inches.

Bo, RAILWAY DIST.,
April 7th, 1920.

JOHN Y. WOOD,
Medical Officer, W.A.M.S.

L.—ANNUAL REPORT FOR THE YEAR 1919 FOR MOYAMBA.

The Staff of the Hospital consists of one Medical Officer, one Dispenser, and one Vaccinator and a Sanitary Gang.

Dr. Easmon was in charge in the beginning of the year and was relieved by Dr. Metzger on the 15th April, 1919.

Dr. Metzger was relieved by me on the 1st July, 1919.

Dispensers M. P. Neville and T. M. Taylor-Scott served during the year. Assistant Public Vaccinator, Abdulai Kamara.

Sanitary Gang, average number, six.

Public Health.—There was no outbreak of epidemic reported during the year under review; the health of officials at this Station has been on the whole good.

European Officials.—The average number of European Officials resident at Moyamba was four; at Boia, nine; at Yonni Banna and Makump, one each.

The chief cause of sickness was Malaria, Gastric and Hepatic troubles and Rheumatism. Four were sent to the Nursing Home. No invalidings, no deaths.

Total number of Europeans on sick list	...	...	18
Total number of days spent on sick list	...	...	83
Average number of days spent on sick list	...	...	4.61

Native Officials.—The general health of the Railway Compound, Boia and Moyamba good. No deaths.

Total number of Natives on the sick list	...	...	98
Total number of days spent on the sick list	...	...	675
Average number of days spent on sick list...	...	...	6.88

Police, i.e., Court Messengers.—Health good; no invalidings, no deaths.

Prisoners.—The general health of the prisoners has been good; there was no outbreak of any epidemic disease, Dysentery or Beri-beri. There was one death due to Bright's Disease.

Non-Official Native Population.—Approximately 1,400, but subject to great and frequent fluctuations. The prevalent diseases treated:—Malaria, Rheumatism, Gonorrhoea, Bronchitis, Hepatic and Digestive troubles.

Meteorological.—The highest maximum shade temperature was 101° on the 24th February, 1919, and the lowest minimum shade temperature was 55° on the 7th February, 1919. The total rainfall was 99.58 inches, an increase of 16.53 inches as compared with 1918, which was 83.05.

Out-Patients.—

				1918	1919
New Cases	...	...	...	3,167	2,794
Subsequent Attendances	...	...	...	2,152	3,160
				—	—
Total	...	...	...	5,319	5,954

In-Patients.—There were 77 admitted into Hospital, with 5 deaths. The chief causes of diseases amongst Out and In-Patients were Malaria, Rheumatism, Worms, Digestive and Respiratory troubles and Venereal Diseases.

Operations.—Total, 12.

Hospital and Dispensaries.—At Boia, a very important Railway centre employing nine Europeans and about 100 Native Officials, a dispensary is badly needed; and as the officials in the various departments of the Government from Songo to Tabe in the Railway District and Boia to Makump on the Branch Line receive all attention from the dispensary at Moyamba, it would facilitate the work at this Station if a dispensary were opened at Boia.

Sembahun.—The new dispensary at Sembahun was visited as usual during the year. It is still in good condition, and is doing good work in the district. The commonest diseases treated were Malaria, Rheumatism, Worms, Digestive and Respiratory troubles.

The Hospital and Dispensary at Moyamba are not in good condition and no structural alterations were effected; new buildings are contemplated.

Sanitation.—A Sanitary gang, averaging four in the dry season and 11 in the wet season for the month, was employed on general sanitary measures throughout the year under review.

Vaccination.—

		1918	1919
Total number vaccinated		3,703	2,040
Total number successful (seen)		2,133	528

W. O. TAYLOR,

January 5th, 1920.

Medical Officer.

M.—ANNUAL REPORT, 1919, RAILWAY DISTRICT, DARU.

1. Daru, Railway District, is made up of the country between Hangha and Pendembu and the two out-stations of Panguma and Kanre-Lahun. At Panguma there is a District Commissioner, and at Kanre-Lahun a company of the W.A.F.F. The duties of the Medical Officer are almost entirely confined to Daru which is the Headquarters of the W.A.F.F. Kanre-Lahun is visited once a month, and Panguma when possible; there is very little opportunity for the Medical Officer to visit other districts.

The Staff consists of one Medical Officer and two dispensers, one of whom is stationed at Kanre-Lahun.

2. *Public Health.*—(a) The general health of the District has been exceptionally good comparing it with last year; this is undoubtedly due to the entire absence of any case of Influenza.

(b) *General Diseases.* Nearly all the patients who were treated at the dispensary are soldiers. Rheumatism, Bronchitis, Venereal Diseases, Ulcers and Injuries forming the majority of cases.

3. *Communicable Diseases.*—Of the Insect-borne diseases, Malaria is the most common, in fact it is the only insect-borne disease which has been recorded. The soldiers get Malaria fairly frequently but it is never very

serious and it is often not necessary to admit the patient to Hospital. One case of Small-pox occurred in the Barracks but was immediately isolated and there were no further cases, the patient making a good recovery. Chicken-pox is fairly common in the town amongst the children, but appears to be of a very mild form. The natives know the disease but do not regard it as anything serious.

No cases of Influenza have occurred, to my knowledge, in the District.

Helminthic Diseases.—Ascaris and Tape Worm are the only Helminthic Diseases met with; two cases of tape worm occurred in non-official Europeans. There has been no cases of Guinea Worm or Bilharzia. Ankylostomas are probably present in many of the natives but I have seen no symptoms arising from the cause. Sickness of all kinds is always more prevalent in the interval between the wet and dry seasons.

The general health of the Europeans has been most excellent, only three cases being put on the sick list, in each case due to Malaria. This does not include the case of an officer who was sent to the Nursing Home at Freetown, owing to trouble with an old wound received in France; he was subsequently invalided to England. Cases of slight Bronchitis, Gastritis, etc., have occurred but they have not been sufficiently serious to warrant their being placed on the sick list.

