Medical and sanitary report / Government of the Gold Coast.

GOVERNMENT OF THE GOLD COAST.

MEDICAL AND SANITARY REPORT

FOR THE YEAR

1913.

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1914.

CONTENTS.

ANNUAL REPORT FOR THE YEAR ENDING DECEMBER 31ST, 1913.

31*st July*, 1914.

SIR,

I have the honour to submit, for the information of His Excellency the Governor, and for transmission to the Right Honourable the Secretary of State, the Medical Report on the health and sanitary condition of this Colony for the year 1913, together with the returns, &c., appended thereto.

I have the honour to be
Sir,
Your obedient Servant,
F. G. HOPKINS,
Principal Medical Officer.

THE HONOURABLE
THE COLONIAL SECRETARY.

I.—ADMINISTRATIVE.

STAFF.

1 Principal Medical Officer.
1 Deputy Principal Medical Officer.
1 Senior Sanitary Officer.
2 Provincial Medical Officers.
3 Senior Medical Officers.
1 Sanitary Officer.
57 Medical Officers, 4 of whom are Medical Officers of Health and one in charge of the Accra Laboratory.

CHANGES IN STAFF.

The Principal Medical Officer, Dr. F. G. Hopkins, proceeded on leave on 29th November.

The Deputy Principal Medical Officer, Dr. E. H. Tweedy proceeded on leave of absence on May 2nd and returned on October 16th.

The Senior Sanitary Officer, Dr. T. E. Rice, left the Colony on promotion to Principal Medical Officer, Sierra Leone, on August 27th, being succeeded by Dr. David Alexander, Sanitary Officer of that Colony, who assumed duty on September 18th.

The Provincial Medical Officer of Ashanti, Dr. H. B. S. Montgomery, proceeded on leave on October 11th, being relieved by Dr. Harper.

Dr. J. A. Clough, Provincial Medical Officer, returned from leave of absence on March 11th, and proceeded to the Northern Territories.

Dr. C. B. Hunter, Senior Medical Officer, returned from leave of absence on August 27th.

Dr. E. W. Graham, Senior Medical Officer, proceeded on leave on December 13th, being relieved by Dr. R. O. White.

Dr. J. H. Collier was transferred to Southern Nigeria on promotion.

Dr. F. J. A. Beringer, Medical Officer of Health, was lent to Sierra Leone to act as Sanitary Officer there.

Dr. A. Connal left the Colony on his appointment as Director of the Medical Research Laboratory at Lagos.

Drs. A. C. Lorena and A. J. R. O'Brien were appointed from the Staff to be Medical Officers of Health.

Appointments.

The following new appointments to the West African Medical Staff serving in the Colony were made.

Dr. J. F. Corson
„ W. Telfer
„ N. A. Dyce Sharp
„ T. A. Dowse
„ E. M. Condy
„ G. G. P. Beckett
„ C. R. Patton
„ H. Mc C. Hänschell

Resignation.

Dr. C. W. S. Boggs resigned his appointment.

Invalidings.

Dr. A. Lundie and R. Mugliston were invalided to Europe after yellow fever.

Officers Seconded.

Drs. G. E. H. Le Fanu and H. Mc C. Hänschell were seconded from the Staff for part of the year as Yellow Fever Investigators.

Drs. Coghill and Hutton, seconded Officers from Southern Nigeria, also worked in the Colony as Yellow Fever Investigators.

Health of the European Staff.

On the whole the health of the European Staff was satisfactory, except that two Medical Officers contracted yellow fever and one septic poisoning, their services to the Government being lost for considerable periods.

European Nurses.

There was some alteration in the European Nursing Staff in consequence of representations which I made to His Excellency the Governor towards the end of the year; the original staff of seven nurses was increased to nine, and provision made for this augmentation in the Annual Estimates for 1914. Very good, conscientious work has been accomplished by them, and the condition of the Hospitals in which they work has much improved in every way.

Native Staff.

Generally speaking the Native Dispensing and Nursing Staff have worked well. It is still very difficult to obtain suitable candidates for Native Nurses. The demand during the cocoa season for even poorly educated youths as clerks and buyers is a serious handicap to us.

The work of nursing is distinctly unpopular, owing to the hours of work and discipline, and it is considered menial work and little or no interest is evinced in it in this Colony.

The full strength should have been as follows :—

1 Chief Dispenser.
2 1st Class Dispensers.
4 2nd Class Dispensers.
8 3rd Class Dispensers.
10 4th Class Dispensers.
16 Dispenser Pupils.
10 1st Class Native Nurses.
20 2nd Class Native Nurses.
22 3rd Class Native Nurses.

Clerical Staff.

The large amount of correspondence and returns to be dealt with necessitated an increase in the Clerical Staff. The offices of the Provincial Medical Officers, Ashanti and Northern Territories, were provided with a 4th Grade Clerk each. The office of Chief Clerk not being filled during the whole year caused me much inconvenience and retarded work in my office. The full strength should have been as follows :—

1 Chief Clerk.
1 1st Grade Clerk.
2 2nd Grade Clerks.
3 3rd Grade Clerks.
2 4th Grade Clerks.
3 5th Grade Clerks.
1 Temporary Clerk.
1 Messenger.

2 Storekeepers.

During the year I arranged for Ashanti, Northern Territories, and Seccondee to have their stores sent direct from home, by which much time and inconvenience was saved.

FINANCIAL.

Statement of Revenue for the year 1913.

Hospital fees	...	...	...	...	£1,232	19 3
Dispensary fees	...	...	...	...	226	3 10
Sale of drugs	...	...	...	...	128	3 10
Sale of medical comforts			...	...	8	0 0
		Total		...	£1,595	6 11

Statement of Expenditure for the year 1913.

	Estimates 1913.	Actual Expenditure 1913.
Medical Department—		
Personal Emoluments	£41,592 0 0	£39,553 1 7
Sanitary Branch—		
Personal Emoluments	9,949 0 0	8,333 7 9
Totals ...	£51,541 0 0	£47,886 9 4

II.—PUBLIC HEALTH.

(*a*) GENERAL REMARKS.

For the first time in the history of this Colony a Report on Vital Statistics for certain areas of it, where Ordinance No. 3 of 1912 is enforced as far as it is possible, has been submitted by the Registrar of Births and Deaths —Senior Sanitary Officer. In comparing his figures, which record all deaths registered from a disease, this report only shows the deaths of those treated by the Government Medical Officers.

To make myself clear I will take—

Malaria.—He records 58 deaths, whereas we record none.

Generally speaking, the health of the Colony, Ashanti and Northern Territories, as far as our returns go, shows an improvement.

It must be remembered that the majority of the Native cases that we get into Hospital come in only when they are obliged through circumstances to do so. They do not object to our methods of treatment, except as regards hospitals, where their communication with their friends is restricted and also their fancies as regards food.

(i.) General Diseases.

These do not call for much comment and were of the usual nature.

(ii.) Communicable Diseases.

Mosquito- or Insect-borne.

Malaria.—Malaria still keeps its place as the most frequent insect-borne disease.

	1912.	1913.
Cases	2,268 ...	2,565

By the reports, the sub-tertian variety preponderated, but I am unable to produce reliable records to that effect, but sincerely hope in future reports to supply more definite information.

At the same time I wish to bring home the fact that the numerous duties Medical Officers have to perform preclude the careful use of the microscope in their clinical work, and I trust this fact will be remembered when reading this Report. The diagnosis of malaria was verified by microscopic examination on 170 Europeans and 460 Natives (adults and children) and 1 Asiatic.

We record no death.

Blackwater Fever.—Twenty-one cases of this disease came under our notice with 7 deaths. There was one fatal case in a native, a rather unusual circumstance.

It is very difficult to get accurate histories in these cases, as to number of attacks of malaria, and how far, and in what manner, malarial prophylaxis has been carried out. I very much fear few Europeans really carry out the latter in such a way that it can be called prophylaxis at all. The after-dinner heavy nap I fear counteracts, in most cases, their half-hearted prophylactic efforts.

	1912.	1913.
Cases	13 ...	... 21
Deaths	6 ...	... 7

Of the cases in 1913, 4 were Officials, 13 Non-Officials, 3 Asiatics, 1 Native.

Yellow Fever.—Twenty cases of this disease were reported during the year. Three, however, did not come under our treatment.

One of these cases (fatal) occurred on a ship in the territorial waters, and the diagnosis was arrived at by post-mortem examination. This was at Saltpond. The other two cases (fatal), one European and one Native (child), died at a place called Abokobi, about 17 miles from Accra.

The increase from last year of the recorded cases must not be ascribed to the increased prevalence of the disease, but rather to more accurate clinical diagnosis, and the fact that it is looked upon as an endemic disease. The chief interest, however, lies in the fact that one case (European) occurred at Kintampo, Northern Province of Ashanti, and four cases (3 Europeans and 1 Native) occurred in the Northern Territories.

As far as I have been able to ascertain, there is no previous record of cases of yellow fever in these dependencies.

	Cases.	Deaths.	Mortality.
Europeans ...	11	6	54·5 per cent.
Natives ...	9	2	22·2 ,, ,,

It is satisfactory to report that there was no epidemic, and this was entirely due to the promptitude and energy of the Senior Sanitary Officer and his staff in dealing with each outbreak.

Dengue.—One case occurred in a European lady.

Trypanosomiasis.—Sixty-one cases were under treatment and of these fifteen died. There were, however, in addition to these cases, 120 known cases scattered through the Western and Northern Province of Ashanti. The question of sleeping sickness in Ashanti has already been fully reported on, so I do not propose to comment further on it here.

Plague.—No cases.

Relapsing Fever.—No cases.

Pappataci Fever.—No cases.

Infections and Epidemic.

Small-Pox.—There was an outbreak of small-pox at Addah during the year, when 108 cases occurred with 18 deaths. There is, however, a decline in the total number of cases recorded, which is most satisfactory. The death-rate is also slightly lower. Shortly we hope to have regular vaccination carried out; our present system being only to vaccinate when small outbreaks occur. Ashanti alone provides systematic vaccination.

	1912.	1913.
Cases	221	163
Deaths	33	23

Chicken Pox.—This highly infectious disease causes little inconvenience to the negro.

	1912.	1913.
Cases	314*	96

Enteric Fever.—Seven cases with one death.

* Epidemic in Seccondee Convict Prison.

Dysentery.—There is a very large increase in the number of cases of this disease, and I am unable to assign a reason, except that more cases of it sought our methods of treatment.

The mortality is, however, lower. To differentiate between the varieties of the disease in this Report has not, I regret to say, been possible, but in my next one, I hope to be able to do so as far as I can, but too much must not be expected.

	1912.	1913.
Cases	549 ...	853
Deaths	29 ...	36

Yaws.—The number of cases of this disease shows a slight increase. The more modern treatment has not yet been carried out to any extent in this Colony.

	1912.	1913.
Cases	535 ...	634

Gonorrhœa.—This is a disease which I regret to say the Native does not worry much about until it gets inconvenient.

	1912.	1913.
Cases	698 ...	703

Syphilis.—There is a marked decline in the number of cases, but what its significance may be it is difficult to say.

I am not inclined to think it is on the decrease. Two deaths were recorded.

	1912.	1913.
Primary	120 ...	158
Secondary ...	426 ...	256
Totals ...	546 ...	414

Tuberculosis.—I regret to say there was an increase in the number of cases and also in the number of deaths.

	1912.	1913.
Cases	135 ...	141
Deaths	13 ...	15

Measles.—Only one case came under our notice. It is a mild disease in the Native, so we see very little of it.

	1912.	1913.
Cases	45 ...	1

Whooping Cough.—There is a considerable increase in the cases but no deaths, nor were there any in the two previous years.

	1912.	1913.
Cases	3 ...	95

Helminthic Diseases.

Ankylostomiasis.—Twenty-two cases applied to this Department for treatment, and the figures are of little significance as an indication of the frequency of the disease in this Colony. Three deaths are ascribed to it.

	1912.	1913.
Cases	4 ...	22

Tænia.—There is a considerable increase in the number of cases.

	1912.	1913.
Cases	456 ...	737

Trematodes.—Thirteen cases were treated.

Bilharzia.—Seventeen cases were treated.

	1912.	1913.
Cases	13 ...	17

Guinea-worm.—It is needless for me to report that the disease was again common, but can we hope for anything better until the Native realises how he gets his infection? It is difficult to get even the educated Native to boil his drinking water.

	1912.	1913.
Cases	1,293 ...	1,524

Ascarides.—Number of cases treated increased.

	1912.	1913.
Cases	117 ...	198

(*b*) EUROPEAN OFFICIALS.

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

	1912.	1913.
Total number of Officials resident	586	740
Average number resident	510	573
Total number on Sick List	483	531
Total number of days on Sick List	2,886	3,902
Average daily number on Sick List	7	10
Percentage of Sick to average number of residents	94·0	92·0
Average number of days on Sick List for each patient ...	5	6
Average sick time to each resident	5·65	6·80
Total number invalided	13	30
Percentage of Invalidings to total resident	2·21	4·05
Total deaths	8	6
Percentage of Deaths to total resident	1·36	0·81
Percentage of Deaths to average number resident	1·56	1·04

The causes of invaliding of European officials were :—Malaria, dysentery (four each), anæmia, (three), yellow fever, alcoholism (two each), blackwater fever, chronic pyrexia, hepatitis, enteritis, sun-trauma, peripheral neuritis, phthisis, neurasthenia, melancholia, delusions, injury, gastritis, indigestion, concussion, burns (one each).

The causes of deaths among European officials were :—Yellow fever, blackwater fever (two each), hyperpyrexia, meningitis (one each).

The principal diseases from which officials suffered were :—Malaria (169), gastritis (21), diarrhœa (16), dysentery (12), sun-trauma (10), yellow fever, ptomaine poisoning (five each), blackwater fever, anæmia, neurasthenia, (four each).

Remarks.

Glancing casually at the above Tables one would at once think we had passed through a worse year than the previous one, but the result to be looked for always is a lower death-rate, and that we can show for 1913.

The total number of days spent on the sick list—Item 4 of the table—requires some explanation.

Twenty-three officials were 832 days on the sick list, giving an average of over 36 days each. Of these the shortest period spent individually was 21 and the longest 70, the former from malaria and the latter from yellow fever.

Malaria and dysentery were the principal causes of invaliding. In reviewing these figures one can safely say only a little over 50 per cent. of the causes were due to the climate.

All the deaths except one must be ascribed to climatic causes. Malaria, though still the principal disease from which officials suffer, shows a pleasing diminution this year of over 60 per cent. in numbers.

Money is being spent generously in this Colony on sanitation and the improvement of the conditions of living, and if the layman will give his generous support in carrying out personal prophylaxis, sick, invaliding and death-rates will decline *pari passu*. To obtain good health in West Africa is to a large extent a personal effort, and it cannot be achieved otherwise.

Blackwater fever shows a decline in numbers, whereas yellow fever shows an increase.

Amœbic dysentery accounts for 12 cases, all of which were confirmed by microscopic examination.

Diarrhœa and gastritis are common complaints, and are due principally to errors of diet. The food question for Europeans in this Colony is a serious one.

(*c*) NATIVE OFFICIALS.

Table showing Sick, Invaliding and Death-Rates of Native Officials.

	1912.	1913.
Total number of Officials resident	1,164	1,299
Average number resident	1,056	1,199
Total number on Sick List	502	552
Total number of days on Sick List	3,795	4,621
Average daily number on Sick List	10	12
Percentage of Sick to average number resident	47·0	46·0
Average number of days on Sick List for each Patient	7	8
Average sick time to each resident	3·59	3·85
Total number Invalided	10	8
Total Deaths	4	9
Percentage of Deaths to average number resident	0·37	0·75

The following were the causes of invaliding, in the case of Native officials :— Nephritis, epilepsy, rheumatism, hæmorrhoids, septic conjunctivitis, phthisis, and debility (one each).

The following were the causes of deaths among Native officials :—Morbus cordis (two), chronic endocarditis, blackwater fever, pneumonia, dysentery, hæmorrhoids and poisoning by native medicine, rheumatism, and Bright's disease (one each).

The health of the Native officials for the year 1913 does not show any improvement, the cause I am unable to give.

It may however be due to the fact that the records have been more accurately kept for 1913. The causes of invaliding and death call for no special comment.

(*d*) GENERAL EUROPEAN POPULATION.

(i.)	Government Officials ...	740
(ii.)	Employés of Trading Firms ...	796
(iii.)	Employés of Mining Companies	928
(iv.)	Missionaries	126
		2,590

TABLE SHOWING THE SICK, INVALIDING AND DEATH-RATES OF NON-OFFICIALS.

How employed.	Number.	Deaths.	Invalidings.	Death-rate per cent.	Invaliding rate per cent.
1912.					
Merchants	668	7	24	1·04	3·59
Mining Companies ...	953	11	35	1·15	3·67
Missionaries	160	2	3	1·25	1·87
Total	1,781	20	62	1·12	3·48
1913.					
Merchants	796	7	43	0·87	5·74
Mining Companies ...	928	5	37	0·53	3·98
Missionaries	126	4	2	3·17	1·62
Total	1,850	16	82	0·86	4·55

European non-officials were invalided from the following causes :— Malaria (19), blackwater fever (13), dysentery (7), anæmia (5), neurasthenia (3), debility, ophthalmia, appendicitis, gastritis, pneumokoniosis, silicosis, syphilis, enteritis (2 each), ulcer, meningitis, gluteal abscess, endocarditis, ulceration of rectum, menorrhagia, albuminuria, enteric fever, influenza, injury, prostatitis, renal calculus, heart disease, hernia, liver abscess, yellow fever, general paralysis, gout, hepatitis (one each) : total 82.

Deaths from the following causes occurred among European non-officials :—Yellow fever, meningitis, accident, blackwater fever (three each), dysentery, siriasis, delirium tremens, homicide (one each) : total, 16.

The above figures were obtained through the Medical Officers of various districts and from the Managers of the various Trading and Mining Companies and Missionary Societies, and we must presume they are accurate for the purpose of reviewing them.

On the whole the European non-official population has increased, the increase being amongst the Trading Companies only.

The death-rate for Tradirg and Mining Companies has declined, while that for Missionaries has increased, but the reverse is the case with the invaliding rate, it having increased for Trading and Mining Companies, but declined for Missionaries. I am afraid I can give no explanation of this latter, except that the same applies to the official figures. It will, however, be observed with satisfaction that the general death-rate is reduced from 1·96 to 1·12 in the preceding years to 0·86 for 1914, and that is the fact we always hope for from year to year, basing our hopes on the large strides which Sanitation is making in this Colony.

EUROPEAN MORTALITY AND INVALIDING RATE FOR 1913.

Total Strength.	Deaths.	Invalidings.	Death-rate per 1,000.	Invaliding rate per 1,000.
Official ... 740	6	30	8·10	40·54
Non Official ... 1,850	16	82	8·64	45·53
Totals ... 2,590	22	112	8·49	44·07

(*e*) GENERAL NATIVE POPULATION.

Such statistics are not available, and will not be until registration becomes general.

SENIOR SANITARY OFFICER'S OFFICE,
ACCRA.
18*th June*, 1914.

SIR,

I have the honour to forward you herewith the Annua Report on Sanitation for the year ending 31st December, 1913, for the information of His Excellency the Acting Governor.

2. In compiling this report I have adhered to the Form and Headings as given in the Model Report according to the instructions issued by the Secretary of State.

3. I regret the delay in submitting this report. This delay has been mainly due to the fact that the present Staff of the Senior Sanitary Officer's Office is just barely sufficient to cope with the ordinary routine work of the Office, and as this has to be carried on at the same time as the report is being prepared, delay occurs in the drawing up of the necessary Statistical Tables. In addition, this year the Office Staff have been occupied in the preparation of Statistical Tables for the Report in connection with Births and Deaths in the Registration Districts of the Colony which has already been submitted to you.

4. Attached I forward the following Tables, etc.:—

TABLE IV.—Summary of Sanitary Routine Work in various stations in the Colony, Ashanti and the Northern Territories.

TABLE showing Estimates in connection with Sanitation 1913.
" " Work done in connection with Malaria Investigation.
" " General Preventive Measures taken in connection with Mosquito-Borne Disease.
" " Annual Return of Anti-Mosquito Work.

TABLE showing Results of Examination of Blood-Smears taken at the Slaughter Houses of the Colony and Protectorate.
" " Results of Examination of Fæces of Hospital Patients and Prisoners.
" " Results of Spleen Examination.
" " Average Prison Area, Cell Capacity and Ventilation Area per Prisoner.
" " Prosecutions for Sanitary Offences and Fines imposed.

As Appendices:—

Report by Medical Officer of Health, Coomassie, on inspection of Chechewere in connection with Yellow Fever, Kintampo.
List of Sanitary Improvements carried out in 1913.
Entomological Returns from Medical Officers.
Report on the Teaching of Hygiene in the Schools of the Gold Coast Colony, by D. J. Oman, Esquire, Director of Education.
Distribution of Scavengers and Labourers.
Return of Malarial Fever, Blackwater Fever, Yellow Fever, Filariasis and Dengue during the year from 1st January to 31st December, 1913.

I have the honour to be,
Sir,
Your obedient Servant,
D. ALEXANDER,
Senior Sanitary Officer.

THE HONOURABLE
THE PRINCIPAL MEDICAL OFFICER
VICTORIABORG, ACCRA.

III.—REPORT ON SANITATION, 1913.

A.—GENERAL REVIEW OF WORK DONE, LAWS PASSED, AND PROGRESS MADE.

(i.)—ADMINISTRATIVE.

(1) Staff.

The Sanitary Staff during the year was constituted as follows :—

(*a*) *European*—

The Senior Sanitary Officer.
The Junior Sanitary Officer.
Four Medical Officers of Health.
Five European Sanitary Inspectors.

The Senior Sanitary Officer is also Registrar of Births and Deaths under Ordinance No. 3 of 1912.

The following changes took place during the year :—

Dr. T. E. Rice, Senior Sanitary Officer, returned to the Colony from leave on 12th March, and left the Colony on the 22nd August, on appointment as Principal Medical Officer to the Colony of Sierra Leone.

Dr. D. Alexander, Junior Sanitary Officer, Sierra Leone, was appointed Senior Sanitary Officer of this Colony on the 8th September, and arrived in the Colony on the 18th September.

Dr. G. C. Walker, Junior Sanitary Officer, proceeded on leave on the 16th August.

Dr. F. J. A. Beringer, Medical Officer of Health, was seconded as Junior Sanitary Officer, Sierra Leone, and left for that Colony on the 26th October.

Dr. A. C. Lorena was appointed Medical Officer of Health on the 22nd January, in place of Dr. Purkis, deceased.

Dr. A. J. R. O'Brien was appointed Medical Officer of Health on the 28th March.

Dr. H. O'Hara May, Medical Officer of Health, acted as Senior Sanitary Officer from 22nd August to the 17th September, and proceeded on leave on the 14th October.

Dr. J. B. Alexander was appointed to act as Medical Officer of Health, Accra, as from 10th September.

Dr. T. H. Dugon, Medical Officer, was appointed to act as Medical Officer of Health, Cape Coast, in addition to his Medical duties, in place of Dr. Beringer seconded to Sierra Leone.

Mr. S. Barter was appointed European Sanitary Inspector on the 27th August, and Messrs. H. Williams and H. Yeoman on the 17th September.

The appointment of Mr. Carter, European Sanitary Inspector, was terminated at the expiration of his Agreement, and he left the Colony on the 12th April.

Mr. R. Wilson, European Sanitary Inspector, was invalided from Seccondee, and lost overboard from the S.S. "Nigeria" on the 24th May.

Thirty days were lost during the year owing to the illness of the European Staff.

(*b*) *Native Sanitary Staff*—

1 Sanitary Superintendent.
2 First Grade Sanitary Inspectors (West Indians).
4 Second Grade Sanitary Inspectors.
2 Third Grade Sanitary Inspectors.
7 Fourth Grade Sanitary Inspectors.
25 Fifth Grade Sanitary Inspectors.
2 Female Sanitary Inspectors.
1 Disinfector Mechanic.
6 Contagious Hospital Attendants—of these, two were appointed for Seccondee, one Cape Coast and one temporary at Accra.

At the end of the year there were seven vacancies for 5th Grade Sanitary Inspectors; it is to be hoped that, with the increased scale of pay to be offered in 1914, it will be possible to bring the staff up to full strength with a better class of man.

During the year, eight new appointments were made, three resignations accepted, one invalided and six dismissed.

At the end of the year the Sanitary Inspectors were stationed as follows:—

A 1st Grade Sanitary Inspector (West Indian) in the Cocoa District behind Winnebah, and one at Accra; ten Sanitary Inspectors at Accra (this includes those undergoing training), three at Seccondee, in the Akwapim District and the Northern Territories; two at Coomassie; and one each at Tarquah, Elmina, Winnebah, Saltpond, Appam, Quittah, Weshiang and Oblogo, Kpong, and Akuse. One Female Sanitary Inspector was stationed at Accra, the other at Cape Coast.

166 days service were lost during the year on account of ill-health of the Native Staff.

(*c*) *Clerical Staff*—

1 First Grade Clerk.
1 Third Grade Clerk.
3 Fifth Grade Clerks.

(2) Estimates.

The Sanitation Estimates for the year amounted to £43,822, an increase of £4,867 as compared with the previous year. The chief items of expenditure will be seen on reference to Table No. VIII.

In addition, £41,350 was earmarked for Sanitary Improvements under Public Works Extraordinary, as against £52,399 in 1912, and £26,035 was expended. The more important Sanitary Improvements effected during the year are shown in Appendix No. 2.

(3) Ordinances, Orders, etc., 1913.

No Ordinances in connection with Sanitation were passed in 1913, but the following orders were made:—

Under the Towns Ordinance, No. 13 of 1892—

1. Building erected for the purpose, declared a Slaughter House:—At Seccondee, Gazette No. 5 of 1913.
At Tarquah, Gazette No. 100 of 1913.

2. New Mangoase placed under the Towns Ordinance, Gazette No. 22 of 1913.

3. Elmina Cemetery declared a Public Cemetery, Gazette No. 45 of 1913.

(4) Tours of Inspection.

Shortage of staff, and the necessity for one or other Sanitary Officer to be in Accra, have so far rendered continuous touring difficult or impossible. The Senior Sanitary Officer visited and inspected Quittah during the outbreak of yellow fever there, and made recommendations for the sanitary improvement of the town. Later in the year Seccondee and the stations on the Secondee—Coomassie Line as far as Obuasi were inspected, as well as the various mining villages, and certain recommendations were put forward as a result. After careful inspection of the surrounding country, recommendations were made regarding the Segregation Area at Seccondee. The question of the railway station site at Komfrodua necessitated my paying a visit to that place in November, and an opportunity was taken to inspect the neighbouring native towns. The development of the new township of Mangoase, the present terminus of the Accra-Akwapim Railway, has proceeded steadily. Thirteen plots have been applied for and allotted in the European Segregation Area, and nearly all the plots in the native town have been taken up. At the time of my visit the cocoa season was in full swing, and it was interesting to see the continuous stream of carriers of both sexes with cocoa loads, the numbers of which have to be seen to be believed. While this gave evidence of the present prosperity of the district as far as its produce was concerned, I was forcibly struck with the number of young adults, principally girls, who were carrying loads of cocoa that were evidently quite beyond their physical strength. This was no doubt due to the scarcity of labour in the district. Luckily the cocoa season is not of long duration, otherwise there is little doubt that such continued physical strain in early adult life would certainly have a very harmful effect on the future of the race. The Junior Sanitary Officer at Tarquah inspected the stations on the railway line and also Seccondee, and the villages of Chama, Ajua and Dixcove. In addition the Medical Officers in the various districts whenever possible toured their districts for purposes of vaccination, and made recommendations as to the sanitary improvement of towns. I would beg to make special mention of the very useful work done by Dr. Tighe as Travelling Medical Officer in the Akwapim District.

(5) Sanitary Progress in the Chief Towns.

Accra.

Steady progress has to be reported in the general sanitary condition of the town. With the introduction of a pipe-borne water supply, the surface drainage scheme for Accra and Christiansborg will have to be pushed forward as rapidly as possible, or nuisances resulting in mosquito breeding places will certainly obtain, not only, as at present, during the rainy season, but generally during the year.

Cape Coast.

During the year Dr. Beringer, Medical Officer of Health, Cape Coast, drew up a very careful and detailed scheme for the sanitary improvement

of the town, principally with a view to removing the congestion that exists in many parts of the town, and for the provision of new streets where these are required. The provision of a pipe-borne water supply is very much needed in Cape Coast; there is no other way in which the water requirements of the town can be met. The Segregation Area is excellently situated, and should undoubtedly prove of great advantage to the health of those residing in it.

Seccondee.

During the year there were five deaths amongst Europeans in Seccondee, but all of these were non-residents. The town is in good order, and excellent progress has been made in bush clearing, stumping and the planting of dhub grass. The Medical Officer of Health reports that not a single tsetse fly has been seen in Seccondee during the last six months of the year, owing to the extensive bush clearing. A new village has been laid out for the fishing community at Ekuase to the West of the town. Concrete buildings are in course of erection for the housing of the imported Kroo labour, thus effecting considerable improvement on existing conditions, as well as facilitating inspection and control. Good permanent quarters are being erected for the housing of the Native members of the Government Staff. A large area has been cleared at Kudjokroom for the purpose of building a village for railway labourers in connection with the new railway site, and site plans for the laying out of the village are being prepared.

Towards the close of the year remarkable activity was shown in the erection of new buildings, principally huts, outside the town but within the Municipal Area. These were in the majority of cases being built without a permit, owing to the fact that without the service of a Building Inspector it is impossible to prevent such buildings, or even check additions and alterations to buildings that are being erected on a permit.

It is worthy of note that of all the specimens of larvæ sent by the Medical Officer of Health to the Laboratory for identification and breeding out, *Anopheles* larvæ only represented 5 per cent., and *A. Costalis* was the only type bred out, while *Stegomyia* larvæ represented 65 per cent. These figures were worked out by members of the Yellow Fever Commission, Drs. Coghill and Hänschell.

Steady progress has been made in the drainage of the town; the question as to the best method of dealing with the outfalls of Main Drains Nos. 1 & 2 is still under consideration.

Coomassie.

Coomassie has two large swamps formed by the East and West Subin streams. The Medical Officer of Health reports that Anopheline mosquitoes are numerous, especially from April to October. By means of open ditch drains the swamp to the West of the town and the East of the new Segregation Area was taken in hand during 1913 and great improvement effected, part of the swamp has been reclaimed and made into a vegetable garden. In addition, a start has been made in laying a concrete drain through the West Subin swamp.

A site has been chosen for a Segregation Area, and roads and plots have been all demarcated; it is hoped that all officials will be housed there by the end of 1915. Large areas of bush have been cleared both on this area and round the town generally, and dhub grass planted.

A new Slaughter House was erected during the year, but, even so, the accommodation is not yet sufficient, on account of the large amount of meat that is slaughtered for human consumption in Coomassie. There were 4,681 cattle, 682 sheep, 3,637 goats and 229 pigs slaughtered during the year, and £815. 19s. 0d. taken in fees. All animals are inspected before slaughter, and any obviously diseased or emaciated are not accepted.

There are few public dustbins in Coomassie, and a great saving in labour is the result, as the inhabitants take their household refuse to the incinerator sites.

The cleanliness of the town has not suffered, and it is probably one of the cleanest towns in the Gold Coast.

Winnebah.

This town has made rapid strides during the last two years, on account of the development of the cocoa trade in the interior of this district, for which Winnebah is the shipping centre. There has been considerable building activity in the four towns that are centres of trade in this district, and an attempt is being made to ensure that these towns develop on sanitary lines.

At Winnebah also a new Segregation Area was decided on during the year. The position is not that originally recommended by the Senior Sanitary Officer.

Addah.

The following is a quotation from a Report by Dr. Duff, Medical Officer at Addah :—

> "*Addah.*—The streets, compounds, etc., are clean, but the situation of the town beside an extensive swamp renders malaria very prevalent amongst natives. The European officials are well segregated and this no doubt accounts for the satisfactory record Addah has had for them for many years past. The Non-officials are not segregated, and in consequence suffer more. However, the adoption of mosquito-proofing by them, and the more regular use of quinine, are undoubtedly improving their health record. But here, as elsewhere, segregation is not practised by them."

Saltpond.

