

Report on the Medical and Sanitary Departments / Government of the Gold Coast.

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**GOVERNMENT OF THE
GOLD COAST.**

REPORT

ON THE

**MEDICAL AND SANITARY
DEPARTMENT**

FOR THE PERIOD

*W. H. G. ...
(acting Deputy Secretary
Sanitary Services)*

APRIL, 1925—MARCH, 1926.

With the compliments of the Director of Medical and

Sanitary Services, Gold Coast Colony.

Medical Department.

18th. February, 1927.





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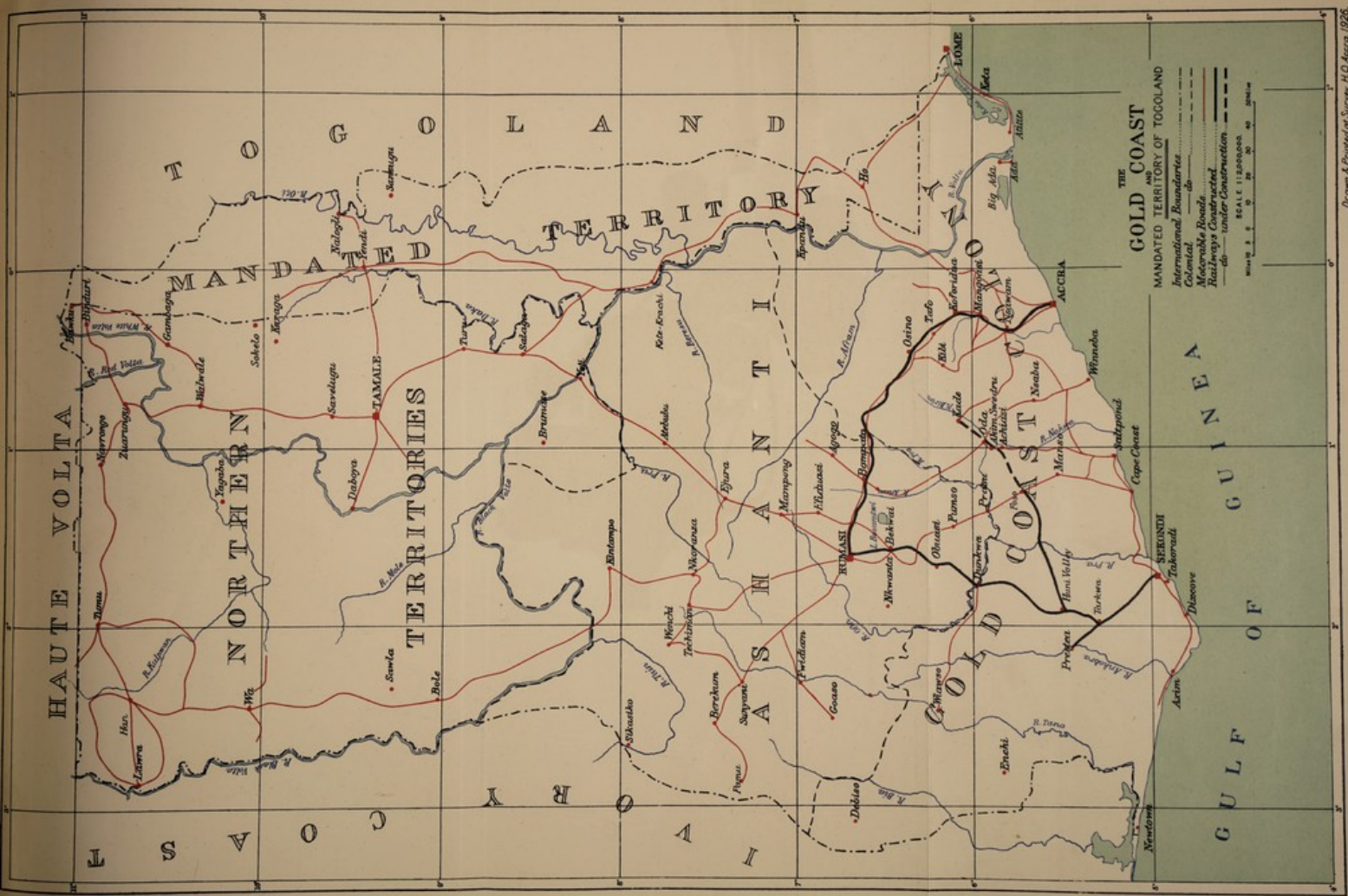
GOVERNMENT OF THE
GOLD COAST.

REPORT

MEDICAL AND SANITARY
DEPARTMENT

FOR THE YEAR

1923-1924





CONTENTS.

	Page.
(I)—ADMINISTRATION.	
TABLE (I)—Staff (showing changes during the year)	5
TABLE (II)—Financial	6
(II)—PUBLIC HEALTH.	
(a) General remarks	6
(b) European Officials—	
Sick, Invaliding and Death Rates	9
(c) African Officials—	
Sick, Invaliding and Death Rates	10
(d) General European Population	10
(III)—SANITATION.	
(a) General review of work done and progress made—	
(i) Administrative	12
(ii) Preventive Measures against—	
Insect-borne Diseases	13
Epidemic Diseases	14
(iii) General Measures of Sanitation	16
(b) Measures taken to spread the knowledge of Hygiene and Sanitation ..	17
(c) Training of Sanitary Personnel	18
(d) Recommendations	18
(IV)—METEOROLOGY	21
(V)—HOSPITALS AND DISPENSARIES	21
(VI)—SCIENTIFIC	24
TABLE (IV)—Summary of Routine Sanitary work done during the year	26
TABLE (V)—Return of Diseases and Deaths (In and Out-Patients)	34

APPENDICES.

APPENDIX A.—Annual Report of the Medical Research Institute for the year 1925-26, by Dr. W. A. Young, Director of Medical Research Institute	38
APPENDIX B.—Reports on three cases of Yellow Fever occurring in Europeans at Accra. (Dr. G. E. H. Le Fanu, Medical Specialist)	51
APPENDIX C.—Report on treatment of Chronic Malaria and Mania. (Dr. S. L. Brohier, Medical Officer)	55
APPENDIX D.—Report on effect of Bismuth Tartrate in treatment of Yaws (Dr. Helen McD. Hendrie)	59
APPENDIX E.—Report on the incidence of Sleeping Sickness in the Lawra District (Dr. A. G. MacKay, Medical Officer)	61
APPENDIX F.—Return shewing cases treated in Venereal Clinic, Accra, during the year, 1925-26	72
APPENDIX G.—Report on work of X'Ray Department for the year, 1925-26	73

CONTENTS

14--ADMINISTRATIVE

15 (I)--Staff showing changes during the year

16 (II)--Attendance

17--FISCAL YEAR

(a) General accounts

(b) European funds

18--Sick, Invalid and Death Rates

(a) Annual Report--

19--Sick, Invalid and Death Rates

(b) General European Fundation

20--SALARIES

(a) General rates of work and program funds--

(b) Administration

(c) Research Program

21--Sick Rates

22--Epidemic Diseases

(a) General Accounts of Salaries

(b) Methods used to equal the percentage of 1914 and 1915

(c) Index of Salary Payment

(d) Reimbursements

23--BUDGET

(a) Summary of Budget

(b) Budget in the year 1915 and 1916

APPENDIX

24--Annual Report of the Medical Department for the year 1915

(a) General Summary of Medical Department

(b) Summary of the work of the Medical Department

(c) Summary of the work of the Medical Department

(d) Summary of the work of the Medical Department

(e) Summary of the work of the Medical Department

(f) Summary of the work of the Medical Department

(g) Summary of the work of the Medical Department

(h) Summary of the work of the Medical Department

(i) Summary of the work of the Medical Department

(j) Summary of the work of the Medical Department

(k) Summary of the work of the Medical Department

(l) Summary of the work of the Medical Department

(m) Summary of the work of the Medical Department

(n) Summary of the work of the Medical Department

(o) Summary of the work of the Medical Department

(p) Summary of the work of the Medical Department

(q) Summary of the work of the Medical Department

(r) Summary of the work of the Medical Department

(s) Summary of the work of the Medical Department

(t) Summary of the work of the Medical Department

(u) Summary of the work of the Medical Department

(v) Summary of the work of the Medical Department

(w) Summary of the work of the Medical Department

(x) Summary of the work of the Medical Department

(y) Summary of the work of the Medical Department

(z) Summary of the work of the Medical Department

Report on the Medical and Sanitary Department for the Year 1925-26.

I. ADMINISTRATION.

TABLE I.—MEDICAL STAFF ON 31ST MARCH, 1926.

- 1 Director of Medical and Sanitary Services.
- 1 Deputy Director of Medical and Sanitary Services.
- 1 Deputy Director of Sanitary Service.
- 1 Director of Medical Research Institute.
- 2 Assistant Directors of Medical Service.
- 2 Surgical Specialists.
- 2 Medical Specialists.
- 6 Senior Medical Officers.
- 2 Senior Sanitary Officers.
- 2 Pathologists (1 seconded from the R.A.M.C.).
- 1 Medical Entomologist.
- 46 Medical Officers (7 of whom are Medical Officers of Health). (1 Medical Officer of Health seconded from R.A.M.C.).
- 3 Women Medical Officers.
- 2 African Medical Officers.

[Vacancies :—
6 Medical Officers.
1 African Medical Officer.
1 Medical Officer of Health.]

- 1 Dental Surgeon.
- 1 Analytical Chemist.
- 1 Office Assistant and Accountant.
- 1 Medical Storekeeper.
- 1 Secretary, Gold Coast Hospital.
- 1 Dispenser Instructor.
- 1 Radiographer.
- 1 Assistant Radiographer.
- 11 Superintending Sanitary Inspectors.
- 1 Laboratory Superintendent.
- 2 Laboratory Assistants.

EUROPEAN NURSING STAFF.

- 4 Senior Nursing Sisters.
- 16 Nursing Sisters.

PRINCIPAL MEMBERS OF THE SUBORDINATE STAFF OF :—

- (A) Medical Department.
- (B) Sanitation Branch.
- (C) Lunatic Asylum.

- (A)
 - 2 Chief Dispensers.
 - 6 First Division Dispensers.
 - 3 First Division Nurses.
 - 1 Chief Clerk.
 - 1 First Division Clerk.
- (B)
 - 1 Chief Clerk.
 - 1 First Division Clerk.
 - 1 Sanitary Inspector and Training Officer.
 - 1 Senior Division Sanitary Inspector.
 - 4 First Division Sanitary Inspectors.
- (C)
 - 1 Chief Attendant.
 - 1 Assistant Chief Attendant.
 - 1 Matron.

EUROPEAN STAFF.

Promotions.—Dr. H. W. Gush, Senior Medical Officer, was promoted to be Surgical Specialist on the 25th November, 1925.

Drs. J. E. Moffatt and D. Duff were promoted to be Senior Medical Officers on the 18th October, 1925, and 25th November, 1925, respectively.

Miss M. Rigney was promoted to be Senior Nursing Sister on 2nd September, 1925.

Appointments.—Drs. E. M. Fraser, O. G. Wilde, E. J. Daly, A. B. Monks, J. Hamilton, J. H. Matthews, C. J. Hannigan, F. W. Thompson, J. H. Penman, A. Heron, F. M. Purcell, G. W. Vaughan, J. H. Owen-Flood, W. N. Greer, N. T. Cassidy, P. L. Gray, R. D. Reid, T. V. Fitzpatrick were appointed during the year as Medical Officers on probation.

Mr. A. Buckner, was appointed Temporary Assistant Radiographer.

The following Nursing Sisters :—M. G. Spencer, E. L. Motts, F. Gilbey, A. B. Bailey M. M. Burke, M. E. Williams, V. Riggs, and A. J. Raine, were appointed.

Other changes in the Staff during the year.—Dr. R. O. White, Senior Medical Officer, retired on pension on 18th October, 1925.

Dr. J. C. Watt, Medical Officer, was invalided from the service on 17th September, 1925.

Dr. J. A. Beamish, having been promoted Senior Medical Officer, Nigeria, was drowned under very tragic circumstances at Axim on the 6th September, 1925.

Dr. W. M. Howells was transferred to the Sanitation Branch as Medical Officer of Health,

Dr. C. J. Hannigan, Medical Officer, had his appointment terminated.

Miss K. Gordon, Senior Nursing Sister, retired on pension 16th June, 1925.

Nursing Sisters M. A. Reader, I. Crafer, C. G. Leggatt, and C. M. Turner resigned during the year ; and Nursing Sister B. R. Flynn's appointment was terminated.

AFRICAN STAFF.

Promotion.—Dr. G. J. D. Hammond was promoted to be African Medical Officer on 26th November, 1925.

Other changes in the Staff during the year.—Dr. B. J. O. Hoare died in the Colony on the 30th April, 1925.

TABLE 2.—FINANCIAL.

(a) *Statement of Revenue 1st April, 1925 to 31st March, 1926.*

Revenue. (Hospital Fees) £4,861 10 3

(b) *Statement of Expenditure.*

Medical Department (including Sanitation Branch)—

Personal Emoluments £132,117 14 4

Other Charges 145,366 0 3

Total £277,483 14 7

II. PUBLIC HEALTH.

(a) GENERAL REMARKS.

3. The following table shews the most noteworthy contrasts in the Return of Diseases treated during the years 1923-24, 1924-25, and the period under review :—

Disease.	1923-24.	1924-25.	1925-26.
Small-pox	2	19†	1,948
Chicken-pox	295	211	241
Dysentery	551	693	936
Enteric Fever	36	31	8
Influenza	193	246	548
Malaria :—			
Tertian	786	1,218	886
Quartan	78	276	382
Subtertian	2,041	1,427	2,742
Chronic	543	1,108	657
Blackwater	21	16	18
Unclassified	2,494	1,171	1,893

Disease.	1923-24.	1924-25.	1925-26.
Measles	88	22	32
Pneumonia	534	514	687
Rheumatic Fever	109	10	18
Sleeping Sickness	6	26	37
Whooping Cough	193	35	107
Alcoholism	34	28	55
Yellow Fever	13*	10	8
Tuberculosis	411	414	571
Plague	44	342	2

*Includes four suspicious cases among Africans.