Total number of Europeans on the sick list for 1919...	3
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Total number of days on sick list	...	...	...	20
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This, compared with 29 on sick list last year with 210 days, shows a very great improvement in the general health of the Europeans.

Native Officials.—The general health of the native officials has been very good, there being only two placed on the sick list.

Total number of native officials on the sick list during the year	2
---	---

Total number of days on the sick list	...	...	...	...	15
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Last year there were 10 on the sick list with 63 days.

Nearly all the work of the Medical Officer in this District consists of treating the soldiers of whom there are nearly 400 together with wives and children. Nearly all the cases treated are of a non-serious nature. Four deaths occurred, one being due to Acute Intestinal Obstruction, one to Malignant Disease and two to Heart Disease.

No *Police* in the District. No *Prison*.

Non-Official Natives.—Very few of these come to Hospital for treatment, and the Medical Officer has very little chance of visiting out-lying towns. Sometimes cases are sent in by the Chiefs for treatment and generally consist of Chronic Ulcers of several years standing.

4. *Hospital and Dispensary.*—The Hospital at Daru consists of a building composed of mud, with a cement floor and an iron roof. There are 14 beds. The Hospital lately has been whitewashed and repainted throughout, and 12 new beds made, and is now in good condition. Further store accommodation has been made by pulling down the partition between two female latrines at the end of the Hospital, which are not required and converting the whole into a store. It is now no longer necessary to use the Operating Theatre as a store. The Hospital at Kanre-Lahun is a mud building and contains four beds. It is now being entirely rebuilt and should be ready by the middle of January.

I called attention last year to the fact that there was no house for the Dispenser in Barracks at Kanre-Lahun where the Hospital is situated; this is very urgently required as the Dispenser at present has to live in the Town, which is half a mile away and cannot be called quickly to an urgent case should it arise.

THE DISPENSARY,
DARU, RAILWAY DIST.,
April 6th, 1920.

H. M. NEWPORT,
Medical Officer.
DARU.

N.—ANNUAL MEDICAL REPORT FOR THE YEAR ENDED 31st DECEMBER, 1919, KENNEMA RAILWAY DISTRICT.

Dr. W. O. Taylor was in charge of the Station from the beginning of the year to June, when he was relieved by Dr. Newport. The latter was in charge till October, and was relieved by Dr. J. Y. Wood who remained in charge till the end of the year.

The Dispensary was in charge of Dispenser G. C. Heroe, from January to April. Dispenser T. C. Williams, from April to the end of September, and Dispenser S. B. Williams from October to the end of the year.

European Officials.—These consisted of two District Commissioners, two Assistant District Commissioners, the Roads Engineer and Assistant Roads Engineer, the Conservator and Assistant Conservator of Forests, the Foreman Platelayers of Blama and Hangha. Their health has been good. None appeared on the sick list.

Native Officials.—The health of the Native Officials has also been good:—

Total number on sick list...	...	...	...	...	12
Total number of days on sick list	...	...	...	...	59

Court Messengers and Warders.—The force consisted of 66 of the former and 10 of the latter; their health has been satisfactory. The services of three court messengers were terminated on medical grounds.

Prisoners.—The health of the prisoners has been also good. Daily average number in gaol was 80.

There was an outbreak of Beri-beri in the prison in November. There were four severe and six mild cases; they were kept isolated in special cells. A change from Indian to native rice, and an increase in vegetable and meat diet for all prisoners, rapidly improved their condition, and no fresh cases occurred. There was also a mild outbreak of Chicken-pox towards the close of the year. There were three cases who were isolated outside the prison.

There were two deaths among the prisoners. One from Cardiac Dropsy and the other one from Cut Throat. All food supplied for their consumption was regularly inspected.

Non-Official Europeans.—Only one was resident in the Station during the year. His health was fairly good.

Sanitation.—The Sanitary work of this Station was carried out by a gang of five men; high bush was kept cut; drains cleaned, empty bottles and tins and other refuse collected and buried in a hole. Meat for public consumption was regularly inspected.

Night soil is buried in trenches by prisoners.

Water Supply is pipe-borne.

Vaccination was carried out by the Assistant Public Vaccinator throughout the year.

Several cases of Small-pox were reported in the adjacent villages, but only one occurred at Kennema Town, and was isolated.

Hospital and Dispensary.—There is no Hospital at this Station. Cases requiring admission were sent to Bo.

The Dispensary is a mud brick structure measuring 10 ft. by 8 ft., and is altogether inadequate for its purpose.

Total number of cases treated—New Cases ...	...	2,224
Subsequent Attendances ...	...	2,766
Total ...	...	<u>4,990</u>

KENNEMA,
April 13th, 1920.

S. B. WILLIAMS,
Medical Dispenser.

O.—ANNUAL REPORT FOR PUJEHUN FOR THE YEAR ENDED 31st DECEMBER, 1919.

1. Dr. McConaghy, Medical Officer, was in charge of the Station at the beginning of the year. He left on furlough in January, and the Dispenser remained in charge until the end of the year.

2. The total number of cases treated during the year under review was, 3,437, new cases 3,274, and subsequent attendances 1,063; being an increase of 190 over the year 1918.

3. *General Health of Government Staff.*—The health of the European Officials has been good throughout the year; none was placed on the sick list at this Station during the year. The Native Staff maintained fairly good health; the number of cases placed on sick list was ten; the total number of days on the sick list was 92. On the whole, the health of the Court Messengers and Warders has been good. There was one death amongst the staff of warders, from Pneumonia. Three messengers were invalided early in the year; their disability was due to the effects of Influenzal Endocarditis.

4. *Prison.*—One prisoner died from Mitral Regurgitation. The health of the prisoners was fairly good.

5. *Sanitation.*—The compounds of the Europeans and Native Staff were kept clean by Prison labour, and by the Sanitary gang. The Court Messengers' lines were kept in proper sanitary condition by the Court Messengers themselves. The pail system is in use by Europeans and Native officials; the Hospital, Prison and Trading Firms. The native population deposit their excreta in the bush near the town, and on the sides of the River Wange which is used for drinking purposes.