The most important feature in the sanitation of Saltpond is the lagoon: during the rains it fills up, and as its exit to the sea is blocked it floods the low-lying land around, with consequent pools and mosquito-breeding areas. In the dry season the lower half forms a pond with more or less defined banks, and is well stocked with larvæ-eating fish. The upper half forms a series of shallow pools, in which *Culex, Stegomyia,* and *Anopheles* have been found by Medical Officers stationed at Saltpond and by the Senior Sanitary Officer during his visit there in 1912. The lagoon is also important, as the natural fall of the land being in this direction it receives the general drainage of the town, and most of the concrete drains have also been made to empty into this most convenient receptacle.

(6) Railways.

Meetings of the Railway Sanitary Committees have been held at centres on the Seccondee—Coomassie Line on different occasions during the year. A special report was called for from the Medical Officers on the line as to the sanitary condition and requirements of the stations and native villages in proximity to stations. This will be followed up by a special visit of inspection by the Senior Sanitary Officer, and definite recommendations will be made for the sanitary improvement of the railway station buildings and their surroundings, and the towns in proximity to the stations.

(7) Shipping.

No records have been kept of the number of ships that have been boarded and inspected during the year. This was done as a routine duty during the outbreak of yellow fever in Southern Nigeria. No difficulty or friction resulted. All native passengers were examined, and their names and destination taken. Surf boats and canoes are regularly inspected, with a view to their cleanliness and freedom from mosquito larvæ. Special attention was paid to this during the three periods in which the Gold Coast was quarantined on account of yellow fever.

(8) Town Councils and Sanitary Committees.

Town Councils.—No friction has resulted from the dual control of Sanitation in the large towns of Accra, Cape Coast and Seccondee, and a great deal of very good work has been done.

Sanitary Committees.—There are seventeen of these committees, whose duties are the supervision of the sanitation, and the making suggestions for the sanitary improvement, of their respective stations. Great interest is shown by the members of the various committees in the sanitation of their stations. It is to be hoped that the good that will certainly result therefrom will serve as examples to visitors from other towns that have not the benefit of these committees.

(ii.)—PREVENTIVE MEASURES.

MOSQUITO- AND INSECT-BORNE DISEASE

(9) Malaria and Blackwater Fever.

In the Colony 1,610 cases of malarial fever were reported, with no death. In Ashanti 682 cases were reported with no death. In the Northern Territories 273 cases with no death. This gives a total 2,565 cases with no death.

Table IX., "Malaria Investigation," gives the result of reports sent in as to microscopical examination of blood films at various stations, with the variety of parasites found. At Accra the films were examined at the Laboratory, and at Seccondee, from the month of May, by the members of the Yellow Fever Commission. A large number of mixed infections were reported from Seccondee, and it is interesting to note the higher percentage of cases in which parasites were found as compared with Accra. In Seccondee 94 per cent. of films examined from Europeans and 70 per cent. of films examined from Natives showed parasites, whereas in Accra the percentages were only 18 per cent. and 12 per cent. respectively.

During June, examination was made of blood films from 112 prisoners in the Central Prison, Seccondee, all of whom were in apparent health, with two exceptions, one who had " fever " the other heart disease. Of this number 27, or 24 per cent., were found to be infected with malaria parasites.

Blackwater Fever.—During the year there were 21 cases with seven deaths (this includes both Europeans and Natives), as compared with a total of 14 cases with six deaths in 1911, and a total of 13 cases with six deaths in 1912. No case of blackwater fever was recorded from the Northern Territories.

The prophylactic measures taken generally against mosquito-borne disease are summarzied in Table X. In addition, segregation areas have been approved of in the following places :—Accra, Seccondee, Saltpond, Cape Coast, Winnebah, Dunkwa, Axim, Mangoase, Coomassie. Segregation is undoubtedly the most effective measure by which it is possible to guard against infection by mosquito-borne disease. It is true that officials and others may get infected while travelling on duty in the bush, but this possibility will get less when more attention is paid to the position and surroundings of rest camps, and the distance of these from native villages. Quinine has so far only been issued free to Government Officials, but provision has been made in the Estimates of 1914 for free distribution on a larger scale.

(10) Trypanosomiasis.

(*a*) *Human.*—According to the official returns 61 cases have been diagnosed during the year with 15 deaths.

In 1911, 83 cases were reported with nine deaths, and in 1912, 104 cases with three deaths.

I have had an opportunity of seeing Dr. Wade's Report on his tour in the Western Province of Ashanti. As a result of his investigations he draws attention to the fact that the disease follows trade routes, and that the more remote the village from the main road, the freer from infection. This is of importance from a preventive point of view, and should receive attention. The percentage of cases found infected out of the large number examined (110 in 39,742) would not appear to be by any means large, but is sufficient to serve as a warning of its presence, in order that effective measures might be taken to prevent its spread. Difficult as it is bound to be in a tropical forest belt like that of Ashanti, it is necessary that clearings be maintained round villages, as also round water supplies, ferries and fords, and these should be insisted on. As regards the infected who serve as carriers of the disease, the only satisfactory method of prevention is by the formation of a Sleeping Sickness or Segregation Camp in some fly-free area, naturally free or artificially made so. The danger of the spread of this disease (owing to the easier means of inter-communication that now exits) to districts where it has not previously been endemic and where it might become epidemic must not be forgotten.

(*b*) *Cattle.*—Table XII. gives the result of examination of smears taken at the slaughter-houses in the Colony and Ashanti. Out of 4,186 smears examined, 523 were found to contain Trypanosomes. The danger of infected cattle being present in Accra or its vicinity, where so many mules and horses are used for commercial and business purposes as well as for pleasure, is evident. Fortunately, as far as I have observed, tsetse flies are rarely seen in Accra, and the same can be said of other biting flies. Rules as to the roads along which cattle may be brought into the town for purposes of slaughter, and the distance that they must be kept from the town during the day, should be introduced and enforced. It is very difficult to obtain correct figures

without registration, but as far as the Medical Officer of Health, Accra, could learn, there were 110 horses in Accra and Christiansborg and 24 in Victoriaborg during last year, while the number of mules was 72. Of these he was only able to trace the cause of death to Trypanosomiasis in three cases, although it is possible that there were more. Out of these three cases two had been up at Nsawam, where, it is more than likely, they got their infection.

(11) Yellow Fever.

During the year the following cases, all diagnosed as yellow fever, were reported :—

Name.	Date.	Place.	Recovery.
Y.W.	6/1/13	Accra	Recovery.
A.	18/1/13	Saltpond	Death.
H.D.	4/3/13	Christiansborg	Recovery.
L.C.	5/3/13	„	„
A.A.	6/3/13	Accra	„
K.K.	10/3/13	„	„
Z.	13/3/13	„	„
B.	18/3/13	„	„
M.S.	27/3/13	„	„
W.	10/5/13	Abokobi	Death.
N.	17/5/13	Quittah	Recovery.
A.	3/6/13	Abokobi	„
S.A.	14/6/13	Accra	Death.
S.N.	14/6/13	„	Recovery.
F.	29/6/13	Quittah	Death.
L.	6/9/13	Bole (N.Ts.)	Recovery.
M.	1/10/13	„	„
R.B.	16/10/13	Kintampo (Ash.)...	Death.
S.	15/11/13	Tumu (N.Ts.)	„
H.	8/12/13	Bole (N.Ts.)	„

A total for the year of twenty cases, ten of which were Europeans. There were seven deaths, five in Europeans giving a case mortality of 50 per cent., and two in Natives. As it was suggested that case R.B. had been infected at Chechewere, the Medical Officer of Health, Coomassie, Dr. A. J. R. O'Brien, was instructed to proceed there and investigate, and I attach a copy of his Report, Appendix No. 1.

The fact that yellow fever has appeared so far away from the Coast proves the necessity for strict anti-larval measures wherever the *Stegomyia* mosquito is found, and for segregation wherever possible, and the provision of rest camps well segregated from native towns.

Special measures were taken on the occasion of each outbreak to prevent spread of the disease, and these would appear to have had the desired result as no serious epidemic occurred. The general measures taken in addition to segregation in order to prevent infection by mosquito-borne disease are summarized in Table X.

The usual precautions were taken to prevent the introduction of the disease from outside the Colony, by quarantine and inspection of passengers.

(12) Filariasis.

Returns from Medical Officers show that 183 cases were treated in Government Hospitals during the year. The Medical Officer, Quittah, remarks—" Filariasis is common, but treatment seldom sought."

EPIDEMIC DISEASES.

(13) General.

With the exception of an outbreak of small-pox in the Addah district, in which 108 cases were treated, I am glad to be able to report that the Gold Coast and its Dependencies have been free from any serious outbreak of epidemic disease during the year.

(14) Plague.

No cases of plague have been diagnosed during the year. An outbreak of a disease said to resemble plague was reported at Tunga near Yeji in the Northern Territories during August; eleven cases with eight deaths occurred within ten days out of a total population of thirty. The Medical Officer visited the town and took smears from the three convalescents; these proved negative when examined in Accra. No rats were caught. Energetic measures were taken and no further cases occurred.

Preventive measures include encouragement in the trapping of rats and better attention to buildings. The education of the people as to the danger of rats forms part of the routine duty of the Sanitary Inspectors in house to house inspection. In spite of the best intentions on the part of the Sanitary Authorities, buildings have not had the attention paid to them that they should have had, owing to the lack of Building Inspectors. With the present staff it is not possible to exercise much control over buildings in course of construction.

(15) Small-Pox and Vaccination.

163 cases of small-pox have been reported during the year with 23 deaths, as already indicated; Addah accounted for 108 of these with 18 deaths.

16,436 successful vaccinations have been performed by Medical Officers, but there is no record as to the total number performed.

At Coomassie, where there is a Vaccinator, there were 3,384 vaccinations performed, out of which 2,814 were successful. House to house visitations were made for the purpose of vaccination, and schools were also attended. Little or no objection to being vaccinated was experienced.

No systematic vaccinations have been done in the large towns on the seaboard. In these towns there must be a large number of "unprotected" persons. It would seem to be good policy to arrange for regular vaccinations in these towns, in order to provide against a possible outbreak of the disease. In the Sanitation Report for 1912 it was recommended that a special Medical Officer be appointed to each Province, whose duties would involve constant travelling for purposes of vaccination and the training of Native Vaccinators. So far nothing has been done in the matter.

(16) Cholera.

No case has been reported which would give rise to any suspicion of this disease being present.

(17) Dysentery.

The official returns give 853 cases of dysentery as having been treated during the year, with 36 deaths.

The number of deaths registered under the Births and Deaths Ordinance in Accra from this disease was 143, or 17 per cent. of the total deaths registered. Enquiry was made as to the probable cause, but no definite conclusion was reached. It is true that "fly nuisance" is very marked in Accra, and it is

possible that the prevalence of this disease here is due to contamination of food by these insects, and, also, it is possible that the "dust nuisance" from the streets and roads may play a part.

No distinction would seem to have been made between amœbic and bacillary dysentery in the returns. I was informed by Dr. Chevers of the Abbontiakoon Mine that a large number of his cases were bacillary and did not re-act to emetine.

(18) Enteric Fever.

Eight cases of this disease were reported—2 cases in Europeans, 6 cases in natives (1 a prisoner at Tamale)—with 1 death, a native. The European cases occurred at Weshiang and Tarquah, the other cases at Tamale, Lorha, Dunkwa and Seccondee.

(19) Chicken-Pox.

96 new cases of chicken-pox were reported during the year. Prompt action succeeded in checking the spread of the disease in each case.

(20) Measles.

One case of measles occurred at Coomassie in a native.

(21) Influenza.

Two cases of influenza were reported, both in natives.

(22) Mumps.

37 cases of mumps were reported, 24 of these occurred at Coomassie, 4 each at Saltpond and Quittah, 1 at Addah, 2 at Seccondee and 2 at Axim.

(23) Pneumonia.

241 cases of pneumonia were treated during the year by Medical Officers. All the cases were in natives, with 22 deaths.

(24) Any other Epidemic Disease.

An outbreak of cerebro-spinal meningitis was reported to have occurred in a village near Wa in the Northern Territories. Dr. Patton visited the village, and found that there had been 5 deaths and two cases actually ill. He reported that these were not suffering from cerebro-spinal meningitis, but from some disease resembling an acute pyæmia. The inhabitants of the village called it "Bungphagga."

ENDEMIC DISEASES.

(25) Tuberculous Disease.

The official returns show 141 cases of tuberculous disease as having been treated during the year, with 15 deaths. Judging from the figures obtained from the Death Registers, tuberculous disease would appear to be much more common than the above figures indicate. The total number of deaths in the Registration Districts of the Colony attributed to this disease is 244 (174 male, 70 female). In Cape Coast alone the registered deaths from this disease number 30 males and 23 females, giving a percentage of 37·2 per cent. males and 37 per cent. females to total deaths registered.

No special preventive measures are taken against this disease beyond general improvement in sanitary conditions, and more attention paid to better ventilation, light and air space in buildings.

(26) Venereal Disease.

There were 414 cases of syphilis reported, with 2 deaths, and 703 cases of gonorrhœa. Both syphilis and gonorrhœa are prevalent, but, as is commonly found in other countries, the patients do not realize the seriousness of the condition and the necessity for continuance of treatment, in order to prevent the resulting serious consequences to themselves, as well as to the community at large.

(27) Beri-Beri.

114 cases of this disease were reported by Medical Officers, with 15 deaths.

During the months of June and July there were 12 deaths amongst Kroo boys who had been resident in Accra for varying periods, from three weeks to one year. There were also 3 deaths reported amongst Gã fishermen from the same disease.

26 deaths are registered under the Ordinance as due to Beri-Beri—Accra 10, Labadi 2, Saltpond 2, Seccondee 7, Addah 4, Akuse 1.

(28) Pellagra.

No cases of this disease have been yet reported in the Colony. At the same time, as a point of interest, it is worth noting for investigation that a condition of the angles of the mouth similar to that described by Dr. Stannus in his report on pellagra in Nyasaland is very common in natives in this Colony.

(29) Leprosy.

There are no camps for the segregation of those suffering from this disease, and the natives do not fear infection any more than they do in the case of other diseases; it is all a question of fetish or Allah. Lepers are allowed to trade and sell in the market places and beg on the highways. 86 cases of this disease were reported, with 3 deaths; 30 of these cases were reported from the Kibbi district. There is no doubt that a number of cases described by laymen as leprosy are wrongly so classed, but at the same time it is probable that the disease is more prevalent than these figures show. There would seem to be a need for the provision of at least two Incurable Hospitals for the Colony, where, in a segregated portion, these unfortunate people could be treated and made more comfortable without being a danger to their neighbours; the remainder of the hospital being available for the accommodation of those suffering from incurable diseases which from want of accommodation it is impossible to keep in a general hospital.

(30) Yaws.

634 cases of this disease were reported for the year, Coomassie heading the list with 189, Axim 101, and Sunyani 50.

(31) New Growths.

The Medical Officer, Quittah, writes:—"Several cases of Sarcoma were seen, usually attacking bone."

(32) Rheumatism.

Official returns show 5 cases in Europeans and 1,803 in Natives—Coomassie 307, Seccondee 252, Cape Coast 160, Quittah 153, Tamale 130, Taharquah 123, and Accra 137.

HELMINTHIC DISEASES.

(33) Ankylostomiasis.

22 cases were reported, with 3 deaths—one case at Quittah, 6 at Accra, 6 at Addah, and 8 at Seccondee, the 3 deaths occurring in Seccondee. From Table XIII. it will be seen that out of 1,644 examinations made of the fæces of hospital patients and prisoners the ova of *Ankylostoma Duodenale* were found in 212 cases, and those of *Necator Americanus* in 7 cases, giving a percentage of 13·32 of total specimens examined.

(34) Tæniasis.

737 cases were reported during the year. The ova of *Tænia Solium* were found in 5·9 per cent. of the stools examined.

(35) Bilharziosis.

17 cases of this disease are reported. The Medical Officer at Quittah writes :—" Bilharziosis is common, the cases come into Quittah from the bush for treatment when very acute. The only reason why more cases are not shown in the returns is that the treatment, not being particularly successful, the patients do not take the trouble to come in."

(36) Trichinosis.

No cases reported.

Preventive measures consist in the careful examination of pork and condemnation of parts affected.

(37) Guinea-worm.

1,524 cases of guinea-worm are included in the official returns ; of these 470 are reported from Coomassie.

(38) Ascaris Lumbricoides.

198 cases of this infection came under treatment. From Table XIII. it will be noticed that the ova were found in 489 instances out of 1,644 specimens of fæces of hospital patients and prisoners that were examined.

(39) Oxyuris Vermicularis.

17 cases reported. Out of 1,644 specimens of fæces of hospital patients and prisoners that were examined, the ova of this worm were found in 36 instances.

(40) (iii.) GENERAL MEASURES.

A summary of the general measures taken for the prevention of mosquito-borne disease is given in Table X. As against water-borne disease, these include the provision of Macgregor Wells, prevention of surface pollution of wells, education as to the necessity for boiling and for the filtration of water, and the provision of public tanks.

The number of prosecutions for larvæ and other offences with the fines imposed are given in Table XVI.

(41) Sewage Disposal.

This constitutes one of the most difficult problems of Sanitation in West Africa. Where possible pan latrines are provided. In some villages pit

latrines under supervision are more or less satisfactory. Where the subsoil water is low an attempt has been made to introduce the Hausa "salga." On account of the expense involved in the provision of staff for supervision and the great difficulty in obtaining labour even when money is available, improvement, except in the larger centres, will be slow. The bush that grows up to the houses in the smaller villages is the common latrine, and in numbers of them the nuisance is accentuated by the presence of pigs running loose. Pipe-borne sewage in large centres like Accra and Seccondee is the only satisfactory solution of the difficulty, and this in turn depends on an ample supply of pipe-borne water. A scheme for the sewerage of Accra has been under consideration for some time, and has now in the main been approved. It is to be hoped that it will be found possible to make an early start in construction. Meanwhile the need for increased latrine accommodation in Accra and Christiansborg is to be met by the erection of pan latrines of a type and in a position that will admit of their being connected up later with the sewage scheme. It has been found impossible so far to use dry earth, but the use of crude kerosene has done a great deal to mitigate the nuisance arising from these public pan latrines. In Accra, Seccondee and Cape Coast there are a number of private pan latrines that are emptied daily by the Town Council scavengers on the payment of a monthly fee.

(42) Disposal of Refuse.

This is effected by burning either in the open on selected sites, such as old quarry holes, or in incinerators, where these are provided. Tins, bottles and incombustible refuse are separated from the combustible and buried. The Seccondee Town Council have a Meldrum Destructor of an old type which has done good service and is still working fairly satisfactorily. In the larger towns street dustbins are provided, and these are well taken advantage of by the inhabitants. In smaller towns and villages the refuse is carried to the incinerator sites or recognized dumping and burning sites by the inhabitants. Table IV., Heads 9, 10, & 11, gives details regarding the disposal of the different forms of refuse.

(43) Water Supply.

The water schemes for the supply of pipe-borne water to Accra and Seccondee are proceeding. Wells have been provided in a few places, and work has been done in the way of protecting existing wells and provision of pumps. The question of the supply of water to the towns and villages of the Colony and the Northern Territories is a very large and serious one, perhaps more especially in the towns on the sea-board that depend during the dry season on surface wells that supply at the best a non-potable brackish water. In the Northern Territories the question of water supply is acute during the dry season, and large prices are asked for small quantities of water. Wells are dug, but, being in sandy soil and their sides not being lined, they naturally fall in during the short rainy season.

(44) Drainage.

Progress has been made in the surface drainage of towns in the Colony, notably in Accra, Seccondee and Cape Coast. The provision of satisfactory surface drainage for towns is an important feature in their sanitary improvement, but where so many towns have to be dealt with, progress in any individual town must necessarily be slow. In the past it would seem as if drains were laid down without any thought of possible extension or possible outfall. Of late years, however, that has been changed, and now all drains are laid down as part of a general scheme for the town. Table IV., Head 13, gives the work done under this head.

(45) Roof Gutters.

These are unfortunately a necessity on the Gold Coast, but, as far as Accra is concerned it is to be hoped that soon it will be possible to dispense with them altogether. Even when perforated they necessitate regular and frequent inspections, in order to prevent their becoming places for mosquito larvæ.

In Quittah, the Medical Officer, Dr. Palmer, reports very favourably on the use of roof storm boards to replace eaves gutters for the purpose of collecting rain water, and gives the following points in their favour :—

(1) they are more economical,
(2) they are easier to put up,
(3) they do not leak,
(4) they do not rust through,
(5) they do not hold stagnant water.

The experimental use of these roof storm boards should be continued.

(46) Oiling.

Oiling is regularly done, and, generally speaking, in all the large towns all potential mosquito-breeding places, which cannot be or have not yet been dealt with by more permanent methods, are safeguarded by oiling.

(47) Reclamation.

No large works of reclamation have been undertaken during the year, but in a minor way a good deal has been done in the filling of holes and excavations.

(48) Clearance of Bush, Undergrowth, etc.

Satisfactory progress has been made in places in which labour is paid for by Government vote, but much remains to be done in towns and villages where the clearing should be done by the inhabitants themselves. This clearing of bush and undergrowth near to villages is especially necessary in districts where Trypanosomiasis is proved to exist, and should include also watering places and fords.

(49) Contagious Diseases Hospitals.

These exist in Accra, Cape Coast, Seccondee, Tarquah and Coomassie. Of these, the only buildings of permanent construction were at Cape Coast, Seccondee and Coomassie. The latter is a new building, and was only ready at the latter end of the year. In other places huts are erected as occasion demands, and are afterwards destroyed.

(50) Buildings.

Site plans and building plans of Government buildings are submitted for approval and signature. In some cases alterations have been made as a result of suggestions.

The provision of quarters for officials still leaves much to be desired, but the necessity for progress has been recognized, and there has been a steady improvement in this direction. Good housing and segregation, with provision and time for suitable recreation, must naturally result in better health and more efficient work. Twenty new bungalows were completed by the Public Works Department in 1913—Accra 8, Eastern Province 1, Western Province 3, Ashanti and Northern Territories 8.

The Railway Department completed one bungalow at Mansu, while four bungalows on " K " Hill, Seccondee, and one set of barrack quarters at Tarquah, were practically completed at the end of the year.

(51) Sanitary Inspectors.

Careful supervision over Sanitary Inspectors is unfortunately very necessary, and in stations where the Medical Officer has to do a certain amount of travelling continuous supervision is difficult. The best is being done under the circumstances; and were it not for the keenness that Medical Officers shew in connection with preventive medicine, in addition to their ordinary medical duties, sanitary progress would be slower than it is at present. It is to be hoped that as a result of the new scheme for the training of younger men for Sanitary Inspectorships, which at present is being discussed, this branch of the service will be more efficient.

Valuable assistance has been given by the European Sanitary Inspectors.

(52) Prisons.

There is nothing new to report regarding these. In all cases when prisons are inspected, suggestions are put forward with a view to the improvement of their general sanitation and cleanliness. Statistics as to the cubic space and ventilation per head are given in Table XV.

(53) Slaughter Houses.

There are twelve in the Colony and nine in Ashanti and the Northern Territories. The results of the examination of blood-smears taken from animals slaughtered are given in Table XII.

(54) Markets.

There are 16 in the Colony, four in Ashanti and eight in the Northern Territories.

(55) Cemeteries.

There are eighteen Public Cemeteries—at Accra, Labadi, Christiansborg, Cape Coast, Axim, Seccondee, Elmina, Tarquah, Saltpond, Winnebah, Addah, Quittah, Akuse, Aburi, Dodowah, Dunka, Kpong and Coomassie.

The total burials were 2,351—public cemeteries 1,862, private cemeteries 489.

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

(56) General.

There have been no lectures given except in schools. Knowledge as to what sanitary requirements mean is gradually spreading, but, so far, there is general unbelief, which results in indifference.

The Sanitary Staff, as a whole, lose no opportunity of sowing seed which they hope will bear fruit later on.

Every officer when travelling should show an example by leaving his rest camp in an orderly and tidy condition, and by looking after his personal sanitation and that of his servants and labourers.

(57) School Teaching.

The Director of Education reports progress. A copy of his Report on the teaching of Hygiene in the schools of the Gold Coast Colony is attached.—Appendix No. 4.

C.—RECOMMENDATIONS FOR FUTURE WORK.

(*a*) Increase of staff is necessary in order to permit of more travelling being done by the Sanitary Officers or officers acting for them in association with the Administrative Officers.

(*b*) It is time that arrangements should be made whereby all labour imported into the Colony would first be subjected to a medical examination; suitable houses to be provided by the importers of this labour in a selected quarter of the town, so ensuring better supervision and control.

(*c*) An increase in the Clerical Staff of the Sanitation Office is absolutely necessary, in order to deal with the increasing correspondence and routine work. The appointment of a Clerical Assistant on the lines laid down by the Principal Medical Officers' Conference held at Lagos would greatly increase the efficiency of the Office, aud relieve the Senior Sanitary Officer of much petty routine work.

(*d*) More Vaccinators are required. There should be one native Vaccinator permanently stationed in each of the important seaboard towns. In addition, the question of the appointment of Medical Officers, one attached to each Province, as Travelling Vaccinators, as already recommended in a previous report, should be seriously considered.

(*e*) The appointment of qualified Building Inspectors.

(*f*) Every effort to be made in order that all quarters in native towns occupied by European Officials should be evacuated. The Medical Officer of Health, Seccondee, in his Annual Report, says:—"The High Court at present occupied by the Judge is in the heart of the Native town, and should not be used as a European residence. The same remarks apply to the bungalows at present occupied by the Harbour Works Officials." These remarks I strongly support.

(*g*) Provision of water supplies in the Colony and Northern Territories. Much could be done for the improvement of water supplies, both of the Colony and the Northern Territories, if provision was made for two Special Foremen of Works for each Province and one for the Northern Territories, who would travel from place to place for no other purpose but the construction and maintenance of wells. The sites would be selected in conjunction with the District Commissioner or Medical Officer or both, and as the provision of these wells would be for the benefit of the villages and towns where they were dug, no doubt it would be possible to get the necessary labour and transport of material from place to place free. In many places, such as Tarquah, Dunkwa and Komfrodua, it may be found possible, by the erection of dams, to provide a pipe-borne supply of unfiltered water to the towns. Adequate water supplies are of prime importance, and must be introduced before much can be done in the way of prevention of storage of water in houses, thus getting rid of one of the main sources of the *Stegomyia*. As regards the prevention of water-borne disease in Europeans, small condensers, such as are used in out-stations in Northern Nigeria, might prove very useful, with one on a larger scale for Coomassie, ensuring at any rate that so long as the officer was resident in the station he would be certain of a safe drinking water. Since my arrival in the Gold Coast I have been struck with the large amount of ærated water in bottles that is used. This appears to be both a reflection on the quality of the water locally obtained and the trust that the residents feel they can place in their household staff.

(*h*) The staff of 2nd Class European Officials is rapidly increasing, and every effort should be made to provide housing accommodation.

(*i*) All 2nd Class European Officials to be supplied with a mosquito net before leaving Liverpool.

(*j*) Provision of condensers for the supply of safe drinking water at out-stations.

D. ALEXANDER,
Senior Sanitary Officer.

ACCRA,
17*th June*, 1914.

IV.—METEOROLOGY.

The rainfall for the year 1913 shows a very marked increase over that for 1912.

Observations taken at one Station—Gambaga—were unfortunately lost owing to the destruction of the Hospital in a violent storm.

Ashanti and Northern Territories show the most marked increase.

This large increase must have been of interest to the Agricultural Department.

V.—HOSPITALS AND DISPENSARIES.

I have to report that the various Hospitals and Dispensaries in the Colony, Ashanti and Northern Territories, have been maintained in an efficient state during the year and good work has been the result.

So much Sanitary work has now to be attended to at Stations where there is no Medical Officer of Health, that Medical Officers have to work much harder, in order to keep their strictly medical work up to date.

I am glad to state however that there has been no curtailment in the medical work through this cause.

ACCRA.

The old European Hospital has been in use during the year, and has as usual done good work.

It is now thoroughly mosquito-proofed, and this is maintained by the Public Works Department.

The proximity of the sea reduces the life of the gauze-proofing considerably, so that it requires constant attention. 142 people received treatment in it.

The Native Hospital and Out-patient Department was in a very congested state, and must, I fear, remain in that condition until we have our new hospital.

In spite of its many disadvantages very satisfactory work has been done in it.

It is also completely mosquito-proofed so far as local climatic conditions permit.

SECCONDEE.

The European Hospital has had a busy year, and the European Nursing Staff was latterly increased from 2 to 3.

It is contemplated at no distant date to remove this hospital, the Senior Medical Officer's and the European Nurses' Bungalows, to a site in the segregation area. For some time it has been realised, that it is a rather anomalous proceeding, to remove sick people from a segregation area into one that is not. 168 people received treatment in this hospital.

The Native Hospital has been kept very busy and plenty of work has been done in it. Its general condition is much improved, as I have found it possible to have it supervised by one of the European nurses, a fact hitherto quite impracticable owing to shortness of staff.

It is kept mosquito-proofed as far as it is in our power to do so.

Coomassie.

The European Hospital has done good work during the year, and 50 patients have received treatment in it. Although the European population of Coomassie is increasing, fewer patients were admitted to Hospital, which speaks well for the station, and also for the energy which has been displayed in improving its sanitary condition.

The new European Hospital, Provincial Medical Officer's and European Nurses' Bungalows are all to be built in the European Reserve in due course.

The new Native Hospital, which will, it is hoped, provide adequate accommodation for some time, is nearing completion. Hitherto, work at Coomassie has been curtailed owing to lack of this accommodation.

The new Contagious Diseases Hospital has been completed.

Cape Coast.

There are both European and Native Hospitals at Cape Coast. At the other Medical Stations in the Colony proper there are no Native Hospitals at all, except four which have Dispensaries only.

Ashanti.

In Ashanti there are Native Hospitals at Obuasi, Kintampo and a nice new one at Sunyani.

Northern Territories.

In the Northern Territories there is a Native Hospital at Tamale, a new one to be erected at Salaga, and the other Stations have Bush Hospitals and Dispensaries.

Contagious Diseases Hospitals.

New Contagious Diseases Hospitals have been in course of erection or have been completed at Accra, Winnebah, Saltpond, Axim, Addah, Quittah, Obuasi and Tarquah. They are all to be made fly-proof.

Summary of Hospitals and Dispensary Returns.

	In-patients.	Out-patients.
Europeans	400	854
Natives and West African Frontier Force	3,307	44,930
Totals	3,707	45,784

Surgical operations 640.

Lunatic Asylum.

There is only one Lunatic Asylum for the Colony, Ashanti and the Northern Territories, and this is at Accra and about one mile from the town. All persons certified as insane and committed to the Asylum have to be brought under police escort to Accra, either by land or sea, and sometimes long distances have to be covered.

As I have mentioned in my previous report, most if not all the cases we get are in the chronic stage, and very little improvement takes place except in their physical condition.

The satisfactory treatment and restraint of people of unsound mind is in its very infancy at present in West Africa, and I fear it must remain so for

some time to come, as there are so many other more important things in connection with medical science that demand attention first.

There is a definite prospect I think in this Colony, at no distant date, that we may have more suitable machinery for dealing with the insane, and more especially of studying clinically the types of insanity to be met with in West Africa. It is absolutely essential in treating insanity that there should be constant medical supervision, and this the medical resources of this Colony have not yet been able to provide. There were no escapes during the year.

The quality of the food supplied was good and ample in quantity. Each year local food stuffs become dearer and more difficult to obtain.

Tank water is the main supply.

Occupation is given to those able to work, but the majority decline to do any at all. The really hard work is performed by the few criminal lunatics, who necessarily have to be confined in an ordinary Asylum.

The mortality, excluding the discharges, works out at 24·3 per cent.

The following figures are a statement of admissions, discharges and deaths for the year :—

	Remaining at the end of 1912.	Admitted during the year 1913.	Total under treatment 1913.	Discharged.	Deaths.	Remaining 31st December, 1913.
Male	83	36	119	12	26	81
Female	15	5	20	4	4	12
TOTAL	98	41	139	16	30	93

PRISONS.

The general health in the Prisons has been quite satisfactory during the year.

There was no outbreak of any disease which calls for any mention.