†Refers only to cases treated in recognized Hospitals.

4. *Small-Pox.*—Shows an apparent increase of 1,929 cases over the number for the previous year. This is due to the fact that for the year under review all cases seen by a Medical Officer, or reported to have occurred, are included in the total, whereas in previous years only the cases seen by a Medical Officer and treated by him in hospital were given. There were no well-defined localized epidemics of the disease. The great majority of the cases were scattered throughout the Northern Territories, especially the North Eastern Districts of Mamprussi and Kusasi, and the Northern Districts of Ashanti.

Only a small percentage of those reported as suffering from small-pox were actually seen by a Medical Officer, and judging by the mildness of the type and the very low mortality it is doubtful whether many of the reported cases were small-pox. The custom of inoculation with the Virus of small-pox, usually carried out by the inhabitants of the Northern Territories, makes it most difficult to stamp out the disease when each person so inoculated becomes a focus for the spread of the infection.

5. *Dysentery.*—The increase in the number of cases of dysentery treated during the year indicates an increase in the number of Africans seeking hospital treatment rather than a wider prevalence of the disease.

The cases are not confined to any particular town or District but are of more or less general occurrence throughout the Colony and its dependencies.

The cause of the prevalence of this disease is attributed to the personal habits of the people " who neither understand nor appreciate domestic hygiene and who exercise little care in the preparation, storage, and handling of food ".

The amoebic type of dysentery is that usually met with.

6. *Malaria.*—The figures for this disease in all its forms shew an increase of 1,362 above those for the previous year. This increase is also accounted for by the general increase in the number of patients seeking European medical treatment rather than by any increased prevalence of the disease. The subtertian variety of the disease is, as in past years, the most prevalent form both in Europeans and Africans.

7. *Blackwater Fever.*—The Returns for the year shew an increase of 2 on the figures for the previous year, and a mortality rate of 39% as compared with 12.5% for the last year. Of the 18 cases recorded 13 were Europeans, 3 Syrians and 2 Africans. Of the 7 deaths, 5 occurred in Europeans and 2 in Syrians. There were no deaths among the Africans.

8. *Influenza.*—In the months November and December, 1925, and January, 1926, an epidemic of this disease occurred in the Gold Coast. The outbreak was confined mainly to the coastal towns and was of a mild form with a low mortality rate (less than 1%). The majority of the cases were of the respiratory type, with broncho-pneumonia and pneumonia as complications in many instances. The origin of the epidemic could not be ascertained but the probability is that it was of local origin and not imported.

9. *Pneumonia.*—There was an increase of 173 cases of this disease as compared with the figures for the previous year. The majority of these cases occurred as complications or sequelae in the course of the Influenza epidemic referred to above. The mortality rate—12.4%—is practically the same as that for the previous year.

10. *Yellow Fever.*—There were 8 cases with 5 deaths during the year under review as compared with 10 cases and 7 deaths for the previous year. Of these 8 cases, 4 were Europeans, 3 Africans and 1 a Syrian.

11. *Tuberculosis*.—571 cases of this disease, with 76 deaths, were treated in the various hospitals during the year as compared with 414 cases, with 51 deaths, for the previous year. Though this increase may be partly accounted for by the increase in the number of Africans seeking medical treatment there is a consensus of opinion among Medical Officers that the disease is steadily becoming more prevalent in the Colony with each succeeding year. The high mortality is due to the fact that the disease, being of comparatively recent introduction, assumes the characters of an acute infection as the Natives have not yet had time to become "tuberculized".

Another reason for the high mortality is that the native patient rarely seeks hospital treatment in the early stages of the disease, the Medical Officer generally sees him for the first time when the disease is too advanced for remedial treatment.

To meet the increasing need for the treatment of such cases it is intended to include provision in the coming year's Estimates for the addition of a special tuberculosis block in connection with the Gold Coast Hospital.

12. *Syphilis*.—Steady progress has been made in stamping out venereal disease in the Colony. The erection of a new and modern building now in the course of completion at the Gold Coast Hospital will in all probability greatly increase the number of attendances—as it is, the increase in the attendances of both males and females at the clinic must be largely attributed to educational propaganda and free treatment. The Accra Centre for the treatment of venereal disease was opened in February, 1921.

Since that date attendances and new cases have increased steadily. Lectures in English and the vernacular are generally making the people realise the immense importance of eradicating venereal disease—and there is every hope and reason to believe that increased efforts will bring a steadily increasing proportion of results.

13. *Yaws*.—9,581 cases of this disease were treated during the year as compared with 6,126 cases for the previous year; an increase which affords gratifying proof of the growing confidence in European methods of treatment. The treatment adopted, as in the previous year, was mainly N.A.B. injections, with prolonged mercurial administration. During the latter half of the year under review Bismuth Sodium Tartrate has been substituted to a large extent for N.A.B. in the treatment of this disease. It is as yet premature to make a definite comparison as to the efficacy of these drugs in the treatment of yaws, but from reports recently received from Medical Officers it would appear that the treatment by Bismuth Sodium Tartrate though possibly less spectacular in its immediate results, is more lasting in its effects than that by N.A.B.

14. *Leprosy*.—446 cases were seen and treated during the year as compared with 96 for the previous year. This increase does not indicate wider prevalence of the disease in the Colony, but results rather from the increased interest taken by Medical and Political Officers in the distribution of the disease.

Inquiries in reply to a questionnaire issued by the British Empire Leprosy Relief Association, revealed:—

- (a) that no definite and reliable information is as yet available regarding the extent or distribution of the disease throughout the Colony and its dependencies;
- (b) that it is less widely distributed, and the number of cases is comparatively fewer than in the other British West African possessions,
- (c) that there is no evidence of its increase in recent years.

The formation of local branches of the British Empire Leprosy Relief Association in the Gold Coast for the purpose of obtaining more definite information with regard to the distribution of the disease and the number of infected cases is under consideration.

FIGURES FOR THE PERIOD.

15. Generally speaking the figures for the period shew an increase in the number of cases seen and treated as compared with 1924-25, as the following Table indicates.

Remaining in Hospital ..	1924-25	..	519
" " " " ..	1925-26	..	467
Total Cases treated ..	1924-25	..	82,476
" " " " ..	1925-26	..	97,910
Deaths	1924-25	..	797
" " " " ..	1925-26	..	862
Remaining over ..	1924-25	..	467
" " " " ..	1925-26	..	490

MATERNITY AND CHILD WELFARE.

16. A Maternity Hospital is being built and will in all probability, be opened next year.

Two Child Welfare Centres have been operating in Accra during the year under review—one at Christiansborg under Dr. O'Halloran and the other at James Town under Dr. Vane Percy. The James Town Centre will be transferred to the Princess Marie Louise Hospital on 1st April, 1926 on which date the Hospital will be ready for use.

A Child Welfare Centre has been established also at Sekondi with Dr. Chappell in charge.

During the year under review the attendances at the various clinics were as follows:—

1. James Town	10,091	of which	4,783	were new cases.
2. Christiansborg	3,347	" "	657	" " "
3. Sekondi	6,889	" "	1,885	" " "

In addition to the work at the Infant Clinics routine inspection of school children was undertaken and minor ailments were treated at the Welfare Centres.

The Women Medical Officers have, therefore, been fully occupied in carrying out their duties.

A weekly home nursing-class was held for African teachers and school girls.

(b) EUROPEAN OFFICIALS.

Table shewing Sick, Invaliding, and Death Rates of European Officials.

	1923-24.	1924-25.	1925-26.
Total number of Officials resident	994	846	994
Average number resident	689	680	761
Total number on the Sick List	792	888	781
Total number of days on the Sick List	6,115	8,614	6,108
Average daily number on the Sick List	16.70	23.6	16.7
Percentage of sick to average number resident	2.42	3.47	2.19
Average number of days on the Sick List for each Patient	7.70	9.70	7.82
Average sick time to each resident	8.87	12.66	8.02
Total number invalided	32	58	59
Percentage of invalidings to total residents	3.21	6.85	5.93
Percentage of invalidings to average number resident	4.65	8.52	7.75
Total deaths	10	7	8
Percentage of deaths to total residents	1.00	0.82	0.80
Percentage of deaths to average number residents	1.45	1.02	1.05

NUMBER OF DAYS ON SICK LIST.

	1923-24.	1924-25.	1925-26.
Tropical diseases	2,143	3,808	2,410
Non-tropical diseases	3,972	4,806	3,698
Total	6,115	8,615	6,108

Causes of Invaliding of Europeans Officials.—Insomnia 4, Debility 6, Neurasthenia 5, Tuberculosis 6, Malaria 13, Hernia 2, Asthma 2, Colitis 2, Blackwater Fever 2, 1 each for the following:—Malarial cachexia, Alcoholism, Accidental gunshot wound, Loss of memory, Loss of vision, General injuries, Appendicitis, Nephritis, Paralysis, Hepatitis, Bronchial catarrh, Gastric ulcer, Fistula, Nervous breakdown, Septic hand, Delusional Insanity, Gastritis:—total 59.

The following table shews, in periods, the approximate length of tour of those invalided :

Serving under the	RESIDENTIAL SERVICE.						Total.
	Under 6 months.	6 but under 9 months.	9 but under 12 months.	12 but under 15 months.	15 but under 18 months.	18 months and over.	
Old Leave Regulations ..	3	1	3	3	—	—	10
New Leave Regulations ..	5	4	13	17	10	—	49

Of the fifty-nine Officials invalided six were military.

Invaliding Rate per 1,000	1923-24	32.19
" " " " "	1924-25	68.55
" " " " "	1925-26	59.35

Causes of Deaths of European Officials.—Blackwater Fever 1, Septicæmia 2, Heart Failure 1, Drowning 1, Chronic Alcoholism 1, Hepatitis 1, Suicide 1, total 8.

(c) AFRICAN OFFICIALS.

Table shewing Sick, Invaliding and Death Rates of African Officials.

	1923-24.	1924-25.	1925-26.
Total number of officials resident	2,878	2,912	2,881
Average number resident	2,581	2,805	2,723
Total number on the Sick List	785	753	888
Total number of days on the Sick List	8,440	9,170	8,967
Average daily number on the Sick List	23.06	25.12	24.56
Percentage of sick to average number resident	0.89	0.86	0.89
Average number of days on the sick list for each patient	10.75	12.17	10.09
Average sick time to each patient	3.27	3.26	3.29
Total number invalided	19	20	18
Percentage of invalidings to total residents	0.66	0.68	0.62
Percentage of invalidings to average number resident	0.73	0.71	0.66
Total deaths	16	27	28
Percentage of deaths to total residents	0.55	0.92	0.97
Percentage of deaths to average number resident	0.62	0.96	1.02

Causes of invalidings of African Officials. Phthisis 6, Delusion 1, Presbyopia 1, Paralysis 1, Gonorrhoeal Rheumatism 1, Rheumatism 1, Arterio-Sclerosis 1, Lumbago 1, Neurasthenia 1, Insomnia 1, Tachycardia 1, Arthritis 1, Lesion of Spinal cord 1, total 18.

Causes of Deaths of African Officials.—Pneumonia 8, Nephritis 3, Heart failure 3, Phthisis 3, Septicæmia 2, and one each of the following :—Appendicitis, Enlarged liver, Parotitis, Diabetes, Influenza, Cerebral Malaria, Peritonitis, Cystitis, Myocarditis ; total 28.

(d) GENERAL EUROPEAN POPULATION.

(i) Government Officials	994
(ii) Employees of Trading Firms	1,529
(iii) Employees of Mining Companies	469
(iv) Missionaries	112
Total	3,104

Table shewing Sick Invaliding and Death Rates of European Non-Officials :

1923-24.	No.	Deaths.	Invalided.	Death Rate per cent.	Invaliding Rate per cent.
Merchants	1,425	11	25	0.77	1.75
Mining Companies	527	2	28	0.37	5.31
Missionaries	97	1	2	1.03	2.06
Totals ..	2,049	14	55	0.68	2.68
1924-25.					
Merchants	1,482	11	42	0.74	2.83
Mining Companies	434	1	16	0.23	3.68
Missionaries	104	—	8	—	7.69
Totals ..	2,020	12	66	0.59	3.26
1925-26.					
Merchants	1,529	10	36	0.65	2.35
Mining Companies	469	3	23	0.63	4.90
Missionaries	112	1	7	0.89	6.25
Totals ..	2,110	14	66	0.66	3.12

Causes of Invaliding of European Non-Officials.—General Debility 9, Malaria 6, Tuberculosis 5, Anaemia 4, Cardiac Disease 3, Neurasthenia 3, Alcoholism 3, Cystitis 2, Pyorrhoea 2, D.A.H. 2, Blackwater Fever 2, Typhoid Fever 1, Paratyphoid Fever 1, Sinusitis 1, Bronchial Asthma 2, Arthritis 1, Tumour 1, Appendicitis 1, Cholecystitis 1, Malarial cachexia 1, Gastritis 1, Ptosis 1, Recurrent Enteritis 1, Boils 1, Adenitis 1, Delusional Insanity 1, Bronchitis 1, Rheumatism 1, Hepatitis 1, Pleurisy 1, Hæmoptysis 1, Injury to eye 1, Jaundice 1, Corneal ulcer 1, Unsuitable for tropics 1, total 66.

Causes of Deaths of European Non-Officials.—Blackwater Fever 3, Malaria 3, Intestinal obstruction 1, Fractured spine 1, Dysentery 2, Yellow Fever 1, Perforated duodenal ulcer 1, Drowning 1, Amoebic abscess of Liver 1; Total 14.

European Mortality and Invaliding Rates for the year.

	No.	Deaths.	Invalidings.	Death Rate per 1,000	Invaliding Rate per 1,000
Officials	994	8	59	8.04	59.35
Non-Officials	2,110	14	66	6.63	31.28

ANNUAL SANITARY REPORT 1925-1926.

III.—HYGIENE AND SANITATION.

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

(1.)—ADMINISTRATIVE.

(a) EUROPEAN STAFF.

Dr. G. J. Pirie, Deputy Director of Sanitary Services, was on duty in the Colony from April 1st, 1925, until 11th March, 1926, when he proceeded to Dakar in connection with the League of Nations Sanitary Conference.