6. *Hospital and Dispensary.*—During the year, 192 In-Patients were treated in the Hospital, which shows a decrease of 20 on the year 1918.

There were four deaths due to Pneumonia, Septicæmia, Fracture of the Skull and Dysentery.

7. *General*.—The population of the town of Pujehun is about 750. The greater number of patients treated are from other chiefdoms. The principal diseases are:—Diarrhoea, Constipation, Bronchitis, Gonorrhoea, Myalgia, Rheumatism, Skin Diseases and Intestinal Worms; this last-named is very common.

PUJEHUN,
NORTHERN SHERBRO DISTRICT,
April 17th, 1920.

S. H. FAULKNER,
Medical Dispenser.

P.—ANNUAL MEDICAL REPORT FOR THE YEAR ENDING 31st
DECEMBER, 1919, SUMBUYAH.

The Dispensary was under my charge to the end of November, when I was relieved by Acting Dispenser N. T. Olushaga.

General Diseases.—The diseases most prevalent in this district are, Dyspepsia, Constipation, Bronchitis, Syphilis, Gonorrhoea, and Ulcers.

Epidemic Diseases.—There were no cases observed during the year.

Vaccination.—Vaccination was carried out during the early part of the year by different public vaccinators.

European Officials.—There were no European Officials in this section of the district, although a few visited it.

Native Officials.—The health of the Native Officials was generally good.

European Non-Officials numbered five, whose health was fairly good.

Soldiers.—During the Syrian rioting, some W.A.F.F. soldiers were stationed here. Their health has been, on the whole, good. Eight, with 12 subsequent attendances making a total of 20 were treated as out-patients. There were no deaths amongst them.

Vital Statistics.—Estimated population, about 1,090.

Dispensary.—A new dispensary is in course of erection. During the year, 1,338 cases were treated. 868 males, and 470 females. Subsequent attendances: males 769, females 401, making a total of 2,508.

THE DISPENSARY,
SUMBUYAH, RAILWAY DISTRICT,
December, 1919.

J. C. MAY,
2nd Class Dispenser.

Q.—ANNUAL MEDICAL REPORT, PORT LOKKOH, 1919.

Staff.—Dispenser Scott was relieved by Dispenser Buck, at the end of the first quarter of the year. Hospital labourer, one.

Public Health.—The most common diseases were:—Rheumatism, Bronchitis, Ascariis, Syphilis, Dyspepsia, Skin Diseases and Wounds. There was an interesting case of Incised Wounds of the left Fronto-parietal region of the scalp, cutting through and reaching the brain, about three inches long, also three other different incisions on the right side of the face—one severing

the upper maxillary bone, the other dividing the right ear and almost dividing the jaw. The third, from the right occipital region to the lower jaw and reaching the lip. She was dressed and sent to the Military Hospital for surgical operation, but succumbed the next day. A Court Messenger sent to Colonial Hospital, Freetown, died.

General Health, European Officials.—There were three District Commissioners relieving one another. None was placed on the sick list. General health good.

Native Officials.—Total cases on sick list was 37 for a period of 126 days.

Prisoners.—There is no permanent prison house here.

Non-Official European Population.—There was one here about the close of the year.

Non-Official Natives.—Prevailing diseases:—Rheumatism, Skin Diseases, Bronchitis, etc. There was one death, a man who had stricture and perineal abscess. Total of non-official, non-indigenous native population about 160.

Dispensary.—There were 2,043 new cases, and 2,861 old cases treated during the year.

SANITARY REPORT, PORT LOKKOH, 1919.

The health of the Station was good. The District Commissioner's quarters. Rest House and Court Messengers' barracks and their surroundings are kept clean.

Vaccination.—There were 4,061 vaccinations, of which, very few were seen a second time.

Disposal of Refuse.—Refuse in the town is collected and burnt or thrown into the river. In the Court Messengers' barracks, pits are dug for refuse.

Meat is not inspected.

Water Supply.—A running stream, contaminated. A well is being constructed by the African Association Agent for his personal use. The District Commissioner has a large tank attached to his quarters.

P. G. BUCK,
Medical Dispenser.

PORT LOKKOH,
January 6th, 1920.

R.—ANNUAL MEDICAL REPORT FOR THE YEAR ENDING 31st DECEMBER, 1919, MAKENE, KARENE SUB-DISTRICT.

Dispenser I. B. Doherty has been in charge of this Station the whole year. The Medical Officer, Moyamba, visited it monthly during the year.

Public Health.—No cases of Infectious and Epidemic Diseases were seen.

Official Europeans.—

Total number of European Officials	...	...	...	4
" " on sick list	...	...	...	2
" " of days on sick list	...	...	...	7

General health, fairly good. No deaths; one transferred to the Nursing Home, Freetown, for abscess on the area of an old gunshot wound of the back.

Native Officials.—

Total number of Native Officials	...	...	...	12
" " on sick list	...	...	...	8
" " of days on sick list	...	...	...	40

General health, fairly good.

Soldiers.—The prevailing diseases were Malarial Fever, Rheumatism, Neuralgia, Constipation, Venereal and Skin Diseases, Diarrhoea.

Non-Official European Population.—There were two who were in fairly good health.

Non-Official Native Population.—The prevailing diseases were:—Bronchitis, Rheumatism, Constipation, and Parasitic Skin Diseases.

Sanitation.—The Sanitary gang is under the charge of the District Commissioner and the Officer in charge "B" Company, W.A.F.F., Sierra Leone Battalion. European night soil was buried in trenches. The West African Frontier Force and Court Messengers use cesspits which are disinfected daily.

Vaccination was carried out by the Vaccinator of the District under the supervision of the District Commissioner.

Hospital and Dispensary.—This is a mud house with wooden doors and windows.

In-Patients.—110 soldiers were admitted during the year with two deaths; one from Pneumonia and the others from Pernicious Anaemia.

Out-Patients.—1,111 and subsequent attendances 1,343, making a total of 2,454 for the year.