From the subjoined figures it will be seen the number of prisoners confined was less than the two previous years, and comparing the Sick and Death-rates for 1912 and 1913 very little difference is noticed :—

	1911.	1912.	1913.
Total convicts	5,474	6,064	5,358
Total sick	466	701	552
Total deaths	10	18	18

VI. SCIENTIFIC.

ACCRA LABORATORY.

The Annual Report of the Accra Laboratory is shown as an Appendix and is given in detail.

The Officer-in-Charge, Dr. Condy, looked after the Cantonments and Lunatic Asylum, as his whole time could not be spared for Laboratory work.

He also temporarily assisted the Yellow Fever Investigators at the Christiansborg and Labadi Dispensaries, which were started in order that they might obtain material for their investigations.

F. G. HOPKINS,

July 31st, 1914. *Principal Medical Officer.*

TABLE I.

Medical Staff on the 31st December, 1913.

Principal Medical Officer	F. G. Hopkins.
Deputy Principal Medical Officer	H. E. Tweedy.
Senior Sanitary Officer	D. Alexander.
Provincial Medical Officer	H. B. S. Montgomery.
" " "	J. A. Clough.
Senior Medical Officer	E. W. Graham.
" " "	C. B. Hunter.
Sanitary Officer	G. C. Walker.
Medical Officer	P. M. Tobit.
" "	F. S. Harper.
" "	W. W. Claridge.
" "	F. J. A. Beringer.
" "	C. H. D. Ralph.
" "	C. V. Le Fanu.
" "	R. O. White.
" "	A. C. Lorena.
" "	J. C. S. McDouall.
" "	A. B. Tighe.
" "	W. M. Wade.
" "	F. I. M. Jupe.
" "	F. H. Storey.
" "	T. H. Dugon.
" "	G. E. H. Le Fanu.
" "	H. O'H. H. May.
" "	J. M. O'Brien.
" "	H. T. Palmer.
" "	A. M. Dowdall.
" "	R. Whyte.
" "	E. Brabazon.
" "	H. W. Gush.
" "	G. J. W. Keigwin.
" "	A. Lundie.
" "	G. F. Forde.
" "	G. de P. d'Amico.
" "	J. A. Beamish.
" "	D. Duff.
" "	M. W. Fraser.
" "	S. Goodbrand.
" "	J. E. Moffatt.
" "	R. Mugliston.
" "	J. Donnelly.
" "	H. F. Hamilton.
" "	P. D. Oakley.
" "	W. A. Ryan.
" "	W. G. Watt.
" "	M. B. Hay.
" "	A. Ingram.
" "	A. Connal.
" "	K. B. Allan.
" "	B. Knowles.
" "	A. J. R. O'Brien.
" "	J. B. Alexander.
" "	C. L. Levers.
" "	M. Graves.
" "	F. G. Thompson.
" "	D. J. F. O'Donoghue.
" "	J. F. Corson.
" "	W. Telfer.
" "	N. A. D. Sharp.
" "	T. A. Dowse.
" "	E. M. Condy.
" "	G. G. P. Becket.
" "	C. R. Patton.
" "	H. McC. Hänschell.

European Nursing Staff on 31st December, 1913.

Senior Nurse	Jessie Oram.
„ „	E. F. Dunne.
Nurse	A. Adair.
„	M. M. Stanton.
„	E. M. Keillor.
„	A. M. Page.
„	J. Winchester.
„	R. M. Veecock.

Principal Members of Subordinate Staff.

First Grade Clerk	S. G. Ricketts.
Second Grade Clerk	C. B. Palmer.
„ „ „	R. Aikoofu.
Third „ „	Two.
Fourth „ „	Two.
Fifth „ „	Three.
Temporary „	One.
Messenger	One.

Dispensing Staff.

Chief Dispenser	John Cato.
First Class Dispenser	F. W. C. Wullf.
„ „ „	H. D. Laryea.
Second „ „	Four.
Third „ „	Eight.
Fourth „ „	Ten.

Native Nurses.

First Class Nurses	Ten.
Second „ „	Twenty.
Third „ „	Twenty-two.

Medical Store.

Storekeeper	Vacant.
„ (Ashanti)	D. B. Odonkor.
Chief Attendant	J. W. Ephraim.
Asst. „	T. W. Tagoe.
Attendants	Eight.
Matron	One.
Gatekeeper	One.

TABLE II.

Statements of Expenditure in the Year under Sub-Heads as compared with the Estimates.

Medical-Head 16.	Estimates, 1913.	Actual Expenditure
OTHER CHARGES.	£	£ s. d.
Diet and Provisions	3,000	2,700 2 0
Medical Comforts	600	429 19 2
Medicines and Chemicals	1,300	1,241 17 9
Medical Appliances and Druggist Sundries	450	578 6 11
Medical Library	100	66 8 10
Medical Assistance (Extra)	130	100 12 9
Surgical Instruments and Appliances	350	254 8 10
Meteorological Instruments	80	38 17 6
Disinfectants	100	83 18 0
Bedding and Hospital Equipment	600	774 4 11
Fuel and Light	180	122 8 5
Outfit Allowance to Medical Officers	100	60 0 0
Clothing for Attendants	200	119 7 7
Clothing for Lunatics	30	26 0 5
Medical Examination of Officers in England	150	104 8 0
Typewriters, purchase and maintenance	60	43 5 6
Research Equipment	286	203 15 6
Scientific Research with respect to Tropical Diseases	25	12 5 11
Contribution towards Medical Research Institute, Lagos, Salaries of Officers and maintenance	460	—
Contribution to Entomological Investigation in West Africa ...	350	350 0 0
Contribution to the Tropical Diseases Research Fund	300	200 0 0
Passages of Officers to and from the Colony	2,500	2,424 12 9
Passages of Officers Coastwise	150	116 5 0
Railway Fares and Freight	300	402 19 5
Personal Conveyance to Principal Medical Officer or Officer acting for him	46	28 18 9
Personal Conveyance to Deputy Principal Medical Officer or Officer acting for him	36	7 1 3
Transport Allowance to Medical Officers	980	993 6 7
Travelling Allowances	450	621 9 6
Hammockmen and Carriers	600	774 16 1
Freight on Stores by Steamer	150	38 15 6
Transport of Stores by Carriers	50	39 14 9
Entomological Equipment	200	54 11 4
Contingent Expenses	15	10 19 5
Course of Instructions for Medical Officers	900	480 17 2
Contribution towards the Salary, etc., of Medical Officers attached to the Colonial Office	191	190 19 3
Carried forward	£15,419	£13,695 14 9

TABLE II.—*continued.*

Statements of Expenditure in the Year under Sub-Heads as compared with the Estimates—*continued.*

Medical-Head 16.	Estimates, 1913.	Actual Expenditure.
	£	£ s. d.
Brought forward	15,419	13,695 14 9
SLEEPING SICKNESS.		
Passages of Officers to and from the Colony	60	28 12 0
Passages of Officers Coastwise	10	—
Hammockmen and Carriers	1,480	815 3 0
Travelling Allowances	380	153 0 9
Transport of Stores by Carriers	10	—
Rendering Building Fly-proof	600	—
Tools, Purchase of...	30	12 0 0
Labourers	2,000	1,394 14 11
Contribution towards the expenses of the Advisory Medical and Sanitary Committee	107	156 8 3
Rent of Hospital, Quittah	—	0 8 10
Total	£20,096	£16,256 2 6

	£ s. d.
Surgeon Dentist's expenses	106 0 0
Expenses in connection with Dr. J. J. Simpson's visit to the Gold Coast	780 18 6
Total	£886 18 6

TABLE III.

Return of Statistics of Population for the Year.

	Europeans and Whites.	Africans.	East Indians.	Chinese and Malays.	Mixed and Coloured.	Remarks.
Number of Inhabitants in 1911 ...	1,389	1,501,997	—	—	—	Census 1911.
„ „ Births during the year 1913	—	1,231	—	—	—	In the Registration Districts.
„ „ Deaths „ „	—	2,335	—	—	—	Do.
„ „ Immigrants „ „		Not recorded.				
„ „ Emigrants „ „						
„ „ Inhabitants in 1913 ...	—	—	—	—	—	—
Increase „ „ „ ...	—	—	—	—	—	—
Decrease „ „ „ ...	—	—	—	—	—	—

TABLE IV.

1.—Name of Town.

Station.	1910.		1911.		1912.		1913.	
	Approximate area.	No. of proclaimed open spaces.	Approximate area.	No. of proclaimed open spaces.	Approximate area.	No. of proclaimed open spaces.	Approximate area.	No. of proclaimed open spaces.
Accra	6 sq. miles	32 but not all proclaimed though all recommended.	1,740 acres	33 recommended but not proclaimed.	1,740 acres	2 proclaimed 31 not proclaimed.	2,067 acres	2 proclaimed 31 not proclaimed.
Addah	490 acres	—	4 acres	—	4 acres	—	4 acres	—
Akuse	½ sq. mile	—	½ sq. mile	—	2 sq. miles	—	—	6
Quittah	70 acres	10	70 acres	10	½ sq. mile	—	½ sq. mile	13
Cape Coast	650 acres	3	2½ sq. miles	3	2½ sq. miles	3	2½ sq. miles	3
Elmina	No record	—	20 acres	13	20 acres	13	20 acres	13
Saltpond	—	12	2 sq. miles	13	2 sq. miles	15	2 sq. miles	15
Winnebah	About 200 acres	—	About ¾ sq. mile	8	2 sq. miles	8	2 sq. miles	8
Seccondee	4,000 acres	4	530 acres	3	530 acres	3	3 sq. miles	3
Axim	1 sq. mile	5	1 sq. mile	2	8 acres	6	478 acres	6
Tarquah	1½ sq miles (approx.)	—	1½ sq. miles	—	1½ sq. miles	—	1½ sq. miles	—
Dunkwa	No record	—	1 sq. mile	—	1 sq. mile	—	1 sq. mile	—
Coomassie	About 1 sq. mile	11	3½ sq. miles	Nil	3½ sq. miles	—	4 sq. miles	—
Obuassie	4 sq. miles	1	4 sq. miles	2	4 sq. miles	2	4 sq. miles	1
	Acres.		Acres.		Acres.		Acres.	
Eastern Province ...	4,720	—	2,134	—	3,344	—	2,391	—
Central Province ...	850	—	3,380	—	4,180	—	4,180	—
Western Province ...	5,600	—	2,770	—	2,138	—	3,998	—
Ashanti	3,200	—	4,800	—	4,800	—	5,120	—
Total	14,370	—	13,084	—	14,462	—	15,689	—

2.—Population.

Station.	1910.					1911.					1912.					1913.				
	Natives.		Europeans.			Natives.		Europeans.			Natives.		Europeans.			Natives.		Europeans.		
	Male.	Female.	Male.	Female.	Total.	Male.	Female.	Male.	Female.	Total.	Male.	Female.	Male.	Female.	Total.	Male.	Female.	Male.	Female.	Total.
Accra	Estimate at 20,000		147	21	—	9,491	10,111	210	32	19,844	9,205	9,937	210	32	19,384	9,205	9,937	224	27	19,393
Addah	About 1,500		12	2	1,514	811	761	9	1	1,582	1,500		11	1	1,512	811	761	14	—	1,586
Akuse	4,500		53	3	4,556	1,728	1,356	22	1	3,107	1,728	1,356	27	1	3,112	1,417	1,442	19	1	2,879
Quittah	1,300	1,475	16	3	1,794	1,666	1,727	14	9	3,416	1,589	1,784	14	9	3,396	1,815	1,815	13	10	3,653
Cape Coast ...	1,607	2,929	55	14	20, 69	5,422	5,847	29	8	11,306	5,422	5,849	32	6	11,309	5,422	5,849	48	8	11,327
Elmina	No returns					2,256	2,835	4	3	5,098	1,500	2,500	3	3	4,006	1,500	2,500	4	3	4,007
Saltpond	About 5,000		—	—	—	1,683	1,857	11	2	3,553	4,880		11	—	4,891	4,880		35	—	4,915
Winnebah	About 5,000		39	6	5,045	3,794	2,048	27	1	5,870	2,966	2,936	45	5	5,954	2,966	2,986	42	5	5,999
Seccondee	8,000 (Approx.)		145	15	8,160	5,774	3,211	120	17	9,122	5,800	3,222	15	10	appx. 9,190	6,000	4,839	150	11	11,000
Axim	7,500		113	3	7,616	1,703	1,582	20	2	3,307	2,100	1,200	128	4	appx. 3,432	2,100	1,200	147	5	3,452
Tarquah	—	—	58	2	60	1,462	969	47	5	2,423	1,021	1,050	47	5	2,123	1,203	1,223	369	1	2,796
Dunkwa	No returns					1,735	598	30	1	2,364	1,433	1,060	34	—	2,527	1,735	598	28	1	2,362
Coomassie	5,161	5,315	125	9	10,607	18, 853		90	6	18,949	11,000	10,000	92	5	21,097	12,000	11,000	110	6	23,116
Obuassie	9,000		140	2	9,142	3,675	1,951	254	3	5,883	2,182	1,614	192	1	3,989	2,182	1,614	183	1	3,989
Eastern Province...	—	—	—	—	—	—	—	345	67	442,232	—	—	—	—	—	—	—	—	—	442,232
Central Province...	—	—	—	—	—	—	—	65	20	247,121	—	—	—	—	—	—	—	—	—	247,121
Western Province	—	—	—	—	—	—	—	967	25	164,413	—	—	—	—	—	—	—	—	—	164,413
Ashanti	—	—	—	—	—	—	—	223		287,814	—	—	—	—	—	—	—	—	—	287,814
Northern Territories	—	—	—	—	—	—	—	—	—	361,806	—	—	—	—	—	—	—	—	—	361,806
Total ...	—	—	—	—	—	—	—	—	—	1,563,386	—	—	—	—	—	—	—	—	—	1,563,386

Census Returns 1911.

3.—Housing.

Station.	1910.				1911.				1912.				1913.			
	Houses.		Huts.		Houses.		Huts.		Houses.		Huts.		Houses.		Huts.	
	E.	N.	E.	N.	E.	N.	E.	N.	E.	N.	E.	N.	E.	N.	E.	N.
Accra	96	1,918	Included under houses.		100	2,611	Included under houses.		107	2,527	Included under houses.		118	2,653	Included under houses.	
Addah	8	251	—	—	8	250	—	—	8	250	—	—	9	251	—	—
Akuse	10	1,136	—	85	10	228	—	160	8	165	—	506	7	578	—	31
Quittah	9	545	—	245	9	585	—	258	9	589	—	261	9	602	—	261
Cape Coast	15	2,283	—	477	11	1,161	—	499	18	1,154	—	499	23	1,151	—	499
Elmina		No Record			3	900	—	—	3	900	—	—	3	900	—	432
Saltpond	7	226	No	Record	8	256	—	224	8	280	—	224	9	536	—	14
Winnebah	9	256	—	726	14	200	—	726	14	210	—	666	15	270	—	648
Seccondee	49	118	—	872	71	1,165	No	Record	56	1,090	—	141	60	1,571	—	—
Axim	10	1,081	No	Record	11	851	—	518	14	867	—	518	18	638	—	344
Tarquah	17	420	No	Record	22	677	—	—	22	677	—	—	22	712	—	—
Dunkwa		No Record			11	304	—	201	13	310	—	201	10	301	—	200
Coomassie	42	714	—	499	40	1,900	—	100	40	1,941	—	100	46	885	—	150
Obuassie	7	—	—	1,000	6	934	—	—	29	1,503	—	—	7	1,183	—	—
Sunyani	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kintampo	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Eastern Province ...	123	3,850	—	330	137	3,674	—	418	132	3,331	—	767	143	4,084	—	292
Central Province ...	31	2,765	—	1,203	36	2,517	—	1,449	43	2,544	—	1,389	50	2,857	—	1,693
Western Province...	76	1,619	—	872	115	2,997	—	719	105	2,944	—	860	110	3,222	—	544
Ashanti	49	714	—	1,499	46	2,834	—	100	69	3,444	—	100	53	2,068	—	150
Total	279	8,948	—	6,904	334	12,022	—	2,686	349	12,263	—	3,116	356	12,231	—	2,689

4.—Mosquito Protection of Houses.

Station.	1910.				1911.				1912.				1913.			
	Number of Houses wholly protected.	Number of Houses with mosquito-proof room.	Made wholly protected in 1910.	Partially protected in 1910.	Number of Houses wholly protected.	Number of Houses with mosquito-proof room.	Made wholly protected in 1911.	Partially protected in 1911.	Number of Houses wholly protected.	Number of Houses with mosquito-proof room.	Made wholly protected in 1912.	Partially protected in 1912.	Number of Houses wholly protected.	Number of Houses with mosquito-proof room.	Made wholly protected in 1913.	Partially protected in 1913.
Accra	2	7	—	—	6	4	4	—	6	5	—	1	12	7	6	2
Addah	2	1	1	—	4	—	2	—	5	1	1	1	6	2	1	—
Akuse	—	1	—	—	—	3	—	2	—	3	—	—	—	—	—	—
Quittah	1	1	1	—	1	1	—	—	—	—	—	—	—	2	—	2
Cape Coast	—	2	—	2	—	4	—	1	—	4	—	—	—	3	—	—
Elmina	No Record				2	2	—	—	—	3	—	—	—	—	—	—
Saltpond	—	—	—	—	—	1	—	—	—	1	—	—	2	2	1	—
Winnebah	1	—	—	—	—	1	—	1	—	3	—	1	8	8	7	3
Seccondee	—	5	—	5	—	4	—	1	1	4	—	1	—	3	—	—
Axim	—	2	—	2	—	2	—	2	—	2	—	—	1	2	—	2
Tarquah	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—
Dunkwa	No Record				—	—	—	—	—	—	—	—	1	—	1	—
Coomassie	—	1	—	—	—	4	—	—	—	4	—	—	—	6	—	2
Obuassie	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Eastern Province	5	10	2	—	11	8	6	2	11	9	1	2	18	11	7	4
Central Province	1	2	2	—	2	8	—	2	—	11	—	1	10	13	8	3
Western Province	—	7	—	7	—	6	—	3	1	6	—	1	3	5	1	2
Ashanti	—	1	—	—	—	4	—	—	—	4	—	—	—	6	—	2
Total	6	20	4	7	13	26	6	7	12	30	1	4	31	35	16	11

5 (A).—Erection of New Buildings During the Year.

Station.	1910.					1911.					1912.					1913.				
	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.	Public Buildings with full sanction.	Houses with full sanction.	Huts with full sanction.	Houses without sanction.	Huts without sanction.
Accra	10	42	2		2	—	27	2	—	—	3	17	9	—	—	—	126	34	—	10
Addah	1	1	—	—	—	1	2	—	—	—	1	2	—	—	—	—	1	—	—	—
Akuse	2	4	—	—	5	1	42	30	—	—	—	26	5	—	—	—	95	31	—	—
Quittah	—	8	—	—	—	4	14	—	2	11	2	1	2	—	2	1	13	—	2	10
Cape Coast ...	—	20	—	—	—	—	—	2	14	1	—	—	—	8	—	—	2	—	5	—
Elmina		No record				—	3	2	—	—	—	—	—	1	—	—	37	—	2	—
Saltpond	—	15	—	—	—	—	36	—	—	—	—	22	—	—	—	—	30	—	—	—
Winnebah ...	3	30	2	No record		1	80	—	—	4	—	30	2	—	—	—	50	2	—	1
Seccondee ...	3	31	—	—	46	1	63	—	2	1	2	23	1	2	4	3	32	—	—	—
Axim	1	No record	—	—	—	—	13	—	1	10	—	16	—	—	—	3	18	—	—	—
Tarquah	4	—	—	—	—	—	13	—	20	—	18	—	—	—	1	1	10	—	—	—
Dunkwa		No record				—	2	—	—	—	1	5	—	—	—	9	—	—	—	—
Coomassie ...	1	110	—	—	—	1	30	—	—	—	1	50	—	—	—	—	52	—	—	—
Obuasi	3	—	—	—	—	9	—	—	—	—	2	65	—	—	—	10	3	—	—	—
Eastern Province	13	42	2	—	2	6	27	2	2	11	6	17	9	—	2	1	235	65	2	20
Central Province	3	65	2	—	5	1	58	30	2	11	—	29	7	—	2	—	119	2	7	1
Western Province	8	31	—	—	—	1	119	4	14	5	—	52	2	9	—	—	119	2	7	1
Ashanti	4	110	—	—	46	1	91	—	23	11	21	44	1	2	5	16	60	—	—	—
						10	30	—	—	—	3	115	—	—	—	10	55	—	—	—
Total ...	28	42	2	—	2	18	27	2	39	27	30	17	9	11	7	27	469	67	9	21
		219			51		298	34				240	10							

5 (B).—Action Taken.

Station.	1910.				1911.				1912.				1913.			
	Number of Prosecutions.		Number Demolished.		Number of Prosecutions.		Number Demolished.		Number of Prosecutions.		Number Demolished.		Number of Prosecutions.		Number Demolished.	
	Huts	Houses.	Huts	Houses.	Huts	Houses.	Huts	Houses.	Huts	Houses.	Huts	Houses.	Huts	Houses.	Huts	Houses.
Accra	—	—	196		—	—	—	—	—	—	—	—	—	—	8	2
Addah	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—
Akuse	—	—	—	8	—	4	6	3	—	—	36	—	—	—	—	—
Quittah	—	—	—	—	—	2	—	8	2	—	2	—	—	1	10	2
Cape Coast ...	—	No record			1	14	1	137	—	8	19	77	—	5	—	11 completed 146 partly
Elmina	—	No record			—	2	—	2	1	—	—	—	—	2	—	1
Saltpond	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	3
Winnebah ...	—	11	30	3 dangerous	—	—	4	—	—	—	1	60 ruined	1	—	1	26 ruins
Seccondee ...	—	—	12	—	1	2	99	24	—	2	2	51	—	—	—	—
Axim		No record			—	—	10	1	—	—	19	17	—	—	12	1
Tarquah	—	1	—	—	—	20	—	44	—	70	—	3	—	7	—	13
Dunkwa		No record			—	—	5	1	2	—	2	3	—	—	10	9
Coomassie ...	—	—	52	—	—	—	—	50	—	—	—	4	—	—	—	—
Obuasi	—	—	40	—	—	—	—	57	—	—	—	121	—	—	—	6
Eastern Province	—	—	196	8	—	6	6	12	2	—	38	—	—	1	18	4
Central Province	—	11	3	1	1	16	5	139	1	8	20	77	1	7	1	15
Western Province	—	1	12	—	1	22	114	79	2	72	21	74	—	7	22	23
Ashanti	—	—	92	—	—	—	—	107	—	—	—	125	—	—	—	6
Total ...	—	12	196 107	9	2	44	125	328	5	80	79	276	1	15	41	48

6.—Markets.

Station.	1910.			1911.			1912.			1913.		
	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.
Accra	3	1. 2 paved only.	—	2	2	—	2	2	—	2	2	—
Addah	1	1 paved only.	—	1	—	1	2	—	2	2	—	2
Akuse	1	—	1	1	—	1	1	—	1	1	—	1
Quittah	1	—	1	1	—	1	1	—	1	1	—	1
Cape Coast... ...	4	1	3	1	—	1	1	—	1	1	—	1
Elmina	No record			1	1 partially paved.	—	1	1 paved only.	—	1	1	—
Saltpond	1	1	—	1	1 paved only.	—	1	1	—	1	1	—
Winnebah	2	2	—	2	2	—	2	2	—	2	2	—
Seccondee	2	1	1	1	1	—	2	2	—	2	2	—
Axim	1	1	—	1	1	—	1	1	—	1	1	—
Tarquah	1	—	1	1	1	—	1	1	—	1	1	—
Dunkwa	No record			1	—	1	1	—	1	1	—	1
Coomassie	1	—	1	1	—	1	1	—	1	2	1	1
Obuasi	1	1	—	4	2	2	3	2	1	2	1	1
Eastern Province ...	6	1	2	5	2	3	6	2	4	6	2	4
Central Province ...	7	4	3	5	2	1	5	3	1	5	4	1
Western Province...	3	2	2	4	3	1	5	4	1	5	4	1
Ashanti	2	1	1	5	2	3	4	2	2	4	2	2
Total ...	18	8	8	19	9	8	20	11	8	20	12	8

7.—Slaughter Houses.

Station.	1910.			1911.			1912.			1913.		
	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.	Number.	Paved and Drained.	Unpaved.
Accra	1	1	—	1	1	—	1	1	—	1	1	—
Addah	—	—	—	—	—	—	—	—	—	—	—	—
Akuse	1	1	—	2	1	1	2	1	1	2	1	1
Quittah	1	—	1	1	1	—	2	2	—	2	2	—
Cape Coast... ...	1	1	—	1	1	—	1	1	—	1	1	—
Elmina	No record			—	—	—	—	—	—	—	—	—
Saltpond	—	—	—	—	—	—	1	1	—	1	1	—
Winnebah	—	—	—	—	—	—	1	1	—	1	1	—
Seccondee	1	1	—	1	1	—	2	2	—	2	2	—
Axim	1	1	—	1	1	—	1	1	—	1	1	—
Tarquah	1	1	—	1	1	—	1	1	—	1	1	—
Dunkwa	No record			—	—	—	—	—	—	—	—	—
Coomassie	1	1	—	1	1	—	1	1	—	2	1	1
Obuasi	1	1	—	1	1	—	1	1	—	1	1	—
Eastern Province ...	3	2	1	4	3	1	5	4	1	5	4	1
Central Province ...	1	1	—	1	1	—	3	3	—	3	3	—
Western Province...	3	3	—	3	3	—	4	4	—	4	4	—
Ashanti	2	2	—	2	2	—	2	2	—	3	2	1
Total ...	9	8	1	10	9	1	14	13	1	15	13	2

8.—Latrines.

Station.	1910. Number. Male. Number.	1910. Number. Male. Seats.	1910. Number. Female. Number.	1910. Number. Female. Seats.	1910. New Ones. Male. Number.	1910. New Ones. Male. Seats.	1910. New Ones. Female. Number.	1910. New Ones. Female. Seats.	1910. Repaired. Male. Number.	1910. Repaired. Male. Seats.	1910. Repaired. Female. Number.	1910. Repaired. Female. Seats.	1910. Demolished. Male. Number.	1910. Demolished. Male. Seats.	1910. Demolished. Female. Number.	1910. Demolished. Female. Seats.
Accra	42	296	23	190	4	40	4	40	2	—	2	—	4	—	4	—
Addah	7	28	6	124	—	—	—	—	—	—	—	—	—	—	—	—
Akuse	8	48	9	54	—	—	—	—	—	—	—	—	—	—	—	—
Quittah	9	54	8	48	—	—	—	—	—	—	—	—	—	—	—	—
Cape Coast ...	22	161	19	150	1	8	1	8	3	24	3	24	—	—	—	—
Elmina	—	—	—	—	No Returns				—	—	—	—	—	—	—	—
Saltpond	12	60	10	50	4	20	3	15	12	—	10	—	—	—	—	—
Winnebah	8	62	8	48	1	8	1	8	4	—	3	—	—	—	—	—
Seccondee	20	120	13	40	2	M & F			12	M & F			1	—	—	—
Axim	6	35	6	36	—	—	—	—	—	—	—	—	—	—	—	—
Tarquah	11	77	6	42	2	14	—	—	15	—	—	—	—	—	—	—
Dunkwa	—	—	—	—	No Returns				—	—	—	—	—	—	—	—
Coomassie	27	170	27	170	—	—	—	—	3	—	—	—	—	—	—	—
Obuasi	6	39	6	30	1	6	1	6	—	—	—	—	1	—	1	—
Eastern Province ...	66	426	46	316	4	40	4	40	2	—	2	—	4	—	4	—
Central Province ...	42	283	37	248	6	36	5	31	19	24	16	24	—	—	—	—
Western Province	37	233	25	118	4	14	—	—	27	—	—	—	1	—	—	—
Ashanti	33	200	33	200	1	6	1	—	3	—	—	—	1	—	1	—
Total ...	178	1142	141	882	15	96	10	71	51	24	18	24	6	—	5	—

Station.	1911. Number. Male. Number.	1911. Number. Male. Seats.	1911. Number. Female. Number.	1911. Number. Female. Seats.	1911. New Ones. Male. Number.	1911. New Ones. Male. Seats.	1911. New Ones. Female. Number.	1911. New Ones. Female. Seats.	1911. Repaired. Male. Number.	1911. Repaired. Male. Seats.	1911. Repaired. Female. Number.	1911. Repaired. Female. Seats.	1911. Demolished. Male. Number.	1911. Demolished. Male. Seats.	1911. Demolished. Female. Number.	1911. Demolished. Female. Seats.
Accra	42	306	25	238	6	87	6	87	9	—	9	—	6	79	4	39
Addah	6	24	5	20	1	4	—	—	4	16	5	20	—	—	—	—
Akuse	8	48	9	54	—	—	—	—	5	—	5	—	—	—	—	—
Quittah	9	54	8	48	—	—	—	—	4	—	2	—	—	—	—	—
Cape Coast ...	19	151	18	149	1	16	1	16	4	—	4	—	1	8	1	8
Elmina	6	47	6	47	—	—	—	—	—	—	—	—	—	—	—	—
Saltpond	12	57	12	58	—	—	2	12	—	—	—	—	—	—	—	—
Winnebah	9	69	9	69	—	—	—	—	3	—	1	—	—	—	—	—
Seccondee	17	112	9	63	2	12	—	—	—	—	—	—	—	—	—	—
Axim	7	61	7	94	2	—	—	—	1	—	1	—	—	—	—	—
Tarquah	11	77	6	48	2	14	—	—	—	—	—	—	—	—	—	—
Dunkwa	5	—	4	—	15	—	15	—	—	—	—	—	15	—	15	—
Coomassie	28	153	28	140	2	10	—	—	2	12	2	12	—	—	—	—
Obuasi	8	60	8	60	5	38	5	38	—	—	—	—	2	14	2	14
Eastern Province ...	65	432	47	360	7	91	6	87	22	16	21	20	6	79	4	39
Central Province ...	46	324	45	323	1	16	3	28	7	—	5	—	1	8	1	8
Western Province	40	290	26	165	21	26	15	—	1	—	1	—	15	—	15	—
Ashanti	36	213	36	200	7	48	5	38	2	12	2	12	2	14	2	14
Total ...	187	1219	154	1048	36	181	29	153	32	28	29	32	24	101	22	61

Station.	1912. Number. Male. Number.	1912. Number. Male. Seats.	1912. Number. Female. Number.	1912. Number. Female. Seats.	1912. New Ones. Male. Number.	1912. New Ones. Male. Seats.	1912. New Ones. Female. Number.	1912. New Ones. Female. Seats.	1912. Repaired. Male. Number.	1912. Repaired. Male. Seats.	1912. Repaired. Female. Number.	1912. Repaired. Female. Seats.	1912. Demolished. Male. Number.	1912. Demolished. Male. Seats.	1912. Demolished. Female. Number.	1912. Demolished. Female. Seats.
Accra	44	324	27	256	2	30	2	30	—	—	—	—	1	6	1	12
Addah	6	24	5	20	—	—	—	—	—	—	—	—	—	—	—	—
Akuse	8	48	7	42	—	—	—	—	—	—	—	—	—	—	—	—
Quittah	9	8	8	48	—	—	—	—	—	—	—	—	—	—	—	—
Cape Coast ...	22	156	16	156	1	30	1	30	9	—	8	—	3	8	3	8
Elmina	6	47	6	47	—	—	—	—	—	—	—	—	—	—	—	—
Saltpond	14	80	13	94	1	4	—	—	1	6	1	6	—	—	—	—
Winnebah	9	36	8	40	1	In building			4	14	5	25	—	—	—	—
Seccondee	21	100	10	61	2	4	2	14	3	—	2	—	1	6	—	—
Axim	9	81	9	60	1	8	1	8	—	—	—	—	—	—	—	—
Tarquah	12	74	6	48	—	—	—	—	15	—	—	—	—	—	—	—
Dunkwa	2	12	2	12	16	16	12	16	10	16	7	16	16	16	12	16
Coomassie	28	153	28	140	—	—	—	—	—	—	24	—	—	—	—	—
Obuasi	7	54	7	54	1	12	1	12	7	—	7	—	—	—	—	—
Eastern Province ...	77	450	47	366	2	30	2	30	—	—	2	—	1	6	1	12
Central Province ...	51	519	43	337	3	34	1	34	1	30	14	20	14	31	3	8
Western Province	44	267	27	181	19	28	15	28	15	38	28	16	9	16	17	22
Ashanti	35	207	35	194	1	12	1	12	1	12	12	—	31	—	—	—
Total ...	207	1243	152	1073	25	104	19	116	49	36	56	47	21	36	16	36

Station.	1913. Number. Male. Number.	1913. Number. Male. Seats.	1913. Number. Female. Number.	1913. Number. Female. Seats.	1913. New Ones. Male. Number.	1913. New Ones. Male. Seats.	1913. New Ones. Female. Number.	1913. New Ones. Female. Seats.	1913. Repaired. Male. Number.	1913. Repaired. Male. Seats.	1913. Repaired. Female. Number.	1913. Repaired. Female. Seats.	1913. Demolished. Male. Number.	1913. Demolished. Male. Seats.	1913. Demolished. Female. Number.	1913. Demolished. Female. Seats.
Accra	22	250	16	161	3	66	1	12	2	18	2	36	—	—	—	—
Addah	6	24	5	20	—	—	—	—	—	—	—	—	—	—	—	—
Akuse	8	48	8	48	—	—	—	—	—	—	—	—	—	—	—	—
Quittah	10	66	9	60	2	16	1	12	9	—	8	—	1	4	—	—
Cape Coast ...	19	160	19	160	1	12	1	12	9	—	9	—	1	8	1	8
Elmina	6	47	6	47	—	—	—	—	—	—	1	—	—	—	—	—
Saltpond	14	85	13	82	—	—	—	—	7	35	5	21	1	5	—	—
Winnebah	8	32	9	42	—	—	—	—	—	—	—	—	—	—	—	—
Seccondee	18	105	12	73	4	32	3	28	15	73	9	45	3	16	3	12
Axim	9	23	10	23	—	—	—	—	6	—	—	—	—	—	—	—
Tarquah	12	65	7	38	—	—	—	—	—	—	—	—	—	—	—	—
Dunkwa	2	24	2	24	—	—	—	—	5	—	5	—	5	30	5	30
Coomassie	30	204	30	204	6	40	6	40	—	—	—	—	2	16	2	16
Obuasi	7	50	7	50	—	—	—	—	—	—	—	—	—	—	—	—
Eastern Province ...	46	392	38	289	5	82	2	24	11	18	10	36	16	4	—	—
Central Province ...	47	324	47	331	1	12	1	12	16	35	15	21	2	13	1	8
Western Province	41	217	31	158	4	32	3	28	26	75	14	45	8	46	8	42
Ashanti	37	254	37	254	6	40	6	40	—	—	—	—	2	16	2	16
Total ...	171	1187	153	1032	16	166	12	104	53	126	39	102	13	79	11	66

8.—Latrines (Private).