Dr. W. G. Watt, Senior Sanitary Officer proceeded on leave on 23rd May, 1925, and resumed duty on 22nd December, 1925.

Dr. P. S. Selwyn-Clarke, Senior Sanitary Officer, proceeded on leave on 3rd December 1925.

Dr. G. C. M. Davis, Medical Officer of Health, returned from leave on 23rd June, 1925, and resumed duty as Acting Senior Sanitary Officer, Accra.

Dr. J. A. A. Duncan, Medical Officer of Health, returned from leave on 18th August, 1925

Dr. P. A. T. Sneath, Medical Officer of Health, has been on duty for the whole year.

Dr. H. C. E. Quin, Medical Officer of Health, was on duty during the year under consideration.

Two vacancies in the Medical Officer of Health grade, were filled by the appointment in England of Dr. G. L. Ranking who assumed duty on 10th June, 1925, and the transfer from the Medical side of Dr. W. M. Howells, Medical Officer, who assumed duty as Medical Officer of Health, on 5th November, 1925.

One vacancy of Medical Officer of Health, remains to be filled. During the year five Superintending Sanitary Inspectors (Europeans) were appointed one appointment being made to fill the vacancy of one Superintending Sanitary Inspector whose appointment was terminated. Of the 3 Royal Army Medical Corps Officers sent out last year on special plague duty, Major Otway, proceeded on leave on 23rd October, 1925, and was eventually restored to his British Unit; Major M. D. Ahern was permitted by the War Office to extend his tour and remained as Medical Officer of Health, Accra, and Major Ingoldby, has been seconded to the Medical Research Institute.

The Non-Commissioned Officers of the Royal Army Medical Corps, sent out on special plague duty proceeded on leave at the end of their tour on 23rd October, 1925, at the expiration of which they were restored to their British Units.

Dr. N. A. Vane Percy (nee Robinson) Woman Medical Officer, was on duty during the year.

Dr. A. N. K. O'Halloran, Woman Medical Officer, proceeded on leave on 27th February, 1926.

Dr. M. C. Chappell, Woman Medical Officer, was appointed, and assumed duty on 13th May, 1925.

(b) AFRICAN STAFF.

Mr. E. G. Atta, 2nd Division Sanitary Inspector, died during the year.

One Second Division Sanitary Inspector, resigned his appointment.

Two Nurse-Midwives, each holding the Certificate of the Central Midwives Board, were appointed one on 25th January, 1926, and the other on 1st March, 1926.

Two Nurses-in-Training were appointed for work in connection with the Princess Marie Louise Hospital.

There were 65 African Sanitary Inspectors—One Senior Division Sanitary Inspector, One Sanitary Inspector and Training Officer, Four 1st Division Sanitary Inspectors, 57 2nd Division Sanitary Inspectors and two Female Sanitary Inspectors. Except for short periods of leave all were on duty throughout the year.

In addition to the above, 6 Temporary Sanitary Inspectors' were employed in Kumasi, and one at Sekondi. Ten Sanitary Inspectors-in-Training were appointed during the year.

The following places were visited by the Deputy Director of Sanitary Services, or a Senior Sanitary Officer during the year.

Aburi, Mampong (Akwapim) Mamfe, Akropong, Larteh, Nsawam, Winneba, Swedra, Saltpond, Cape Coast, Elmina, Sekondi, Tarkwa, Aboso, Huni Valley, Prestea, Akuse, Dodowa, Weshiang, Kumasi and Ashanti generally and numerous places in the Northern Territories. Many of these places were visited several times during the year.

ORDINANCES, ETC.

The following are the principal changes :—

1. Ordinance No. 19 of 1925, known as the Mining Health Areas Ordinance which provides for the power to improve the health and housing of natives employed in connection with the Mining Industry.

This Ordinance came into force on 1st January, 1926.

2. Ordinance No. 20 of 1925, known as the Town Planning Ordinance which provides for controlling the erection of buildings and the proper lay-out of streets in the interests of the public health.

3. Ordinance No. 5 of 1925, declaring the establishment of the Kumasi Public Health Board.

4. Various Orders were made by the Governor making vaccination compulsory in different places under section 5 of the Vaccination Ordinance.

5. Various Orders were made by the Governor under the Quarantine and Infectious Diseases Ordinances declaring certain places infected owing to Infectious Disease, and revoking the same.

6. Various Orders-in-Council were made applying the Towns and Public Health Ordinance to the following towns—Suhum, Subri, Ateiku, Kade, Wanchi, Oda, Twifu, Nyendsi and Achiasi.

II.—PREVENTIVE MEASURES.

(1) INSECT-BORNE DISEASES :—

Malaria, Yellow Fever, etc., Routine anti-mosquito work has been carried out by the Sanitary Staff during the year. The reclamation and drainage of swampy areas and the conversion of earth drains to cement drains were continued during the year.

During the year under review routine Medical Examination of School Children was carried out by the two Women Medical Officers.

Yellow Fever.—During the year 8 cases of Yellow Fever were reported.

Four cases occurred in	Accra.
Two " " "	Nsawam.
One case " "	Winneba.
One " " "	Cape Coast.

The histories of the Accra cases were as follows :—

(a) European aged 32 years in 2nd month of his 2nd tour in West Africa.

He left Sekondi on 23rd May, 1925 and arrived in Accra on the following day ; he left Accra for Ada on 25th May, remained there until 27th May, arriving back in Accra on 28th May. On the evening of 28th May he felt ill, complaining of headache, photophobia and general malaise.

Patient was admitted to the European Hospital, Accra on 29th May and his case was diagnosed as one of Yellow Fever. He was given an intravenous injection of N.A.B. Patient made an uninterrupted recovery and was discharged from Hospital on 6th June, 1925.

(b) European aged 32 years, an employee of one of the firms, taken ill on 2nd September, 1925, having completed 18 months of residence in Accra.

He was removed to Hospital, and his case was diagnosed as Yellow Fever.

He was treated with N.A.B., making an uninterrupted recovery, and proceeded on leave on 26th September, 1925.

(c) An African male aged 39 years, admitted to the Gold Coast Hospital on 28th October, 1925. He was reported by his friends to have had " fever " four days previous to admission to hospital.

On admission Patient was unconscious and he died on 29th October, 1925 without regaining consciousness. Diagnosis of Yellow Fever was confirmed by postmortem examination.

(d) An African aged 20 years admitted to the Gold Coast Hospital on 15th December 1925 with a history of having had "high fever" for 3 days before admission. Diagnosis on admission was suspected Yellow Fever. Patient died on 16th December, 1925.

Diagnosis of Yellow Fever was confirmed by postmortem examination.

The histories of the Nsawam cases were as follows:—

(a) European aged 30 years taken ill on 23rd April, 1925, with violent headache and gastric pains accompanied by vomiting, patient dosed himself with Quinine—20 grains on 24th April and 10 grains on 25th April. On 26th April patient vomited twice but feeling no better he came into Accra the same evening and was admitted to Hospital.

On admission patient looked ill and a diagnosis of Yellow Fever was made. Patient was treated with N.A.B. and made an uninterrupted recovery and proceeded on leave on 9th May, 1925.

(b) European aged 26 years an employee of one of the firms, was taken ill on 19th March, and Yellow Fever was diagnosed on 21st March. Patient died on 23rd March.

This diagnosis was confirmed on post mortem examination.

The case at Winneba was an African adult female admitted to Hospital on 5th October. Diagnosis of Yellow Fever was confirmed by post-mortem examination.

The case at Cape Coast was a Syrian male, aged, 47 years, who died on 23rd July, 1925. Diagnosis confirmed on post-mortem examination.

With reference to the note under this heading appearing in last year's report on the impending visit of experts from the Rockefeller Commission for the study of Yellow Fever it may be mentioned that they have now arrived, and Dr. Walcott is in the Gold Coast investigating this disease.

Several Europeans living in or near infected areas have taken advantage of the offer of vaccination with Noguchi's prophylactic vaccine against yellow fever. The usual anti-mosquito measures directed against the carrier *Aedes argenteus* have been continually carried out e.g., oiling pools, draining swampy land, dealing with water tanks, old tins, bottles, eaves-gutters, grading ditches etc.

Trypanosomiasis.—One case of this disease was reported which was fatal; the patient came from the Northern Territories and died in Accra. Two deaths occurred in the African Hospital, Kumasi, from *Trypanosomiasis*.

(2) EPIDEMIC DISEASES.

Enteric Fever.—Eight cases of Enteric Fever were reported during the year. One occurred at Nsawam and one at Sekondi, both of which recovered.

There were three cases at Accra, 2 at Cape Coast and 1 at Kumasi all of which were fatal.

Dysentery 1.—This disease is prevalent throughout the Colony, Ashanti and Northern Territories. 313 cases were reported in the Colony with 19 deaths, 141 cases were reported in Ashanti and the Northern Territories with 16 deaths.

The Medical Officer of Health, Accra, reports that the deaths due to dysentery and diarrhoea amounted to 12% of the total deaths in Accra. He states that flies cannot be held responsible to any great extent for these diseases because Accra, for a tropical town, has few flies. The predominating cause is almost certainly the personal habits of the people who neither understand nor appreciate domestic hygiene and who exercise little care in the preparation, storage and handling of food.

Cholera.—No cases of this disease were reported during the year.

Influenza.—During the year under review 461 cases of Influenza were reported with 38 deaths.

These occurred in Accra, Sekondi, Koforidua, Tarkwa, Kumasi and the Northern Territories.

The prevailing type was the respiratory.

Chicken-Pox was reported from various places in the Colony, Ashanti and Northern Territories.

Small-Pox.—Considerable out-breaks were reported during the year, the majority of cases occurring in Ashanti and the Northern Territories.

In Ashanti, 902 cases with 104 deaths and in the Northern Territories 973 cases with 32 deaths were reported.

In the Colony 73 cases were reported of which 4 were fatal. There is no doubt that inoculation, although prohibited by law, is still being practised especially in isolated places where it is impossible to prevent it.

Vaccination is carried out generally, being compulsory in the larger towns, lanolinated lymph from the Lister Institute being used.

Twelve Vaccinators were continuously employed.

VACCINATION 1920 to 1925-26.

	1920.	1921.	1922.	1923-24.	1924-25.	1925-26.
Total Vaccination	221,386	87,449	122,566	82,425	102,546	311,927
Total verified successful ..	177,085	58,073	46,588	36,468	45,163	98,869
Percentage verified successful ..	80	66.4	38.01	44.24	44.04	31.69

Relapsing Fever.—One case was reported during the year in Accra, and was fatal

This case was from the Northern Territories.

Plague.—One case only of plague was reported during the year. The patient, an African fireman, was landed at Cape Coast from the S.S. "Chama" on April 22nd, 1925. He was in a drowsy condition on admission with a temperature of 106; he died on 24th April, 1925.

In view of the prolonged outbreak of Plague in Nigeria all preventive measures possible were carried out against a further outbreak of the disease in the Gold Coast and Ashanti.

Special gangs of rat catchers were employed and large numbers of rats were caught and destroyed. Nipper, and cage traps, and Typographic Varnish being used, the latter being very effective.

The usual sanitary measures such as filling up of rat holes, burning of refuse and rubbish generally and prosecution of persons for having unsanitary premises were carried out.

Cerebro-Spinal Fever.—An outbreak of this disease broke out on 11th January, 1926, at Ejura which is a town situated on the main North Road from Kumasi to Tamale, 61 miles from Kumasi.

The first case was reported, as stated above, on 11th January, 1926, followed by several others, the outbreak lasting until 24th January, 1926.

During the outbreak there were 13 cases all of which were fatal.

An Order by the Governor No. 1 of 1926, declaring Ejura an infected area was given on 19th January, 1926, and this Order was revoked on 1st February, 1926. One case of Cerebro-Spinal Fever was also reported from Sunyani on 21st January, 1926, and this was fatal.

One fatal case occurred in Accra.

(2) ENDEMIC DISEASES.

Tuberculosis.—The registered deaths from Pulmonary Tuberculosis, were as follows :—
Accra 82, Cape Coast 55, Sekondi 38, Tarkwa 58.

The Medical Officer of Health Tarkwa, in his Annual Report, states as follows :—

" This disease, in Tarkwa Town and in the Mining Areas, is, by far, the most serious question that has to be faced.

The total number of deaths at all ages registered in Tarkwa during 1925-26 was 126 of which 58 were certified as due to Pulmonary Tuberculosis. The "killing disease" both in Tarkwa Town and in the neighbouring Mine Areas is Tuberculosis. In the two Mines Areas where I have acted as Medical Officer for the past 6 months the most typical cases are to be seen in the young adolescent and in the elderly mine employee who has usually worked with the Companies for years".

This disease is not an infectious Disease under the Infectious Diseases Ordinance but it is notifiable by Government Medical Officers.

Leprosy.—There is no means of dealing with Leprosy in an efficient manner as no leper legislation exists in the Gold Coast.

In March, 1926, a popular lecture on Leprosy illustrated by Lantern Slides, was given in Accra by Mr. Frank Oldrieve, Secretary of the British Empire Leprosy Relief Association; the lecture was most interesting and was very well attended.

In Accra, lepers, who are willing to submit to treatment, are permitted to live and be treated at the Contagious Diseases Hospital by the Medical Officer of Health. 38 cases were under treatment during the year in Accra, one of which was fatal.

This cannot be considered satisfactory because the Contagious Diseases Hospital is not a suitable place for the housing and treatment of lepers and the Medical Officer of Health has not the time to deal with the Disease in an efficient manner owing to his other numerous and important duties.

Anthrax.—Five fatal cases of Anthrax—Septicæmic and enteritic forms—were reported from Kumasi. The Medical Officer of Health Kumasi reports that a careful enquiry was made as to the origin of the disease and the conclusions finally arrived at were that the deceased, who were travellers, had consumed meat in the course of their travels from animals that had been ill, or more likely died from Anthrax. This consumption of the flesh of diseased cattle is largely practised on the cattle routes.

(3) HELMINTHIC DISEASES.

Ankylostomiasis.—Is very prevalent among Mines labourers and to deal with this disease precautionary measures have been adopted by improving the type of latrine both on the surface and also underground in accordance with Sir William Simpson's recommendations.