Operations.—

16 Lymphadenitis.
11 Abscesses.
10 Boils.

The prevailing diseases were:—Gonorrhoea, Malaria, Rheumatism, Neuralgia, Bronchitis, Constipation, Lymphadenitis, Skin and Parasitic Diseases.

I. B. DOHERTY,
Medical Dispenser.

January 6th, 1920.

S.—ANNUAL MEDICAL REPORT FOR 1919, SEMBEHUN
DISPENSARY, RONIETTA DISTRICT.

Administrative.—One Dispenser; One Dispensary Labourer.

Changes.—Dispenser M. O. Frazer was in charge of this Station from the beginning of the year, and was relieved by Dispenser M. P. Neville in December.

2. *Public Health.*—The general state of health is good. There was no epidemic during the year.

(b) European Officials	...	...	...	Nil.
(c) Native Officials	...	...	...	3
No one on sick list.				

3. *Sanitation*.—There is no Sanitary gang in this Station.

4. *Hospital and Dispensary*.—This is the second year since the Dispensary was opened, and the people seem to appreciate it, as shown by their attendances. There is a decrease of 69 in new cases as compared with last year, when there was an outbreak of Influenza, but the general total shows an increase of 436. The prevailing diseases treated were Gonorrhœa, Rheumatism, Bronchitis, Ulcers and diseases of the digestive system.

Total number treated was as follows :—

	Officials.	C. Police.	F. Police.	Paupers.
New Cases	12	—	—	660 + 620
Subsequent Attendance ...	10	—	—	963 + 1,081
				} = 3,346

M. P. NEVILLE,
Medical Dispenser.

12th January, 1920.

T.—REPORT FOR THE YEAR 1919, BANDA JUMA.

1. Dispenser E. T. Ajax was in charge of this Station at the beginning of the year. He was relieved by Dispenser G. C. Heroe on the 5th of June. The latter was relieved on the 6th of August by me.

2. The sanitary condition of the Station has been much improved.

3. The total number of cases treated, both In and Out-Patients, during the year was 1,214 (males 874, females 340). Subsequent attendances, both males and females, 5,604, making a total of 6,818, against 4,325 the previous year, an increase of 2,493.

4. There are two European and two Native Government Officials here, and a company of soldiers. The health of these officials has been good. None of them has been on the sick list.

5. The prevailing diseases are :—Scabies, Constipation, Dyspepsia, Caries of Teeth, Rheumatism, Conjunctivitis, Yaws, Neuralgia, Gonorrhœa, Bronchitis, Diarrhœa, Arthritis, and Ulcers. There has been no death.

6. His Excellency the Governor and A.D.C., the Commanding Officer S. L. Batt., W.A.F.F., the District Commissioner and Medical Officer, Pujehun, visited this Station during the year.

J. E. LEWIS,
Medical Dispenser.

12th January, 1920.

U.—ANNUAL REPORT, 1919, BATKANU STATION.

The Station was in charge of Dispenser A. H. Wyse until March, when he was relieved by Dispenser P. Q. A. John, who left in September, after which date the Station was without a dispenser for some three or four weeks, until I arrived at the beginning of October.

A European official died from Blackwater Fever. Apart from this the health of the officials, European and Native, was good.

The number of Out-Patients treated was 1,604, with 1,556 subsequent attendances. In-Patients numbered 63. The most prevalent diseases were Constipation, Syphilis, Rheumatism, Bronchitis, and Intestinal Worms.

E. T. AJAX,
3rd Class Dispenser.

BATKANU, KARENE DISTRICT,
9th April, 1920.

V.—ANNUAL MEDICAL REPORT FOR KABALLA, KOINADUGU DISTRICT, 1919.

Staff.—One Dispenser, two Public Vaccinators, one Hospital Labourer, and four Sanitary Labourers under the District Commissioner's supervision.

Public Health.—The health of the Station remained good throughout the year.

Malaria.—The total number of cases treated was 35, all clinically diagnosed.

Health of Europeans.—None was placed on the sick list.

Native Officials.—The health of the Native Officials was very good.

Prisoners.—The health of the prisoners remained good throughout the year; there was no death.

Hospital and Dispensary.—In-Patients.—There were 37 cases admitted into hospital. The diseases were Syphilitic Ulcers, Ascites, Appendicitis, Pneumonia, Diarrhoea, Abscess, Gonorrhoeal Stricture, etc.; of these there were two deaths, one resulting from Ascites and the other from Appendicitis.

Out-Patients.—The total number of new cases was 1,432, and the subsequent attendances were 1,076, making a grand total of 2,508.

Sanitation.—The Official Quarters and Compounds, including the Barracks and the Town, were kept clean.

Small-pox.—There was no extensive outbreak, but reports were made by the Public Vaccinators that in some chiefdoms a few cases were accidentally met with. There was one case found at Kaballa, and the patient taken to a hut built for the purpose.

Water Supply.—The Water Supply is obtained from a running stream, which is fenced and protected from animals.

Vaccination.—The total number vaccinated during the year was 2,534. Successful, 1,189; unsuccessful, 653; and 692 cases were not seen.

Meteorological.—The highest maximum shade temperature was 99° on the 18th of February, and the lowest minimum shade temperature was 54° on the 30th December, 1919.

Rainfall.—The highest on one day was 2.45 inches on the 9th October, 1919. Total rainfall for the year was 103.77 inches.

A. E. GEORGE,
Medical Dispenser.

KABALLA,
10th April, 1920.

W.—KENT ANNUAL REPORT, 1919.

During the year the Station was in charge of Dispenser H. E. Frazer.

Number of New Cases treated	...	...	...	1,741
Subsequent Attendances	...	...	...	2,253
Total	...	...	...	<u>3,994</u>

This is an increase of 1,477 on the previous year.

During the early part of the year there was an outbreak of Measles in the District; 42 cases were attended; no deaths.

The prevailing Diseases were those of the Digestive and Respiratory Systems, Malaria, Rheumatism, and Skin Diseases.

Civil Police.—The health of those in the District was good.

H. E. FRAZER,

Medical Dispenser.

KENT,

28th April, 1920.