1910.

	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night-soil men.	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.
Accra	52	350	350	30	—	—	—	—	—
Addah	—	—	—	—	—	—	—	—	—
Akuso	24	72	—	8	1	—	1	1	—
Quittah	43	145	145	6	—	—	—	—	—
Cape Coast	395	673	673	28	10	—	—	89	—
Elmina	—	—	—	No	rec	ord	—	—	—
Saltpond	7	—	—	10	—	—	—	—	—
Winnebah	—	248	—	12	—	incl	uded	in p	ools
			pri	sone	rs.	or	exca	vati	ons.
Seccondee	60	314	—	12	8	—	—	2	—
Axim	6	—	—	—	—	—	—	—	—
Tarquah	30	149	—	15	—	—	—	—	—
Dunkwa	—	—	—	No	rec	ord	—	—	—
Coomassie	14	208	320–340	—	60	—	—	—	—
Obuasi	12	152	132	13	—	—	—	—	—
Sunyani	—	—	—	—	—	—	—	—	—
Kintampo	—	—	—	—	—	—	—	—	—
Eastern Province ...	119	567	495	44	1	—	1	1	—
Central Province ...	402	921	673	50	10	—	—	89	—
Western Province...	96	463	—	27	8	—	—	2	—
Ashanti	26	340	472	13	60	—	—	—	—
Total	743	2291	1640	134	79	—	1	92	—

1911.

	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night-soil men.	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.
Accra	150	306	can't say	35	—	—	—	—	—
Addah	9	114	—	5	—	—	—	—	—
Akuso	15	66	—	8	4	4	—	1	—
Quittah	142	118	—	7	—	—	—	—	—
Cape Coast	88	—	—	—	—	—	—	—	—
Elmina	2	94	—	6	—	—	—	—	—
Saltpond	13	98·8	—	11	—	—	—	—	—
Winnebah	33	276	—	12	—	—	—	—	—
Seccondee	66	80	—	20	—	—	—	—	—
Axim	24	143	—	8	—	—	—	—	—
Tarquah	29	122	—	18	—	—	—	—	—
Dunkwa	12	8	8	4	—	—	—	—	—
Coomassie	40	223	293	26	—	—	—	—	—
Obuasi	23	130	—	14	—	—	—	—	—
Sunyani	—	—	—	—	—	—	—	—	—
Kintampo	—	—	—	—	—	—	—	—	—
Eastern Province ...	416	604	—	55	4	4	—	1	—
Central Province ...	136	468·8	—	29	—	—	—	—	—
Western Province...	131	353	8	50	—	—	—	—	—
Ashanti	63	353	293	40	—	—	—	—	—
Total	746	778	301	174	4	4	—	1	—

1912.

	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night-soil men.	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.
Accra	157–160	Abt. 300	—	40	—	—	—	—	—
Addah	9	108	—	8	—	—	—	—	—
			pri	sone	rs				
Akuso	15	67	—	8	—	—	—	4	—
Quittah	79	118	—	8	2	—	—	—	—
Cape Coast	76	747	—	32	—	—	—	—	—
Elmina	3	94	—	8	—	—	—	—	—
			pri	sone	rs				
Saltpond	15	122·12	6	12	—	—	—	—	—
Winnebah	40	186	—	8	6	1	—	5	1 by owner
Seccondee	85	80	19	20	—	—	—	—	—
Axim	24	165	—	16	—	—	—	—	—
Tarquah	43	122	—	16	—	—	—	—	—
Dunkwa	12	9	—	4	—	—	—	—	—
Coomassie	40	293	—	26	—	—	—	—	—
Obuasi	8	120	—	20	—	—	—	—	—
Sunyani	—	—	—	—	—	—	—	—	—
Kintampo	—	—	—	—	—	—	—	—	—
Eastern Province ...	263	593	—	64	2	—	—	4	—
Central Province ...	134	1149·12	6	60	6	1	—	5	1
Western Province...	164	376	19	56	—	—	—	—	—
Ashanti	48	413	—	46	—	—	—	—	—
Total	609	2531·12	25	226	8	1	—	9	1

1913.

	Number.	Pails removed daily.	Number of clean pails substituted for dirty ones.	Number of night-soil men.	Cesspools.	Cesspools cleansed.	New cesspools.	Cesspools abolished.	Cesspools regularly oiled.
Accra	316	449	1·5	45	—	—	—	—	—
Addah	9	106	—	8	1	1	—	—	1
Akuso	12	46	—	8	—	—	—	—	—
Quittah	74	144	—	9	—	—	—	2	—
Cape Coast	90	808	—	33	—	—	—	—	—
Elmina	11	21	—	1	—	—	—	—	—
Saltpond	18	120·29	2	11	—	—	—	—	—
Winnebah	15	172	29	10	—	—	—	—	—
Seccondee	82	—	—	28	—	—	—	—	—
Axim	36	157	44	16	—	—	—	—	—
Tarquah	58	122	16	16	—	—	—	—	—
Dunkwa	19	19	19	4	—	—	—	—	—
Coomassie	87	297	92·135	26	—	—	—	—	—
Obuasi	18	—	—	20	—	—	—	—	—
Sunyani	—	—	—	—	—	—	—	—	—
Kintampo	—	—	—	—	—	—	—	—	—
Eastern Province ...	411	745	1·5	70	1	1	—	2	1
Central Province ...	164	1121·29	31	55	—	—	—	—	—
Western Province...	195	298	79	64	—	—	—	—	—
Ashanti	105	438	135	46	—	—	—	—	—
Total	875	2602·29	246·5	235	1	1	—	2	1

9.—Removal of Refuse.

Station.	1910.						1911.						1912.						1913.					
	Dustbins.	Carts removing street refuse.	Amount of refuse.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount of refuse.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount of refuse.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount of refuse.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.
Accra	48	6	40 carts	—	Not recorded	25	40	10	55 carts	—	—	29	46	10	50—60 loads	10—12 trucks privately	See Note 11 to dust bin & removed by occpr.	30—45	46	14	66·5	—	—	23
Addah	1	1	3 carts	Done privately	Done privately	5	9	2	18 carts	—	—	6	—	2	28			10	9	2	18	2	2	10
Akuse	13	3	46 carts	Nil	Nil	6	13	3	35 carts & 30 h. loads	—	—	9	4	2	6	—		—	4	3	10	3	7	4
Quittah	12	2	6 carts	—	—	6	6	1	1 cart load	2	16 cart loads	8	10	2	½ cart load	2	12 cart loads	9	9	3	½	3	14	9
Cape Coast	63	12	19 1/5 tons	—	—	36	60	11	116 cart loads	—	—	32	49	11	76½ cart loads	—	—	33	40	11	71	1	¾ cart load	34
Elmina	—	No record		—	—	—	6	1 cart, 3 barrows	3 carts, 9 barrows	—	—	12	6	1–3 whl. barrows	10 cart loads	—	2 cart loads	13	6	—	2	—	24	13
Saltpond	13	—	5 carts	—	—	10	14	5	—	—	18	20	14	5	12·9	Same as above	25·6	26	19	6	14·2	6	29·5	20
Winnebah	14	3	28 carts	—	—	14	18	3	26 cart loads	—	—	8	14	3	12 cart loads	1	1 cart load	4	9	3	16	1	—	6
Seccondee	20	6	26 loads	1	10 loads	24	20	2	6 carts	4	20	50	19	2	4 cart loads	4	23 cart loads	56	18	6	23·5	2	2 cart loads	56
Axim	10	2	5 carts	—	—	6	10	2	12 carts	—	½ cart load	12	13	3	18	—	3	17	13	4	20	—	3	12
Tarquah	—	—	6 barrels full	—	—	6	—	6 wheel barrows	12 carts	6	6 cart loads	8	1 received 1 forBunge	6 wheel barrows	6 wheel barrows	6 wheel barrows	6 wheel barrows	6	—	4 wheel barrows	47	—	13 cart loads	6
Dunkwa	—	No record		—	—	—	2	—	30 h. loads	—	—	5	4	—	about 36	Nil	80 head loads	6	15	—	38 wheel barrows	—	277 head loads	3
Coomassie	2	3	160 whl. barrows	—	2 baskets each yard	29	—	20 wheel barrows	46 wheel barrows	10	30	12	1	20 wheel barrows	13—16 hd. lds.	10	210·39 hd. loads	12	1	6 carts & 14 wheel barrows	74 head loads	—	335·6 hd. loads	34
Obuasi		—	100 hd. loads	—	1,500 hd. loads	15	—	—	14 h. loads	—	641 h. loads	13	—	—	25 hd. loads	—	800 head loads	13	—	—	25 head loads	—	825 hd. loads	16
Eastern Province ...	74	12	—	—	—	42	68	—	—	2	—	52	69	—	—	—	—	64	68	—	—	—	—	46
Central Province ...	90	15	—	—	—	60	98	—	—	—	—	72	83		—	—	—	76	74	—	—	—	—	73
Western Province ...	30	8	—	1	—	36	32	—	—	10	—	75	37		—	—	—	85	46	—	—	—	—	77
Ashanti	2	3	—	—	—	35	—	—	—	10	—	25	1		—	—	—	25	1	—	—	—	—	50
Total	196	38	—	1	—	173	198	—	—	22	—	224	181	—	—	—	—	259	189	—	—	—	—	246

10.—Mode of Disposal of Excreta, Refuse and Offal.

1911.

Station.	Buried or Trenched.			Burnt.			Thrown into sea.			Otherwise dealt with.		
	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.
Accra	—	13 C-lds. 55 H-lds.	—	—	56	—	361	—	—	—	—	—
Addah	—	12	—	—	6	—	104	—	—	—	—	—
Akuse	60	20	—	—	20	—	—	—	6	—	—	—
Quittah	92	—	½ H-ld.	—	—	—	—	4½	—	—	—	2
Cape Coast ...	—	—	1/15 H-ld.	—	1	—	609	115 H-lds.	—	—	—	1/7 H-ld.
Elmina	—	—	—	—	3-9 Bar-lds.	1 H-ld.	94	—	—	—	—	—
Saltpond ...	—	—	—	—	—	—	98·8	23·7	4·2	—	—	—
Winnebah ...	—	26	—	—	—	—	278	—	—	—	—	—
Seccondee ...	—	59 H-lds.	—	—	26	—	175	—	4	—	—	—
Axim	—	—	—	—	12½	—	143	—	—	—	—	—
Tarquah ...	122	—	—	—	12	2	—	—	—	—	—	—
Dunkwa ...	4	—	—	—	30 H-lds.	10 H-lds.	—	—	—	—	—	—
Coomassie ...	293	30	1 H-ld.	—	—	—	—	—	—	—	—	—
Obuasi	130	24 H-lds.	3 H-lds.	—	641 H-lds.	14 H-lds.	—	—	—	—	—	—
Eastern Province	152	—	—	—	—	—	465	—	6	—	—	—
Central Province	—	—	—	—	—	—	1079·8	—	4·2	—	—	—
Western Province	126	—	—	—	—	—	318	—	4	—	—	—
Ashanti... ...	423	—	—	—	—	—	—	—	—	—	—	—
Total ...	701	—	—	—	—	—	1862·8	—	14·2	—	—	—

1912.

Station.	Buried or Trenched.			Burnt.			Thrown into sea.			Otherwise dealt with.		
	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.
Accra	—	40	—	—	50-60	—	300	—	1	—	—	—
Addah	—	15	—	—	13	—	108	—	—	—	—	—
Akuse	67	6	1	—	—	—	—	—	—	—	—	—
Quittah	89	—	—	—	6½	½ H-ld.	29	—	1	—	—	—
Cape Coast ...	1	1/15 H-ld.	1/15 H-ld.	—	75½	—	747	—	1/7	—	—	—
Elmina	—	—	—	—	12	1 H-ld.	94	—	—	—	—	—
Saltpond ...	—	4·7	—	—	38·5	—	12·2	—	—	—	—	—
Winnebah ...	—	2	—	—	12	—	186	—	—	—	—	—
Seccondee ...	—	3	—	—	24	2	80	—	—	—	—	—
Axim	—	—	—	—	20	—	186	—	·02	—	—	—
Tarquah ...	122	11	2 H-lds.	—	—	—	—	—	—	—	—	—
Dunkwa ...	9	—	—	—	120 H-lds.	12 H-lds.	—	—	—	—	—	—
Coomassie ...	207 34	210·39 H-lds.	15·31 H-lds.	—	—	—	—	—	—	—	—	—
Obuasi	120	2·5 H-lds.	2	—	800 H-lds.	—	—	—	—	—	—	—
Eastern Province	156	—	—	—	—	437	—	2	—	—	—	—
Central Province	—	—	—	—	—	1149·12	—	1/7	—	—	—	—
Western Province	131	—	—	—	—	266	—	·02	—	—	—	—
Ashanti... ...	327·84	—	—	—	—	—	—	—	—	—	—	—
Total ...	614·84	—	—	—	—	1832·12	—	2·16	—	—	—	—

1913.

Station.	Buried or Trenched.			Burnt.			Thrown into sea.			Otherwise dealt with.		
	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails excreta per day.	Cartloads refuse per day.	Cartloads offal per day.
Accra	—	31	—	—	49	—	49	—	—	—	—	—
Addah	—	—	—	—	20	—	106	—	—	—	—	—
Akuse	46	6	10	—	—	—	—	—	—	—	—	—
Quittah	—	—	1½	—	6½	—	144	—	1/2 H-ld.	—	—	—
Cape Coast ...	—	1	1-15 H-ld.	—	70	—	808	—	1/7	—	—	—
Elmina	—	—	1 H-ld.	—	24	—	94	—	—	—	—	—
Saltpond ...	—	—	—	—	43·7	4·2	132·9	—	—	—	—	—
Winnebah ...	—	—	3	—	16	—	172	—	—	—	—	—
Seccondee ...	—	—	—	—	23½	—	134	—	2 B'sk'ts	—	—	—
Axim	—	—	—	—	20	—	157	—	2	—	—	—
Tarquah ...	122	11	2 H-lds.	—	—	—	—	—	—	—	—	—
Dunkwa ...	19	19·09 H-lds.	1 H-ld.	—	257 H-lds.	2 H-lds.	—	—	—	—	—	—
Coomassie ...	297	429·6	19	—	—	—	—	—	—	—	—	—
Obuasi	—	—	1	—	—	—	—	—	—	—	—	—
Eastern Province	46	—	—	—	—	—	699	—	—	—	—	—
Central Province	—	—	—	—	—	—	1206·9	—	—	—	—	—
Western Province	141	—	—	—	—	—	311	—	—	—	—	—
Ashanti... ...	297	—	—	—	—	—	—	—	—	—	—	—
Total ...	484	—	—	—	—	—	2216·9	—	—	—	—	—

11.—Cartloads of Cans, Bottles, and Incombustible Material from Houses, Huts, and Compounds.

Station.	1910.	1911.	1912.	1913.
Accra	43 for November and December	55 head-loads	40	13·5
Addah	Not estimated. Done privately by occupiers	15	15	2
Akuse	10	All such material is deposited in the dustbin by the inhabitants	Nil Occupier removes his own rubbish	6
Quittah	2	½	¼	6
Cape Coast ...	—	—	—	¾
Elmina	No record	—	—	11
Saltpond ...	—	—	3·1	4·5
Winnebah ...	Included in refuse thrown into authorised holes by owners	2	4	2
Seccondee ...	40 baskets	59 head-loads	3	2
Axim	Not known	2	3	3
Tarquah... ...	2 barrels full	60 head-loads	36 head-loads	50 head-loads
Dunkwa ...	No record	16 do.	20 do.	12 do.
Coomassie ...	2	2	3	3
Obuasi	—	24 head-loads	25 head-loads	—
Eastern Province	—	—	—	—
Central Province	—	—	—	—
Western Province	—	—	—	—
Ashanti... ...	—	—	—	—
Total ...	—	—	—	—

12.—Water Supply.

Station.	Pipe-Borne Water.				Wells.				Tanks.														Barrels.	
					Public.		Private.		Public.						Private.						Nature of Tanks.				
	Source.	Linear yards.	Public stand pipes.	Private stand pipes.	No.	M.P., &c.	No.	M.P., &c.	Under-ground.	M.P., &c., pump.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Under-ground.	M.P., &c., pump.	Above ground.	M.P.	400 gallons or less.	Above 400 gallons.	Wood.	Iron.	Con-crete.	No.	M.P.
Accra	—	—	—	—	—	—	185	170	25	23	57	57	—	82	157	155	170	170	19	308	26	144	157	1,050	800 (approx.)
Addah	—	—	—	—	5	—	9	—	2	—	9	9	—	11	3	3	5	5	—	8	2	15	2	8	8
Akuse	—	—	—	—	—	—	—	—	—	—	4	11	2	9	2	2	9	9	—	9	1	8	2	135	135
Quittah	—	—	—	—	6	5	63	—	—	—	—	—	5	6	5	5	15	15	—	—	—	15	5	200	200
Cape Coast... ...	—	—	—	—	8	4	231	206	14	13	6	6	—	20	62	62	110	110	54	118	9	112	71	426	390
Elmina	—	—	—	—	3	2	16	15	5	3	1	1	1	5	25	25	61	61	31	55	1	60	25	280	280
Saltpond	—	—	—	—	5	1	17	15	3	2	2	2	—	5	14	10	50	46	28	22	11	25	14	98	98
Winnebah	—	—	—	—	—	—	30	30	3	2	3	3	1	5	19	19	76	76	39	32	18	147	19	70	70
Seccondee	—	—	—	—	8	8	133	127	—	—	—	—	—	—	42	41	224	220	—	224	4	205	15	361	357
Axim	—	—	—	—	7	7	28	26	1	1	—	—	—	—	—	—	73	73	70	3	2	70	1	69	69
Tarquah	—	—	—	—	4	4	46	37	—	—	—	—	—	—	3	3	60	60	36	—	24	10	48	104	98
Dunkwa	—	—	—	—	—	—	28	9	—	—	—	—	—	—	—	—	19	19	12	7	2	17	—	25	25
Coomassie	—	—	—	—	11	6	82	70	—	—	—	—	—	—	4	4	29	29	15	18	8	21	4	79	69
Obuasi	Spring	2,256	14	2	8	—	—	—	—	—	—	—	—	—	—	—	14	14	—	—	1	14	—	12	12
Eastern Province ..	—	—	—	—	11	5	257	170	27	23	77	77	7	108	167	165	199	199	19	325	29	182	166	2,195	1,143
Central Province ...	—	—	—	—	16	7	294	266	25	20	12	12	2	35	120	116	297	293	153	237	39	344	129	874	838
Western Province...	—	—	—	—	19	19	235	299	1	1	—	—	—	—	45	44	376	372	118	234	32	302	64	559	549
Ashanti	—	—	—	—	19	6	82	70	—	—	—	—	—	—	4	4	43	43	15	18	9	35	4	91	81
Total ...	Spring	2,256	14	2	65	37	868	805	53	44	89	89	9	143	336	329	915	907	305	814	109	863	363	3,719	2,611

13.—Drainage (Private).

Station.	1910.				1911. MASONRY DRAINS.				1912. MASONRY DRAINS.				1913.				1910. EARTH DRAINS.			1911. EARTH DRAINS.			1912. EARTH DRAINS.			1913.		
	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards conseructed.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.
Accra	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Addah	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Akuse	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Quittah	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cape Coast	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Elmina	—	No record			—	—	—	—	—	—	—	—	—	—	—	—	No record			—	—	—	—	—	—	—	—	—
Saltpond	—	—	—	—	—	—	—	—	—	—	—	23	80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Winnebah	—	—	—	—	120	—	—	—	139	39	—	39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Seccondee	400	—	150	—	—	—	—	—	1,850	—	—	250	1,820	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Axim	—	—	—	—	—	—	—	—	31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tarquah	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dunkwa	—	No record			—	—	—	—	—	—	—	—	—	—	—	—	No record			50	—	—	—	—	—	—	—	—
Coomassie	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Obuasi	—	—	—	—	—	—	—	—	103	—	—	—	—	—	—	—	—	—	—	—	—	—	700	300	mthly	—	—	—
Eastern Province	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Central Province	—	—	—	—	120	—	—	—	139	39	—	62	80	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Western Province... ...	400	—	150	—	—	—	—	—	1,851	—	—	250	1,820	—	—	—	—	—	—	50	—	—	—	—	—	—	—	—
Ashanti	—	—	—	—	—	—	—	—	100	—	—	—	—	—	—	—	—	—	—	—	—	—	700	300	—	—	—	—
Total	400	—	150	—	120	—	—	—	2,090	39	—	312	1,900	—	—	—	—	—	—	50	—	—	700	300	—	—	—	—

13.—Drainage (Public).

Station.	1910. MASONRY DRAINS. Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	1911. Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	1912. Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	1913. Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	1910. EARTH DRAINS Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	1911. Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	1912. Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	1913. Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.
Accra	8000	—	—	5000	9109	1288	93	1109	16014	650	220	6905	16664	—	—	1304	Not recorded.		Every 2 months.	10459	9727	Every 2 months.	15620	7942	Every 3 months.	3699	1149	Every two months.
Addah	—	—	—	—	5	5	—	—	5	—	—	—	5	—	—	—	—	250	Newly constructed.	600	250	Quarterly.	600	—	2 monthly.	600	—	Quarterly.
Akuse	76	—	—	76	151	—	—	75	151	—	—	—	—	—	—	—	3520	4400	Once a month.	11546	3601	Monthly.	395706	7099	Monthly.	Unknown.		Daily.
Quittah	586	—	—	158	724	—	—	30	—	—	—	—	1234	—	—	394	—	—	—	—	—	—	—	—	—	150	—	3 monthly.
Cape Coast ...	—	—	—	1418	16666	324	60	828	17066½	262	843	269½	17916	367	4688	849½	10505	—	4	4935	—	Continuously	3357	50	Continuously	2507	60	Continuously.
Elmina	No record.				—	—	—	—	—	—	—	863	863	—	—	—	No record.		—	—	—	—	—	200	Once a year.	—	—	Once a quarter.
Saltpond ...	—	—	—	Abt. 150	—	—	—	723·6	—	—	—	3145	8295	—	300	400	700 lagoon.	—	—	—	891	—	250	100	Monthly.	805	205	Monthly.
Winnebah ...	2020	—	—	760	6600	—	—	3580	7237½	15	—	637½	700	—	—	—	Not estimated.	480	Once a month.	9400	3440	Every 2 months.	400	90	Monthly as required.	124	151	Every 3 months in wet season.
Seccondee ...	4500	150	170	280	8920	—	599	2106	14247	—	274	5327½	—	—	—	—	700	—	Monthly.	1905	564	Every 2 months.	1215	420	Occasionally.	2000	1000	Every 2 months at intervals as occasion
Axim	1240	—	—	300	—	87	—	—	3088	426	—	500	—	240	—	—	—	—	Every 2 months.	620	40	—	815	—	—	1351	—	4 times. [requires.
Tarquah... ...	—	—	—	334½	153709	—	6	107	753709	—	—	—	—	—	—	—	—	—	—	2196½	2196½	Every fortnight.	24244	3554	Every fortnight.	1106	1969	Every fortnight.
Dunkwa... ...	No record.				—	—	—	—	—	—	—	—	—	—	—	246	No record.		—	—	—	Once a quarter.	633·3	633·3	About monthly.	6418	317	Monthly.
Coomassie ...	501	120	—	—	1760	—	—	140	800	—	451	440	3400	—	—	880	—	411	Monthly.	682803	411	—	16036	510	Monthly.	50751	5167	7 times a month.
Obuasi	122	—	—	132	122	—	—	132	—	—	—	—	—	—	—	—	24200	—	Monthly.	24200	—	Monthly.	—	—	—	—	—	—
Eastern Province	8662	—	—	5234	9989	1293	93	1214	16170	650	220	6905	17903	—	—	1698	3520	4650	—	22605	13578	—	411926	15041	—	3849	1149	—
Central Province	2020	—	—	2328	23266	324	60	5131·6	24304	277	843	4915	27774	367	4388	1249½	11205	480	—	14335	4331	—	4007	440	—	3436	416	—
Western Province	5740	150	170	914½	162629	87	605	2213	771044	426	274	5827½	—	240	—	246	—	—	—	4721½	2806	—	26907·3	4607·3	—	10875	3286	—
Ashanti	713	120	—	132	1882	—	—	272	800	—	451	400	3400	—	—	880	24200	411	—	707003	411	—	16036	510	—	50751	5167	—
Total ...	17134	270	170	8608½	197766	1704	758	8830·6	812318	1353	1788	18047½	49077	607	4988	4073½	39625	5541	—	748064½	21120	—	458876·3	20598·3	—	68911	10018	—

14.—Clearance of Undergrowth, Grass, Weeds, Etc.

Station.	1910.		1911.		1912.		1913.	
	Square yards grass, &c., cut and removed.	Frequency of clearance.	Square yards grass, &c., cut and removed.	Frequency of clearance.	Square yards grass, &c., cut and removed.	Frequency of clearance.	Square yards grass, &c., cut and removed.	Frequency of clearance.
Accra	Not recorded	Every 3 months	946,960	Every 3 months	1,365,696	As often as required	1,848,653	About every 3 months
Addah	1,200	Monthly	20,000	Quarterly	20,000	2-monthly	20,000	Quarterly
Akuse	No record		248,562	Every 2 months	1,884,827	Monthly	—	Continuously being cleared
Quittah	9,559	5	18,962	Once a week	24,042	Twice a year	40,000	6-monthly
Cape Coast ...	312,208	4	321,809	Continuously	1,321,214	Continuously	1,204,957	Continuously
Elmina	No record		5,987	—	58,806	—	36,360	Once a month
Saltpond	No record		12,704	Monthly	58,837	Daily	53,454	Weekly
Winnebah ...	All land in town to 50 yards from buildings three times in the last 6 months.		Not recorded	Every 2 months	96,030	3-monthly	24,900	Every 3 months
Seccondee ...	484,000	Undergrowth and jungle every 6 months, long grass 6 weeks.	572,791	Quarterly	929,657⅗	At intervals as occasion requires.	1,824,939	Quarterly
Axim	—	Every 3 months	236,790	6 times	384,029	—	575,833	6-monthly
Tarquah	320,000	Every 6 weeks	899,256	Twice a quarter	289,980	Twice a quarter	789,090	Twice a quarter
Dunkwa	No record		8,000	Quarterly	5,102	About monthly	16,639	Monthly
Coomassie ...	1,904,665	Monthly	1,904,665	8 times yearly	721,985	8 times yearly	6,426,390	Monthly
Obuasi	1,454,511	Monthly	2,992,059	Monthly	1,800,000	Monthly	3,120,000	Monthly
Eastern Province	10,759	—	1,234,484	—	3,294,565	—	1,908,653	—
Central Province...	312,208	—	340,500	—	1,534,887	—	1,319,671	—
Western Province	804,000	—	1,716,837	—	1,608,768⅗	—	3,204,501	—
Ashanti	3,359,176	—	4,896,724	—	9,019,785	—	9,546,390	—
Total ...	4,486,143	—	8,188,545	—	15,458,002⅗	—	15,979,215	—

15.—Excavations and Low-lying Land.

Station.	1910.							1911.						
	Pools and Excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, Streams, &c. Fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.	Pools and Excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, Streams, &c. Fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.
Accra	78	50	22,000 sq. ft.	—	Not recorded.	—	6	—	161	24,520 sq. yds.	144	13,295	—	11
Addah	25	6	500 yds.	—	Not estimated.	—	15	14	2	250 sq. yds.	—	—	—	6
Akuse	50	No record	—	—	—	—	—	2	78	174	—	1,249	—	6
Quittah	23	1	—	—	3	—	—	—	—	—	—	—	—	—
Cape Coast ...	76	72	889 sq. yds.	1	563	—	2	—	39	470 sq. yds.	—	1,991	—	6
Elmina	—		No returns.			—	—	25	5	500 sq. yds.	—	—	1	—
Saltpond	—	—	—	—	—	—	10	—	—	—	—	—	—	—
Winnebah	162	168	Not measured.	—	Not measured.	4	20	2	10	10,000 sq. yds.	—	20,000	—	15
Seccondee	6	6	¾ of 2nd Lagoon.	—	40 sq. yds.	—	10	125	123	59,817	2	54,503	—	399
Axim	—	12	3,500 sup yds.	—	—	—	No record	—	—	81 sq. yds.	—	—	—	—
Tarquah	42	118	900 sq. yds.	—	—	—	9	106	104	2,150 sq. yds.	1	2,150	—	54
Dunkwa	—	—	No returns.			—	—	31	8	150 sq. yds.	—	60 c. ft.	—	14
Coomassie	80	30	100 sq. yds.	—	5 cart loads.	1	4	—	—	100 sq. yds.	—	—	—	—
Obuasi	79	79	—	—	24,910	—	15	150	13	1,710	—	—	—	40
Eastern Province ...	176	57	2,945½	—	3	—	21	16	241	24,944	144	14,544	—	23
Central Province ...	238	180	889	1	563	4	32	27	54	10,970	—	21,991	1	21
Western Province	48	136	—	—	40	—	19	262	235	62,198	3	56,655·2	—	467
Ashanti	159	109	100	—	—	1	19	150	13	1,810	—	—	—	40
Total ...	621	482	—	1	—	5	91	455	543	99,922	147	93,190	1	551

Station.	1912.							1913.						
	Pools and Excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, Streams, &c. Fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.	Pools and Excavations.	Excavations filled up.	Amount of marsh raised and drained.	Pools, Streams, &c. Fish stocked.	Cubic yards material used for filling in.	Persons fined for making excavations.	Men employed daily for filling in.
Accra	Variable.	68	—	All	—	—	12	Variable.	30	1,873 sq. yds.	6	497	1	5
Addah	5	7	—	—	—	—	10	—	21	42 sq. yds.	—	Not estimated.	—	10
Akuse	—	68	972	—	1,454	—	6	—	28	—	—	—	—	10
Quittah	14	6	—	1	—	6	—	Hundreds.	10	100 sq. yds.	—	300	—	9
Cape Coast ...	1	18	—	—	1,726½	—	4-6	Varieswith rains, &c.	92	5,928	—	5,609	—	11·5
Elmina	25	7	—	—	—	—	—	About 25	—	—	6	—	—	—
Saltpond	—	20	7	—	—	—	—	—	3	552	—	—	—	—
Winnebah	116	116	100 sq. yds.	—	—	—	4	15	15	2,590	—	202	—	—
Seccondee	153	153	77,826 sup. yds.	—	35,004	—	6	—	200	—	1	—	14	Not stated
Axim	—	3	—	—	—	—	—	—	13	—	—	—	—	3
Tarquah	186	—	2,150 c. yds.	—	3,854	—	50	585	11	243,591 c. yds	—	109	—	4
Dunkwa	230	128	2,920	2	361	48	—	40	—	—	—	2 wheel barrows from Incinerator each day.		2
Coomassie	—	—	600 sq. yds.	—	—	3	—	—	184	10,125	—	1,569	—	6
Obuasi	2	—	—	—	—	—	—	—	—	—	—	—	—	16
Eastern Province ...	19	149	972	1	1,454	6	28	—	89	2,015	6	797	1	34
Central Province ...	142	161	107	—	1,726½	—	10	40	110	9,070	6	5,811	—	11·5
Western Province	569	284	82,896	2	39,219	48	56	625	224	243,591	1	—	14	9
Ashanti	2	—	600	—	—	3	—	—	184	10,125	—	1,569	—	22
Total ...	732	594	84,575	3	42,399½	57	94	—	607	264,801	13	—	15	76·5

16.—Oiling.