Six deaths were registered in Accra, as due to this disease. The Medical Officer of Health Tarkwa in his report states that "in this area it would appear that this parasitic disease exists without marked injury to health in the great majority of persons infested; slight degrees of infestation must produce a certain amount of debility, loss of weight etc., and as complicating and intensifying other disorders must always be kept in mind".

Health of Labourers employed in Mines.—A Medical Officer of Health is now stationed at Tarkwa who will be able to keep under proper sanitary control the Mining Health Areas.

An Ordinance, the Mining Health Areas Ordinance, which came into force on 1st January, 1926, provides for better housing of mines labourers and improved sanitation of the Mines generally. With a Medical Officer of Health stationed in a mines area, and an ordinance to provide for improved sanitary conditions, it is hoped that the health of the labourers will improve, and so reduce the morbidity and mortality rates.

Recruits for the Mines are now medically examined before leaving the Northern Territories.

II.—GENERAL MEASURES OF SANITATION.

Europeans are advised and encouraged to live in residential areas selected specially for the purpose.

Africans Congested Areas are being dealt with and are being cleared and made more sanitary.

Routine inspections were carried out during the year by the Sanitary Staff.

The total number of houses inspected during the year was 405,228. There were 15,687 prosecutions during the year of which 3,255 were for having mosquito larvae on their premises and 12,432 for other insanitary conditions. The fines from these prosecutions amounted to £6,045 13s. 0d.

Sewage Disposal.—With the exception of the Gold Coast Hospital where a water carriage system has been installed, the pail latrine system is in use in Accra and other towns. The excreta are conveyed to trenching areas or pits which are filled in with earth daily, but in one or two coast towns they are disposed of in the sea.

Scavenging and Refuse Disposal.—Refuse is removed by lorries and head loads and is incinerated.

Tins, bottles, and incombustible matter generally, are buried and so used to fill up low-lying ground as they are covered over, with the burnt refuse from the incinerators, and with earth.

Drainage is of the surface variety, no subsoil drains existing in any town in the Colony or Ashanti.

In the towns, like Accra, Sekondi, Cape Coast and Kumasi concrete drains have been constructed but in the smaller places earth drains are universal excepting perhaps on the main street.

Water Supplies.—Accra, Sekondi and Winneba have the advantage of a pipe-borne supply but towns like Kumasi, Cape Coast and Koforidua are dependent on tanks and wells for their supply ; elsewhere tanks and wells form the chief source of supply.

A pipe-borne water supply for Kumasi is still a very long way off, and a similar mode of supply for Cape Coast and Koforidua is still under investigation.

Offensive Trades.—There are no specified offensive trades such as are laid down in the English Public Health Act, 1875. There are certain industries such as fish curing, which might easily be classified as offensive but there is no Ordinance which deals with these trades.

Clearance of Bush and Undergrowth is carried out regularly by labourers.

School Hygiene.—The Schools in the Gold Coast are those (a) belonging to the Government and those (b) attached to the various religious denominations.

All Schools are under Government control in that they are inspected by officers of the Education Department. In the towns of Accra and Sekondi the school children were medically inspected and the buildings inspected with a view to their sanitation and general cleanliness. Generally speaking the condition was fair, cleanliness was very good, but overcrowding was common.

(IV) LABOUR CONDITIONS.

General industrial conditions.—With the exception of the Mines and the Kroo labourers employed by the Municipal Councils and some of the business firms, all labour is voluntary i.e., not under indenture and they are free agents.

In the case of the Mines the labourers are under indenture being recruited and engaged for a definite period ; the same applies to labourers from the Kroo Coast

All indentured labourers are housed and provided with free medical attendance.

(V) HOUSING AND TOWN PLANNING.

A Town Planning Ordinance No. 20 of 1925 was passed in December, 1925 to control the erection of buildings and the laying-out of streets within certain areas.

In Cape Coast, the New Amanful site, with the exception of one house, remains unbuilt upon ; this area was selected as a place where the dispossessed, who lived in the first congested area previous to its demolition, could erect houses.

Several improvements have been made in Cape Coast by the laying-out of new roads and streets.

(VI) FOOD IN RELATION TO HEALTH AND DISEASE.

All foodstuffs exposed for sale were regularly inspected by a Superintending Sanitary Inspector and if any food was found to be unfit for human consumption action was taken to have it condemned and destroyed. All animals to be slaughtered were inspected and after slaughter all carcasses were carefully examined.

Any carcasses showing signs of disease were condemned, in toto or partially, according to the nature and extent of the disease.

Imported food being chiefly of the tinned variety is not inspected except when in the various trading stores. No difficulty has been found when bad or defective tins were seen as the agents in charge raise no objection to its summary disposal.

Markets.—During the year improvements have been effected in markets in different places.

In Kumasi a new market has been built replacing the various old and congested ones.

The new market at Cape Coast, for which the Kotokurabah site was selected has not yet been begun as the market women have declared their preference for the present market area.

In Accra plans have been passed for a new market and the building is approaching completion.

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

The teaching of Hygiene has been continued in all Government and other Schools.

Health weeks were held in Accra and other places and demonstrations given in order to try and instil into the minds of the general public what Sanitation and cleanliness really mean.

C. TRAINING OF SANITARY PERSONNEL.

Ten Africans have been undergoing a course of instruction under an officer of the Sanitation Department with a view to appointing them as 2nd Division Sanitary Inspectors.

Provision for ten more candidates for a course of instruction has been made in the 1926-27 estimates and they will be selected after examination in elementary general knowledge.

D. RECOMMENDATIONS.

1. Provision of pipe-borne water supplies for Cape Coast, Koforidua and Kumasi.

E. ACTION TAKEN DURING THE YEAR WITH REGARD TO RECOMMENDATIONS CONTAINED IN 1925-26 REPORT.

1. Pipe borne water supplies for Cape Coast and Kumasi still under consideration.
2. Child Welfare Centre opened in Sekondi.
3. Investigation of Yellow Fever in the Gold Coast by the Rockefeller Commission. This has begun.
4. Provision has been made in 1926-27 estimates for one additional Senior Sanitary Officer, and two Medical Officers of Health.

W. G. WATT,

Acting Deputy Director, Sanitary Services.

27TH MAY, 1926.

ACCRA WATER SUPPLY.

BACTERIOLOGICAL EXAMINATION OF SAMPLES FROM RESERVOIRS, FINAL FILTERS
AND TOWN STANDPIPES, APRIL, 1925-MARCH, 1926.+ = Smallest volume of water yielding typical *B. coli*.- = Absence of *B. coli* in the respective volumes states at head of columns.Adopted test of typical *B. coli*.—Lactose—Positive.

Indol—Positive.

Date. 1925.	Source of Sample.	100 cc	10 cc	1 cc	.1 cc	.01 cc
April	2 Final Filter No. 6	+	-			
	" Laboratory Tap	-				
	9 " "	-				
	" Densu at Weshiang				+	-
	" Prefilter No. 3	+	-			
	16 Laboratory Tap	+	-			
	" Final Filter No. 1	+	+	-	-	-
	23 Laboratory Tap	-				
	" Final Filter No. 2	+	-			
	" Storage Reservoir No. 1	+	-			
May	30 Laboratory Tap	+	-			
	" Final Filter No. 3	-				
	7 Laboratory Tap	-				
	" Storage Reservoir No. 2	-				
	" Final Filter No. 4	-				
	14 Laboratory Tap	-				
	" Final Filter No. 5	-				
	20 Laboratory Tap	-				
	21 Laboratory Tap	-				
	" Final Filter No. 6	-				
June	28 Final Filter No. 1	-				
	4 Storage Reservoir No. 2	+	-			
	" Laboratory Tap	-				
	" Final Filter No. 2	-				
	11 Laboratory Tap	-				
	18 Laboratory Tap	+	-			
	" Final Filter No. 3	-				
	" Storage Reservoir No. 1	-				
July	25 Laboratory Tap	+	-			
	" Final Filter No. 4	+	-			
	2 Laboratory Tap	-				
	" Final Filter No. 5	-				
	" Storage Reservoir No. 1	-				
	9 Laboratory Tap	+	-			
	" Final Filter No. 6	-				
	16 Laboratory Tap	+	-			
	" Final Filter No. 1	-				
	" Storage Reservoir No. 1	-				
August	23 Final Filter No. 2	-				
	" Laboratory Tap	-				
	30 Laboratory Tap	-				
	" Final Filter No. 3	-				
	" Storage Reservoir No. 1	-				
	6 Laboratory Tap	-				
	" Final Filter No. 4	-				
	13 Laboratory Tap	-				
	" Final Filter No. 5	-				
	" Storage Reservoir No. 1	-				
August	20 Laboratory Tap	-				
	" Final Filter No. 6	-				
	27 Laboratory Tap	+	-			
	" Storage Reservoir No. 1	-				
	" Final Filter No. 1	+	-			

Date. 1925.	Source of Sample.	100 cc	10 cc	1 cc	.1 cc	.01 cc
September 3	Laboratory Tap	+	-			
"	Final Filter No. 3	-				
10	Laboratory Tap	-				
"	Storage Reservoir No. 2	-				
"	Final Filter No. 4	-				
17	Laboratory Tap	+	-			
"	Final Filter No. 5	-				
24	Laboratory Tap	+	-			
"	Storage Reservoir No. 2	-				
"	Final Filter No. 1	-				
October 1	Laboratory Tap	-				
"	Final Filter No. 2	-				
8	Laboratory Tap	-				
"	Final Filter No. 3	-				
"	Storage Reservoir No. 2	-				
15	Laboratory Tap	-				
"	Final Filter No. 4	-				
22	Laboratory Tap	-				
"	Final Filter No. 5	-				
"	Storage Reservoir No. 2	+	-			
29	Laboratory Tap	-				
"	Final Filter No. 6	-				
November 5	Laboratory Tap	-				
"	Final Filter No. 1	-				
"	Storage Reservoir No. 1		+	-		
12	Laboratory Tap	-				
"	Final Filter No. 2	+	-			
19	Laboratory Tap		+	-		
"	Final Filter No. 2	-				
"	Storage Reservoir No. 1	-				
26	Laboratory Tap	+	-			
"	Final Filter No. 3	-				
December 3	Laboratory Tap	+	-			
"	Final Filter No. 4	+	-			
"	Storage Reservoir No. 1	+	-			
10	Laboratory Tap	-				
"	Final Filter No. 4	-				
17	Final Filter No. 5	+	-			
"	Storage Reservoir No. 1		+	-		
"	Laboratory Tap	+	-			
24	Final Filter No. 6	-				
"	Laboratory Tap	+	-			
31	Storage Reservoir No. 1		+	-		
"	Laboratory Tap	-				
"	Final Filter No. 1	-				
January 7	Laboratory Tap	+	-			
"	Final Filter No. 2	+	-			
14	Final Filter No. 3	+	-			
"	Storage Reservoir No. 2	-				
"	Laboratory Tap	-				
21	Laboratory Tap		+	-		
"	Final Filter No. 4	+	-			
28	Laboratory Tap	-				
"	Final Filter No. 5	-				
"	Storage Reservoir No. 2	-				
February 4	Laboratory Tap	-				
"	Final Filter No. 6	-				
11	Laboratory Tap		+	-		
"	Storage Reservoir No. 2	+	-			
"	Final Filter No. 1	-				
18	Laboratory Tap	+	-			
"	Final Filter No. 2	-				
25	Laboratory Tap	-				
"	Final Filter No. 3	-				
"	Storage Reservoir No. 1		+	-		

Date. 1925.	Source of Sample.	100 cc	10 cc	1 cc	.1 cc	.10 cc
March 4	Laboratory Tap	—				
"	Final Filter No. 4	—				
11	Laboratory Tap	—				
"	Final Filter No. 5	—				
"	Storage Reservoir No. 1	—				
18	Laboratory Tap	—				
"	Final Filter No. 6	—				
25	Laboratory Tap	—				
"	Storage Reservoir No. 1	—				
"	Final Filter No. 1	—				

IV.—METEOROLOGY.

RAINFALL IN INCHES.

Station.	1923.	1924.	1925.
Accra	21.16	28.55	36.54
Aburi	43.14	54.14	57.22
Sekondi	39.29	42.25	43.71
Axim	90.18	61.82	69.41
Tarkwa	71.72	73.67	59.11
Kumasi	55.75	51.96	67.24
Tamale	36.03	35.73	45.77

V.—HOSPITALS AND DISPENSARIES.

16. The total cases treated at the various Government Hospitals and Dispensaries during the year was 97,910.

The following Table shows the number of in-patients treated at Accra, Sekondi and Kumasi Hospitals :—

Station.	1923-24.		1924-25.		1925-26.	
	Europeans.	Africans.	Europeans.	Africans.	Europeans.	Africans.
Accra	235	1,506	247	2,024	258	2,372
Sekondi	170	602	208	534	228	820
Kumasi	116	1,972	133	1,977	140	2,400
Totals	521	4,080	588	4,535	626	5,592

PRISONS.

17. The General Health has been satisfactory and there has been no increase in the number of Prisoners reporting sick over previous years.

Steady improvement is being made in the accommodation for long-sentence Prisoners. The Director of Prisons reports that the alterations to Ussher Fort, Accra are now nearly completed, and that extensive alterations in the Prison accommodation at Kumasi are being made, and should be completed this year.

The Upper Storey of James Fort Accra is being altered to make quarters for Warders, and—for the purpose of separating Debtor Prisoners from Convict Prisoners—the lower quarters have been turned into a Debtor Prison only.

Accommodation for Female Convict Prisoners has been provided by the completion of a new Female Prison at Kumasi. Fort St. Jago, Elmina is still used as a female convict Prison, and there is also a Prison at Keta.

The number of Female convict Prisoners is very small, averaging only 25.

Four small Prisons have been closed *viz* :—Ejura, Dunkwa, Saltpond and Juaso.

Daily Lock-up.—The average Daily Lock-up for the year was 1,433.25 as compared with 1,390.57 in 1924-25 and 1,463.92 in 1923-24.

Diet.—The supply of food is adequate and of good quality.

Sick List.—The average sick list was 55.66 i e., 3.1% as against 3% in 1924-25 and 3.2% in 1923-24.