X.—ANNUAL MEDICAL REPORT FOR THE YEAR ENDING
31st DECEMBER, 1919, HASTINGS.

This Dispensary was re-opened. Dispenser A. H. Wyse was in charge from May.

Total number of cases treated was 2,110 (831 males, 1,279 females).

A. H. WYSE,

Medical Dispenser.

HASTINGS,

12th January, 1920.

Y.—ANNUAL REPORT, GODERICH, 1919.

This Station was re-opened on the 2nd July, 1919. The Medical Dispenser was the only resident official.

Number of new cases treated, 716; subsequent attendances, 633; making a total of 1,349. There were 24 cases of Influenza, but none proved fatal.

The Sanitary condition of the town was bad. The streets and main roads were covered with high weeds and rubbish. Pigs were left to stray about, digging up the streets and causing many impediments, during the rains especially.

Water Supply.—Water is obtained from wells.

E. W. COLE,

Medical Dispenser.

GODERICH,

12th January, 1920.

Z.—REPORT FOR REGENT FOR THE YEAR 1919.

The District is composed of five villages, viz., Leicester, Gloucester, Regent, Bathurst and Charlotte with a population of about 2,000 inhabitants.

Dispenser D. M. Thomas was in charge from the 1st to the 22nd January when I took over. There were 2,160 new cases of Out-Patients treated and 1,133 subsequent attendances, making a grand total of 3,293, as against 2,905 the previous year, with an increase of 388.

The most prevalent diseases seen during the year were:—Rheumatism, Ulcers, Dyspepsia, Malarial Fever, Wounds, Ascaris, Constipation and Bronchitis.

There were 27 Government Officials placed on the sick list during the year; the chief diseases being Bronchitis, Rheumatism and Malarial Fever.

There were 41 deaths and 45 births.

V. M. YOUNG,
Medical Dispenser.

THE DISPENSARY,
REGENT,
April 19th, 1920.

AA.—ANNUAL MEDICAL REPORT FOR THE DISTRICT OF YORK FOR THE YEAR ENDING 31st DECEMBER, 1919.

Government Native Officials.—There were three on sick list with an average of four days.

Dispensary and Out-Patients.—There were 1,287 new cases treated and 898 subsequent attendances, making a total of 2,185, a decrease of 197 as compared with the previous year. The diseases common were, Malarial Fever, Rheumatism, Debility, Bronchitis, Diseases of the Digestive System, Skin Diseases, Injuries and Ascaris.

E. F. SMITH,
Medical Dispenser.

YORK,
April 9th, 1920.

AB.—ANNUAL REPORT FOR BANANAS FOR 1919.

This District comprises Dublin, Campbell Farm and Ricketts, and was in charge of Dispenser E. W. Cole to the 16th June, 1919, and from that date to the 16th September, 1919, in charge of Dispenser E. T. Ajax and subsequently in charge of Dispenser D. M. Thomas.

During the year the number of cases treated was 1831.

Total number of births registered during the year ...	21
Total number of deaths	16

Deaths of infants under one year was five.

D. M. THOMAS,
Medical Dispenser.

DUBLIN, BANANAS,
April 30th, 1920.

AC.—ANNUAL REPORT FOR WATERLOO FOR THE YEAR 1919.

The District was in charge of Dispenser P. J. John during the year, except February and March when Dispenser T. C. Williams relieved him.

Public Health.—There were 11 cases of Influenza and two of Small-pox in October.

Dispensary.—2,170 new cases with 1,505 subsequent attendances were treated.

Civil Police.—The strength of the force was 29 ; the total number of days on the sick list was 85, giving an average of about three days each.

220 births and 230 deaths were registered in the District during the year. 48 deaths were children under one year.

Sanitation.—There is a Sanitary gang consisting of one Sanitary Inspector with two labourers.

The Town Market which had been left closed for many years is now converted into a meat market with six stalls.

P. J. JOHN,
Medical Dispenser.

WATERLOO,
January 7th, 1920.

ANNUAL SANITARY REPORT

FOR THE YEAR ENDING 31st DECEMBER, 1919,

BY THE

SENIOR SANITARY OFFICER.

ANNUAL REPORT

FOR THE YEAR ENDING 31 DECEMBER 1915

1916

REPORT OF THE

SANITATION.

I.—ADMINISTRATION.

1. Dr. W. Allan acted as Senior Sanitary Officer from the beginning of the year until the 1st May when he went on leave. Major Farrar, R.A.M.C., T.F., acted as Senior Sanitary Officer from May 1st to September 26th when he returned to the United Kingdom on termination of service. Major Peacock, Medical Officer, Nigeria Southern Provinces, was appointed Sanitary Officer, Sierra Leone, as from 25th March, 1919, and took over from Major Farrar from September 26th, 1919. He acted as Senior Sanitary Officer from September 26th to December 26th. Dr. J. Beringer was appointed Senior Sanitary Officer, Sierra Leone, as from 13th October, 1918, and assumed duty on December 27th, 1919.

The following Officers acted as Medical Officer of Health :—

Dr. W. Allan	...	...	1st January to 30th April.
Major Farrar	...	...	1st May to 23rd August.
Dr. J. Y. Wood	...	...	24th August to 17th October.
Dr. W. Allan	...	...	18th October to 31st December.

2. By Order in Council, No. 7 of 1919, the town of Waterloo was declared a Sanitary District. A Sanitary Sub-Inspector of Nuisances was posted to Waterloo as from 1st April, 1919. His salary was paid partly by the Government, partly from village funds.

3. With a view to preventing the introduction into the Colony and Protectorate of Rabies or other disease disseminated by domestic animals, an Ordinance known as the Domestic Animals Ordinance was passed in June, to enable control to be exercised upon the importation of Domestic Animals, including cats and dogs. Up to the present this Ordinance has not been put into force.

4. By Order in Council, No. 15 of 1919, Influenza was made an infectious disease within the meaning of section 32 of the Public Health Ordinance, No. 15 of 1905. This order came into operation on the 27th October, 1919, and was to be in force for the space of six months therefrom.