Station.	1910.				1911.				1912.				1913.			
	Drains oiled.	Pools and Excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and Excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and Excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.	Drains oiled.	Pools and Excavations oiled.	Tanks and Barrels oiled.	Men employed daily for oiling.
Accra (Nov. & Dec., 1910)...	734	1,203	3,454	6	3,498	5,610	6,313	9	1,440	863	1,485	6	1,066	9,916	2,393	8 average.
Addah	—	—	6 done privately	—	—	—	—	—	—	—	—	—	—	—	12	occasionally.
Akuse	—	No record		—	248	197	270	Various	—	509		1	98	152	104	2
Quittah	3	23	—	2	5	—	—	—	—	58	—	—	—	16	2	—
Cape Coast	93	77	9,972	4	312	299	124	4	243	389	197	4	582	1,124	338	4
Elmina	—	No record		—	1	—	—	—	—	—	—	1	14	20	—	—
Saltpond	—	—	4,861	4	—	—	522	—	—	64	—	1	—	145	78	—
Winnebah	264	489	2,880	6	467	322	1,018	2	8	640	124	2	18	32	322	1
Seccondee	9 twice weekly	18 twice weekly	280	10	109	1,126	1,646	5	55	951	709	4	185	1,456	636	4
Axim...	74	No record	535	27	225	—	—	—	111	—	8	1	56	90	—	2
Tarquah	8	42	34	5	24	106	160	1	272	—	—	1	120	885	30	2
Dunkwa	—	No record		—	28	43	10	2	184	151	108	24	339	1,129	502	1
Coomassie	8 daily	80 daily	6	1	8 daily	—	—	—	10-m'thly.	260	—	1	2,200	1,264	—	2
Obuasi	—	2671		1	74	195	12	1	15-m'thly.	2-monthly	19	1	153	60	28	1
Eastern Province	737	1,226	3,460	8	3,751	5,807	6,583	9	1,440	921	1,485		1,104	10,084	2,511	11
										509		7				
Central Province	357	566	17,713	14	780	621	1,664	6	251	1,086	321	8	614	1,321	738	5
Western Province	1,018	1,914	849	42	386	1,275	1,816	8	622	1,102	825	30	700	3,560	1,168	9
Ashanti	2,920	29,200	6	2	2,994	196	12	1	3,830	284	19	2	2,353	1,324	28	3
		2671														
Total	5,032	32,906	22,028	66	7,911	7,899	10,075	24	6,143	3,393	2,650	47	4,771	16,289	4,445	28
		2671								509						

17.—Inspections and Prosecutions.

Station.	1912.								1913.							
	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	Soda Water factories.	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	Soda and aerated water factories inspected.
Accra	10-11	129,120	693	—	633	1,498	257	—	10 average	64,889	1,724	2,192	667	1,816	353	—
Addah	1	3,000	57	8	42	947	3	—	1	8,620	56	47	20	209	21	—
Akuse	1	8,258	76	113	76	386	226	—	1	4,298	149	149	115	47	—	—
Quittah	1	2,036	63	33	29	151	90	—	1	3,360	91	151	30	58	12	—
Dodowah	1	2,868	41	—	41	—	66	—	1	1,621	2	—	2	—	45	—
Nsawan & Pakro ...	1	1,138	114	—	114	—	131	—	1	612	35	42	35	50	18	—
Adawso	—	5,326	76	—	76	—	114	—	—	3,596	53	—	53	—	132	—
Komfrodua	1	4,392	57	—	57	—	156	—	—	4,000	1	—	1	—	116	—
Aburi ...		5,916	24	—	24	—	45	—	1	2,029	1	—	1	—	33	—
Mampong ...		1,728	27	—	27	—	56	—	—	1,793	18	—	18	—	51	—
Akropong ...		—	5	—	5	—	13	—	—	—	—	—	—	—	—	—
Cape Coast ...	11	23,747	428	208	210	471	2	1	11	20,277	231	288	173	325	80	1
Elmina	1	6,212	163	992	128	752	79	—	1	3,640	176	8	126	171	11	—
Winnebah	1	6,140	—	not neces-sary.	62	244	19	—	1	8,100	102	—	69	286	31	—
Soadru & Nsaba ...	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
Appam	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—
Saltpond	1	11,973	68	12	63	53	11	—	1	9,930	38	10	46	60	4	—
Secconidee	8	54,656	429	297	301	356	74	—	9	57,064	342	1,416	342	88	211	—
Axim	1	11,727	102	28	84	107	24	—	1	4,927	32	7	27	76	29	—
Tarquah	1	4,453	33	99	21	1,084	42	—	1	6,185	60	189	32	330	112	—
Dunkwa	1	5,252	18	45	18	77	56	—	1	6,876	35	35	36	44	73	—
Coomassie	2	58,200	183	698	183	886	392	1	3	89,263	241	198	241	188	493	1
Obuasi	2	66,000	31	—	31	276	229	—	2	98,519	—	—	367		—	—
Kintampo	—	—	—	—	—	—	—	—	—	3,360	30	8	36	45	29	—
Sunyani	—	—	—	—	—	—	—	—	—	1,915	76	76	—	90	27	—
Tamale	1	3,744	39	—	39	—	104	—	1	6,374	62	3	46	22	—	—
Wa	1	1,656	—	—	—	—	20	—	1	32,338	309	104	1	482	120	—
Gambaga	—	936	—	—	—	—	28	—	—	303	8	—	—	—	2	—
Salaga	1	2,832	4	—	4	—	53	—	1	6,908	43	43	—	908	21	—
Bole	—	2,376	—	—	—	—	19	—	—	597	64	64	64	22	12	—
Tumu	—	1,176	—	—	—	—	1	—	—	1,010	—	Gen'l warn-ing.	—	Gen'l warn-ing.	—	—
Zouarugu	—	1,139	—	—	—	—	22	—	—	—	—		—		—	—
Bawku	—	124	2	—	2	—	—	—	—	500	9	—	6	—	—	—
Lorha	—	60	11	—	11	—	17	—	Medical Officer inspects premises. Notices are applicable to the community.				4			—
Eastern Province ...	17	163,782	1,233	154	1,124	2,982	1,157	—	16	94,818	2,130	2,481	942	2,180	781	—
Central Province ...	14	48,072	659	1,212	463	1,520	111	1	14	41,947	547	306	414	842	126	1
Western Province	11	76,092	582	469	424	1,624	196	—	12	75,052	469	1,647	437	1,338	425	—
Ashanti	4	124,200	214	698	214	1,162	631	1	5	193,057	382	317	313	367	622	1
Northern Territories	3	14,043	56	—	56	—	264	—	3	48,030	495	274	121	1,434	155	—
Total	49	426,190	2,744	2,533	2,281	7,288	2,359	2	50	452,904	4,023	5,025	2,227	6,161	2,107	2

TABLE V.

The Meteorological Observations taken at the Stations mentioned, during the Year 1913.

Station.	Temperature.						Rainfall.		Wind.		Remarks.
	Solar Maximum.	Minimum on Grass.	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in Inches.	Degree of Humidity.	General Direction.	Average Force.	
Accra... ...	144·97	73·19	85·82	73·27	12·26	76·54	29·18	76·59	S.W.	58·57	
Aburi ...	141·83	66·89	85·80	63·00	16·63	73·32	58·11	87·25	S.W.	...	
Addah ...	146·28	66·94	84·96	75·37	9·57	80·25	35·37	80·31	...	...	
Quittah ...	140·90	73·14	88·91	74·54	14·33	81·72	23·64	76·05	...	...	
Cape Coast ...	144·58	59·20	86·40	72·74	13·62	79·57	31·32	82·56	...	...	
Seccondee ...	144·06	71·27	88·50	72·07	16·49	80·30	36·53	50·50	...	...	
Axim... ...	135·58	70·80	82·99	71·59	11·23	77·29	92·02	93·61	...	...	
Tarquah ...	153·60	67·01	90·86	69·50	20·21	80·48	77·39	77·43	...	...	
Coomassie ...	154·22	76·53	84·50	73·84	10·83	78·33	55·93	88·92	...	...	
Kintampo ...	149·75	69·92	90·64	68·92	21·33	79·53	78·18	63·53	...	...	
Sunyani ...	142·31	56·28	87·66	60·84	29·66	76·12	73·22	84·60	...	...	
Gambaga ...	...	70·47	92·43	74·06	20·65	84·25	...	57·31	...	...	
Tamale ...	149·35	61·70	96·21	70·98	26·30	83·85	48·01	59·65	...	...	

TABLE VI.

Return of Diseases and Deaths (In-Patients) for the Year 1913.

Diseases.	Remaining in Hospital at end of 1912.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1913.	Remarks.
		Admissions.	Deaths.			
Infective Diseases.						
Beri-Beri	3	56	15	59	1	
Cerebro-Spinal Fever ...	—	—	—	—	—	
Chicken-Pox	14	35	—	49	—	
Cholera	—	—	—	—	—	
Dengue	—	1	—	1	—	
Diphtheria	—	—	—	—	—	
Dysentery	5	232	30	237	2	
Endocarditis—infective	—	—	—	—	—	
Enteric	—	6	1	6	—	
Erysipelas	—	3	1	3	—	
Gonorrhœa	4	48	—	52	1	
Influenza	—	—	—	—	—	
Kala-Azar	—	—	—	—	—	
Leprosy—						
(*a*) Nodular	—	1	1	1	—	
(*b*) Anæsthetic ...	4	6	—	10	—	
Malaria—						
(*a*) Tertian	4	237	—	241	—	
(*b*) Quartan	—	17	—	17	—	
(*c*) Aestivo-Autumnal	6	58	—	64	2	
(*d*) Chronic Malaria	—	5	—	5	—	
(*e*) Blackwater Fever	—	16	5	16	—	
(*f*) Unclassified ...	—	15	—	15	2	
Measles	—	—	—	—	—	
Undulant Fever ...	—	—	—	—	—	
Plague	—	—	—	—	—	
Pneumonia	3	81	22	84	3	
Rabies	—	—	—	—	—	
Low Fever	—	3	—	3	—	
Rheumatic Fever ...	—	83	—	83	2	
Septicæmia	3	7	1	10	—	
Trypanosomiasis (Sleeping Sickness)	1	27	14	28	1	
Small-Pox	3	39	5	42	1	
Syphilis (*a*) Primary ...	—	5	—	5	—	
(*b*) Secondary ...	2	17	1	19	2	
(*c*) Inherited ...	—	7	1	7	—	
Tetanus	—	7	3	7	—	
Tuberculosis	—	29	15	29	1	
Whooping Cough ...	—	—	—	—	—	
Yaws	—	14	—	14	1	
Yellow Fever	—	15	3	15	—	
Pyrexia	—	10	—	10	—	
Mumps	—	17	—	17	4	
Pyæmia	—	2	—	2	—	
Intoxications.						
Alcoholism	—	13	2	13	—	
Morphinism	—	—	—	—	—	
Ptomaine Poisoning ...	—	4	—	4	—	
Others	—	2	—	2	—	
Carried forward ...	52	1,118	120	1,170	23	

Diseases.	Remaining in Hospital at end of 1912.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1913.	Remarks.
		Admissions.	Deaths.			
Brought forward ...	52	1,118	120	1,170	23	
GENERAL DISEASES.						
Anæmia	—	9	—	9	—	
Anæmia—Pernicious ...	—	—	—	—	—	
Diabetes	—	1	—	1	—	
Exophthalmic Goitre ...	—	—	—	—	—	
Gout	—	2	—	2	—	
Leucocythæmia-Spleno-Medullary	—	4	1	4	—	
Hodgkin's Disease ...	—	2	—	2	—	
Myxœdema	—	—	—	—	—	
Purpura	—	—	—	—	—	
Rickets	—	—	—	—	—	
Scurvy	—	—	—	—	—	
Debility	—	31	4	31	1	
LOCAL DISEASES.						
Diseases of the Nervous System :—						
Sub-section 1.						
Neuritis	—	7	—	7	—	
Meningitis	—	8	5	8	1	
Myelitis	—	—	—	—	—	
Hydrocephalus	—	—	—	—	—	
Encephalitis	—	—	—	—	—	
Abscess of Brain ...	—	—	—	—	—	
Congestion of Brain ...	—	—	—	—	—	
Tabes Dorsalis	—	1	—	1	—	
Sclerosis-Disseminated ...	—	1	—	1	—	
Ataxia	—	1	—	1	—	
Sub-section 2.						
Apoplexy	—	1	—	1	—	
Paralysis...	—	10	2	10	—	
Chorea	—	1	—	1	—	
Epilepsy	—	13	2	13	1	
Neuralgia	—	5	—	5	—	
Hysteria	—	1	—	1	—	
Neurasthenia	—	3	—	3	1	
Vertigo	—	5	—	5	1	
Sub-section 3.						
Mental Diseases :—						
Insomnia	—	3	—	3	—	
Idiocy	—	—	—	—	—	
Mania	—	3	—	3	—	
Melancholia ...	—	4	2	4	—	
Dementia	—	1	—	1	—	
Delusional Insanity	—	—	—	—	—	
Diseases of the Eye :—						
Conjunctivitis ...	—	45	—	45	1	
Keratitis	—	1	—	1	—	
Ulceration of Cornea	—	2	—	2	—	
Iritis	—	3	—	3	—	
Optic Neuritis ...	—	1	—	1	1	
Cataract	—	1	—	1	—	
Irido-cyclitis ...	—	2	—	2	—	
Entropion	—	1	—	1	—	
Pterygium	—	1	—	1	—	
Staphyloma ...	—	1	—	1	—	
Diseases of the Ear :—						
Inflammation ...	—	14	—	14	1	
Other Diseases ...	—	5	—	5	—	
Carried forward ...	52	1,312	136	1,364	31	

Diseases	Remaining in Hospital at end of 1912.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1913.	Remarks.
		Admissions.	Deaths.			
Brought forward ...	52	1,312	136	1,364	31	
LOCAL DISEASES—*contd.*						
Diseases of the Nose :—						
Epistaxis	—	1	—	1	—	
Rhinitis	—	2	—	2	—	
Diseases of the Circulatory System :—						
Pericarditis ...	1	7	3	8	—	
Endocarditis ...	—	2	1	2	—	
Valvular Mitral ...	—	28	9	28	—	
,, Aortic ...	—	2	—	2	1	
,, Tricuspid	—	—	—	—	—	
,, Pulmonary	—	—	—	—	—	
Arterial Sclerosis ...	—	—	—	—	—	
Aneurism	—	—	—	—	—	
Cardiac Dilatation...	—	2	—	2	—	
,, Incompetence	—	1	—	1	—	
Tachycardia ...	—	1	—	1	—	
Phlebitis	—	6	—	6	1	
Diseases of the Respiratory System :—						
Laryngitis	—	2	—	2	—	
Bronchitis ...	2	134	1	136	1	
Broncho-Pneumonia	1	14	1	15	—	
Abscess of Lung ...	—	—	—	—	—	
Gangrene of Lung...	—	—	—	—	—	
Emphysema ...	—	1	—	1	—	
Pleurisy	1	49	2	50	3	
Empyema	—	3	2	3	—	
Pleuro-Pneumonia ...	—	2	—	2	1	
Asthma	—	1	1	1	—	
Diseases of the Digestive System :—						
Stomatitis	—	3	—	3	—	
Caries of Teeth ...	—	1	—	1	—	
Glossitis	—	1	—	1	—	
Sore Throat ...	—	6	—	6	1	
Inflammation of Tonsils	—	8	2	8	—	
Gastritis	—	58	2	58	—	
Ulceration of Stomach	—	1	1	1	—	
Hæmatemesis ...	—	—	—	—	—	
Dilatation of Stomach	—	—	—	—	—	
Stricture of Stomach	—	—	—	—	—	
Dyspepsia	—	53	—	53	—	
Enteritis	—	28	1	28	2	
Appendicitis ...	1	9	1	10	—	
Colitis	1	6	2	7	—	
Ulceration of Intestines	—	—	—	—	—	
Sprue	—	—	—	—	—	
Hernia	—	31	3	31	2	
Diarrhœa	2	106	4	108	1	
Constipation ...	—	11	—	11	—	
Colic ...	—	23	—	23	—	
Hæmorrhoids ...	—	6	—	6	—	
Pancreatitis ...	—	—	—	—	—	
Hepatitis—Acute ...	—	18	1	18	—	
Abscess of Liver ...	—	9	7	9	—	
Cirrhosis	—	1	—	1	—	
Jaundice	—	—	—	—	—	
Carried forward ...	61	1,949	180	2,010	44	

Diseases.	Remaining in Hospital at end of 1912.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1913.	Remarks.
		Admissions.	Deaths.			
Brought forward ...	61	1,949	180	2,010	44	
LOCAL DISEASES—*contd.*						
Diseases of the Digestive System—*continued.*						
Peritonitis	—	10	5	10	—	
Ascites	1	5	—	6	—	
Stenosis of Rectum	—	1	—	1	—	
Acute Yellow Atrophy	—	1	1	1	—	
Gastro-Enteritis ...	—	4	—	4	—	
Fistula in Ano ...	—	7	—	7	—	
Obstruction of Bowels	—	2	—	2	—	
Intestinal Infection	—	1	—	1	—	
Intussusception ...	—	4	2	4	—	
Prolapsus Ani ...	—	1	—	1	—	
Ischio-rectal Abscess	—	1	—	1	—	
Cancrum Oris ...	—	2	—	2	—	
Diseases of the Lymphatic System :—						
Splenitis	—	—	—	—	—	
Inflammation of Lymphatic Gland	5	24	—	29	1	
Suppuration of Lymphatic Gland ...	—	11	—	11	—	
Lymphangitis ...	—	26	—	26	—	
Elephantiasis ...	1	8	—	9	4	
Diseases of the Urinary System :—						
Acute Nephritis ...	—	12	4	12	1	
Bright's Disease ...	2	3	2	5	—	
Pyelitis	—	—	—	—	—	
Calculus	—	—	—	—	—	
Renal Colic ...	—	—	—	—	—	
Cystitis	—	12	—	12	—	
Vesical Calculus ...	—	—	—	—	—	
Suppression ...	—	—	—	—	—	
Hæmaturia ...	1	1	—	2	—	
Chyluria	—	—	—	—	—	
False Passage in Urethra	—	3	—	3	1	
Retention of Urine	—	1	1	1	—	
Fistula (Urinary) ...	—	1	—	1	—	
Diseases of the Generative System :— (Male Organs) :						
Urethritis	—	2	—	2	—	
Gleet	—	—	—	—	—	
Stricture	3	18	—	21	2	
Prostatitis	—	1	—	1	—	
Soft Chancre ...	—	22	—	22	—	
Condyloma	—	—	—	—	—	
Inflammation of Scrotum	—	4	—	4	—	
Hydrocele	2	14	1	16	—	
Orchitis	—	11	—	11	1	
Epididymitis ...	—	11	—	11	—	
Abscess of Testicle	—	—	—	—	—	
Hæmatocele ...	—	2	—	2	—	
Paraphimosis ...	—	1	—	1	1	
Oedema of Scrotum	—	2	—	2	—	
Phimosis	—	2	—	2	—	
Balanitis	1	3	—	4	—	
Sloughing Penis ...	—	1	—	1	—	
Carried forward ...	77	2,184	196	2,261	55	

Diseases.	Remaining in Hospital at end of 1912.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1913.	Remarks.
		Admissions.	Deaths.			
Brought forward ...	77	2,184	196	2,261	55	
LOCAL DISEASES—*contd.*						
Diseases of the Generative System—*continued.* (Female Organs):						
Ovaritis	1	4	—	5	—	
Ovarian Cyst ...	—	10	—	10	—	
Endometritis ...	—	10	—	10	—	
Displacement of Uterus	—	2	—	2	—	
Vaginitis	—	1	—	1	—	
Confinement ...	—	1	—	1	—	
Dysmenorrhœa ...	—	4	—	4	—	
Menorrhagia ...	—	—	—	—	—	
Leucorrhœa ...	—	1	—	1	—	
Abortion	—	3	—	3	—	
Delayed Labour ...	—	1	—	1	—	
Vaginal Hæmorrhage	—	1	—	1	—	
Retained Placenta...	—	2	—	2	—	
Premature Birth ...	—	1	—	1	—	
Puerperal Septicæmia	—	—	—	—	—	
Metritis	—	3	—	3	—	
Abscess of Breast ...	—	—	—	—	—	
Threatened Abortion	—	1	—	1	—	
Placenta Prævia ...	—	1	—	1	—	
Pelvic Abscess ...	—	1	—	1	—	
Extra Uterine Gestation	—	1	—	1	—	
Complete Prolapse of Uterus	—	1	1	1	—	
Condyloma Vulvæ...	—	1	—	1	—	
Diseases of Organs of Locomotion :—						
Osteitis	3	26	—	29	—	
Arthritis	3	40	1	43	2	
Spondylitis... ...	—	—	—	—	—	
Bursitis	—	23	—	23	—	
Osteomyelitis ...	1	—	—	1	—	
Periostitis	1	12	1	13	—	
Hip Disease ...	—	1	1	1	—	
Necrosis	—	6	—	6	2	
Myalgia	—	9	—	9	—	
Lumbago	—	1	—	1	—	
Pleurodynia ...	—	3	—	3	—	
Diseases of Connective Tissue :—						
Cellulitis	—	68	1	68	—	
Abscess	1	60	1	61	16	
Elephantiasis ...	—	—	—	—	—	
Abscess (Mammary)	1	2	—	3	—	
Diseases of the Skin :—						
Urticaria	—	—	—	—	—	
Eczema	—	—	—	—	—	
Boil...	—	7	—	7	—	
Carbuncle	—	1	—	1	—	
Herpes	—	1	—	1	—	
Psoriasis	—	4	—	4	—	
Oriental Sore ...	—	—	—	—	—	
Tinea	—	3	—	3	—	
Scabies	—	10	—	10	—	
Acne	—	—	—	—	—	
Prickly Heat ...	—	—	—	—	—	
Carried forward ...	88	2,511	202	2,599	75	

Diseases.	Remaining in Hospital at end of 1912.	Yearly Total.		Total Cases treated.	Remaining in Hospital at end of 1913.	Remarks.
		Admissions.	Deaths.			
Brought forward ...	88	2,511	202	2,599	75	
LOCAL DISEASES—*contd.*						
Diseases of the Skin—*contd.*						
Whitlow	—	3	—	3	—	
Gangrene of Skin ...	—	2	1	2	—	
Impetigo	—	5	—	5	—	
Dermatitis	—	13	—	13	—	
Ulcers	9	141	—	150	5	
Injuries—General ...	3	20	7	23	2	
Local... ...	20	393	18	413	16	
Surgical Operations :—						
Amputation of Leg	1	9	1	10	1	
Circumcision ...	5	40	—	45	2	
Sequestrum of Femur	—	2	—	2	—	
,, Tibia	1	—	1	1	—	
Ainhum	—	6	—	6	—	
Rib Excised ...	—	1	—	1	—	
Cyst of Thigh ...	—	2	—	2	—	
Abscess of Liver ...	—	1	1	1	—	
Hernia, Radical Cure of	—	9	1	9	1	
Necrosis of Jaw, Removal of ...	—	1	—	1	—	
Curetting	—	8	—	8	—	
Tumours :—						
Carcinoma of Stomach	—	1	1	1	—	
,, , Hepatic	—	1	1	1	—	
,, of Cervix	—	1	—	1	—	
Lipoma	1	15	1	16	—	
Sarcoma	—	7	2	7	—	
Fibro-myoma Uteri	—	2	1	2	—	
Carcinoma of Penis	—	1	—	1	—	
Malformations	—	—	—	—	—	
Poisons	—	9	1	9	—	
Diseases undiagnosed ...	23	19	—	42	—	
Parasitis—Animal :—						
Protozoa	—	—	—	—	—	
Trematoda (Flukes)	—	—	—	—	—	
Bilharziosis ...	—	4	—	4	—	
Helminthiasis ...	—	2	—	2	—	
Cestoda :—						
Tænia Solium ...	—	8	—	8	1	
Tænia Saginata ...	—	1	—	1	—	
Nematoda :—						
Ascaris	—	12	—	12	—	
Tricocephalus Dispar	—	—	—	—	—	
Trichina	—	—	—	—	—	
Dracunculus ...	13	261	—	274	16	
Filariasis	—	11	—	11	1	
Steongylus	—	—	—	—	—	
Ankylostomiasis ...	—	13	3	13	—	
Oxyuris	—	2	—	2	—	
Insecta :—						
Myiasis	—	3	—	3	—	
Chiggers	—	3	—	3	—	
TOTAL ...	164	3,543	242	3,707	120	

TABLE VII.

Return of Diseases (Out-Patients) for the Year 1913.

Diseases.	Male.	Female.
Infective Diseases.		
Beri-Beri	54	1
Cerebro-Spinal Fever	—	—
Chicken-Pox	37	10
Cholera	—	—
Dengue	—	—
Diphtheria	—	—
Dysentery	477	139
Endocarditis—infective	—	—
Enteric	1	—
Erysipelas	1	—
Gonorrhœa	631	20
Influenza	1	1
Kala-Azar	—	—
Leprosy (*a*) Nodular	45	8
(*b*) Anæsthetic	3	1
Malaria (*a*) Tertian	1,083	206
(*b*) Quartan	6	—
(*c*) Aestivo-autumnal	430	222
(*d*) Chronic Malaria	81	19
(*e*) Blackwater Fever	3	2
(*f*) Type unclassified	102	74
Measles	1	—
Undulant Fever	—	—
Plague	—	—
Pneumonia	126	31
Pyæmia	1	—
Pyrexia	183	60
Relapsing Fever	—	—
Rheumatic Fever	1,329	391
Septicæmia	85	4
Trypanosomiasis (Sleeping Sickness)	30	3
Small-Pox	121	—
Syphilis (*a*) Primary	133	20
(*b*) Secondary	143	79
(*c*) Inherited	5	3
Tetanus	—	—
Tuberculosis	76	36
Whooping Cough	54	41
Yaws	504	116
Yellow Fever	5	—
Mumps	18	2
Intoxications	3	—
Carried forward	5,772	1,489

Diseases.	Male.	Female.
Brought forward	5,772	1,489
General Diseases.		
Anæmia	161	84
Anæmia—Pernicious	3	6
Diabetes	2	2
Goitre	—	3
Gout	15	1
Leucocythæmia	1	—
Hodgkin's Disease	—	—
Myxœdema	—	—
Purpura	—	—
Rickets	3	—
Scurvy	—	—
Local Diseases.		
Diseases of the Nervous System	443	128
,, ,, Eye	1,135	566
,, ,, Ear	467	284
,, ,, Nose	148	25
,, ,, Circulatory System	212	91
,, ,, Respiratory System	3,095	1,106
,, ,, Digestive System	6,668	2,096
,, ,, Lymphatic System	345	78
,, ,, Urinary System	134	42
,, ,, Generative System (Male)	492	—
,, ,, ,, ,, (Female)	—	344
,, ,, Organs of Locomotion	835	169
,, ,, Connective Tissue	1,148	224
,, ,, Skin	4 951	1,758
Injuries.		
General	329	48
Local	5,943	1,584
Surgical Operations	253	40
Tumours	95	63
Malformations	2	—
Poisons	20	5
Parasitis	1,960	427
Insecta	39	127
Minor Diseases	255	68
Total	34,926	10,858

TABLE VIII.

Estimates in connection with Sanitation, 1913.

Heads of Expenditure.	1912.	1913.	Increase or Decrease, 1913.
SANITATION.	£	£	£
Personal Emoluments	8,132	9,949	+ 1,817
Other Charges	29,768	33,873	+ 4,105
PUBLIC WORKS DEPARTMENT.			
Public Works Extraordinary (Sanitary Improvements)	52,300	41,350	- 10,950
Total	£90,200	£85,172	- £5,028

Distribution of other Charges—1912 and 1913.

Items.	Eastern.		Central.		Western.		Ashanti.		Northern Territories.		Totals.		Increase or Decrease 1913.
	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	1912	1913	
	£	£	£	£	£	£	£	£	£	£	£	£	£
Scavengers and Labourers	5,114	6,475	2,265	2,690	2,227	2,635	5,900	6,600	373	747	15,879	19,147	+3,268*
Upkeep of Latrines ...	480	400	325	250	395	286	150	150	100	100	1,450	1,186	- 264†
Dustbins and Tools ...	362	320	166	140	172	140	—	—	—	—	700	600	- 100
Plague Prevention ...	125	125	60	60	65	65	—	—	—	—	250	250	—
Yellow Fever Prevention	444	444	240	245	316	311	—	—	—	—	1,000	1,000	—
Clearing Govt. Lands ...	1,200	1,200	300	300	900	900	—	—	—	—	2,400	2,400	—
Grants-in-Aid	1,000	1,000	2,000	2,000	1,000	1,000	—	—	—	—	4,000	4,000	—
Sanitary Equipment ...	—	—	—	—	—	—	200	200	100	150	300	350	+50
Miscellaneous	—	—	—	—	—	—	—	—	—	—	3,789	4,940	+1,151
Total	£8,725	£9,964	£5,356	£5,685	£5,075	£5,337	£6,250	£6,950	£573	£997	£29,768	£33,873	+£4,105

* Increase of stations and labourers—Mampong, Weshiang, Oblogo and Kibbi. † Amounts decreased in 1913.

TABLE IX.

Malaria Investigation.

Station.	Number Examined.		Parasites Found.						Remarks.
			Europeans.			Natives.			
	Europeans.	Natives.	Benign Tertian.	Quartan.	Subtertian.	Benign Tertian.	Quartan.	Subtertian.	
Accra... ...	94	429	2	—	15	1	5	45	2 cases of Trypanosomiasis.
Addah ...	—	53	—	—	—	7	—	46	
Quittah ...	4	116	1	—	3	38	1	36	
Akuse ...	—	—	—	—	—	—	—	—	No return.
Winnebah ...	4	10	1	—	1	—	—	1	
Saltpond ...	—	29	—	—	—	—	—	4	
Cape Coast ..	6	90	—	—	2	13	16	23	
Elmina ...	—	14	—	—	—	—	—	4	
Seccondee ...	91	318	8	12	66	35	37	139	Many mixed infections, Y.F. Commission since May.
Axim... ..	—	15	—	—	—	1	—	—	
Tarquah ...	4	70	—	1	—	4	10	6	
Dunkwa ...	1	8	—	—	1	3	—	—	
Coomassie ...	11	87	—	—	7	1	1	39	3 cases of Trypanosomiasis.
Chechewere ...	—	46	—	—	—	—	—	44	
Obuasi ...	4	3	—	—	3	—	—	—	
Sunyani ...	—	52	—	—	—	3	—	3	
Kintampo ...	2	26	—	—	1	—	—	22	
Lorha... ...	—	12	—	—	—	—	—	—	
Bawku ...	—	59	—	—	—	—	—	6	
Salaga ...	—	126	—	—	—	3	2	11	
Bole	—	59	—	—	—	28	2	22	
Wa	—	—	—	—	—	—	—	—	Nil returns.
Gambaga ...	—	—	—	—	—	—	—	—	" "
Tamale ...	—	39	—	—	—	4	5	—	
Tumu... ...	—	27	—	—	—	5	3	6	
Zouaragu ...	—	31	—	—	—	10	—	3	
Total ...	221	1,719	12	13	99	156	82	461	

TABLE X.