Death Rate.—The total number of deaths was 35 as against 18 in 1924-25 and 32 in 1923-24.

DENTAL.

18. The Government Dental Surgeon, although stationed in Accra, visited also Kumasi Sekondi, Cape Coast, Saltpond, Winneba, etc., during the year.

The record of work done again shows an increase as the following Table shews :—

							1924-25.	1925-26.	
<i>Officials.</i>							<i>Numbers treated.</i>		
European ..	..	..	..	..	..	509	509	
African ..	..	..	..	..	..	436	623	
Total ..	..	..	..	..	..	945	1,132	
<i>Non-Officials.</i>									
European ..	..	..	..	..	..	420	475	
African ..	..	..	..	..	..	1,212	1,088	
Total ..	..	..	..	..	..	1,632	1,563	
Total number of Patients treated						1924-25.	1925-26.		
						2,577	2,695		

The following table shews the number of operations performed :—

	Officials.	Non-Officials.	Total.
(a) EXTRACTIONS.			
Local Anaesthesia	754	1,280	} 2,102
General Anaesthesia	12	56	
(b) FILLINGS.			
Gold	36	57	= 93
Amalgam	280	240	= 520
Porcelain	135	66	= 201
Cement	55	67	= 122
Temporary	78	86	= 164
			1,100
(c) DRESSING.			
Including Root Treatment	201	177	= 378
(d) Scalings	158	187	= 345
(e) Dentures	143	209	= 352
(f) Bridges	2	7	= 9
(g) Repairs to Bridges and Dentures	89	70	= 159
(h) Minor Treatments	92	123	= 215

Chief Pathological conditions met with during the period are as follows :—

(1) Dental Caries	1,928
(2) Dental Abscess	656
(3) Pulpitis, Acute and Chronic	206
(4) Peridontitis, Acute and Chronic	312
(5) Excessive Calcific deposit	263
(6) Cases diagnosed as true Pyorrhoea Alveolaris (Chronic Su. peridontitis	280
(7) Gingivitis	212
(8) Septic Roots	175
(9) Stomatitis	86
(10) Sepsis arising in connection with eruption of permanent dentition	33
(11) Malposition of Teeth	24
(12) Fracture of Teeth	20
(13) Necrosis of Alveolus	11
(14) Neuralgia of non-dental origin	12
(15) Polypus of pulp	8
(16) Pulp Stones	22
(17) Excessive post extract haemorrhage	18
(18) Supernumerary Teeth	32
(19) Dental Cyst	4
(20) Epulis	3
(21) Fibrous Sarcoma of jaw	4
(22) Antrum disease	3
(23) Canorum oris	2

LUNATIC ASYLUM.

19. In a report on the Lunatic Asylum for the year 1925-26 the Medical Superintendent states as follows :—

The Staff consists of—

- 1 Chief Attendant,
- 1 Assistant Chief Attendant,
- 13 Male Attendants.
- 1 Matron.
- 1 Female Attendant.
- 1 Gate Keeper.

On 31st March, 1926, there was a total 229 inmates in the Asylum as compared with a total of 225 inmates on the 31st March, 1925.

Admitted during the year	75	Males and Females,
Discharged " " "	23	" " "
Escapes	Nil.	
Deaths	49	
Remaining	229	of which 19 are Criminal.

The classification of diseases from which the inmates are suffering as is follows:—

	Males.	Females.
Imbecility.. .. .	10	3
Mania	72	20
Melancholia	6	1
Dementia	4	7
Delusional Insanity	29	6
Homicidal Mania.. .. .	19	nil.
Suicidal Mania	3	nil.
Manic Depressive Insanity	4	1
Paranoia	2	nil.
G.P.I.	1	nil.
Epilepsy	2	1
Under observation	35	3
Totals	187	42

The following improvements and alterations were effected:—

- (a) Kitchen improvements. Iron doors fitted to fire places
- (b) Iron bars refitted in one dormitory.
- (c) Completion of unclimbable fencing.

The question of the provision of a new Mental Hospital on modern lines is under consideration.

DEATHS.

The causes of death were:—

Cerebral Haemorrhage	2
Cardiac Failure	9
Mitral Incompetence	1
Dysentery	2
General Debility	8
Senility	2
Chronic Colitis	3
Hemiplegia	1
Enteritis	1
Asthenia	7
G.P.I.	1
Beri Beri	2
Hyperpyrexia	1
Epilepsy	8
Ankylostomiasis	1
	—
	49
	—

VI.—SCIENTIFIC.—(APPENDICES).

20. Appendix A.—Annual Report of the Medical Research Institute for the year, 1925-26 by Dr. W. A. Young, Director of Medical Research Institute.

21. Appendix B.—Reports on three cases of Yellow Fever occurring in Europeans at Accra. (Dr. G. E. H. Le Fanu, Medical Specialist).

22. Appendix C.—Report on treatment of Chronic Malaria and Mania. (Dr. S. L. Brohier, Medical Officer).

23. Appendix D.—Report on effect of Bismuth Tartrate in treatment of Yaws. (Dr. Helen McD. Hendrie).

24. Appendix E.—Report on the incidence of Sleeping Sickness in the Lawra District. (Dr. A. G. MacKay, Medical Officer).

year 25. Appendix F.—Return shewing cases treated in Veneral Clinic, Accra, during the 1925-26.

26. Appendix G.—Report on work of X Ray Department for the year, 1925-26

M. E. O'DEA,

Director, Medical and Sanitary Services.

ANALYTICAL CHEMIST.

CHEMIST LABORATORY,
ACCRA.REPORT ON THE WORK DONE DURING THE YEAR APRIL, 1925 TO
31ST MARCH, 1926.

The number of samples dealt with was 310 and comprised the following :—

Medical and Police Departments—						
Examinations for poisons—						
Human viscera .. .. .	..	..	..	..	..	8
Stomach contents .. .. .	..	..	..	..	..	3
Native " medicines " .. .. .	..	..	..	..	..	2
Cooked foods .. .. .	..	..	..	..	..	4
Water .. .. .	..	..	..	..	..	2
Domestic Utensils .. .. .	..	..	..	..	..	2
Examinations for bloodstains .. .. .	..	..	..	..	..	1
						— 22
Medical and Sanitary Services—						
Drugs for purity .. .. .	..	..	..	..	..	5
Waters .. .. .	..	..	..	..	..	40
Foods .. .. .	..	..	..	..	..	10
						— 55
Customs Department—						
Patent Medicines .. .. .	..	..	..	..	..	25
Potable Spirits .. .. .	..	..	..	..	..	8
Wines .. .. .	..	..	..	..	..	56
Medicinal Wines .. .. .	..	..	..	..	..	11
Beer and Stout .. .. .	..	..	..	..	..	17
Perfumes .. .. .	..	..	..	..	..	78
Toilet preparations .. .. .	..	..	..	..	..	20
Miscellaneous .. .. .	..	..	..	..	..	8
						— 223
Unclassified .. .. .	..	..	..	..	..	10
						—
						310
						—

The analyses of human organs and stomach contents were made in connection with five deaths from suspected poisoning.

In one case a trace of phenol was found in the stomach and contents; in another case alcohol was present in both stomach and contents. No poison was detected in the other three cases.

In a specimen of kenki submitted by the Police was found a trace (0.1 mgrm.) of yellow phosphorus.

Vermin paste containing Phosphorus had been introduced into this ball of Kenki which formed an exhibit in a charge of attempted poisoning. Evidence in this case was given by me at the Assizes held at Sekondi. The accused person was convicted.

In two plates of a cooked meal of meat and vegetables fine splinters of glass were found and recovered; whether their presence was accidental or intentional has not yet transpired.

Bloodstains were detected on a cutlass submitted by the Police.

A simple method was devised and described in detail for the preparation by Medical Officers of Bismuth Hydroxide and its suspension of known content in aqueous glycerin, thus forming in case of need a substitute for other forms of Bismuth.

Samples of water from out of which various species of mosquitoes had bred were examined on behalf of the Medical Entomologist entailing determinations of salinity and Hydrogen-ion concentration.

The number of samples submitted by the Customs Department continues to increase especially as regards perfumed spirits which, together with patent medicines, require to be examined from the point of view of their potability or otherwise as beverages.

The distillation of denatured condemned spirits were continued; 83 litres producing 38 litres of 80% alcohol.

During the period under review I was absent on leave from the Colony for 5½ months.

ROBERT SIMMONS, F.I.C.
Analytical Chemist.

TABLE IV.
Summary of routine Sanitary work done during the Year.
1. Name of Towns.

Station.	1923-24.		1924-25.		1925-26.	
	Approximate area.	No. of proclaimed opened spaces.	Approximate area.	No. of proclaimed opened spaces.	Approximate area.	No. of proclaimed opened spaces.
Accra ..	8.25 Sq. miles	32	8.5 Sq. miles	32	8.25 Sq. miles	32
Cape Coast ..	2½ "	4	2½ "	4	4 "	4
Sekondi ..	3 "	3	3 "	3	3 "	3
Kumasi ..	9 "	—	9 "	—	9 "	—

2. Population.

Station.	1923-24.				1924-25.				1925-26.				
	Natives.		Europeans.		Natives.		Europeans.		Natives.		Europeans.		
	Males.	Females.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.		
Accra ..	23,614	20,225	560	78	44,477	25,229	22,500	74	48,429	26,000	23,000	100	49,780
Cape Coast ..	7,390	7,536	46	13	14,885	7,310	7,549	18	14,909	7,380	7,620	14	15,053
Sekondi ..	8,300	5,800	212	30	14,342	8,300	5,800	46	14,437	7,000	5,600	60	12,951
Kumasi ..	12,681	7,404	193	17	20,295	25,632	—	35	26,036	9,822	8,692	42	18,949

3. Housing.

Station.	1923-24.				1924-25.				1925-26.			
	Houses.		Huts.		Houses.		Huts.		Houses.		Huts.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Accra ..	230	3,087	—	—	240	3,365	—	—	260	3,400	—	—
Cape Coast ..	30	1,481	—	405	30	1,374	—	400	32	1,421	—	—
Sekondi ..	140	1,545	—	—	140	1,255	—	—	182	1,422	—	—
Kumasi ..	131	1,635	—	71	154	1,482	—	98	153	1,236	—	—

4. Erection of New Buildings.

Station.	1923-24.		1924-25.		1925-26.	
	No. of houses built without sanction.	No. of Huts built without sanction.	No. of houses built without sanction.	No. of Huts built without sanction.	No. of houses built without sanction.	No. of Huts built without sanction.
Accra ..	—	149	—	50	—	35
Cape Coast ..	—	—	—	—	—	—
Sekondi ..	—	—	85	—	61	—
Kumasi ..	—	—	—	—	—	—

4. (b) Action Taken.

Station.	1923-1924		1924-1925.		1925-1926.	
	No. of Prosecutions.		No. of Prosecutions.		No. of Prosecutions.	
	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.
Accra ..	—	—	—	—	—	—
Cape Coast ..	—	—	—	—	—	—
Sekondi ..	—	—	—	—	—	—
Kumasi ..	—	—	—	—	—	—

5. Latrines.

Station.	1923-24.				1924-1925.				1925-1926.													
	Number.		New ones.		Number.		New ones.		Number.		New ones.											
	Male.		Female.		Male.		Female.		Male.		Female.											
	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.	No. Seats.										
Accra ..	49	540	41	296	1	5	1	5	54	567	46	323	6	36	56	587	48	313	2	20	2	20
Cape Coast ..	10	114	10	12	1	6	1	6	16	114	16	126	—	—	15	114	15	126	—	—	—	—
Sekondi ..	17	115	12	87	—	—	—	—	19	125	11	74	—	—	29	213	21	166	5	44	5	44
Kumasi ..	36	263	36	231	2	8	2	8	42	409	46	499	7	70	38	499	36	480	5	46	5	46

5. (b) Latrines (Private).

Station.	1923-24.							1924-25.							1924-26.										
	No.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of night soil men.	Cesspools.	Cesspool cleansed.	New cesspools.	Cesspools abolished.	No.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of night soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	No.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of night soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	
Accra ..	584	658	—	92	—	—	—	—	840	840	840	129	—	—	—	—	588	883	883	130	—	—	—	—	—
Cape Coast	134	730	—	34	—	—	—	—	118	734	—	25	—	—	—	—	206	561	76	17	—	—	—	—	—
Sekondi	321	360	575	64	—	—	—	—	375	375	—	50	—	—	—	—	443	881	881	72	—	—	—	—	—
Kumasi	206	425	478	67	—	—	—	—	271	592	914	96	—	—	—	—	372	744	1,458	69	—	—	—	—	—

6. Removal of Refuse.

Station.	1923-24.							1924-25.							1925-26.						
	Dustbins.	Carts removing street refuse.	Amount of refuse removed daily from street.	Cart removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount of refuse removed daily from Street.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing Street refuse.	Amount of refuse removed daily from Street.	Carts removing refuse from yards and premises.	Amount of refuse from yards and premises.	Men employed.			
Accra	39	7	105	4	44	62	42	6 lorries	60 lorry loads	3	350 cart-loads.	50	44	7 Lorries and 6 Carts.	45 lorry loads.	4	38 lorry loads.	45			
Cape Coast	35	10	57	1 cart load.	2 cart-loads.	23	35	1 & 2 lorries	62 cart loads	—	2 Cart-loads	14	35	6 Carts.	64 cart-loads.	—	2 cart-loads.	13			
Sekondi	23	3 lorry loads.	25 lorry-loads.	—	—	51	23	3 lorries.	95 head loads.	—	300	39	25	3 Lorries and 1 Cart.	28 lorry loads.	—	28 lorry loads.	41			
Kumasi	23 Incinerators.	1	218 Baskets	2 Baskets	43 Baskets.	2	13 & 35 Incinerators.	1.	122 head-loads & cart loads.	4	125 head-loads.	12	32	3 Lorries, 2 Carts & 8 Baskets.	10,589 baskets.	4 baskets	360 head-loads.	4			

9. Water Supply.

1923-1924

Station.	Pipe-Borne Water.			Wells.				Tanks.							
	Source.	Public Stand Pipe.	Private Stand Pipe.	Public.		Private.		Public.		Private.		Nature of Tank.		Barrels.	
				No.	Mosquito proof.	No.	Mosquito proof.	Above Ground.	Mosquito proof.	Above Ground.	Mosquito proof.	Wood.	Iron.		Concrete.
Accra	River-Densu	70	1,022	—	114	84	—	1	230	206	5	103	122	20	14
Cape Coast	—	—	—	4	232	232	2	9	227	227	10	123	76	353	353
Sekondi	Anankwan	38	131	—	—	—	—	—	82	82	—	62	20	—	—
Kumasi	—	—	—	3	110	110	—	—	79	79	3	73	3	257	257

1924-1925

Accra	River-Densu	75	1,114	—	65	60	—	—	149	141	2	47	100	16	12
Cape Coast	—	—	—	5	191	189	2	9	225	225	12	123	90	426	396
Sekondi	Anankwan	67	143	2	—	—	—	—	25	25	—	15	10	—	—
Kumasi	—	—	—	4	78	78	—	—	122	122	—	118	4	234	234

1925-1926.