5. Owing to an outbreak of plague at Dakar in French West Africa, that port was declared by Governor's Order, No. 8 of 30th October, to be an infected place within the meaning of the Quarantine Ordinance, 1914. All ships from Dakar were examined but no case of plague was discovered.

6. On the 27th November Lagos was declared an infected place on account of Small-pox and was declared free from infection on the 6th December. It was again declared infected on the 24th December and remained so up to the end of the year. All ships which left Lagos during these periods were examined on arrival in Freetown harbour, but no case of Small-pox was discovered.

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

MALARIA.

8. In accordance with the Steegmann Scheme, Anti-Malarial Measures, both temporary and permanent, were carried out on a fairly extensive scale in Freetown during the year. The average number of men employed during the dry season was 130 and during the wet season 230.

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

1. No. of pools dealt with by draining or filling up	4,989
2. No. of pools cleared	63,511
3. No. of drains and gutters cleared (in feet) ...	133,863

9. The various streams in the Municipal area have been regulated and cleared from time to time. This work is done in December at the end of the late tornado season and the canalisation carried out then is likely to remain effective until the early tornado season which begins in April. Great assistance was rendered by Mr. Biddle, Acting Superintendent of Prisons, who put a large gang of prisoners at the disposal of the Sanitary Department.

10. The Anti-Mosquito work on trees and water-bearing plants has been continued. 46,951 trees and plants have been inspected and dealt with.

11. A certain amount of useful work has been done in filling in compounds with stone and rubble. This work was carried out by labour lent by the Public Works Department under the supervision of a European Sanitary Inspector. Seventy-one compounds and 380 square yards of open ground were treated. It is intended to continue this filling in of compounds in conjunction with the scheme for surface drainage now being carried out in the Western Area.

12. Oiling of cesspits, wells, pools, etc., was carried out by the oiling gangs. A record is kept of cesspits which become flooded during the wet season, and special attention is paid to them.

Record of Work done.—

Number of times cesspits oiled	58,222
" " drains and pools oiled	239,642
" " wells oiled	4,936
" " boats and canoes oiled	4,834

13. During the year 1918, 152 wells were closed. During 1919, 398 were closed, making a total of 550. This leaves about 200 which will be dealt with in 1920.

14. A certain amount of permanent surface drainage was carried out which will be described later.

15. No special Anti-Malarial work was carried out in the Colony outside Freetown or in the Protectorate, but in the Peninsula villages, along the railway and in the various civil stations, the usual routine work was done partly by prison labour, partly by labour paid for out of the Sanitary vote.

YELLOW FEVER.

16. No case of Yellow Fever was reported in Sierra Leone during the year. No West African port was declared infected, but one case was reported from Salt Pond in September.

TRYPANOSOMIASIS.

17. No cases were reported during the year.

CEREBRO-SPINAL FEVER.

18. No cases reported.

(2) PREVENTIVE MEASURES AGAINST INFECTIOUS AND EPIDEMIC DISEASES.

DYSENTERY.

19. Owing to the loss of the records of the Colonial Hospital, it is impossible to ascertain the exact incidence of Dysentery in 1919, but, from information received from medical men, there does appear to have been a diminution in the amount of Dysentery treated during the year. With the closure of most of the wells and the spraying with disinfectant of cesspits on a large scale, a decrease in the amount of all intestinal disease is to be expected.

PLAGUE.

20. About 4,000 rats were destroyed during the year. As the work of the rat-catchers employed by the Department was not satisfactory, it was thought that better results would be obtained at a smaller cost by increasing the bounty paid for rats from 1d. to 3d. This was started in December and seems likely to be a more satisfactory method. Ratin and Ratinin were used earlier in the year, but it is doubtful if they were of much value. Experiments are to be made with varnish as recommended by Dr. Howarth, Medical Officer of Health of the City of London, and Barium Salts will also be tried.

Bacteriological examination of rats was carried out from time to time by the Medical Officer in charge of the Laboratory, but no evidence of plague was discovered.

SMALL-POX.

21. Freetown has been comparatively free from Small-pox during the year, and the port has never been an "infected place" under the Quarantine Ordinance. Four imported and four non-imported cases were admitted to Kissy Infectious Diseases Hospital from Freetown during the year. The usual precautions were taken promptly and there were no return cases. In the Protectorate there were a few small localised outbreaks, but no epidemics. There is an establishment of 16 Native Vaccinators, three of whom are employed in the Colony and the remainder in the Protectorate. They are trained in Freetown by the Medical Officer of Health, and when efficient are posted to the various districts. Where there is a Medical Officer they work under his supervision, otherwise they are under the orders of the District Commissioner, whom they accompany when on tour. The appointment of a Medical Officer to supervise all Vaccinators was approved by the Secretary of State, but owing to the shortage of Medical Officers, this post could not be filled during the year.

Record of Vaccinations performed:—

		1919.	1918.
Number vaccinated ...	...	47,702	63,700
„ successful ...	...	14,461	32,033
„ unsuccessful ...	...	6,785	—
„ not inspected...	...	26,456	—

INFLUENZA.

22. No cases of Influenza were reported in Freetown during the year, but on several occasions there was a danger of the disease being introduced. On November 1st, the S.S. "Appam" arrived and it was reported that one fatal case of Influenza had occurred and that a considerable number of passengers had suffered from "coughs and colds." Strict precautions were taken. The ship was worked in quarantine, no transit passengers or crew were allowed to land, and passengers disembarking at Freetown were isolated for seven days at Mount Aureol, under arrangements made by the Military Authorities, who deserve the thanks of the community for the promptness and efficiency with which they carried out this work. No cases occurred amongst the contacts.

On October 16th, an outbreak of a mild type was reported at Sekondi and other places in the Gold Coast. On October 30th, Lagos was declared infected. The small outbreak at Lagos came to an end on November 14th, and that in the Gold Coast on December 4th. During the time these ports were infected all ships arriving from there were visited by the Medical Officer of Health. Two European sailors on the S.S. "Kwarra," which arrived from Nigerian and Gold Coast ports on November 18th, were found to be suffering from Influenza and were isolated at the Cape Sanitary Station together with 52 native labourers who were disembarking at Freetown. The ship was worked in strict quarantine. No cases occurred amongst the contacts at the Sanitary Station.