Summary of General Preventive Measures taken against Mosquito-borne Diseases in 1913.

Apart from the special prophylactic schemes adopted on the occasion of each Yellow Fever outbreak, the following general precautions were instituted :—

1.	Number of European Houses wholly mosquito-protected	31
2.	Number of European Houses partially mosquito-protected	35
3.	Number of Public Wells	57
4.	Number of Public Wells mosquito-proof	37
5.	Number of Private Wells	868
6.	Number of Private Wells mosquito-proof	705
7.	Number of Public Tanks { Underground 53 / Above ground 87 }	140
8.	Number of Public Tanks mosquito-proof { Underground 43 / Above ground 78 }	121
9.	Number of Private Tanks { Underground 336 / Above ground 915 }	1,251
10.	Number of Private Tanks mosquito-proof { Underground 329 / Above ground 907 }	1,236
11.	Number of Barrels	2,917
12.	Number of Barrels mosquito-proof	2,611
13.	Number of Tanks and barrels oiled	4,445
14.	Number of Inspectors employed	44
15.	Number of Houses inspected	383,548
16.	Number of Houses where larvæ were found	3,337
17.	Number of notices re larvæ	4,560
18.	Number of persons fined for having larvæ on premises	1,924
19.	Number of pools, wells, &c., stocked with fish	13
20.	Lineal yards of concrete drains repaired or re-constructed	5,595
21.	Lineal yards of new concrete drains constructed	5,073
22.	Lineal yards of earth ditches dug	10,018
23.	Lineal yards of earth ditches cleaned	68,911
24.	Square yards of vegetation cleared	12,861,215
25.	Pools or Excavations filled up	607
26.	Square yards of marsh land filled in and drained	265,701
27.	Drains oiled	4,771
28.	Pools oiled	16,289

TABLE XI.

Annual Return of Anti-Mosquito Work, 1913.

STATION.	Houses Inspected.	Number of Houses with larvæ.	Number of Receptacles with larvæ.	Mosquito Index (1913).	Rainfall.	Mosquito Index (1912).
Accra	64,889	1,724	—	2·65	29·18	2·07
Addah	8,620	56	—	·64	34·73	1·04
Akuse	4,298	149	—	3·46	—	·90
Quittah	3,360	91	—	2·70	24·08	3·55
Aburi	2,029	1	—	·04	58·11	—
Cape Coast	20,277	231	—	1·13	31·32	1·82
Elmina	3,640	176	—	4·83	—	2·70
Saltpond	9,930	38	—	·38	—	·60
Winnebah	8,100	102	—	1·25	—	4·87
Seccondee	57,064	342	—	·59	37·02	·78
Axim	4,927	32	—	·64	91·80	1·22
Tarquah	6,185	60	—	·97	77·39	·78
Dunkwa	6,876	35	—	·50	—	·47
Coomassie	89,263	241	—	·27	55·93	·30
Obuassie	98,519	45	—	·04	—	·08
Kintampo	3,360	30	—	·78	8·51	1·86
Sunyani	1,915	76	—	3·96	—	·51
Tamale	6,374	62	—	·97	48 01	4·80
Gambaga	303	—	—	—	—	—
Eastern Province	83,196	2,021	—	2·42	—	—
Central Province	41,947	547	—	1·30	—	—
Western Province	75,052	469	—	·62	—	—
Ashanti	193,057	392	—	·20	—	—
Northern Territories	6,677	62	—	·92	—	—
Total	399,929	3,491	—	·84	—	—

TABLE XII.

Annual Return of the Result of Periodical Examination of Blood-Smears taken from the Slaughter-House of the Colony and Protectorate for the Year 1913

Station.	Cattle.			Sheep.			Goats			Pigs.			Percentage in which Trypanosomes were found				Percentage in which other Parasites were found.				Nature of other Parasites.
	Number examined.	Number in which Trypanosomes were found.	Number in which other Parasites were found.	Number examined.	Number in which Trypanosomes were found.	Number in which other Parasites were found.	Number examined.	Number in which Trypanosomes were found.	Number in which other Parasites were found.	Number examined.	Number in which Trypanosomes were found.	Number in which other Parasites were found.	Cattle.	Sheep.	Goats.	Pigs.	Cattle.	Sheep.	Goats.	Pigs.	
Accra	256	59	2	148	3	—	108	2	—	111	1	4	23·04	2·02	1·85	·90	·78	—	—	3·60	1 cow with sarcospores, 1 cow with sarcocysts; 1 pig with tubercle bacilli lung, 1 pig with sarcospores, 1 pig with drepanidium, 1 pig with parasite unknown.
Addah	19	1	—	17	—	—	50	—	—	40	1	—	5·26	—	—	2·50	—	—	—	—	
Akuse	28	—	—	37	—	—	57	—	—	14	—	—	—	—	—	—	—	—	—	—	
Quittah	22	—	1	38	—	—	33	—	—	26	1	—	—	—	—	3·84	4·54	—	—	—	
Cape Coast	5	—	—	39	1	—	37	—	—	14	—	—	—	2·56	—	—	—	—	—	—	
Elmina	—	—	—	13	5	—	37	—	—	—	—	—	—	38·53	—	—	—	—	—	—	
Saltpond	—	—	—	108	—	—	819	—	—	—	—	—	—	—	—	—	—	—	—	—	
Winnebah	3	2	—	33	7	6	155	6	15	—	—	—	66·66	21·21	3·87	—	—	18·18	9·67	—	
Seccondee	1	1	—	2	1	—	2	—	—	2	2	—	100·00	50·00	—	100·00	—	—	—	—	
Axim	2	—	—	17	—	—	11	—	—	8	—	—	—	—	—	—	—	—	—	—	
Tarquah..	54	26	1	15	—	—	14	—	—	3	—	—	48·51	—	—	—	1·83	—	—	—	
Dunkwa	44	16	—	23	3	—	10	1	—	3	—	—	36·36	13·04	10·00	—	—	—	—	—	
Coomassie	235	185	—	87	25	—	126	37	—	34	—	—	78·72	28·73	29·36	—	—	—	—	—	
Obuasi	109	39	—	33	—	—	23	—	—	4	—	—	35·69	—	—	—	—	—	—	—	
Kintampo	90	40	1	46	11	—	13	2	—	—	—	—	44·44	23·91	15·38	—	1·11	—	—	—	
Sunyani	54	21	—	14	1	—	2	—	—	6	—	—	38·88	7·14	—	—	—	—	—	—	
Tamale	83	1	—	7	—	—	42	—	—	—	—	—	1·20	—	—	—	—	—	—	—	
Wa	48	1	—	17	—	—	14	—	—	—	—	—	2·08	—	—	—	—	—	—	—	
Gambaga	12	1	—	32	—	—	21	—	—	—	—	—	8·33	—	—	—	—	—	—	—	
Salaga	89	4	—	14	—	—	10	—	—	—	—	—	4·49	—	—	—	—	—	—	—	
Bole	94	12	—	32	—	—	3	—	—	—	—	—	12·76	—	—	—	—	—	—	—	
Lorha	33	—	—	25	—	—	52	—	—	—	—	—	—	—	—	—	—	—	—	—	
Zouaragu	36	—	—	25	—	—	32	—	—	—	—	—	—	—	—	—	—	—	—	—	
Tumu	27	4	—	13	—	—	14	—	—	—	—	—	14·81	—	—	—	—	—	—	—	
Bawku	21	—	—	22	—	—	22	—	—	—	—	—	—	—	—	—	—	—	—	—	
Total	1365	413	5	849	57	6	1707	48	15	265	5	4	30·25	6·71	2·81	1·88	·36	·70	·87	1·50	

TABLE XIII.

RETURN SHEWING THE NUMBER OF THE INMATES OF THE PRISONS AND NATIVE HOSPITALS WHOSE STOOLS HAVE BEEN EXAMINED MICROSCOPICALLY, AND TABULATING THE FINDINGS DURING THE YEAR 1913.

Station.		Taenia Solium.	Rhabdonema Intestinale.	Trichocephalus Dispar.	Ankylostoma Duodenale.	Uncinaria Americana.	Ascaris Lumbricoides.	Oxyuris Vermicularis.	Other Intestinal Parasites.	Total No. of cases examined.	Remarks.
ACCRA—	Prison	1	—	56	58	—	73	5	11	250	
	Hospital	2	—	31	52	4	39	6	50	234	
ADDAH—	Prison	3	3	4	2	—	17	1	—	57	
	Hospital	1	1	1	4	—	5	—	—	30	
AKUSE—	Prison	—	—	—	2	—	—	—	—	2	
	Hospital	—	—	—	—	—	—	—	—	—	
QUITTAH—	Prison	2	—	5	1	—	12	—	3	31	
	Hospital	5	—	4	11	—	22	—	5	50	
CAPE COAST—	Prison	10	—	16	19	—	76	4	6	124	
	Hospital	4	—	4	3	—	18	—	6	53	
ELMINA—	Prison	3	—	3	2	—	23	2	—	71	
	Hospital	—	—	—	—	—	—	—	—	—	
SALTPOND—	Prison	—	—	—	—	—	4	—	—	10	
	Hospital	—	—	—	—	—	—	—	—	—	
WINNEBAH—	Prison	1	—	—	1	—	17	1	3	59	
	Hospital	—	—	1	—	—	2	—	3	17	
SECCONDEE—	Prison	4	—	—	4	—	8	—	2	25	
	Hospital	6	—	1	42	—	39	—	56	119	
AXIM—	Prison	—	—	—	—	—	—	—	—	1	
	Hospital	—	—	—	—	—	20	—	—	39	
TARQUAH—	Prison	—	—	—	—	—	—	—	—	—	
	Hospital	1	—	—	—	—	—	—	2	3	
DUNKWA—	Prison	1	—	—	—	—	1	5	1	47	
	Hospital	—	—	—	—	—	—	—	—	—	
COOMASSIE—	Prison	—	—	6	3	—	5	—	—	9	
	Hospital	—	—	2	1	—	2	—	4	5	
OBUASI—	Prison	2	—	2	1	—	14	—	—	30	
	Hospital	1	—	—	—	—	6	—	—	18	
KINTAMPO—	Prison	—	—	4	—	1	15	2	3	25	
	Hospital	3	—	1	1	2	4	2	1	18	
SUNYANI—	Prison	3	—	10	—	—	8	1	1	37	
	Hospital	2	—	9	—	—	6	1	2	41	
TAMALE—	Prison	2	—	—	—	—	—	—	7	9	
	Hospital	16	—	—	—	—	—	—	—	17	
WA—	Prison	—	—	—	—	—	—	—	—	1	
	Hospital	—	—	—	—	—	—	—	3	3	
GAMBAGA—	Prison	3	—	—	—	—	2	—	—	21	
	Hospital	3	—	—	—	—	1	—	—	9	
SALAGA—	Prison	—	—	—	—	—	—	—	—	—	
	Hospital	—	—	—	—	—	—	—	1	1	
BOLE—	Prison	—	—	—	—	—	—	—	—	—	
	Hospital	2	—	—	—	—	—	—	1	3	
LORHA—	Prison	—	—	2	—	—	1	—	—	19	
	Hospital	5	—	—	—	—	2	1	1	12	
ZOUARAGU—	Prison	—	—	—	—	—	—	—	—	—	
	Hospital	—	—	36	—	—	34	5	50	120	
TUMU—	Prison	3	—	5	2	—	3	—	—	7	
	Hospital	8	—	10	3	—	10	—	1	17	
BAWKU—	Prison	—	—	—	—	—	—	—	—	—	
	Hospital	—	—	—	—	—	—	—	—	—	
TOTAL		97	4	213	212	7	489	36	222	1,644	

TABLE XIV.

Annual Return of Spleen Rate for the Colony, Ashanti and the Northern Territories for the Year 1913.

Station.	Age 0 to 3 years.		Age 3 to 8 years.		Age 8 to 15 years.		Total Number examined.	Total Number with enlarged spleen.	Number of blood examinations made of foregoing.	Number of Cases in which Malaria Parasites were found.	Percentage with enlarged spleen.	Percentage in which Malaria Parasites were found.
	Number examined.	Number with enlarged spleen.	Number examined.	Number with enlarged spleen.	Number examined.	Number with enlarged spleen.						
Accra	17	11	40	28	43	23	100	62	35	12	62·00	34·37
Addah	158	113	228	77	127	15	513	205	136	70	49·96	51·47
Akuse	29	19	34	21	9	6	72	46	—	—	63·88	—
Quittah	553	202	969	209	342	21	1,864	432	204	134	23·17	65·68
Cape Coast	305	182	220	140	147	54	672	376	219	52	55·95	23·74
Elmina	44	31	47	20	9	3	100	54	46	7	54·00	15·21
Saltpond	37	23	29	19	9	2	75	44	29	8	58·66	27·58
Winnebah	56	40	94	65	17	11	167	116	41	10	69·46	24·39
Seccondee	43	31	87	56	104	48	234	135	—	—	57·69	—
Inchaban—Waterworks ...	—	—	26	16	31	5	57	21	56	35	36·84	62·50
Axim	85	60	39	26	41	23	165	109	94	47	68·48	50·00
Tarquah	37	26	35	29	28	19	100	74	69	19	74·00	27·53
Dunkwa	37	28	140	92	80	16	257	136	42	14	52·91	33·33
Coomassie	76	57	83	65	48	29	207	151	117	31	72·94	26·49
Obuasi	39	30	113	83	60	30	212	143	61	5	67·45	8·19
Kintampo	20	14	134	75	51	10	205	99	143	63	48·29	44·05
Sunyani	31	9	77	26	70	17	178	52	62	10	29·21	16·12
Tamale	17	7	59	24	14	7	90	38	50	10	42·22	20·00
Wa	9	3	170	21	31	3	210	27	—	—	12·85	—
Gambaga	54	35	39	16	35	8	128	59	43	2	46·09	4·65
Salaga	85	52	205	76	23	6	313	134	99	20	42·81	20·20
Bole	2	2	64	28	24	22	90	52	82	46	57·77	56·09
Lorha	111	58	305	106	132	15	548	179	36	—	32·66	—
Zouaragu	82	59	88	31	52	6	222	96	97	40	43·24	41·23
Tumu	56	34	72	34	33	6	161	74	29	14	45·96	48·27
Bawku	66	18	68	14	46	3	180	35	61	6	19·44	9·83
Total ...	2,049	1,144	3,465	1,397	1,606	408	7,120	2,949	1,851	653	41·41	35·27

TABLE XV.

Prisons.

Prison.	Average Prison Area per Prisoner.	Average cubic space in Cells per Prisoner.	Average Ventilation Area in Cells per Prisoner.
Eastern Province :—			
Accra	16·98	307·86	3·77
Addah	232·38	463·57	3·74
Akuse	187·75	414·64	3·52
Quittah	262·50	407·46	1·79
Central Province :—			
Cape Coast	242·85	380·71	1·18
Elmina	781·58	1293·48	5·27
Saltpond	246·66	689·22	5·38
Winnebah	255·52	668·73	5·10
Western Province :—			
Seccondee C.P.	423·45	646·12	14·84
Seccondee F.O.	57·84	282·70	2·50
Axim	169·35	534·80	3·46
Tarquah	109·43	427·05	3·85
Dunkwa	33·94	210·00	1·47
Ashanti :—			
Coomassie	110·90	180·00	1·80
Obuasi	25·41	410·91	5·52
Sunyani	71·42	331·42	3·80
Kintampo	376·87	427·50	1·56
British Krachi	504·33	776·06	1·40

TABLE XVI.

Annual Return of Prosecutions made in the Sanitary Department for the Year 1913.

Station.	Nature of Offence.		Number of Prosecutions.	No. of Convictions.	No. Fined.	Total Amount of Fines.	Number Discharged with Caution.	No. Imprisoned
	Larvæ.	Other Offences.				£ s. d.		
Accra	667	353	1,020	1,001	970	325 8 6	31	—
Addah	52	43	95	95	94	27 14 6	1	—
Akuse	183	213	396	383	382	103 14 6	—	1
Quittah	45	70	115	103	103	21 11 0	—	—
Komfrodua ...	1	116	117	117	117	55 14 0	—	—
Dodowa	2	45	47	47	47	22 9 0	—	—
Mampong ...	18	51	69	69	69	50 16 0	—	—
Aburi	1	33	34	34	34	13 10 0	—	—
Adawso	53	132	185	182	182	99 6 6	—	—
Nsawam and Pakro	46	133	179	173	173	104 9 0	—	—
Mangoase	3	43	46	46	46	28 12 0	—	—
Cape Coast ...	173	182	355	343	342	105 16 6	1	—
Elmina	134	120	254	252	252	68 2 6	—	—
Saltpond	48	60	108	105	102	98 12 6	3	—
Winnebah ...	62	45	107	101	101	43 6 0	—	—
Appam	23	47	70	66	66	22 5 6	—	—
Soadru, Nyakrom and Nsaba	—	153	153	113	113	37 5 0	—	—
Seccondee	313	204	517	490	487	233 18 6	3	—
Axim	27	33	60	58	56	23 17 0	2	—
Tarquah	27	81	108	102	101	51 5 0	1	—
Dunkwa	34	77	111	111	109	32 10 6	1	1
Coomassie ...	231	505	736	734	734	220 3 0	—	—
Obuasi	49	317	366	366	358	62 4 0	8	—
Kintampo ..	37	60	97	84	84	15 5 0	—	—
Sunyani	—	30	30	30	30	19 7 6	—	—
Tamale	54	63	117	93	85	10 17 6	8	—
Wa	6	132	138	126	74	7 0 0	36	16
Gambaga	—	2	2	2	2	0 5 0	—	—
Salaga	—	15	15	15	14	5 10 0	1	—
Bole	36	50	86	76	76	7 16 0	—	—
Lorha	—	4	4	4	4	0 4 0	—	—
Zouaragu	—	9	9	7	7	0 7 0	—	—
Tumu	—	1	1	1	1	0 2 0	—	—
Bawku	2	5	7	7	7	1 5 0	—	—
Eastern Province...	1,071	1,232	2,303	2,250	2,217	833 5 0	32	1
Central Province ...	440	607	1,047	980	976	375 2 6	4	—
Western Province	401	395	796	761	753	341 11 0	7	1
Ashanti	317	912	1,229	1,214	1,206	316 19 6	8	—
Northern Territories	98	281	379	331	270	33* 6 6	45	16
Total ...	2,327	3,427	5,754	5,536	5,422	£1,920 4 6	96	18

APPENDIX No. 1.

YELLOW FEVER—KINTAMPO.

REPORT BY MEDICAL OFFICER OF HEALTH, COOMASSIE, ON INSPECTION OF CHECHEWERE.

SANITARY DEPARTMENT,
COOMASSIE.
18*th November*, 1913.

SIR,

I have the honour to report that on the instructions of the Principal Medical Officer, I left Coomassie on November 4th, and arrived at Chechewere at 12.30 p.m. on November 5th. I stayed there until the afternoon of the 10th.

2. Immediately on arrival I informed the Chief that he was to bring any sick people to see me at once, and to parade all the rest of the villagers. Only three sick children were brought to see me.

3. The temperatures of the remainder, as far as possible were taken, and out of an estimated population of about 400, actually 368 were examined.

4. All those with a temperature above 98·4° were detained and the others dismissed. Those detained, numbering 48, together with the 3 sick children, were instructed to see me twice daily, until further orders. In only two cases did they fail to appear regularly.

5. Each morning and evening the 51 were examined, special attention being paid to any indication of Yellow Fever; careful observations were made of the temperature, pulse rate, urine (which was examined daily, for albuminuria, in each case), presence of jaundice, epigastric tenderness, or vomiting. A blood film of each person was also examined, and the effect of the administration of quinine noted.

6. Afterwards a careful house-to-house inspection of the village was made, to see if any sick were in hiding, and also to try and find mosquito larvæ and other insanitary conditions.

7. Details of each case are attached in tabulated form. I must admit that I failed to demonstrate what I should call Yellow Fever.

8. There have only been two deaths in Chechewere during the last four months, and both of these occurred in old people. No details of the diseases they suffered from were obtained.

9. The village is situated on a hill with a valley and swamp 150 yards away, on the southern side, through which a stream flows, and there is another valley, swamp and stream 300 yards away on the northern side. The natives do not store water for any length of time, but empty their pots daily, as there is a plentiful supply from the river at all times of the year. *Anopheline* mosquitoes and larvæ abound, but few *Stegomyia* were found. After visiting every house and compound, I only obtained three specimens of *Stegomyia* larvæ, and only caught one adult of that species. Many specimens of *Culex pectinopalpus fusca* were bred from the larvæ taken from puddles near the streams and in some old gold holes.

10. I believe, but may be wrong, that some authorities now doubt whether *Stegomyia* is the only mosquito that conveys Yellow Fever. If this be true, no importance can be attached to the fact that few *Stegomyia* were found.

11. Chechewere is on the main road to Kintampo from Coomassie, and there is considerable traffic up and down the road. A census, taken by my orderly and the Chief's linguist, showed that 122 persons passed through Chechewere in one day, on their way to Kintampo from Coomassie. Thirty-two of these had come from Seccondee.

12. I presume that the reason I was ordered to proceed to Chechewere, was because the late Mr. B., Foreman of Works, was supposed to have been infected there. Any knowledge I have been able to gather contradicts this hypothesis. Mr. B. left Coomassie on the 2nd of November, stayed at Chechewere on the evening of the 4th, and arrived at Kintampo on the 8th. He was taken ill on the 16th, twelve days after leaving Chechewere, and died on the 18th. The incubation period of Yellow Fever is generally accepted to be from a few hours up to six days.

13. Though unable to demonstrate the presence of Yellow Fever in Chechewere, I do not doubt that it might possibly exist there. As Seidelin so ably says :—

> " The real difficulties begin when mild and atypical cases have to be " considered. Then each symptom must be carefully weighed and the " epidemiological facts ascertained."

I presume a satisfactory diagnosis of Yellow Fever can only be made, in these mild cases, when we obtain a grouping of certain symptoms as—remission of temperature, albuminuria, slow pulse, epigastric tenderness, and slight jaundice. To obtain these the patient would have to be carefully watched and frequent observations made by a medical officer. The facilities for demonstrating mild and atypical Yellow Fever, on a hurried visit to the bush, are limited. It seems to me that we will not meet with much success in that direction until we are able to prove the presence of a parasite. Careful clinical observations made in hospital, where the patient is under control, are at present essential.

I have, etc.,

(Signed) A. J. R. O'BRIEN,
Medical Officer of Health,
Coomassie.

THE SENIOR SANITARY OFFICER,
ACCRA.

ABBREVIATIONS USED.

a. = Adult, or person over 12 years.
b. = Boy over 5 and under 12.
g. = Girl over 5 and under 12.
c. = Child under 5.
T. = Temperature.
n. = Normal.
s.n. = Sub-normal.
p.r. = Pulse rate.
Alb. = Albuminuria.
J. = Jaundice.
M.P. = Malaria parasites.
Sp. = Spleen palpable.

1. K.—c., T. 99·8 on evening of 1st day, n. or s.n. afterwards; p.r., highest 100, lowest 85; quinine given on 1st day and 2nd days; Alb.—; J.—; M.P.+; Sp.+.

2. K. A.—c., T. 100 on evening of 1st day, n. or s.n. afterwards; p.r., highest 110, lowest 90; quinine given on 1st and 2nd days; Alb.—; J.—; M.P.—; increase of mononuclears; Sp.+.

3. K. D.—c., T. 99 on evening of 1st day, n. or s.n. after; p.r. 90 to 100; quinine given 1st day; Alb.—; J—; M.P.—; Sp+.

4. K. B.—c., T. 99·2 on evening of 1st day, n. or s.n. after; p.r. 90 to 100; quinine given 1st and 2nd days; Alb.—; J.; M.P.—; Sp.+.

5. K. T.—c., T. 99·2 on evening of 1st day, n. or s.n. after ; p.r. 100 to 110 ; quinine given on 1st, 2nd, 3rd, 4th and 5th days ; Alb.—; J.—; M.P.+; Sp.+.

6. K. K.—c., T. 100·2 on evening of 1st day, 100·6 on evening of 3rd day ; n. or s.n. at other times ; p.r. 100 to 120 ; quinine given on 1st, 2nd, 3rd, 4th and 5th days ; Alb.—; J—; M.P.+; Sp.+.

7. K. N.—a., T. 99·4 on evening of 1st day, n. or s.n. after ; p.r. 80 to 90 ; quinine given on 1st day ; Alb.—; J.—; M.P.—.

8. K. M.—c., T. 100·4 on evening of 1st day, n. or s.n. after ; p.r. 100 to to 120 ; quinine given on 1st, 2nd, 3rd, 4th and 5th days ; Alb.—; J.— ; M.P.+; Sp.+.

9. K. D.—a., T. 99·4 on evening of 1st day, n. or s.n. after ; p.r. 76 to 88 ; quinine given on 5 days ; Alb.—; J.—; M.P.+; Sp.+.

10. I. Y.—b., T. 99·5 on evening of 1st day, n. or s.n. after ; p.r. 80 to 100 ; quinine given on 1st, 2nd and 5th days ; Alb.—; J.—; M.P.+.

11. Q. Y.—c., T. 101 on evening of 1st day, 100·4 on evening of 2nd, 100·2 on evening of 3rd day ; n. or s.n. on other occasions ; p.r. 100 to 120 ; quinine given on the 5th day ; Alb.—; J.— ; M.P.+; Sp.+.

12. K. I.—c., T. 101 on evenings of 1st and 2nd days, n. or s.n. at other times ; p.r. 100 to 120 ; quinine given on 5 days ; Alb.—; J.—; M.P.+; Sp.+.

13. K. Q.—a., T. 100 on evening of 1st day, n. or s.n. after ; p.r. 80 to 96 ; quinine given on 1st day ; Alb.—; J.—; M.P.—.

14. Y. A.—a., T. 100 on 1st evening, n. or s.n. after ; p.r. 120 to 80 ; quinine given on 5 days ; Alb.—; J.—; M.P.+.

15. Q. D.—b., T. 99·8, 99·2, 98·6 on 1st, 2nd and 3rd evenings, n. or s.n. at other times ; p.r. 90 to 100 ; quinine given on 5 days ; Alb.—; J.—; M.P.+; Sp.+.

16. K. T.—c., T. 100 on 1st two evenings, n. or s.n. after ; p.r. 100 to 120 ; quinine given on the 5 days ; Alb.—; J.—; M.P.— ; mononuclear increase ; Sp.+.

17. Q. B.—b., T. 99·4 on 1st evening, n. or s.n. after ; p.r. 90 ; quinine given on 5 days ; Alb.—; J.—; M.P.+; Sp.+.

18. A. Y.—g., T. 100 on 1st evening, 99·8 next morning, 99·6 on 2nd evening, n. or s.n. on other occasions ; p.r. 120 when T. up, 86 when T. normal ; quinine given on 5 days ; Alb.—; J.—; M.P.+; Sp.+.

19. K. I.—c., T. 99·4 on 1st evening, n. or s.n. after ; p.r. 100 to 120 ; quinine given on 1st, 3rd and 5th days ; Alb.—; J.—; M.P.+; Sp.+.

20. K. D.—b., T. 100·4 on 1st evening, 99 next morning, 100·2 the 2nd evening, n. or s.n. after ; p.r. 120 to 90 ; quinine given on the 3 first days ; Alb.—; J.—; M.P.+; Sp.+.

21. K. B.—b., T. 100 on 1st evening ; n. or s.n. after ; p.r. 96, then 90 ; quinine given on the 5 days. Alb.—; J.—; M.P.+; Sp.+.

22. K. J.—b., T. 100·2 on 1st evening, n. or s.n. after ; p.r. 90 to 112 ; quinine given on 5 days ; Alb.—; J.—; M.P.+; Sp.+

23. K. J.—c., T. 99·6 on 1st evening, n. or s.n. after ; p.r. 100 to 110 ; no quinine given ; Alb.—; J —; M.P.—.

24. K. B.—c., T. on two occasions was 99, n. or s.n. at other times ; p.r. 88 ; quinine given on 1st and 2nd days ; Alb.—; J.—; M.P.+; Sp.+.

25. K. J.—c., T. 100 on 1st evening, n. or s.n. on other occasions; p.r. 100 to 110; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

26. K. U.—c., T. 99 on 1st evening, n. or s.n. after; p.r. 120, then 100; quinine given on three occasions; Alb.—; J.—; M.P.+; Sp.+.

27. K. P.—c., T. 99·4 on 1st evening, 99·2 next morning, n. or s.n. after; p.r. 96 to 104; quinine given on 4 days; Alb.—; J.—; M.P.+; Sp.+.

28. A. M.—a., T. 99·2 on 1st evening, n. or s.n. after; p.r. 90 to 108; quinine given on 1st evening; Alb.—; J.—; M.P.+; Sp. not palpable.

29. K. N.—a., T. 99 on 1st evening, n. or s.n. after; p.r. 86; quinine given on 3 days; Alb.—; J.—; M.P.+; Sp. not palpable.

30. K. B.—c., T. 99·4 on 1st evening, n. or s.n. after; p.r. 86 to 96; quinine given on the 5 days; Alb.—; J.—; M.P.+; Sp.+.

31. K. I.—c., T. 99 on 1st evening, n. or s.n. after; p.r. 94; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

32. Q. W.—b., T. 99·2 on 1st evening, 100 next morning, 101 on 2nd evening, n. or s.n. afterwards; p.r. varied from from 96 to 108 when T. up, 80 when normal; quinine given on the 5 days; Alb.—; J.—; M.P.+.

33. Y. A.—a., T. 99·4 on 1st evening, n. or s.n. after; p.r. 100 to first, then 76; quinine given once; Alb.—; J.—; M.P.—.

34. E. W.—a., T. 99·4 on 1st evening, n. or s.n. after; p.r. 80; quinine given each day; Alb.—; J.—; M.P.+.

35. K. A.—a., T. 100 on 1st evening, n. or s.n. after; p.r. 100 at first, then 80; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

36. K. K.—a., T. 100·6 on 1st evening, n. or s.n. after; p.r. 80 to 100; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

37. Y. S.—g., T. 99·4 on 1st evening, n. or s.n. after; p.r. 90; no quinine given; Alb.—; J.—; M.P.—.

38. A. P.—c., T. 99.4 on 1st evening, 99 next morning, 99·8 on 2nd evening, n. or s.n. after; p.r. 100 to 120; quinine given on the 5 days; Alb.—; J.—; M.P.+; Sp.+.

39. A. A.—a., T. 99 on 1st evening, n. or s.n. after; p.r. 80; quinine given twice; Alb.—; J.—; M.P.+.

40. E. E.—a., T. 99 on 1st evening, n. or s.n. after; p.r. 90; quinine given on 5 days; Alb.—; J.—; M.P.+.

41. Y. D.—c., T. 99·2 on 1st day, n. or s.n. after; p.r. 100 to 110; quinine given each evening; Alb.—; J.—; M.P.+; Sp.+.

42. K. F.—c., T. 99·2 on 1st evening, 99·2 next morning, 99 on 2nd evening. n. or s.n. after; p.r. 100 to 120; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

43. K. S.—c., T. 99·6 on 1st evening, 99·8 next morning, 99·4 on 2nd evening, n. or s.n. after; p.r. 92 to 100; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

44. Y. W.—c., T. 99·4 on 1st evening, n. or s.n. after; p.r. 100 to 120; quinine given on each day; Alb.—; J.—; M.P.+; Sp.+.

45. Y. N.—a., T. 99·6 on 1st evening, n. or s.n. after; p.r. 80; quinine given on 1st, 2nd, 3rd and 5th days; Alb.—; J.—; M.P.+; Sp.+.