Accra	River-Densu	80	1,331	—	64	62	—	—	127	127	2	33	92	19	19
Cape Coast	—	—	—	1	194	190	2	162	162	—	11	151	90	422	316
Sekondi	Anankwan	67	165	—	—	—	—	—	—	—	—	—	—	—	—

10. Drainage.

Station.	Masonry Drains.						Earth Drains.											
	1923-24.			1924-25.			1925-26.			1923-24.			1924-25.			1925-26.		
	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yard constructed.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	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 ..	—	—	4,332	63,213	606	—	8,569	75,962	877	—	12,749	2,1183	22,507	Fortnightly.	40,861	25,982	Fortnightly.	
Cape Coast ..	230	2,069	952	26,420	947	747	28,360	—	—	1,940	3,335	796	6,001	—	4,378	—	Monthly.	
Sekondi ..	—	—	841	28,383	—	1,300	1,889	30,810	—	120	6,066	14,992	1,139	—	10,947	87	When necessary.	
Kumasi ..	13,394	—	1,692	3,276	—	1,450	1,826	15,453	—	1,450	253	4,885	656	700	21,083	35,459	do.	

11. Inspection and Prosecutions.

Station	1923-24.										1924-25.										1925-26.									
	Inspectors employed.	Houses inspected.	Houses where larvae were found.	Notices against larvae.	Persons fined for larvae.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	No. of Soda and Aerated Factories inspected.	Persons fined for insanitary conditions.	Persons employed.	Houses inspected.	Houses where larvae were found.	Notices against larvae.	Persons fined for larvae.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	No. of Soda and Aerated Factories inspected.	Persons fined for insanitary conditions.	Persons employed.	Houses inspected.	Houses where larvae were found.	Notices against larvae.	Persons fined for larvae.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	No. of Soda and Aerated Factories inspected.				
	Accra ..	22	156,674	937	526	740	3,412	10	3	26	165,450	1,107	575	735	4,630	1,360	3	26	141,025	899	145	710	1,898	1,258	3					
Cape Coast ..	12	24,841	348	616	312	30	83	—	12	59,569	287	424	251	114	66	—	12	65,662	269	368	239	251	83	—						
Sekondi ..	3	71,654	147	78	110	948	202	1	14	72,368	138	5	70	935	255	1	12	49,076	183	46	102	367	551	1						
Kumasi ..	7	37,208	751	61	607	398	886	1	17	59,778	483	62	469	1,315	4,331	1	11	83,003	258	44	202	1,676	2,385	1						

RETURN OF DISEASES AND DEATHS (IN AND OUT PATIENTS) FOR THE YEAR, 1925-26.

Diseases.	Remaining in Hospital at end of 1924-1925.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1925-1926.	Remarks.
		New Cases.	Deaths.			
INFECTIVE DISEASES.						
Beri-Beri	2	67	10	69	7	
Cerebro-Spinal Fever	—	14	14	14	—	
Chicken-Pox	—	241	—	241	3	
Cholera	—	—	—	—	—	
Dengue	—	1	—	1	—	
Diphtheria	—	—	—	—	—	
Dysentery—Amoebic	2	575	12	577	3	
Bacillary	2	88	1	90	—	
Unclassified	3	266	8	269	—	
Endocarditis—infective	—	1	1	1	—	
Enteric	—	8	4	8	—	
Erysipelas	—	5	—	5	—	
Gonorrhoea	3	3,356	—	3,359	6	Includes case in Venereal Clinic.
Influenza	1	547	5	548	2	
Kala Azar	—	—	—	—	—	
Leprosy (a) Nodular	1	120	1	121	—	
(b) Anaesthetic	—	325	1	325	—	
Malaria (a) Tertian benign	—	886	—	886	—	
(b) Quartan	—	382	—	382	—	
(c) Subtertian	5	2,737	24	2,742	1	
(d) Chronic Malaria	5	652	—	657	1	
(e) Blackwater	—	18	7	18	1	
(f) Unclassified Fever	1	1,892	4	1,893	4	
Measles	—	32	1	32	—	
Malta Fever	—	—	—	—	—	
Plague	1	1	1	2	—	
Pneumonia	3	684	85	687	5	
Rabies	—	1	1	1	—	
Relapsing Fever	—	2	1	2	1	
Rheumatic Fever	—	18	—	18	—	
Septicæmia	—	16	15	16	—	
Trypanosomiasis (Sleeping Sickness)	1	36	5	37	—	Includes both cases treated and recorded
Small-Pox	—	1,948	140	1,948	—	Includes cases in Venereal Clinic.
Syphilis (a) Primary	7	782	—	789	1	
(b) Secondary	6	1,322	2	1,328	2	
(c) Inherited	1	102	2	103	2	
Tetanus	1	25	7	26	1	
Tuberculosis	16	555	76	571	10	
Whooping Cough	—	107	—	107	—	
Yaws	5	9,576	—	9,581	3	
Yellow Fever	—	8	5	8	—	
Other Diseases	—	308	6	308	2	
Intoxications—						
Alcoholism	—	55	1	55	—	
Morphinism	—	—	—	—	—	
Other forms	—	11	—	11	—	
General Diseases—						
Anæmia	—	394	—	394	1	
Anæmia—Pernicious	—	4	—	4	—	
Diabetes	—	8	—	8	—	
Exophthalmic Goitre	—	8	—	8	—	
Gout	—	3	—	3	—	
Leucocythæmia	—	1	—	1	—	
Hodgkin's Disease	—	—	—	—	—	
Myxœdema	—	—	—	—	—	
Purpura	—	—	—	—	—	
Rickets	1	23	—	24	—	
Scurvy	—	7	—	7	—	
Rheumatism	1	87	2	88	3	
Other Diseases	—	1,069	11	1,069	10	
DISEASES OF THE NERVOUS SYSTEM.						
Neuritis	3	109	2	112	—	
Meningitis	—	24	5	24	—	
Myelitis	—	11	2	11	—	
Carried forward	71	20,518	462	29,589	69	

RETURN OF DISEASES AND DEATHS (IN AND OUT PATIENTS) FOR THE YEAR, 1925-26.

Diseases.	Remaining in Hospital at end of 1924-1925.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1925-1926.	Remarks.
		New Cases.	Deaths.			
Brought forward	71	29,518	462	29,589	69	
Hydrocephalus	—	3	—	3	—	
Encephalitis	—	1	—	1	—	
Abscess of Brain	—	2	2	2	—	
Congestion of Brain	—	12	2	12	—	
Other Diseases	—	109	1	109	—	
Apoplexy	1	10	2	11	—	
Paralysis	6	73	1	79	2	
Chorea	—	17	—	17	—	
Epilepsy	2	99	3	101	1	
Neuralgia	1	604	—	605	—	
Hysteria	—	14	—	14	—	
Other Diseases	—	311	3	311	6	
Idiocy	—	18	—	18	—	
Mania	—	104	2	104	2	
Melancholia	—	18	—	18	1	
Dementia	—	28	1	28	—	
Delusional Insanity	—	51	—	51	1	
Other Diseases	2	96	—	98	1	
DISEASES OF THE EYE.						
Conjunctivitis	4	2,242	—	2,246	—	
Keratitis	—	19	—	19	1	
Ulceration of Cornea	2	113	—	115	1	
Iritis	—	154	—	154	—	
Optic Neuritis	—	9	—	9	—	
Cataract	1	49	—	50	—	
Other Diseases	1	385	—	389	5	
Diseases of the Ear—						
Inflammation	4	735	—	739	—	
Other Diseases	—	583	—	583	—	
Diseases of the Nose	—	247	—	247	1	
Diseases of the Circulatory System—						
Pericarditis	—	12	—	12	—	
Endocarditis	—	52	9	52	1	
Valvular Mitral	—	153	13	153	—	
" Aortic	—	63	3	63	—	
" Tricuspid	—	3	—	3	—	
" Pulmonary	—	30	—	30	—	
Arterial Sclerosis	—	22	—	22	—	
Aneurism	—	25	2	25	1	
Other Diseases	6	136	13	142	3	
Diseases of the Respiratory System—						
Laryngitis	1	235	—	236	—	
Bronchitis	9	6,268	10	6,277	7	
Brocho-pneumonia	—	194	14	194	—	
Abscess of Lung	—	—	—	—	—	
Gangrene of Lung	—	—	—	—	—	
Emphysema	—	32	1	32	—	
Pleurisy	2	262	7	264	2	
Empyema	1	15	2	16	—	
Other Diseases	—	661	10	661	10	
Diseases of the Digestive System—						
Stomatitis	—	308	—	308	—	
Caries of teeth	—	1,318	—	1,318	—	
Glossitis	—	140	—	140	1	
Sore Throat	—	221	—	221	—	
Inflammation of Tonsils	—	304	—	304	—	
Gastritis	—	543	—	543	2	
Ulceration of Stomach	—	12	1	12	—	
Hæmatemesis	—	7	—	7	—	
Dilatation of Stomach	—	16	—	16	—	
Carried forward	114	46,659	564	46,773	118	

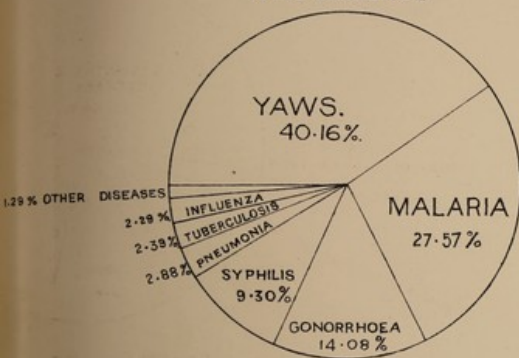
RETURN OF DISEASES AND DEATHS (IN AND OUT PATIENTS) FOR THE YEAR, 1925-26.

Diseases.	Remaining in Hospital at end of 1924-1925.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1925-1926.	Remarks.
		New Cases.	Deaths.			
Brought forward	114	46,659	564	46,773	118	
Stricture of Stomach	—	2	—	2	—	
Dyspepsia	1	781	—	782	—	
Enteritis	1	510	13	511	3	
Appendicitis	—	71	—	71	—	
Colitis	—	66	—	66	—	
Ulceration of In. estine:	—	—	—	—	—	
Sprue	—	—	—	—	—	
Herni.	10	514	13	524	16	
Diarrhoea	4	1,972	1	1,976	2	
Constipation	—	6,696	—	6,696	3	
Colic	—	396	—	396	1	
Hæmorrhoids	—	319	1	319	2	
Pancreatitis	—	—	—	—	—	
Hepatitis—Acute	—	195	4	195	3	
Abscess of Liver	2	53	5	55	1	
Cirrhosis	2	41	13	43	—	
Jaundice	2	73	3	75	1	
Peritonitis	—	40	8	40	—	
Ascites	1	34	1	35	—	
Other Diseases	11	422	23	433	4	
Diseases of the Lymphatic System—						
Splenitis	1	618	1	619	—	
Inflammation of Lymphatic Gland	5	243	—	248	2	
Suppuration of Lymphatic Gland	1	268	6	269	2	
Lymphangitis	—	45	—	45	—	
Elephantiasis	—	49	—	49	—	
Other Diseases	—	88	11	88	—	
Diseases of the Urinary System—						
Acute Nephritis	1	170	22	171	5	
Bright's Disease	—	122	1	122	—	
Pyelitis	—	11	1	11	—	
Calculus	—	11	—	11	—	
Renal Colic	—	19	—	19	1	
Cystitis	1	228	2	229	2	
Vesical Calculus	—	2	—	2	—	
Suppression	—	3	—	3	—	
Hæmaturia	1	54	—	55	1	
Chyluria	—	1	—	1	—	
Other Diseases	4	43	5	47	1	
Diseases of the Generative System—						
Male Organs:—						
Urethritis	—	146	—	146	1	
Gleet	—	32	—	32	—	
Stricture	6	307	6	313	9	
Prostatitis	—	35	—	35	4	
Soft chancre	6	407	—	413	—	
Condyloma	1	8	—	9	—	
Inflammation of Scrotum	—	30	—	30	—	
Hydrocele	7	152	—	159	3	
Orchitis	5	183	—	188	1	
Epididymitis	—	106	—	106	2	
Abscess of Testicle	—	12	—	12	—	
Other Diseases	10	456	3	466	10	
Female Organs:—						
Ovaritis	—	30	—	30	—	
Ovarian Cyst	—	10	—	10	—	
Endometritis	—	323	1	323	—	
Displacement of Uterus	—	35	—	35	—	
Vaginitis	—	76	—	76	1	
Amenorrhoea	—	64	—	64	—	
Dysmenorrhoea	—	130	—	130	—	
Menorrhagia	—	48	—	48	—	
Leucorrhoea	—	73	—	73	—	
Abortion	1	81	—	82	—	
Carried forward	198	63,563	708	63,761	199	

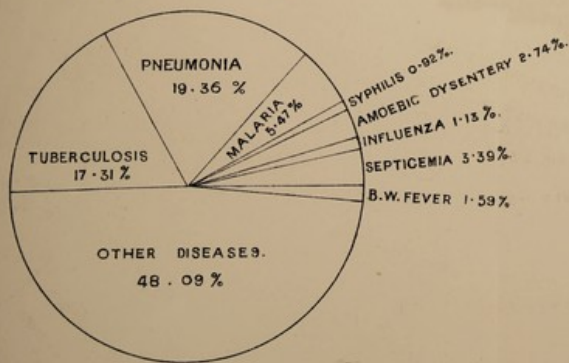
Includes cases
in Venereal
Clinic.