III.—GENERAL MEASURES.

(a) DISPOSAL OF REFUSE.

23. FREETOWN.—The method of refuse disposal remains the same as before. In the dry season most of the refuse is dealt with in incinerators, but in the wet season when there is an increase in the amount of refuse owing to the rapid growth of grass and weeds it is impossible to burn it all and the residue is thrown into the sea. The street dust bins are very unsightly and insanitary and in many cases an obstruction to traffic. Now that roads are being made, and the town and district opened up for motor transport more modern methods are needed and will have to be considered in the immediate future.

24. At Bonthe refuse is being utilised on a small scale in filling up what is known as Heddle's Swamp, a tidal channel which divides the town into two parts. In the Protectorate stations refuse is usually buried in pits.

(b) DRAINAGE.

25. A certain amount of permanent surface drainage work was carried out, partly out of the current vote, and partly from funds voted for the purpose of the Anti-Malarial Scheme.

In selecting areas for surface drainage it was recommended that a start should be made on drains which could be least satisfactorily dealt with by temporary measures, and the improvement of which would be most likely to produce beneficial results at an early date without prejudice to any scheme for surface drainage which might be introduced later in conjunction with a Freetown Improvement Scheme.

A commencement has been made with the area in the Western Ward, bounded by Campbell Street, Pademba Road, Fergusson Street and Dillet Street, which has long been known to be the cause of a great deal of Malaria. The drains have been in a most unsatisfactory state, causing flooding of

compounds and leading to the formation of stagnant pools, which were ideal anopheline breeding places. Great difficulty had been experienced in dealing with this area by any temporary measures.

The type of drain used is a fairly deep ovoid, with weep-holes in the low-lying areas to carry off a certain amount of sub-soil water.

The following lengths of concrete drainage have been laid during 1919 :—

Benjamin Lane ...	...	...	553 feet
Campbell Street ...	...	...	144 „
Pademba Road ...	...	...	519 „
Philip Street ...	...	...	369 „
Fergusson Street ...	...	...	639 „
Pike Street ...	..	...	296 „

In addition to this the drain to take the stream formed by Portuguese Town Spring, referred to in paragraph 43 of the 1918 Report, has been completed. All the work referred to in this paragraph has been charged to the special vote for Anti-Malarial Measures.

26. Out of other votes the following surface drainage has been carried out :—

Adelaide Street ...	...	429 feet
Priscilla Street ...	...	550 „

(c) SANITARY INSPECTIONS.

27. Sanitary Inspections were carried out systematically in Freetown. 157,288 inspections of premises were made during the year, as compared with 98,294 in 1918, and 87,897 in 1917. 7,993 notices were served to remove insanitary conditions of premises.

Police Court proceedings were instituted in 445 cases for non-compliance, resulting in a conviction in 343 cases. 55 cases had not been adjudicated at the end of the year, 47 cases were withdrawn or cancelled. The total number of mosquito breeding places found during the year both inside and outside premises was 964. 563 prosecutions were undertaken, resulting in 524 convictions. The average fine per conviction was 3s. 10d.

(d) MOSQUITO INDEX.

28. A mosquito larvæ was taken in December. 350 compounds were inspected and the index was found to be 2.98 per cent.

(e) MEAT INSPECTION.

29. 5,667 bullocks, 564 sheep and six goats were slaughtered in the Public Slaughter House during the year. Seven carcasses were condemned and destroyed, owing to *Cysticercus Bovis*.

(f) WATERWORKS.

30. I am indebted to the Waterworks Superintendent in Freetown for the following report showing progress made during 1919.

About 600 yards of new distributing mains were laid during the year along Macauley, Charles and Saunders Streets, and about 1,200 yards of distributing mains were lowered along Circular Road, Regent Road, Krootown Road and Campbell Street. Owing to the rocky nature of the latter streets, the mains were originally laid near the surface by the Freetown Waterworks Construction, and they have now been lowered to an average depth of 2ft. 6in.

Owing to the closing of the wells in the City, there were a good many applications for private water services, but on account of the shortage of materials only thirty could be laid. There were also eight public stand-pipes erected. The closing of the wells has naturally very appreciably increased the consumption of water from the Waterworks. All sections of the Waterworks were maintained in good condition, and the pipe lines and Water Reservations were regularly patrolled.

The Superintendent of Waterworks, Mr. Wilfred S. Cole, was sent to England by the Corporation for six months, to gain further experience in Waterworks Engineering, and to study English Waterworks systems.

B.—MEASURES TAKEN TO SPREAD KNOWLEDGE OF HYGIENE AND SANITATION.

31. Elementary lectures on sanitation were given to the Sanitary Inspectors by the Medical Officer of Health. The teaching of hygiene and sanitation in schools was carried on as before.

During an inspection of Bo School the Sanitary Officer was much gratified by the answers given orally, even by the younger boys. He also had the opportunity of looking through the papers sent in by the senior boys in a written examination in hygiene, and considered them most creditable.

C.—RECOMMENDATIONS FOR FUTURE WORK.

- (1) Introduction of more modern methods of refuse collection and disposal in Freetown.
- (2) Inauguration of scheme for training and re-organising Native Sanitary Staff.
- (3) Application of Public Health (Protectorate) Ordinance to new areas in the Protectorate and provision of additional Sanitary Inspectors for important districts and towns.
- (4) Provision for more rapid and more complete notification of outbreaks of infectious disease in the Protectorate.
- (5) Continuation of scheme for surface drainage of low-lying areas of Freetown.

W. H. PEACOCK, MAJOR,
Acting S.S.O.

16th July, 1920.

FREETOWN
METEOROLOGICAL TABLE.

1919.