46. K. U.—c., T. 99·6 on 1st evening, n. or s.n. after; p.r. 100; quinine given on 5 days; Alb.—; J.—; M.P.+; Sp.+.

47. Y. U.—c., T. 100·2 on 1st evening, 99 next morning, 99·4 on 2nd evening, n. or s.n. after; p.r. 108; quinine given on the 5 days; Alb.—; J.—; M.P.+; Sp.+.

48. E. K. S.—a., T. 100 on 1st and 2nd days; p.r. 100 and then 80; quinine given on 3 days; Alb.—; J.—; M.P.+.

49. K. I.—b., T. varied between 102·4 and 105·4 for the 5 days; p.r. was very rapid and went as high as 150, and never came below 120; quinine was given without effect; Alb.+, very slight trace on one occasion, absent on other examinations; no jaundice; M.P.+; Sp.+. This boy was suffering from broncho-pneumonia.

50. E. P.—c., T. 100·2 on 1st evening, 101·4 next morning, 103 on 2nd evening, 100·8 on 3rd morning (an abscess of the neck was then opened), n. on 4th morning and stayed normal; p.r. 100 to 120; quinine given on the 5 days; Alb.—; J.—; M.P.+; Sp.+.

51. E. W.—g., T. 100·8 on the first occasion seen, remained between 103 and 105 for 4 days, and then dropped by crisis (girl had been ill for 4 days before I saw her); p.r. 110 to 140; quinine had no effect on the T.; Alb.—; J.—; M.P.+; Sp.+. This girl was found to be suffering from pneumonia.

APPENDIX No. 2.

SANITARY IMPROVEMENTS CARRIED OUT IN 1913.

EASTERN PROVINCE.

ACCRA.—

(1) Drainage of area between European club and the sea.

(2) Drainage of Brazil Street, Block 6—This included making of gravel road and a considerable amount of filling in.

(3) Two concrete tanks to take drainage of James Fort Prison. Emptied daily.

(4) Drying shed to destructor.

(5) Drainage—Asylum Road.

(6) Six new concrete dustbins have been erected in various parts of Accra and Riponsville.

(7) Two public latrines of 18 pans each at Riponsville and two of 12 pans at Korle Gono.

(8) Four temporary latrines were erected to accommodate the inrush of people during the native festival in August.

(9) A reinforced concrete flushing tank of 3,000 gallons was constructed in Salaga Market at the head of the main drain to enable this drain to be efficiently and frequently flushed. This is fed by sea-water from a windmill pump on the cliff near the slaughter house.

(10) Commencement of High Street drainage scheme.

(11) Drainage of area to the East of the Chief Justice's bungalow.

(12) One hundred and twelve tanks and wells were inspected; 72 repaired and mosquito-proofed, 4 abolished, 2 in use for constructional purposes were not touched, and 27 were found in good order.

(13) Eight type houses were built at Riponsville and four at Adabraka. These will be sold to genuine dispossessed persons at easy rates.

(14) Loans of Building Materials to the amount of £1,323 were issued to dispossessed persons during the year.

ADAWSO.—

(1) 98 lineal feet concrete drain constructed at Police Barracks and 20 lineal feet repaired.

(2) Extension of drain in Main Road 94 yards in length and main outfall—Mangoase Road constructed length 10 yards.

(3) Three dust bins built.

(4) Concrete floors to three market sheds and drains round 8 sheds.

ADDAH.—

£152 were spent in mosquito-proofing bungalows, and construction of concrete well-heads and aprons.

AKUSE.—

(1) Construction of two public latrines.

(2) Drain from Somanya Road to Kpong Road.

(3) Building temporary C.D. Hospital.

(4) Building Latrine at Post Office.

(5) Repairs to slaughter house.

KOMFRODUA.—

(1) Drains constructed near Messrs. Swanzy's Factory, length 100 feet.

(2) Main outfall culvert constructed.

NEW MANGOASE.—

(1) Two culverts constructed across Main Road each 38 ft. × 2 ft. 6 ins. × 2 ft. 0 ins.

(2) Clearing bush, cutting down and removing trees on lines of new streets.

(3) Clearing site for market.

(4) Excavation for road back of traders' plots.

(5) Filling in depression and levelling at site for native town.

NSAWAM.—

(1) 174 lineal yards 15-in. drain at police station and barracks.

(2) Repairs to incinerator.

SOMANYA.—

(1) Bath houses at Post Office built.

(2) Well sinking and construction of concrete well-heads.

QUITTAH.—

(1) Construction of 16-in. drains and culverts in Mission and Bremen Streets and Albany Place.

(2) Reconstructing drains at prison.

(3) WELLS.—

Sinking well at Chief Aghono's farm.

Deepening and constructing concrete tops to wells at open spaces Nos. 3, 11 and 12 and fixing pumps.

Deepening and constructing well tops at Hausa Town.

Mosquito-proofing wells.

(4) Construction of 24-pan latrine at Hausa Town.

(5) Erecting two double latrines at back of King's Warehouse.

(6) Repairs to all existing latrines and white-washing same.

(7) Construction of latrine at Swanzy's beach.

(8) Demolition of two old dustbins and rebuilding one.

KIBBI.—

(1) Two water basins constructed.

(2) Clearing swamp between bungalows and Basel Mission Station.

ABURI.—

Slaughter house.

CENTRAL PROVINCE.

CAPE COAST.—

(1) Five concrete dust bins.

(2) 730 lineal yards surface water drains.

(3) 1 market shed converted into men's baths.

(4) 1 market converted into laundry (in progress).

(5) One 12-pan latrine constructed.

(6) Repairs to drains and latrines.

SALTPOND.—

(1) Raising wall round catchment area of tank to 6 ft.

(2) Slaughter house.

(3) 2 destructors built.

(4) Two 12-pan latrines built.

(5) Drains to Ashanti Road and Chapel Street.

(6) 6 dust bins constructed.

WINNEBAH.—

(1) Slaughter house.

(2) One type latrine, 16 pans.

(3) One large destructor.

(4) 7 dust bins.

(5) 700 lineal yards surface-water drain constructed.

APPAM.—

(1) Repairs and alterations to refuse destructor.

(2) Slaughter house.

(3) Repairs to market and gutters.

(4) A sea latrine.

WESTERN PROVINCE.

AXIM.—

(1) Afala Lagoon 12,211 cubic yards filling.

(2) Repairs to wells and pumps at Brewei, Ottupai and Hospital.

(3) Pumps fixed to well at Lower Town, also mouth of well raised 3 feet, concrete platform constructed and drains to lagoon.

(4) Drains—302 lineal yards have been constructed.

(5) Seven culverts put in.

(6) Mosquito-proof room provided at District Commissioner's quarters.

DUNKWA.—

(1) Two washing places 18 feet square, and three bath houses 16 feet square constructed.

(2) One dust bin built.

(3) Demolition of old houses and filling in holes.

(4) Repairs to incinerators.

(5) 130 feet concreting earth drains.

SECCONDEE.—

(1) Town drains—New and Old Seccondee.

(2) Hausa Zongo.

(3) Hospital Valley.

(4) In April heavy storms damaged the outfall of the main drain—this was repiled—rebuilt and strengthened with buttresses.

(5) Two market sheds each 60 feet long by 14 feet wide were constructed at the Hausa Zongo.

(6) A slaughter house for pigs built.

(7) Three public latrines each of 18 pans of the same type as those lately built in Accra have been erected and are ready for use. A fourth is under construction.

(8) 20,400 sup. yards of bush were cleared from the site of the new Kroo Town.

(9) *C.D. Hospital Valley.*—6,274 sup. yards cleared of bush and planted with bahama grass, also a considerable amount of hole filling carried out. Well lined with concrete.

(10) *Remodelling and levelling building sites.*—£593 has been expended on this work.

SECCONDEE—*continued.*

(11) Property to the value of £399 has been acquired for the general improvement of the town.

Miscellaneous.—A considerable amount of maintenance work has been carried out, such as repair to drains, latrines, dustbins, etc., and also several small jobs for the Town Council have been done.

TARQUAH.—

(1) Drains to wash houses and latrines.

(2) Filling in swamp round police barracks.

(3) Building retaining walls and laying concrete drains 29 lineal yards at market place.

(4) Reroofing cloth shed at market.

(5) Remosquito-wiring doors and windows at native hospital.

(6) Drain from mortuary floor.

(7) Drain 17 lineal yards behind police barracks.

(8) Repairing and refixing fire bars No. 1 incinerator.

(9) Tables to butchers' shed-market.

(10) Railway swamp.

ASHANTI AND NORTHERN TERRITORIES.

COOMASSIE.—

(1) Five public latrines have been constructed.

(2) Drainage of State Road.

(3) Bridge over Subin River.

(4) Alterations to incinerators.

(5) Relining King's wells.

(6) Construction of two culverts.

(7) Kingsway drainage.

(8) Pump and well in Zongo.

(9) 24-in. drain Market Road and Kingsway to Subin Stream.

(10) Latrines for clerks' forestry office and fort.

(11) A surface-water drainage scheme was prepared by the District Engineer.

TAMALE.—

(1) Two public latrines built.

(2) Slaughter platforms in concrete.

(3) 2 dust bins.

(4) 4 culverts built.

APPENDIX No. 3.

ENTOMOLOGICAL RETURNS.

The following blood-sucking diptera have been described by Medical Officers at the various Stations :—

THE COLONY.—

QUITTAH (Dr. Palmer).—

Anopheles (Pyretophorus) costalis.
Stegomyia fasciata.
Culex fatigans.
Anopheles (Myzomyia) funestus.
Culicomyia nebulosa.

ADDAH (Dr. Duff).—

Anopheles (Pyretophorus) costalis.
Anopheles cellia.
Culex.
Stegomyia.

ACCRA (Drs. Connal and Condy).—

Stegomyia fasciata.
Culex fatigans.
Culex decens.
Anopheles (Pyretophorus) costalis.

WINNEBAH (Drs. Ralph and Jupe).—

Culex.
Anopheles.
Stegomyia.

SALTPOND (Drs. O'Donoghue and Sharp).—

Culex.
Anopheles.
Stegomyia.

CAPE COAST (Drs. Beringer and Dugon).—

Culex.
Anopheles.
Stegomyia.

ELMINA (Dr. Forde).—

Culex.
Anopheles.
Stegomyia.

SECCONDEE (Drs. Lorena, Coghill and Hänschell).—

Culex fatigans.
Culex duttoni.
Culex tigripes.
Culex negrocostalis.
Culex pectinopalpus fusca.
Stegomyia fasciata.
Anopheles (Pyretophorus costalis).

The observers remark that *Stegomyia fasciata* was the commonest variety of mosquito.

AXIM (Drs. Gush, White, Goodbrand).--

Stegomyia.

TARQUAH (Drs. Alexander, Jupe, Hay).—

Stegomyia fasciata.
Culex tigripes.
Culex duttoni.
Culex pectinopalpus fusca.
Anopheles.

DUNKWA (Dr. Keigwin).—

Stegomyia.
Anopheles.

Dr. Keigwin reports that *Stegomyia* was the common mosquito.

ASHANTI.—

OBUASI (Drs. Donnelly and McDouall).—

Stegomyia.
Culex.

WESTERN DISTRICT OF ASHANTI (Dr. Wade).—

Glossina palpalis.
Glossina pallicera.
Glossina longipalpis.
Glossina fusca.
Glossina nigrofusca.

SUNYANI (Dr. Storey).—

Anopheles (Pyretophorus) costalis.
Anopheles Myzomyia funestus.
Anopheles (Nyssorhynchus) rufipes?
Stegomyia fasciata.
Culex tigripes.
Culicomyia nebulosa.

KINTAMPO (Drs. Ingram and Wade).—

Culex annulioris.
Culex consimilis.
Culex tigripes.
Culex duttoni.
Culex univittatus.
Culex invidiosus.
Stegomyia fasciata.
Stegomyia sugens.
Ochlerotatus nigeriensis.
Culicomyia nebulosa.
Anopheles (Pyretophorus) costalis.
Anopheles Myzomyia funestus.
Anopheles Myzorhynchus paludis.
Anopheles Myzomyia Rhodesiensis.

COOMASSIE (Drs. Montgomery and A. J. R. O'Brien).—

Anopheles (*Pyretophorus*) *costalis.*
Anopheles (*Myzorhynchus*) *paludis.*
Anopheles (*Nyssorhynchus*) *maculipalpis.*
Anopheles (*Cellia*) *squamosæ.*
Mansonia mucidus.
Mansonia uniformis.
Stegomyia fasciata.
Culex pectinopalpus fusca.

NORTHERN TERRITORIES.—

TAMALE (Dr. Telfer).—

Anopheles (*Nyssorhynchus*) *maculipalpis.*
Culex fatigans.

BOLE (Drs. Thompson and Lundie).—

Stegomyia fasciata.
Culex tigripes.
Anopheles (*Pyretophorus*) *costalis.*
Anopheles (*Nyssorhynchus*) *maculipalpis.*

ZOUARAGU (Dr. Allan).—

Anopheles (*Pyretophorus*) *costalis.*
Anopheles (*Myzomyia*) *funestus.*
Stegomyia fasciata.
Culex fatigans.

TUMU (Dr. Ryan).—

Anopheles (*Pyretophorus*) *costalis.*
Anopheles (*Myzomyia*) *funestus.*
Stegomyia fasciata.

GAMBAGA (Dr. Knowles).—

Culex fatigans.

LORHA (Drs. Ivers and Corson).—

Culex.
Stegomyia.
Anopheles.

BAWKU (Dr. Whyte).—

Stegomyia fasciata.

WA (Dr. Watt).—

Culex pipiens.
Culex fatigans.
Stegomyia fasciata.

SALAGA (Drs. Oakley and Fraser).—

Culicomyia nebulosa.
Anopheles (*Pyretophorus*) *costalis.*
Culex tigripes.

APPENDIX No. 4.

REPORT ON THE TEACHING OF HYGIENE IN THE SCHOOLS OF THE GOLD COAST COLONY, 1913.

As regards the majority of the schools little can be added to the information given in the last Report.

The text book "Mrs. Deacon's Lectures on Hygiene" has been used in conjunction with the Sanitary Bye-laws and the mosquito cards published by the Tropical School of Medicine.

The letterpress has been exceedingly well learnt. In some instances it has been very fully explained by the teachers and often illustrated by simple experiments.

The unsuitability of this text book has long been recognised, and it is hoped that "Strachan's Elementary Hygiene" together with suitable charts and diagrams will soon be used in every school. In a few schools, however, the book has been largely disregarded, and the elementary principles of hygiene have been taught with as few words and as many homely illustrations as possible. This teaching has as its foundation the absolute necessity for, firstly, scrupulous cleanliness in all matters, and, secondly, the prevention of breeding of disease-carrying insects.

The teaching has become popular rather than technical. To the hygiene book version of pure water—a practical impossibility for most of the pupils—has been added the teaching of the fact that the straining of water through a cloth will, at least, remove the impurities in suspension, and that boiling will nullify the chances of contracting guinea-worm. Again, instead of devoting a large number of lessons to the scientific explanation of the changes that the mosquito undergoes, the greatest stress has been laid on the necessity for removing the breeding places of the mosquito. By keeping the larvæ in a glass jar containing water, securely covered with a piece of finely perforated paper, the teachers have shown to the children that mosquitœs actually breed in water.

The necessity for ventilation has, in many cases, been well shown by the teachers' experiments and the folly of wearing full European dress during the day and in the morning and evening, a light Manchester cloth, has been demonstrated.

Outdoor games have been fostered and a system of physical exercise recommended by the Department introduced.

Although this method is productive of good results in some cases, yet by far the larger number of pupils, it is to be feared, regard the hygiene teaching as they, presumably, regard the majority of the instruction given in the schoolroom. It belongs to "book" and not to their daily lives. This is only natural, for it cannot be expected to change the lifelong habits, or to remove the innate prejudices of a people, in the course of a generation, however vital the subject and however expert the teacher.

(Signed) D. J. OMAN,

Director of Education.

22*nd January*, 1914.

APPENDIX No. 5.

RETURN OF SCAVENGERS AND LABOURERS EMPLOYED BY THE SANITARY BRANCH DURING THE YEAR 1913.

The sum of £12,190 was voted for Scavengers and labourers who were employed in towns not under the Town Councils Ordinance, and was distributed as follows:—

Station.	Number employed.	Remarks.
Aburi	11	At Accra, Cape Coast and Seccondee, scavengers and labourers were supplied by the Town Councils.
Accra	86	
Adawso	11	In addition, 82 men were, however, employed at Accra for mosquito-brigade work, and 4 men at the Accra Cantonments, and paid by the Government.
Addah	18	
Akuse	32	
Annamaboe	4	
Appam	11	
Axim	43	
Chama	6	
Dixcove	5	
Dodowah	15	
Dunkwa	11	
Elmina	13	
Komfrodua	7	
Kibbi	1	
Kpong	5	
Kwanyako	6	
Mampong	6	
Mangoase	5	
New Mangoase	11	
Nsaba	6	
Nsawam	16	
Nyakrom	6	
Oblogo	6	
Odumase	5	
Pram Pram	5	
Prestea	6	
Quittah	18	
Saltpond	37	
Soadru	11	
Somanya	13	
Tarquah	53	
Weshiang	6	
Winnebah	38	
TOTAL	533	

The majority of the above labourers were employed upon what is usually described as mosquito-brigade work, that is in removing any conditions likely to favour the breeding of mosquitoes.

APPENDIX No. 6.

RETURN OF MALARIAL FEVER, BLACKWATER FEVER, YELLOW FEVER, FILARIASIS AND DENGUE, DURING THE YEAR FROM THE 1st JANUARY TO 31st DECEMBER, 1913.

1. Name of Colony		Gold Coast.
2. Total area		80,235 square miles.
3. Estimated population—		
(*a*) Total		1,503,386.
(*b*) Europeans		1,343.
(*c*) Asiatics		46.
(*d*) Other races		1,501,997.
4. Births during the year...		1,231 (in the Registration Districts).
5. Deaths during the year—		
(*a*) Total deaths		2,335 (in the Registration Districts).
(*b*) Deaths ascribed to Fever		161.
(*c*) Deaths ascribed to Blackwater Fever...		6.
(*d*) Deaths ascribed to Yellow Fever ...		7.
6. Government Hospitals—		
(*a*) Number of such Hospitals		22.
(*b*) Totals during year	(admissions) ...	3,707.
	(deaths)	242.
(*c*) Malarial Fever	(admissions) ...	327.
	(deaths)	—
(*d*) Blackwater Fever	(admissions) ...	16.
	(deaths)	5.
(*e*) Yellow Fever	(admissions) ...	15.
	(deaths)	3.
(*f*) Filariasis	(admissions) ...	11.
	(deaths)	—
(*g*) Dengue	(admissions)... ...	1.
	(deaths)	—
7. Government Dispensaries—		
(*a*) Number of such Dispensaries		29.
(*b*) Total attendances during year		45,784.
(*c*) Attendances for Malaria		2,238.
(*d*) Attendances for Filarial Diseases ...		172.
(*e*) Attendances for Dengue		—
8. Medical Service —		
(*a*) Number of Government Medical Officers		57.
(*b*) Number of Special Health Officers ...		6.
(*c*) Number of other registered Practitioners		31.
9. Schools—		
(*a*) No. of Government and State-aided Schools		154.
(*b*) No. of Scholars registered in these schools		18,533.
(*c*) Percentage of daily attendances ...		13,649.

10. Estates employing indentured labour—

(*a*) Number of such	No returns.
(*b*) Number of indentured labourers employed	
(*c*) No. of Hospitals and Dispensaries on such estates	
(*d*) Total deaths among such labourers ...	
(*e*) Deaths ascribed to Malaria	
(*f*) Total admissions and attendances at Hospitals and Dispensaries	

11. Estimated revenue of Colony—

Total during year	£1,300,000 0 0

12. Estimated expenditure of Colony—

(*a*) Total during year	£1,263,250 0 0
(*b*) Annual medical and sanitary expenditure	£93,560 0 0
(*c*) Upkeep of Government Hospitals and Dispensaries	—
(*d*) Total salaries and allowances of M.Os.	£39,555 0 0
(*e*) Total annual sanitary expenditure ...	£36,854 0 0

13. Towns under Municipalities or Town Councils—

(*a*) Number of such	3
(*b*) Total population...	39,883
(*c*) Total revenues—	
Accra	£8,760 9 9
Cape Coast	£1,879 19 6
Seccondee	£3,637 2 10
Total	£14,277 12 1
(*d*) Total sanitary expenditure—	
Accra	£10,715 6 10
Cape Coast	£ 3,007 9 8
Seccondee	£ 4,555 14 3
Total	£18,278 10 9

14. Table of Deaths in the Registration Districts.

Province.	Population. (Census 1911.)	Total Deaths.												
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Eastern Province ...	38,208	83	88	96	91	126	106	105	102	89	82	83	100	1,151
Central Province ...	25,827	64	52	46	42	55	42	57	67	45	52	41	58	621
Western Province ...	17,216	39	29	48	45	54	48	53	50	52	42	50	53	563
Ashanti	18,853	3	4	10	12	7	5	9	9	6	3	4	9	81
Total	100,104	189	173	200	190	242	201	224	228	192	179	178	220	2,416

15. Table of Deaths in the Principal Towns.

Town.	District where situated.	Population. (Census 1911.)	Total Deaths.												
			January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Accra ...	Eastern Province	19,844	57	60	63	72	84	80	78	79	60	39	45	60	777
Labadi ...		2,130	10	7	5	4	10	3	6	1	10	9	7	7	79
Aburi ...		1,609	7	8	9	6	9	8	9	6	3	11	6	8	90
Dodowa		2,307	—	—	—	—	—	1	2	2	1	4	4	2	16
Addah ...		1,582	1	2	4	2	5	2	3	4	2	3	3	3	34
Kpong ...		4,213	—	—	—	—	—	—	—	4	5	7	8	10	34
Akuse ...		3,107	—	7	12	5	13	6	3	3	3	3	6	5	66
Quittah ...		3,416	8	4	3	2	5	6	4	3	5	6	4	5	55
Cape Coast	Central Province	11,306	30	27	16	11	25	19	23	28	19	25	18	20	261
Elmina ...		5,098	7	6	5	5	5	6	3	6	4	7	4	9	67
Saltpond		3,553	5	5	6	11	11	7	3	14	11	11	11	9	114
Winnebah		5,870	22	14	19	15	14	10	18	19	11	9	8	20	179
Seccondee	Western Province	9,122	7	10	13	14	14	16	15	14	11	17	13	16	160
Axim ...		3,307	11	8	6	5	7	7	10	7	12	10	8	9	100
Tarquah...		2,423	16	9	28	22	24	15	21	20	23	13	26	22	239
Dunkwa...		2,364	5	2	1	4	9	10	7	9	6	2	3	6	64
Coomassie	Ashanti ...	18,853	3	4	10	12	7	5	9	9	6	3	4	9	81
	Total ...	100,104	189	173	200	190	242	201	224	228	192	179	178	220	2,416

16. Rainfall during the Year 1913.

Station.	Rainfall.												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Accra	—	6·26	1·24	2·43	4·75	4·23	5·28	1·73	—	2·04	1·22	—	29·18
Addah	—	3·81	0·61	2·01	5·57	10·74	7·61	0·82	—	3·92	0·08	0·10	35·37
Aburi	0·15	4·67	3·74	5·78	5·51	8·58	11·07	8·32	4·76	2·77	2·34	0·42	58·11
Quittah	—	3·36	0·36	2·06	3·71	8·12	2·68	—	0·07	3·14	0·14	—	23·64
Cape Coast	—	2·25	2·31	7·84	3·85	5·73	3·89	0·85	2·41	2·11	—	0·08	31·32
Seccondee	—	2·49	1·26	6·13	4·73	8·93	8·13	1·32	2·02	1·52	—	—	36·53
Axim	0·33	2·45	4·97	4·30	11·43	21·83	26·73	6·74	1·74	5·37	5·86	0·25	92·02
Tarquah	2·40	5·38	2·76	8·87	7·47	9·23	17·77	6·19	5·41	7·21	3·67	1·03	77·39
Coomassie	0·58	4·00	2·47	9·40	4·89	4·33	6·80	8·28	9·54	3·90	1·24	0·50	55·93
Kintampo	1·10	1·91	2·58	3·98	10·55	5·16	9·76	16·29	14·61	11·85	—	39·00	78·18
Sunyani	1·37	3·59	2·07	4·36	5·19	10·01	14·09	8·87	6·70	8·23	0·98	1·06	66·52
Tamale	—	0·72	0·72	1·57	3·31	6·43	7·00	14·58	11·29	2·39	—	—	48·01
Gambaga	—	—	—	—	—	—	—	—	—	—	—	—	—

17. Additional information to be given, if possible, on the following points :—

(*a*) Is there any legislation in force against the breeding of mosquitoes in premises ?	Yes. Ordinance No. 6 of 1911.
Number of notices served	5,025.
Number of convictions	2,227.
(*b*) Number of children examined for enlarged spleen	7,120. See Table XV. in Report.
Where was this done ?	At Government Hospitals and Dispensaries.
Percentage affected	41·41. See Table XV. in Report.
Does Kala-Azar exist ?	No case yet reported.
(*c*) Number of persons examined for filarial disease	Nil.
(*d*) Any large works for surface drainage of towns or reclamation of marshes ...	Yes, at Accra and Seccondee. Sanitary Improvements £27,807.
(*e*) Number of men employed in towns and villages for petty anti-mosquito works	Part time of 533 men employed in scavenging was utilised in anti-mosquito work.
Approximate cost	£12,190 voted for scavenging.
(*f*) Amount of Government quinine sold or distributed gratis during the year ...	Unknown. Distributed free to European Government Officials.
(*g*) Is quinine distributed regularly in the schools ?	No.
(*h*) Measures taken against these diseases on estates employing indentured labour ...	None at present.
(*i*) Any steps taken regarding the housing of the poor	Type Houses being built at Korle Gono and Adabraka for the dispossessed.
(*j*) Any exceptional increase or decrease of these diseases recently noticed... ...	Nil.
(*k*) Any other remarks on the subject ...	Nil.

APPENDIX No. 7.

THE LABORATORY,
ACCRA,
12*th April*, 1914.

SIR,

I have the honour to forward the Annual Report of work done in the Laboratory for the year 1913.

Dr. Connal had been in charge up to May 15th, and I took over from him on that date and continued for the remainder of the year.

The bulk of the work consisted in the examination of clinical material sent by the Medical Officers in charge of the European and native hospitals, and collected by myself from the asylum and cantonments where I acted as Medical Officer during the year; a certain amount was also obtained from dispensaries at Christianborg and Labadi, which were opened during three months from September to November to assist in the investigation of yellow fever.

It will be seen that the number of specimens was greatly in excess of those received in 1912.

VACCINE LYMPH.

The preparation of glycerinated calf lymph, which had been carried out during the previous two years, was continued for the month of January only, so it is not necessary to give details of manufacture as this has been done in former reports.

There were only two quantities sent out, one to Dunkwa, and one to Quittah, and, judging from the returns sent in from both stations, which are attached in tabular form, the lymph was evidently of a fair standard.

BLOOD-SMEARS.

These examinations totalled for the year 680, the results were sent in monthly on printed forms to the Sanitary Department.

As a rule films were thin, and dried before staining; this is always sufficient when the infection is a heavy one, but acute cases often occur in which fever is present and yet the parasites cannot be found in the peripheral blood; in these the "thick film" was found useful for detecting the organism in nearly every case of malaria with paroxysms and fever, and also in trypanosomiasis. The only objection to this method is that at the beginning there is some difficulty at times in determining what are really parasites and what artefacts; occasionally parasites cannot be found by either method in cases which appear to be malaria; in these the infection may be a particularly mild one, or they may be simple ephemeral fever, and the quinine test does not always enable one to come to a definite conclusion regarding diagnosis.

There were 114 smears from Europeans, in 29 of which parasites were found; of these 27 were of the sub-tertain variety, and two of benign, giving a percentage of 23·6 and 1·6 respectively.

Pigmented mononuclears occurred in only three cases, making a total malarial infection of roughly 28 per cent.

A good many of these patients came from out-stations where they were probably in closer contact with the native population, and consequently more liable to receive infection than those stationed in Accra, where the efficient sanitary precautions reduce Anopheline breeding places and the number of carriers of the parasite to a minimum; judging from my own experience in my bungalow in Victoriaborg it is the exception rather than the rule to find mosquitoes.

Neither filarial embryos nor trypanosomes were detected in the blood of Europeans. The blood examinations of native adults numbered 539, malaria parasites being found in 33, of which 26 were of the sub-tertian variety, 4 quartan, one benign tertian and 2 crescents, giving an infection of a little over 6 per cent. as compared with a European 28 per cent. Of course a large number of these were suffering from some definite complaint other than malaria.

There is no doubt that the native enjoys a considerable degree of immunity against malaria, which appears to be acquired and not transmitted. The proportion of infected children is great, but decreases as adolescence is approached.

A tolerance of the malarial poison is evident even in children at an early age, after a few attacks ; it is not uncommon in the native villages to see children, with large spleens and numerous parasites in the blood examination, running about without suffering any great inconvenience.

In 5 cases trypanosomes were found in the blood of adult natives, also embryos of *Filaria loa* in 5, and those of *Filaria perstans* in 5 other cases. Twenty-seven blood-smears from native children under 15 years of age were examined ; 10 showed malaria parasites, the sub-tertian being the type in 8 of them ; the remaining two were quartan and benign tertian. In 3 other cases pigmented mononuclears were present, so that the total evidence of malarial infection was nearly 50 per cent.

Embryos of *Filaria loa* were found in one case of a child under 8 years.

Table II. gives the results of blood examinations of the different groups, both Native and European.

A differential leucocyte count was made on nearly all smears ; in malarial cases, as a rule, the leucocytes were diminished in number, the decrease involving mainly the polynuclear cells. The large mononuclears invariably were relatively increased, and masses of pigment were more often found in these than in the multinucleated elements. In those cases where the anæmia was extreme, as the result of an aggravated malarial condition, the appearance of nucleated red corpuscles was fairly common, especially in children ; they evidently indicate an attempt at restoration of the blood. The average normal number of polynuclears in blood from natives hardly ever exceeded 50 per cent., so that 70 per cent. to 75 per cent., which is given as normal in most text books, would be regarded as a leucocytosis ; the highest counts of these cells in cases of disease were found in croupous pneumonia, a condition to which the native is very susceptible ; the occurence of a leucocytosis usually indicates a favourable termination. In uncertain acute atypical lesions, a polymorphonuclear leucocytosis seems to point to pneumonia, its absence pointing to tuberculous trouble.

A relative increase of the eosinophile cells is nearly always seen except where there is a high polymorph. count. This is probably caused by helminthiasis, which is so prevalent, but as it has often been observed that an eosinophilia is not marked in some cases where a heavy helminthic infection is indicated on examination of the stool, and on the contrary, there is sometimes a high eosinophilia without any evidence of ova. Too much stress seems often to be laid on the fact of an eosinophilia indicating helminths, as an increase may be caused by a number of diseases, notably asthma and certain skin affections. The greatest increase, however, is usually found in the various forms of helminthiasis, a count of over 20 per cent. being not uncommon.

In films these cells are often seen broken down, with their granules scattered about.

Myelocytes were sometimes found where the anæmia was severe, especially in chronic cachectic conditions, but their percentage was always extremely

small. There were no definite cases of spleno-medullary leucocythæmia, of which these cells are the chief diagnostic feature.

The presence of mast cells, which are supposed to be not commonly found in human blood, was a distinguishing feature of all these films, occurring in a large percentage. They are nearly all of the same type, coarsely granular basophile, the nucleus obscured by the very numerous granules which also give the outline of the cell an irregular margin; the nature of the disease did not seem to have any bearing on the number of mast cells, which varied from two to one per cent. for all ages. Increase and decrease of the blood plates were frequently observed, but no definite conclusions could be arrived at, as their significance is rather doubtful.

Filariasis.

The eleven cases of filarial infection were discovered during routine blood examination, the embryos were readily recognised in fresh or dry film preparations.

In those cases in which a differential count was made, an eosinophilia of 6 to 12 per cent. existed.

Trypanosomiasis.