FOUR DIAGRAMS REPRESENTING IN GRAPHIC FORM THE INCIDENCES OF INFECTIONS AND OTHER DISEASES.

INFECTIVE DISEASES
TOTAL INCIDENCE.



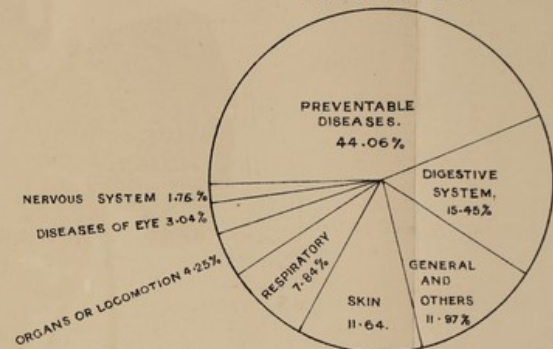
TOTAL DEATHS.



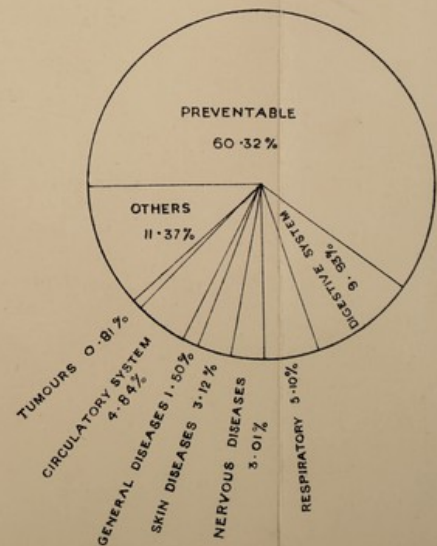
* THE DISEASES CLASSED AS PREVENTABLE ARE

- (A) INFECTIVE DISEASES
- (B) INTOXICATIONS.
- (C) SCABIES.
- (D) INJURIES
- (E) POISONS.
- (F) HELMINTHS.
- (G) INSECTA.

GENERAL SYSTEMIC & PREVENTABLE *
DISEASES.
TOTAL - CASES.



TOTAL DEATHS.





RETURN OF DISEASES AND DEATHS (IN AND OUT PATIENTS) FOR THE YEAR, 1925-26.

Diseases.	Remaining in Hospital at end of 1924-1925.	YEARLY TOTAL.		Total Cases Treated.	Remaining in Hospital at end of 1925-1926.	Remarks.
		New Cases.	Deaths.			
Brought forward	198	63,563	708	63,761	199	
Delayed Labour	—	39	6	39	2	
Post partum Hæmorrhage	—	12	1	12	—	
Retained Placenta	—	7	2	7	—	
Premature Birth	—	4	—	4	—	
Puerperal Septicæmia	—	12	6	12	—	
Mastitis	—	78	—	78	—	
Abscess of Breast	—	22	—	22	—	
Other Diseases	3	215	13	218	13	
Diseases of Organs of Locomotion—						
Osteitis	3	379	—	382	1	
Arthritis	3	754	1	757	4	
Spondylitis	—	4	—	4	—	
Bursitis	1	81	—	82	1	
Other Diseases	21	2,921	4	2,942	16	
Diseases of Connective Tissue—						
Cellulitis	9	612	1	621	9	
Abscess	7	1,524	5	1,531	11	
Elephantiasis	2	34	1	36	4	
Other Diseases	1	243	—	244	1	
Diseases of the Skin—						
Urticaria	1	159	—	160	—	
Eczema	—	281	—	281	—	
Boil	2	735	—	737	—	
Carbuncle	—	66	1	66	—	
Herpes	—	110	—	110	—	
Psoriasis	—	6	—	6	—	
Oriental Sore	—	—	—	—	—	
Tinea	—	656	—	656	1	
Scabies	—	560	—	560	—	
Acne	—	129	—	129	—	
Prickly Heat	—	97	—	97	—	
Ulcers	95	8,227	25	8,322	107	
Other Diseases	—	835	1	835	6	
Injuries (General)	21	1,369	33	1,390	24	
Injuries (Local)	75	9,300	39	9,375	67	
Surgical Operations—						
Major	—	1,376	5	1,376	—	} Not included ed in totals.
Minor	—	460	—	460	—	
Tumours	9	291	7	300	5	
Malformations	—	40	—	40	—	
Poisons	—	154	1	154	—	
Parasites Animal—						
Protozoa	—	27	—	27	—	
Trematoda (Flukes)	5	114	—	119	1	
Others	—	4	—	4	—	
Cestoda—						
Tænia Solium	—	384	—	384	—	
Tænia Seginata	—	711	—	711	—	
Others	—	—	—	—	—	
Nematoda—						
Ascaris	—	394	—	394	—	
Tricocephalus Dispar	—	1	—	1	—	
Trichina	—	5	—	5	—	
Dracunculus	11	1,858	—	1,869	14	
Filariasis	—	19	—	19	—	
Strongylus	—	—	—	—	—	
Ankylostomiasis	—	184	7	184	3	
Oxyuris	—	71	—	71	—	
Others	—	8	—	8	—	
Insecta—						
Myiasis	—	6	—	6	—	
Others	—	138	—	138	—	
Totals	467	97,143	862	97,910	489	

APPENDIX A.

ANNUAL REPORT OF THE MEDICAL RESEARCH INSTITUTE, ACCRA.
FROM APRIL, 1ST 1925 TO MARCH 31ST, 1926.

Staff.—It is gratifying to be able to state that our Staff has been considerably augmented, and now consists of:—

1. The Director—Dr. W. A. Young.
2. Senior Pathologist—Dr. A. S. Burgess.
3. Pathologist—Major C. M. Ingoldby, R.A.M.C.
4. Assistant Pathologist—Dr. Thompson.
5. Acting Assistant Pathologist—Dr. G. Robinson.
6. Medical Entomologist—Mr. A. W. Pomeroy.
7. Laboratory Superintendent—Mr. F. Leeson.
8. Laboratory Assistant—Mr. F. W. Abbott.
9. Laboratory Assistant—Mr. S. F. Woodward.

The Director, Dr. Young, was on leave from October, 10th 1925, to 14th April, 1926 during this period he took out a course of Pathology and performed Research Work the upshot of which was a paper entitled " Pathology of prolonged Emetin Administration," which was written in conjunction with Dr. Tudhope, Lecturer in Pathology, St. Andrews University, and which will appear in the 'Transactions of the Royal Society of Tropical Medicine.' Before proceeding on leave Dr. Young, made a Tsetse investigation of the Bole District, which extended from 3rd August, 1925, to 28th August, 1925, and was accompanied by Major Ingoldby.

The Senior Pathologist, Dr. A. S. Burgess, returned from leave 22nd July, 1925, and acted as Director from 10th October, 1925, to 10th March, 1926.

The Pathologist, Major Ingoldby, was seconded as Pathologist, from the Royal Army Medical Corps, on 24th October, 1925. In addition to his visit to the Bole district mentioned above he made tsetse investigations in the Ho district from 2nd October, 1925, to 7th October, 1925; in the Oda district from 16th November, 1925; to 8th December, 1925; and in the Northern Territories, from 18th December, 1925, to 15th January, 1926.

On February, 20th 1926, he opened and took charge of the Sekondi Laboratory.

It is a pleasure to be able to record at last the opening of this Laboratory. Its position in relation to Takoradi, Tarkwa, and of course Sekondi, should be of great use to these communities.

The Assistant Pathologist Dr. Thompson.

Dr. Thompson, has been assistant in Bacteriology to Professor Tulloch, at St. Andrews University for the past two years. Though appointed he will not take up his duties for some time as he is at present taking out a course at the London School of Tropical Medicine.

The Acting Assistant Pathologist—Dr. G. Robinson.

Dr. Robinson, has been seconded from the Medical Staff to act as Assistant Pathologist. If this arrangement continues to be suitable he will be definitely appointed at the end of two years.

The Medical Entomologist—Mr. A. W. J. Pomeroy.

Mr. Pomeroy, late Senior Entomologist, in the Agricultural Department, Nigeria, was transferred to the Gold Coast and took up his duties in December, 1925. His appointment was made on the advice of Dr. Guy Marshall C.M.G., of the Imperial Bureau of Entomology.

The Laboratory Superintendent—Mr. F. Leeson, returned from leave 13th May, 1925, and had Local Leave 8th February, 1926, to 28th February, 1926.

The Laboratory Assistant Mr. F. W. Abbott, was on leave from 23rd May, 1925 to 28th October, 1925.

The Laboratory Assistant Mr. S. F. Woodward, arrived 28th October, 1925, and was sent for duty to Sekondi, on the 13th February, 1926.

TSETSE FLY AND TRYPANOSOMIASIS.

This is a brief epitome of a report sent to the Secretary of State, is the third on the same subject, and completes the history of the Surveys for a whole year, and is a continuation of the two reports incorporated in the Annual Reports of the preceding two years.

The first Report was for the end of the dry season, the second for the period at the end of the rains, and the third which is now given, for the middle rains.

The route covered was Kumasi—Ejura—Kintampo—Whala or Weila—Bamboi—Bwe—Banda Nkwanta—Wasipe—Bole, and back.

The season of the year was August. Heavy Rains were frequent and the rivers rising. In a fortnight the Volta rose 12 feet. The type of country is described in the Annual Report for last year and is mainly Orchard Bush.

Five species of Tsetse Fly were caught *G. Palpalis*, *tachinoides* Morsitans—*Longipalpis*—*Fusca*. Compared with the seasons March, and December, the "Fly" was greatly increased.

Game was plentiful though difficult to approach. Roan—Hartebeeste—Reedbuck—Diuker—Water Buck—Warthog—Hippo Bush cow and, I believe, occasional Elephant.

The spotted hyæna was every where common.

The population in the Bamboi—to Bole district is about 1 per square mile.

As 223 miles were covered on foot a good idea of the intensity and range of the various species was obtained.

One feature was noteworthy. Tsetse appeared to bite at any hour of the day or night. We were badly bitten by *G. Longipalpis* at 7 p.m., one night and to be bitten by any species an hour or so before dawn was a common event, especially if the grass on which they were resting was disturbed.

As far as Bwe the state of things was as reported before, except for the greater intensity of the "Fly".

In connection with the *Tachinoides* Breeding ground at Bwe the following is quoted in full from the report.

"On the river the "fly" was very abundant, and very hungry, both *G. Palpalis* and *Tachinoides*, about in equal numbers but female predominated.

I carefully examined the *Tachinoides* breeding grounds which gave such a good yield last December, and no pupæ nor cases were found and the sand was moist, even though the river was below the level of the sand, and the dampness was not due to actual rain. It was due to subsoil drainage from the high banks, and the fact that the river was rising.

In my second Report I suggested that one of the reasons for the tsetse fly being controlled was due to the possibility of the emergence of the fly from the pupa being limited in time *i.e.*, the conditions for suitable breeding results were curtailed. From observations it would appear that the pupation of the tsetse varies directly as the rise and fall of the river.

In February and March, the river is at its lowest—the shade from the trees is poor and the grass is either ready for burning, or has been burnt.

From that time the river rises and falls slowly but is always a little higher than before. Towards June, Tornadoes far North, and locally, occur, and the river may rise several feet in a few hours—and again decrease, but the *Tachinoides* breeding ground may have been covered or else the subsoil water has made the sand wet.

In early August the river is rising steadily and a big rain will raise it a foot in one night. Apart from this the sand remains wet above the water line. In late August the river will have risen 12 feet—the sand is covered, and a month later the river will have probably risen another 20 feet—and will overflow its banks, to possibly a mile on each side. When the river subsides muddy clay is left on the banks, which hardens as it dries, and thus renders most of the banks unsuitable for breeding. Here and there sand is left and if shaded suitably, pupation results. In December the river is as at the beginning of August with this difference—drainage has ceased from the banks, *i.e.*, no subsoil water—hence the sand dries—the shade is good, and pupation can occur. In December last in a few square yards I got nearly 100 pupæ of *Tachinoides* and 1 of *palpalis*, and only a few empty cases. In March none were got because possibly of the effects of the Harmattan, the burning of the grass and the lack of suitable shade, also the game appear then to go to more suitable feeding grounds. Thus it would appear that allowing breeding takes place most of the year, suitable pupation grounds along the river appear to be available only from say October to January, or about at most four months of the year. The accompanying graph will explain possibly better than these words. Needless to say this probably does not represent all the factors for or against pupation nor may it be at all accurate for other parts of the bush around, but it would appear to give some explanation why pupæ are difficult to obtain on the river banks everywhere in Ashanti".

There is a big Morsitans Belt at Wasipe—one hundred flies were dissected and showed 16 per cent infected with *T. congolense* and 12 per cent with *T. vivax*.

Three morsitans pupal cases were found here, but no pupæ.

"I made one interesting discovery. To drive off the fly we were using small branches. It was noticed that the fly rarely moved unless actually touched.

It struck me that this was natural. A moving animal would pass through grass and the fly would ignore the grass therefore this fact might be used to catch the fly.

By covering the hand with a big leaf and approaching quietly one could put the leaf easily on top of the fly and so secure it. Evidently Tsetse flies do not fear the colour green.

This may be of use for trap work."

CONCLUSIONS.

The North Western side of the Gold Coast is undoubtedly the home of Tsetse flies of several species.

2. The intensity of the "fly" varies enormously throughout the year.

3. It is suggested that certain factors are at work which prevented the tsetse in most areas running riot. The rise and fall of the Volta is suggested as one factor.

4. A main camp at Bwe and subsidiary ones at Wenchi and Wasipe might be the mean of obtaining useful information as to the control of the "fly".

5. The tsetse-fly is moderately highly infected with *T. congolense* and *vivax*.

6. The tsetse is not afraid of the colour "green" as represented by leaves or grass.

7. Flies infected with human trypanosomiasis are fortunately scarce and the impression prevails on one, that one infected fly may infect many people especially if carried into a village.