	Month.												Annual.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	
Mean Temperature ...	76	77·3	72·2	72·9	79·5	76·4	73·7	74	73·3	78·3	81·3	91·6	76·4
Mean Humidity ...	73·1	67·5	72·8	77·3	82·7	82·8	88·5	83·3	87·3	81·2	76·5	76·1	79·14
Total Rainfall ...	·01	trace	5·79	4·45	11·98	14·31	26·53	22·78	20·81	6·50	4·51	·27	117·9

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

1. Name of Town: Freetown.

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

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:—		
1917	112*	—
1918	120*	—
1919	120*	—

Number of Huts:—

1910	} Included among Native Houses.
1911	
1912	

4. Mosquito Protection of Houses.

—	1917.	1918.	1919.
Number of European houses wholly mosquito-protected	} One mosquito-protected room at the Nursing Home and another at old Colonial Hospital.		
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.

—	1917.	1918.	1919.
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.	238	184	79
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 Cline Town Reservation and Barracks.

Action taken.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1917	—	—	—	—
1918	—	—	—	—
1919	—	—	—	—

6. Markets.

	Total Number.	Number paved and drained.	Number unpaved.
1917	10	8	2
1918	10	8	2
1919	10	8	2

7. Slaughter-houses.

	Total Number.	Total paved and drained.	Number unpaved.
1917	2	2	—
1918	2	2	—
1919	2	2	—

8. Latrines.

	For Males.		For Females.	
	Number.	Number of Seats.	Number.	Number of Seats.
Number of Public Latrines :—				
1917... ..	11	71	11	48
1918... ..	11	71	11	48
1919... ..	11	83	11	60
Number of New Public Latrines erected during year :—				
1917... ..	2	24	2	24
1918... ..	—	—	—	—
1919... ..	1	12	1	12
Number of Public Latrines repaired during the year :—				
1917... ..	6	—	6	—
1918... ..	4	—	4	—
1919... ..	6	—	6	—
Number of Public Latrines demolished during the year :—				
1917... ..	—	—	—	—
1918... ..	—	—	—	—
1919... ..	1	4	—	—

	1917.	1918.	1919.
Number of Private Latrines	241	250	268
Average number of pails of nightsoil removed daily	298	307	320
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	4,123	4,034	4,200
Number of cesspools cleansed	1,057	1,013	1,921
Number of new cesspools constructed or repaired during the year	96	498	422
Number of old cesspools abolished	88	89	339
Number of cesspools oiled regularly by Department	612	669	670

9. Removal of refuse.

	1917.	1918.	1919.
Number of dust-bins	73	72	66
Number of carts (if employed) at work daily, etc.	5	7	7
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.	5	7	7
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.		
	1917.	1918.	1919.	1917.	1918.	1919.	1917.	1918.	1919.
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.

1917.	1918.	1919.
12	12	12

12. Water Supply.

Nature of Water Supply.	1917.	1918.	1919.
Pipe-borne water :—	Upland	Surface Reservations.	
Source (river, lake or spring) :—			
Number of linear yards	—	—	—
Number of stand pipes along roads	—	193	201
Number of stand pipes in compounds and houses	—	257	287
Wells :—			
Public :—			
Number	1	1	1
Number with pumps protected against surface water and mosquito-protected	—	—	—
Private :—			
Number	731*	581*	183*
Number protected against surface water and mosquito-protected	61	50	50

* Approximately.

12. Water Supply—*continued*.

Nature of Water Supply.	1917.	1918	1919.
Tanks :—			
Public :—			
Number underground	—	1	1
Number mosquito-protected and served by pumps ...	—	1	1
Number above ground	—	4	4
Number mosquito-protected	—	—	—
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons	—	5	5
Private :—			
Number underground	—	—	—
Number mosquito-protected	—	—	—
Number above ground	23	17	16
Number mosquito-protected	8	8	8
Number of 400 gallons capacity or less	—	—	—
Number above 400 gallons	—	—	—
Nature of tanks :—			
Wood	—	—	—
Iron	11	16	9
Concrete	12	9	7
Barrels :—			
Number	—	868	945
Number mosquito-protected	—	131	125

13. Drainage.

Nature of Drainage.	Public.	Private.
Masonry Drains :		
Lineal yards of masonry drains :—		
1917	—	—
1918	8,147 yds.	—
1919	9,130 yds.	—
Lineal yards reconstructed during the year :—		
1917	—	—
1918	—	—
1919	—	—
Lineal yards repaired during the year :—		
1917	—	—
1918	—	—
1919	—	—
Lineal yards of new drains constructed during the year :—		
1917	—	—
1918	—	—
1919	983 yds. (concrete drains)	—
Earth drains or ditches :—		
Number of linear yards of ditches cleaned :—		
1917	—	—
1918	1,600 yds.	—
1919	21,000 yds.	—
Number of linear yards of ditches dug and graded :—		
1917	—	—
1918	55,565 yds.	—
1919	44,621 yds.	—
Average frequency of clearing ditches of grass :—		
1917	Twice annually.	—
1918		—
1919		—

14. Clearance of undergrowth, long grass and jungle.

—	1917.	1918.	1919.
Number of square yards of weeds, grass, and vegetation cut and removed	—	—	—
Average frequency of clearance of rank vegetation on same area	Twice annually.		

15. Excavations and low-lying land.

—	1917.	1918.	1919.
Number of pools and excavations	—	—	—
Number of excavations filled up	—	5,069	3,815
Amount of low-lying and marsh land raised and drained	—	—	—
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.

—	1917.	1918.	1919.
Number of drains oiled	46,225	110,181	239,642
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	5	10	10

17. Inspections and Prosecutions.

—	1917.	1918.	1919.
Number of inspectors employed	19	29	31
Number of houses inspected	87,897	98,294	157,258
Number of houses where larvæ were found	529	402	571
Number of notices served to remove conditions causing the breeding of larvæ	—	539	505
Number of persons fined for having mosquito larvæ on premises ...	388	332	524
Number of notices served to remove insanitary conditions on premises	5,825	7,809	7,993
Number of persons fined for not removing insanitary conditions after notice	38	186	343
Number of soda and aerated water factories inspected	—	—	—