All the cases of trypanosomiasis had come to Accra from other stations; several were soldiers who probably became infected in the Northern Territories. The disease often appears to be peculiarly mild clinically, with small numbers of parasites in the blood, so that several examinations may be necessary or even the cerebro-spinal fluid searched by lumber puncture before the diagnosis may be ratified. In fresh preparations little structure can be made out, but it is seen that progression is brought about by wave-like motions starting in the flagellum and running along the undulating membrane; when very active the parasite has a screw-like motion. All the human trypanosomes adhered to the gambiense type.

The differential leucocyte count showed a fairly constant increase of eosinophiles and large mononuclears. In one film both filarial embryos and trypanosomes were found. Two guinea-pigs were inoculated with the human parasite by Dr. Hutton; both died within five days, but no evidence of the disease was discovered in their blood *ante-mortem* or after death.

Urine Examinations.

Sixty-seven specimens were received for examination, 26 from Europeans and 41 from natives. Of the former, granular casts were found in three, hyaline in two, and pus in one. The estimation of urea was made in eight. In the native urines, granular casts were present in two, hyaline in two, red cells in four, tubercle bacilli in one, pus in three and bilharzia ova in four. The latter are sometimes found without any symptoms whatever being displayed.

All these details are given in Table III.

Examination of Fæces.

These number 381, as compared with 67 reported on for the previous year.

Fifty-seven were from Europeans, and in one of these Ankylostome ova were found; 13 showed the *Entamœba histolytica* and 5 *Lamblia intestinalis*, in the latter no other protozoa ova were found to account for the symptoms, so that this parasite is probably pathogenic.

In the 324 native specimens, there were only 82 negative, and quite a number showed an association of different ova, one having Ascaris,

Ankylostome, Trichocephalus and Bilharzia ova. Balantidium coli was found in one native stool, and was the only parasite present to account for the diarrhœa.

A large percentage of native adults harbour helminths of some sort, and seem to be very tolerant of their presence, even when heavily infected. Details of all fæcal examination are given in Table IV., and Table V. gives a numerical analysis of the most important findings.

Sputum Examinations.

In all 32 specimens were received, 6 from Europeans and 26 from natives. In the former, tubercle bacilli were found in 3. The native sputa showed tubercle bachilli in 4, pneumococci in 2, Trichomonas pulmonalis in 3, and the Prowazekia urinarius in one. This latter was at first supposed to be a contamination, but after proper precautions were taken it was still found; I cannot explain its significance.

These were the more important pathogenic causes found, but full details are shown in Table VI.

No cases of plague occurred during the year. In nearly all the tuberculous cases blood examinations were made; as a rule no marked polynuclear increase was present, except in cases of mixed infection with high temperature.

The leucocyte count is often useful as an aid in distinguishing between tubercle and pneumonic or septic pulmonary conditions, where a leucocytosis is usually a relative increase in the small and large mononuclear cells. Tuberculosis is an important disease in the Colony, and seems to be becoming fairly prevalent. When introduced into a native house it has every chance of spreading, as the native at night time usually closes windows or other ventilating holes to secure an equable temperature, so that expectoration is indulged in freely. Evidence of old or more recent pulmonary tuberculosis was discovered in a fair number of post-mortems done during the year.

Pus Examinations.

Seventeen were examined—two from Europeans showing Gonococci, and eleven showing the same organism from natives.

Venereal diseases are particularly prevalent among the natives.

Amœbæ were found in one case of liver pus from a European.

Results are given in Table VII.

General

Other general examinations are given in Table VIII. Blood cells were present in the stomach contents from one European.

Three throat smears were examined and cultures made; nothing worthy of special note was discovered.

The *Spirochæta pertenuis* was demonstrated in scrapings from 4 cases of yaws.

The *Trichomonas intestinalis* appeared in one case of vomited material.

Slaughter House Material. Table IX.

Smears from slaughtered animals were taken weekly, and the results of examination sent monthly to the Sanitary Department.

During the year the number of animals examined was 626. Trypanosomes were present in 69 out of 250 head of cattle. The majority of animals killed here come from the Addah district or are brought from Northern Territories, and a few probably bred locally.

Although tsetse flies are rare in Accra, it is possible for infection to be directly transmitted to healthy animals by other blood-sucking flies, notably species of *Stomoxydæ* and *Lyperosia*, and it is a pity that no restriction seems to be placed on the importation of infected beasts.

By the adoption of a system of immediate blood-examination on arrival, and the slaughter of those found with parasites, the dissemination of animal trypanosomiasis in Accra could be greatly diminished. This would be of great importance, especially with regard to the horses. Trypanosomes were also found in three sheep, one goat and one pig, and in nine cases sarcocysts were found. A Drepanidium, showing both extracellular and intracellular varieties, was present in three pigs. Spirochætes, and other bodies which were protozoal in type, were always very scanty in the film and may have been contaminations. Any diseased or abnormal organs noticed at the slaughter house were brought to the laboratory for examination, and sections made and stained when advisable ; nothing worthy of special remark was observed.

Pathological Specimens.

In addition to those collected in Accra, thirteen others were received from Drs. Harper, Oakley and Hamilton ; sections were cut, and a report sent out on each.

They are remarked on in Table X.

Post-Mortem Examinations.

These were done in every possible case in hospital patients, whether the cause of death was known or doubtful. Autopsies were also performed in all deaths at the Lunatic Asylum and Gaol, as well as on all bodies brought in from the town.

They totalled 66.

Among cases from the Asylum which numbered 30, enteric fever with perforation and peritonitis was the diagnosis in one, and trypanosomiasis in two. It is possible, that in a number of acute insane cases admitted to the Asylum, the mania is but a manifestation of trypanosome infection, but as, unfortunately, time does not admit of a thorough examination being carried out, they do not show on post-mortem any gross lesions, and the only essential pathological condition is the small celled infiltration of the peri-vascular lymphatic tissue throughout the brain. This was demonstrated from one case. Other diagnosis from the Asylum included dysentery, pneumonia, peritonitis and nephritis. The remaining 36 examinations embraced yellow fever (one), dysentery, general tuberculosis, trypanosomiasis, pneumonia, peritonitis, beri-beri, strangulation and hanging.

There were three other very interesting cases. The first was an aneurism of the ascending part of the thoracic aorta, (this was intrapericardial and ruptured before it attained a great size). The second was a suprahepatic abscess which had ruptured into the pericardium ; the pus was chocolate coloured, such as follows on chronic amœbic dysentery, and cicatrized ulcers were present in the large bowel. In the third the only cause of death discoverable, was a heavy porocephalus infection ; the parasites were found encysted in the lungs, liver and all along the mesentery ; the condition was apparently a fairly chronic one, as a number of the encysted forms were partially calcified. Helminths were searched for in all cases ; ascaris, ankylostomes, and oxyuris were the most commonly found in order of frequency. All interesting pathological specimens were kept for further examination.

Mosquito Larvæ.

At frequent intervals during each month bottles of larvæ were collected by the Sanitary Inspectors and sent to the laboratory for identification; in all 130 bottles were received.

Stegomyia fasciata were found in 121 of these, either alone or associated with other larvæ, which were usually one of the following:—*Culex fatigans*, *Culex decens* or *Anopheles*.

Culex fatigans was found alone in four bottles, and *Culex decens* occurred alone in two, while *Anopheles* were present alone once. The source of these larvæ, with the type found in each bottle and description of receptacle which contained them, is given in Table XI.

Blood-sucking Flies.

These were caught and preserved whenever possible; several *Tabanidæ* were obtained in the laboratory itself; two varieties were identified, 1 *Tæniola* and 1 *Ditæniatus*. During July and August when two horses were undergoing treatment for trypanosomiasis, *Stomoxdæ* and *Lyperosia* were found in numbers, and Dr. Hutton, who sent a collection to the London School of Tropical Medicine, was able to demonstrate, on dissection, the presence of trypanosomes, in both varieties. A small collection of different specimens was received from Dr. Hamilton; these included mosquitoes, tabanidæ and tsetse flies.

Examination of Wines, Patent Medicines, &c.

These were usually done at the request of the Comptroller of Customs, chiefly with a view to ascertaining the percentage of alchohol in each.

The number analysed during the year is given in Table XII., and the percentage of alcohol by volume noted. It appears that large quantities of these medicines are sold throughout the Colony, and consumed by the native purely because of their intoxicating qualities, and not for any therapeutic value they may possess.

Water Analyses.

Seven of these were made; two of the samples were from Quittah, two from Adjabeng Lodge, Accra, one from the Secretariat tank and the remaining two from the Densu River and swamp at Weshiang. The figures are not quite complete, but in all the ammonia and oxygen absorbed in parts per 100,000 are high, and in four the chlorine is also greater than it should be in such samples.

In each a fairly high degree of previous and recent organic contamination is indicated, this being more marked in the case of some of the tank waters than in raw water from the Densu River, such a condition being likely, owing to lack of care in keeping storage tanks clean, and so allowing an accumulation of animal and vegetable organic material. It would be useless to make any deductions from these few analyses without the adoption of "Water Standards" in the various districts, and a knowledge of any source of possible pollution.

These examinations are entered in Table XIII. if required for reference.

Various.

Several examinations were done for the Police Department; these were either of the nature of stains (on weapons or cloth) or done with a view to the detection of a poison in the substances submitted.

Occasional examinations was also made at the request of the District Commissioner, such as testing for blood in stains on coins or cloth, and analyses of metal for the detection of gold.

Specimens of flies were sometimes received from Europeans in Accra for identification.

Blood-smears were frequently examined from birds, snakes and lizards.

Halteridia were found in several slides from birds, some of which were shot on the Densu River and it was observed, that often certain cells take up the Leishmans stain in a peculiar way, not seen in human blood, and the polymorphonuclears may have a variety of granules. Both intracellular and free vermicular forms of Hæmogregarina were found in the blood of every snake examined.

Seven polo ponies were examined during the year, four were infected with trypanosomes, and three of these were treated by Mr. W. B. P. Beal, Veterinary Officer, who worked in the Laboratory during his stay in Accra, and after his departure by Dr. Hutton. Two died and two were shot.

The treatment adopted was atoxyl injections in large doses, 60 grains or so, alternating with orpiment internally at regular intervals. The animals seemed to improve temporarily after an injection and become somewhat more vigorous, but no permanent improvement was noticed in any case.

The parasites may not be found in the peripheral blood some hours after a dose, but they invariably return in 48 to 72 hours, and often in greater numbers.

In any case which does improve, an essential point seems to be good feeding. Proper provision for coping with trypanosomiasis horses is badly required in Accra, a number of fly-proof stables are required for the isolation of infected and suspected cases.

Dr. Hutton, as previously stated, has demonstrated the possibility of *Stomoxydæ* and *Lyperosia* being able to convey the parasite from an infected to a heathly animal, and it seems very probable that these flies are mainly responsible for the spread of the disease in Accra.

Drs. Hutton and Seidelin worked in the Laboratory for a number of months while conducting their investigation on yellow fever.

It can be seen that the opportunities for special work, by the Medical Officer in charge, were very limited, as the routine duties absorbed practically all the time.

Some new apparatus was acquired and several useful additions were made to the library.

I have, etc.,
(Sgd.) E. M. CONDY.

The Honourable
The Principal Medical Officer,
Victoriaborg, Accra.

S.A.H.

TABLE I.

Vaccine Lymph Glycerinated.

Recipients.	Quantity sent from G.L.E.	Date despatch.	Date of use.	Number of persons used for.	Failures.	Number of insertions made.	Number of insertions successful.	Percentage of success.		Remarks and Series.
								Cases.	Insertions.	
Dunkwa	400	15/1/13.	Jan. and Feb., 1913.	108	3	432	415	97·2	96·0	Primary 104. Secon. 4. Series 89.
Quittah	300	29/1/13.	Feb. 8–24.	154	40	462	—	74·0	—	Primary 59–47. „ 95–67. Series 89.

TABLE II.

Giving Details of the Examination of Blood-Smears.

	Malaria.					Trypanosome.	Embryo Loa Loa.	Embryo Filaria perstans	Negative.	Total.
	Crescent	Quartan.	Benign Tertian.	Subtertian.	Pigmented mononuclears					
Europeans	0	0	2	27	3	0	0	0	82	114
Native Adults	2	4	1	26	0	5	5	5	491	539
Native Children, 3–8 ...	0	0	0	2	0	0	0	0	9	11
„ „ 3–8 ...	0	1	1	2	0	0	1	0	3	8
„ „ 8–15 ..	0	0	0	4	3	0	0	0	1	8
Total	2	5	4	61	6	5	6	5	586	680

TABLE III.

Giving Details of the Examination of the Urine.

	Urea.	Granular Casts.	Pus Cells.	Tube Casts.	Blood.	Hyaline Casts.	Tubercle Bacilli.	Bilharzia Ova.	Urea. Granular Casts.	Negative.	Total.
Europeans ...	8	3	1	2	0	0	0	0	0	12	26
Natives	5	2	3	2	4	2	1	4	3	15	41
Total ...	13	5	4	4	4	2	1	4	3	27	67

TABLE IV.

	Ankylostome Ova.	Ascaris Ova.	Ascaris and Ankylostome Ova.	Ascaris, Ankylostome, Trichocephalus Ova.	Ascaris, Ankylostome, Trichocephalus, Bilharzia, Ova.	Ankylostome, Trichocephalus Ova.	Ankylostome, Bilharzia Ova.	Ankylostome, Oxyuris Ova.	Ankylostome Ova, Amœba.	Ascaris, Trichocephalus Ova.	Ascaris, Amœba.	Amœba, Finke.	Ascaris, Ankylostome, Oxyuris Ova.	Entamœba Histolytica.	Bilharzia Ova.	Bilharzia, Trichocephalus Ova.	Trichocephalus Ova.	Spirochæte.	Oxyuris.	Tænia Onchosphæres.	Lambilia Intestinalis.	Balantidium Coli.	Trichomonas.	Tænia Solium.	Necator Americanus.	Oxyuris Ova, Entamœba Histolytica.	Trichocephalus, Oxyuris Ova.	Negative.	Total.
Europeans ...	1	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	1	5	0	0	0	0	0	0	37	57
Natives ...	35	40	33	25	1	8	2	1	2	9	1	1	1	19	1	1	32	1	4	9	2	1	4	3	4	1	1	82	324
TOTAL ...	36	40	33	25	1	8	2	1	2	9	1	1	1	32	1	1	32	1	4	10	7	1	4	3	4	1	1	119	381

TABLE V.

Ankylostome.	Ascaris.	Bilharzia.	Entamœba Histolytica.	Tricocephalus.	Oxyuris.
109	111	5	36	76	8

TABLE VI.

GIVING DETAILS OF THE EXAMINATION OF SPUTUM.

—	Tubercle Bacilli.	Pneumococci.	Streptococci.	Staphylococci.	Micrococcus tetragenus.	Trichomonas pulmonalis.	Parowazekia urinarius.	Negative.	TOTAL.
Europeans	3	—	—	—	—	—	—	3	6
Natives ...	4	2	2	1	1	3	1	12	26
TOTAL	7	2	2	1	1	3	1	15	32

TABLE VII.

GIVING DETAILS OF THE EXAMINATION OF PUS.

—	Gonococci.	Staphylococci.	Negative.	TOTAL.
Europeans	2	—	—	2
Natives	11	4	—	15
TOTAL	13	4	—	17

1 Liver Pus (European). Amœba found.

TABLE VIII.

Stomach Contents.

—	Blood.	Negative.	Total.
Europeans	1	—	1
Natives	—	—	—
Total	1	—	1

Smears Throat.

—	Staphylococci.	Negative.	Total.
Europeans	—	—	—
Natives	1	2	3
Total	1	2	3

Smear Case of Yaws.

—	Spirochæta.	Negative.	Total.
Europeans	—	—	—
Natives	4	—	4
Total	4	—	4

Vomited Matter.

—	Mucus.	Trichomonas.	Negative.	Total.
Europeans	2	—	1	3
Natives	—	1	—	1
Total	2	1	1	4

TABLE IX.

Month.	Animal.				Total.	Trypanosome.					Tubercle Bacilli.					Sarcocystes.					Dracunculidium.					Remarks.
	Cattle.	Sheep.	Goat.	Pig.		Cattle.	Sheep.	Goat.	Pig.	Total.	Cattle.	Sheep.	Goat.	Pig.	Total.	Cattle.	Sheep.	Goat.	Pig.	Total.	Cattle.	Sheep.	Goat.	Pig.	Total.	
January ...	19	3	2	—	24	9	—	1	—	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
February ...	15	3	5	12	35	3	—	—	1	4	—	—	—	1	1	—	—	—	1	1	—	—	—	—	—	1 Pig. Elongated Parasite extra cellular.
March ...	10	3	3	4	20	5	—	—	—	5	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	
April ...	12	—	4	—	16	8	—	—	—	8	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	
May... ...	19	3	5	7	34	5	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	
June ...	37	25	18	14	94	13	—	—	—	13	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	
July... ...	27	19	12	17	75	3	1	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
August ...	24	15	14	17	70	7	—	—	—	7	—	—	—	—	—	—	—	—	2	2	—	—	—	—	—	
September ...	20	20	13	11	64	2	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
October ...	15	11	4	5	35	3	—	—	—	3	—	—	—	—	—	1	—	1	1	3	—	—	—	—	—	
November ...	26	25	21	15	87	4	1	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
December ...	26	22	8	11	67	7	1	—	—	8	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	
TOTAL ...	250	149	109	118	626	69	3	1	1	74	—	—	—	1	1	3	1	1	4	9	—	—	—	3	3	

TABLE X.

Date, 1913.	By whom sent.	Parts of Section.	Remarks.
28/3	Dr. Harper ...	Large intestine (Kroo).	Superficial ulceration, mucous membrane. Infiltration of submucosa. No giant cells. No tubercle bacilli.
Do.	Do. ...	Small intestines (Kroo).	Desquamation of mucosa, great engorgement of vessels. No infiltration of submucosa.
Do.	Do. ...	Cervix	Carcinomatous invasion.
Do.	Do. ...	Liver case 1 ...	Marked interlobular cirrhosis. Patchy fatty degeneration hepatic cells.
Do.	Do. ...	Spleen case 1 ...	Marked congestion. Small areas hæmorrhagic necrosis.
Do.	Do. ...	Gland case 1 ...	Round celled infiltration, numerous little rounded areas of greater infiltration with central necrosis.
2/5	Dr. Oakley ...	Brain, native ...	Perivascular infiltration.
Do.	Do. ...	Spinal cord	Perivascular infiltration. Proliferation of neuroglia cells.
Do.	Do. ...	Gland	Great infiltration and fibrous tissue increase.
Do.	Do. ...	Spleen	Do. do. do.
Do.	Do. ...	Kidney	Nothing noteworthy.
Do.	Do. ...	Liver	Do.
Do.	Dr. Hamilton ...	Tumour of penis ...	Carcinoma.

TABLE XI.

Mosquito Type. 1913.

Date.	Division.	Block.	No. of House.	Type of Mosquito.	Type of Larvæ.	Receptacle.
17/3/13	—	—	—	Stegomyia F. ...	Stegomyia F. ...	—
,,	—	—	—	,, ...	,, ...	—
,,	—	—	—	,, ...	,, ...	—
22/3/13	—	16	—	,, ...	,, ...	Barrel.
,,	—	17	—	,, ...	,, ...	Pot.
27/3/13	—	4	5a	,, ...	,, ...	Barrel.
28/3/13	—	8	32	,, ...	,, ...	Drum.
2/4/13	—	18	—	,, ...	,, ...	Barrel and Pot.
,,	—	4	13	,, ...	,, ...	Barrel.
3/4/13	—	14	120	Stegomyia F., Culex F.	Stegomyia F., Culex F.	,,
,,	—	15	19	,, ...	,, ,,	Pot.
,,	—	16	89	Stegomyia Fasciata	Stegomyia Fasciata	Tank.
,,	—	16	100	,,	,,	Pot.
,,	—	16	102	,,	,,	Tank.
4/4/13	—	17	—	,,	,,	Barrel.
10/4/13	—	15	—	,,	,,	Pot.
,,	—	8	54	,,	,,	,,
11/4/13	—	8	53	Stegomyia F. ...	Stegomyia F. ...	Drum.
,,	—	8	6	Culex Fatigans	Culex Fatigans	Tin.
,,	—	16	9	Stegomyia F. ...	Stegomyia F. ...	Well.
,,	—	16	25	,, ...	,, ...	Tank.
,,	—	8	68	,, ...	,, ...	Pot.
,,	—	16	9	,, ...	,, ...	Barrel.
,,	D.C's. Court	—	—	,, ...	,, ...	Gutter.
,,	Korle Gono	—	—	Stegomyia F. and Culex decens	Stegomyia F. and Culex decens	Pot.
14/4/13	—	8	15	Stegomyia F. ...	Stegomyia F. ...	,,
,,	—	8	63	,, ...	,, ...	,,
,,	—	8	45	,, ...	,, ...	Tank.
,,	—	8	28	,, ...	,, ...	Pot.
,,	—	8	21	,, ...	,, ...	,,
16/4/13	—	Korle	Gono ...	Culex decens ...	Culex decens ...	Barrel.
17/4/13	—	,,	,, ...	Stegomyia F. ...	Stegomyia F. ...	Pot.
21/4/13	—	,,	,, ...	Stegomyia F. and Culex	Stegomyia F. and Culex	,,
,,	—	,,	,, ...	,, ,,	,, ,,	,,
,,	—	16	27	Anopheles Cost.	Anopheles Cost.	,,
23/4/13	—	16	117	Stegomyia F. ...	Stegomyia F. ...	Barrel.
25/4/13	—	16	84a	,, ...	,, ...	,,
26/4/13	—	8	70	,, ...	,, ...	,,
1/5/13	—	12	—	,, ...	,, ...	Pot.
,,	—	11	7	,, ...	,, ...	,,
5/5/13	—	8	19	,, ...	,, ...	,,
,,	—	11	—	,, ...	,, ...	,,
,,	—	16	20	,, ...	,, ...	,,
7/5/13	Bungalow	No.	30	,, ...	,, ...	,,
,,	—	14	26	,, ...	,, ...	,,
8/5/13	—	11	—	,, ...	,, ...	,,
,,	—	12	17	,, ...	,, ...	,,
9/5/13	—	12	4	,, ...	,, ...	,,
,,	—	15	117	,, ...	,, ...	,,
,,	—	16	50	,, ...	,, ...	,,
14/5/13	—	9	23	,, ...	,, ...	Jar.
,,	—	11	—	,, ...	,, ...	Pot.
28/5/13	—	8	22	,, ...	,, ...	Barrel.
,,	—	12	129	,, ...	,, ...	Well.
,,	—	6	—	,, ...	,, ...	Pot.

Date.	Division.	Block.	No. of House.	Type of Mosquito.	Type of Larvæ.	Receptacle.
28/5/13	1	11	85	Stegomyia F.	Stegomyia F.	Jar.
,,	—	16	130b	,,	,,	Pot.
,,	—	16	100a	,,	,,	,,
2/6/13	—	11	—	,,	,,	,,
,,	—	11	—	,,	,,	Barrel.
,,	—	11	1	Culex F.	Culex F.	Pot.
,,	—	9	26	,,	,,	Drum.
,,	—	2	25	,,	,,	,,
4/6/13	—	High	Street	,,	,,	,,
August	—	—	—	Stegomyia Fasciata	Stegomyia Fasciata	Barrel.
,,	—	—	—	Culex Fatigans	Culex Fatigans	Drum } Bred
Sept.	—	—	—	,,	,,	,, } by Dr.
,,	—	—	—	Stegomyia Fasciata	Stegomyia Fasciata	,, } Seide-
3/10/13	B 3	11	48	N. L.	,,	Jar lin.
6/10/13	G	—	15	Stegomyia F.	,,	Pot. ,,
7/10/13	—	11	105	,,	,,	,,
,,	G	11	129	,,	,,	,,
8/10/13	F	Ripon	sville	,,	,,	,,
,,	B	5	35a	Culex Fatigans	Culex Fatigans	Barrel.
,,	B	5	40	,,	,,	,,
9/10/13	A	14	—	Stegomyia F.	Stegomyia F.	Pot.
,,	G	17	79a,84,63	Stegomyia F., Culex d.	,,	,,
13/10/13	B	7	72	Stegomyia F.	,,	,,
14/10/13	—	12	22	,,	,,	,,
,,	G	13	72	,,	,,	,,
15/10/13	C	1	27	,,	,,	,,
,,	E	8	66	Culex decens	Culex decens	,,
,,	G	17	111	Stegomyia F.	Stegomyia F.	Iron pot.
,,	E	8	64	Culex decens	Culex decens	Cesspit.
,,	B	13	3a	,,	,,	Pot.
,,	B	7	58	Stegomyia and Culex	Stegomyia and Culex	Pot.
,,	G	17	79 and 81	,,	,,	Bucket.
,,	G	17	74, 776	Stegomyia F.	Stegomyia F.	Barrel.
17/10/13	C	4	35	,,	,,	Pot.
20/10/13	B	11	114	Nil	Stegomyia F. and Culex	,,
22/10/13	E	8	8 and 9	Stegomyia F.	,,	Well.
,,	B	11	80	,,	,,	Pot.
,,	E	8	92	Nil	,,	,,
,,	C	4	50	Stegomyia F.	Stegomyia, Anopheles	,,
,,	G	15	60	Nil	,,	,,
27/10/13	G	17	34	Stegomyia F.	Stegomyia F.	,,
,,	D	11	102	,,	,,	,,
28/10/13	G	17	53	Nil	Nil	,, received broken
,,	G	17	104	Stegomyia F. and Culex	Stegomyia F. and Culex	,,
29/10/13	—	3	75	,,	,,	,, Christians- borg.
,,	—	4	16	,,	,,	,, ,,
,,	B	11	104	,,	,,	,, ,,
,,	B	3	80	,,	,,	,, ,,
6/11/13	—	1	50	,,	,,	,, ,,
,,	—	16	—	,,	,,	,, ,,
,,	—	1	53	,,	,,	,, ,,
7/11/13	B	5	74	,,	,,	Cask.
10/11/13	B	5	40	,,	,,	Pot.
,,	—	10	2	Stegomyia and Anopheles	Stegomyia and Anopheles	Drum.
,,	C	5	17	Stegomyia F.	Stegomyia F.	Cask.
,,	A	12	110	,,	,,	,,
,,	F	16	—	Nil	,,	Pot.
14/11/13	B	7	65	,,	,,	,,
17/11/13	G	15	125,129 131	Stegomyia, Culex Anopheles	Steg., Culex, Anopheles	Jar drum.

Date.	Division.	Block.	No. of House.	Type of Mosquito.	Type of Larvæ.	Receptacle.
4/12/13	A	13	35	Stegomyia F.	Stegomyia F.	Pot.
,,	A	11	129	,,	,,	,,
,,	C	4	37	,,	Stegomyia F. and Culex...	Barrel.
,,	B	11	105	,,	,,	Pot.
,,	B	11	108	,,	Stegomyia F.	,,
,,	A	14	31	,,	,,	,,
,,	E	9	14	Nil	,,	,,
,,	B	11	92	,,	,,	,,
,,	B	11	73	,,	,,	,,
,,	B	11	116	Stegomyia F.	Stegomyia F.	,,
,,	B	11	114	,,	,,	,,
8/12/13	C	3	36	Stegomyia F. and Culex...	Stegomyia F. and Culex...	,,
15/12/13	—	4	6	,,	,,	,, Christiansborg.
16/12/13	A	14	—	,,	,,	,,
,,	A	3	43	,,	,,	,, Christiansborg.
29/12/13	A	14	53	,,	,,	,,

TABLE XII.

Giving Details of the Examination of Wines, &c.

Date, 1913.	Name.	Result.
January 23rd ...	Lavorine	0·66 per cent. volume of alcohol.
Do. do. ...	Ginger Wine ...	Less than 0·61 per cent. volume alcohol.
April 22nd	Nig.	11·61 per cent. by volume alcohol, 79·65 per cent. under Prog.
June 30th	Monoo Wine ...	Non-alcohol.
July 12th	Vita Sana	19·28 per cent. by volume alcohol.
October 8th	Bula Matadi ...	30·57 do. do.
Do. do.	Pain Killer	27·0 do. do.
Do. do.	Amol	57·84 do. do.
October 28th... ...	Neurol	77·5 do. do.
Do. do.	Nevara	4·27 do. do.

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TABLE XIII.

Water Analysis.—Parts, per 100·000.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Colour	Faint Brown	White	Light Brown	None	None	Greyish White	Brown.
Turbidity	Marked	Slight	Opalescent	Clear	None	Distinct opalescence	—
Odour	Unpleasant	Faint	None	None	None	None	Odourless.
Reaction	Neutral	Slightly acid	Neutral	Neutral	Neutral	Neutral	Neutral.
Free Ammonia ...	0·15	0·01	0·032	0·025	0·044	0·006	0·01
Chlorine	8	5	2	Less than 2 grs. per gallon.	4·3	8·6	10
Residue left on Evaporation	Nil	Nil	Slight, charred a little, no odour brownish black.	Trace, White, no charring, no odour.	Very slight, greyish no charring. No odour.	White, charred and smoke slightly on ignition.	Brownish charred then white on ignition.
Sodium Chloride ...	—	—	3·4	Less than 3·3	7·1	14·3	16·6
Nitrites	—	Distinct trace	—	Faint trace	Trace	Faintest trace	Absent.
Nitrates	—	—	—	Distinct	Trace	0·71	Absent.
Hardness	19	—	20	16	6	6	11
Poisonous metals ...	Absent	Absent	Absent	Absent	Absent	Absent	Absent.
Oxygen absorbed in 2 hrs. at 82° F.	—	—	0·3	Less than 0·1	0·14	0·14	0·026

No. 1. Quittah A. No. 2. Quittah B. No. 3. Adjabeng Lodge. No. 4. Adjabeng Lodge underground Tank. No. 5. Secretariat Tank. No. 6. Densu River. No. 7. Weshiang Sump.

MEMORANDUM ON THE ANNUAL MEDICAL AND SANITARY REPORT OF THE GOLD COAST FOR THE YEAR 1914.

Page 9. During the year under review, there were 2,712 cases of malaria treated, with 5 deaths, as against 2,565 cases with no deaths in 1913. Diagnosis was confirmed by the microscope in 1,142 cases.

There were 21 cases of blackwater fever, the same number as in the preceding year, but with 6 deaths as opposed to 7 in 1913.

Page 10. The mortality from yellow fever seems to be decreasing so far as Europeans are concerned, but increasing in the case of the natives. The mortality for 1912, 1913 and 1914 being: 100 per cent., 54.5 per cent and 44.4 per cent., amongst the former, and 0.0 per cent., 22.2 per cent. and 50.0 per cent. in the case of the latter.

Page 11 Small-pox, so far as can be judged from known cases, has decreased considerably, the figures being: 221 cases in 1912, 168 in 1913, and 23 in 1914.

There were seven cases of enteric fever, with one death.

A marked decrease in the mortality from dysentery is reported, the percentage of deaths in 1914 being: 1.9 as against 4.2 in 1913 and 5.2 in 1912.

There

Page 13. There is a marked increase in the death rate amongst European officials, but the invaliding rate is somewhat lower than in the preceding year.

Pages 18-49 The sanitary report is a particularly good one, and reflects great credit on the Sanitary Branch, as does the work, of which it is a record

Page 20. Attention is drawn to the advantages of tours of inspection by Sanitary Officers. These if extensively carried out should keep the Branch in close touch with the sanitary condition of the Dependency and should enable it to guide the progress of sanitary reform.

Page 25 It is very gratifying to hear that in several instances native chiefs are responsible for the improved sanitary conditions of their towns, and in two cases, Sackie Kroom and Apedua, that the chiefs have apparently carried out these improvements on their own initiative.

Page 34. The particulars with regard to the cases of
Page 35 yellow fever during the year under review, and previous years, should prove interesting to the Yellow Fever (West Africa) Commission.

Page 46. Europeans are always warned against taking sugar-coated tabloids of quinine, and there would not appear to be any reason why the same objections to its use should not apply equally in the case of the natives, unless of course these tabloids are made with a specially thin or soluble coat.

A

Pages 57-73 A certain number of clerical errors and omissions are to be found in Table IV. Care should be taken to avoid these in future.

Page 92. Appendix No.1 shows the sanitary improvements carried out during the year in the Dependency.

H.L.B.

11. 9. 15.