Major Ingoldby made visits to the Oda and Ho districts and elicited the following facts.

SUMMARY.

Fly belts.—"Three well marked fly belts were observed. The first in moderately dense savannah forest of which the ground at this season is swampy and sodden, roughly between 18 and 30 miles from Senkyi (Senchi) on the road to Ho.

The species in this belt are *G. longipalpis* and, less common, *G. fusca* and *G. palpalis*.

The second covers the approaches to, and the lower slopes of the Kpeve pass; the vegetation here is denser than in the first areas, and more of the monsoon forest character. Ground soaked, many small streams. Species, *G. palpalis* and *G. longipalpis*.

The third is in the neighbourhood of the R. Todschie, on the Ho—Kpeve Road. Much of the country hereabouts is of light savannah forest, more or less open grass country with palms (*B. flabellifer*), but the fly were thickest in a patch of rather dense bush.

Species *G. longipalpis* and a few *G. palpalis*.

It is not of course to be inferred that fly are confined to these areas—the only ground covered in which no fly were found was (1) the immediate vicinity of Ho (2) the Ho—Palime—Kpandu road and (3) the dry country in the south east corner of the Ho District.

SEXES.

It was noticeable that while of the *G. longipalpis* taken the sexes were about equal in numbers, in *G. palpalis* the males outnumbered the females in the proportion of 15 to 2.

Oda District.—17-11-25 to 7-12-25.

<i>Species collected:</i>	<i>Glossina palpalis</i>	..	80	76
	" <i>pallicera</i> *	..	16	12
	" <i>fusca</i> ..	..	1	3
	" <i>nigrofusca</i>	..	1	0

*20 *G. pallicera* dissected, no trypanosomes found.

G. pallicera rather unexpectedly abundant. Found in company with *palpalis* along newly made cuts through thick 'bush' in the close vicinity of the River Birim. Usually seen in the hotter hours of the day sitting on small branches lying across the road. Commonly branches of 2"—3" diameter with pale, smooth, shiny bark were chosen, in fact after a time one could spot a branch ahead on which a *G. pallicera* was pretty sure to be sitting.

They proved extremely wary and difficult to catch, flying off at the slightest movement near them, but as a rule returning in a moment or two to the same branch. This wariness is not surprising in view of the numbers of forest Scincids (*Lygosoma* spp) and of Asilid flies which frequented the same 'cuts'.

They made no attempt to bite during the day-time (I was not in their area during the cooler hours of the day). They bite at night, I had occasion to walk by night from Akim-Swedru to Apoli, following a narrow track through dense forest rarely more than a mile from the River Birim. Between 9.0 p.m. and 4.0 a.m. I myself and my carriers were occasionally bitten

by *Glossina* spp.—those captured were *G. fusca*, *G. nigrofusca*, and *G. pallidica*. The last appeared to me to give an exceptionally severe bite.

HISTOLOGICAL EXAMINATIONS :—

Two hundred and twenty-three tissues have been examined histologically this year.

They include :—Kidneys 30, Livers 40—spleen 25—Hearts 7—Brains 4—Glands 14—Lungs 18—Stomachs 5—Breasts 5—Bladder 1—Testicles 5—Instestines 4—Pancreas 2—Tumours 33—Miscellaneous 30.

Tumours.—There has appeared at various times recently somewhat erroneous statements as to the absence of malignant disease in the African native. The majority of the cases mentioned here are from the so called " Bush native " in contradistinction to the town bred educated African.

The following figures are given in detail to give an idea of the state of affairs in Accra. I advisedly say Accra since most of the material is sent from the Gold Coast Hospital, Korley Bu which can only treat a certain area of the Gold Coast.

<i>Sarcomata</i> :—		Spindle celled—back of hand	1	Spermatic cord	2	..	..	..	3
		Mixed round celled Sarcomata—ovary child 18 months	..	..	..	..	..	..	1
		Round celled Sarcomata	..	..	..	..	..	..	3
		Melanotic Sarcomata—scapular region	..	..	..	..	..	..	1
		Lympho—Sarcoma—Jaw	..	..	..	..	..	..	1
		Sarcoma of neck in Children	..	..	..	..	..	..	2
		Sarcoma in Fowl	..	..	..	..	..	..	1
		Myxomatous spindle celled Sarcoma breast	..	..	..	..	..	..	1
									—
									13
<i>Carcinomata</i> :—		Breasts :—							
		Fibro Carcinoma	..	..	..	..	..	..	1
		Medullary Carcinoma in male	..	..	..	..	..	..	1
		Spheridal Celled	..	..	..	..	..	..	1
		Epithelioma of lip	..	..	..	..	..	..	3
		Cancer of Cervix uteri	..	..	..	..	..	..	2
		Cancer of Liver—European	..	..	..	..	..	..	1
		Adeno Carcinoma Stomach	..	..	..	..	..	..	1
		Ulcerating growth of leg	..	..	..	..	..	..	1
		Malignant Papilloma Penis	..	..	..	..	..	..	2
									—
									13
<i>Other Tumours</i> :—		Simple Papilloma	..	..	..	..	..	..	2
		Fibroadenoma—broad ligament	..	..	..	..	..	..	1
		Fibroadenoma—breast	..	..	..	..	..	..	1
		Lipoma	..	..	..	..	..	..	1
		Fibroma	..	..	..	..	..	..	2
		Cysts	..	..	..	..	..	..	3
		Tumour due to F. Volvulus	..	..	..	..	..	..	1
									—
									11

One cyst of the spermatic cord was interesting in showing the presence of F. Bancrofti containing embryos.

Tubercular lesions are not uncommon. In one case sent from Kumasi, the giant celled system were very definite and the bacillus present in large numbers.

One female was of interest. She had numerous ulcerations of the Vulva. The Wassermann was negative. N.A.B. however was given on several occasions with no improvement.

A tag from one of the ulcerations was then sent for histological examination and revealed the ova of *Schistosomum hæmatobium* in large numbers.

It is possible that *Bilharzia* may account for many of these apparently venereal ulcerations.

LEPTOSPIRA IN ACCRA WATER SUPPLY.

Dr. Burgess, has been working on this subject, and the following is taken from notes made by him.

Some experiments were made in the hope of obtaining the water *Leptospira* in pure culture, but were discontinued owing to their unpromising character.

The medium used consisted of a watery emulsion of normal human fæces, as suggested by Hindle (B.M.J., July 11th 1925), and the inoculum of tap water.

A 1% emulsion was found to give the richest growth, but in a 0.25% emulsion the organisms appeared somewhat earlier.

Petri dishes were usually used. In these the *Leptospira* often appeared in as short a time as 4 days, and usually persisted for about 2 months.

Contrary to the statement of Hindle it was found that the organisms grew abundantly in stoppered bottles full to the neck, but their appearance was much delayed *e.g.*, 6 weeks.

It was found that the addition of about 0.25% agar to the medium had a favourable influence on growth. On the other hand boiling the medium, or even heating to 60°, had an unfavourable influence.

Filtration through paper and exposure to light were also unfavourable to growth. However none of these conditions alone would constantly prevent the development of the *Leptospira*.

Experiments on the influence of P.H. were in conclusive, and it was found that the medium, even when previously boiled, underwent marked spontaneous change.

Whatever the initial reaction, between P.H. 6.3 and 9, the final reaction always reached a value somewhat about P.H. 8.4, the change taking about 2 weeks.

On two occasions cooled boiled water was added to raw fæces, and no *Leptospira* appeared—showing that these organisms were not derived from the fæces.

It is of interest to note that in some cases in which raw emulsion was used, the coarse spirochaetes originally present in the fæces, multiplied considerably and in a stoppered bottle remained numerous and active for as long as 5 months.

Yellow Fever.—Our state of knowledge shows no increase in this subject. Kidneys from cases diagnosed as Yellow Fever have not shown lime casts.

Some of these kidneys were forwarded to Professor Hoffmann of Habana for his opinion. He found no lime casts and was of opinion that the condition was not that of Yellow Fever as he knows it.

He sent a short article to the *Journal of Tropical Medicine and Hygiene* March 1st, 1926, page, 69 on this matter, which please see.

Ten guinea pigs were inoculated with 5 c.c. each of blood taken from three patients diagnosed clinically as Yellow Fever.

The average temperature of the 10 pigs is shown below—also that of a control for a period of 15 days.

The blood on all occasions was taken on the 2nd or 3rd day of the disease.

No *Leptospira* was ever seen either in the human blood or the guinea pigs blood.

Leptospira Ictero-hæmorrhagica.—We have still failed to find this in the rats of Accra. Ground kidney emulsions have been examined by dark ground methods and in several instances guinea pigs have been inoculated with the material but on no occasion has any positive result been got.

Unfortunately *Mus Norvegicus* is not often sent to the Laboratory alive. The matter is still receiving attention.

Plague.—It is gratifying to state that we have dealt with no human case of plague this year, neither has a rat been examined which showed any signs of chronic plague.

The higher average temperature this year and possible higher rat immunity may explain the freedom from this disease.

During the last six months experiments have been made to determine the best method of obtaining a potent vaccine with the minimum of difficulty.

As these experiments are not yet completed no results are given just now. We expect however to be able to produce sufficient vaccine to cope with any outbreak of not too great dimensions.

POST-MORTEM EXAMINATIONS.

POST-MORTEM EXAMINATIONS.

UNNATURAL DEATHS.

Motor Car—Fractured ribs—Laceration of lung	2
Strangulation—Suicidal	3
Fracture dislocation of neck—dived from top of a tree	1
Fracture dislocation of neck—result of accidents at work	2
Gun shot wounds—perforation of lungs 1—gut 1—kidneys and liver 2	4
Fracture of Skull—hæmorrhage and laceration of brain	1
Cutlass wounds of head	1
Fracture of spleen—fall on edge of drain	1

UNATURAL DEATHS.

Drowning	8
Portion of neck—human vertebræ—drowning	1
Traumatic Cerebral Hæmorrhage	1
Concussion	1
Methylated spirit poisoning	1
Rabies 1—Inegribodies	2
Septic meningitis—fracture skull	1
Burns	2

NATURAL DEATHS.

Generalised syphilis	1
Perforated ulcers—1 Dysenteric—1 Duodenal—1 Appendix	3
Typhoid fever perforation	1
Enteritis—Beoli Septicæmia	1
Strangulated hernias 2—Intestinal obstruction (hole in mesentery 1)	3
Dysentery	4
Nephritis interstitial 3—Parenchymatous 2	5
Leprosy + Starvation	1
Cardiac failure—Toxic 1—Fatty Degeneration 2—Myocarditis 2—Senile decay 1—	8
Bronchitic 1—Post Pneumonia 1	7
Lobar Pneumonia	1
Yaws—Marasmus—Child	1
Liver—Carcinoma Primary	6
Multilobular Cirrhosis 5—Biliary Cirrhosis 1	4
Heart—aortic valve disease 1—Aneurysm aorta 2—Tubercular pericarditis 1	2
Malaria Cerebral	4
Tuberculosis general 1—lungs and pleura 3	1
Diabetes mellitus	2
Yellow Fever (natives)	1
Softening of brain—arterial thrombosis? specific lunatic.. .. .	56
Total	88

The following case is given in toto. Clinically it seemed like Weils disease but no *Leptospira Icterohæmorrhagica* could be found either microscopically or by guinea pig inoculation

Yellow fever seemed a likely diagnosis—yet the liver histologically does not suggest such a condition, hence the diagnosis was left as an acute toxæmia? cause.

Kornuna—Zaberima—N.T. aged 30, admitted 29th June, 1925, died 30th June, 1925

Symptoms.—Jaundiced—restless—certain amount of irritation—enlarged tender liver—tender and painful epigastrium—Leucocytosis 12-15,000

Nil seen in blood film or dark ground.

Urine—bile—albumen and numerous casts.

Temperature 100—102°. Pulse 80—90—Hiccough but unable to vomit.

P.M.—Well made—intensely jaundiced—tissues dry, no petchiæ seen.

Lungs congested—Liver 6½ lbs—red granite appearance.

Bile stained—congested—Gall bladder contained thick bile and was inflamed looking.

Kidneys.—Left 9½ oz. right 8 ozs.

Fatty—bile stained—stellate veins injected and marked some hæmorrhages—Capsule stripped easily.

Stomach internally—fly specks—intense congestion and submucous hæmorrhages cardiac end—numerous petechiæ.

Bladder full—centrifuged and stained urine showed no *Leptospira*.

HISTOLOGICALLY.

Kidney.—Congestion and slight hæmorrhages of tufts.

Here and there granular and cloudy swelling of tubules.

Liver.—Granular change and cloudy swelling of cells.

Here and there a fat droplet but scanty.

Round cell infiltration in portal areas.

Some change in cell lining of bile canals.

No micro—organisms seen.

Silver preparations showed no leptospira nor spirochaetes.

Condition—Acute toxæmia—cause?

BLOOD FILMS.

116 Films were sent for the presence of Malarial Parasites.

Of these 16 showed Malignant Tertian parasites in Africans.

1 in a European and 2 in Syrians.

1 Film showed a picture of Pernicious Anæmia.

7 Thick films were examined for microfilaria.

2 were positive, the species being bancrofti.

Blood counts made numbered 19.

One blood culture was made and found negative.

SEROLOGICAL TESTS.

Wassermann Reactions.—These numbered this year 759.

After completing 139 the Sachs Georgi's method was used as a control. The results were nearly always in agreement.

The Sachs—Georgi method adopted was that worked out by H. Ferguson Watson of Edinburgh (Journal of Pathology and Bacteriology Volume XXVIII No. 2 page 171). In our hands it has given very good results and is easily manipulated.

	Negative.	Positive.
Wassermann Reaction only ..	62	99
Sachs Georgi Test only ..	21	23
Combined Tests :—		
Wassermann	250	334
Sachs Georgi	246	343

It will be noted that the discrepancy is very small.

It is found that a Wassermann + = Sachs Georgi ++
 " ++ = " " +++++.

Widal Reactions.—Total number made=32.

Positive Europeans=8 Africans 9 for Typhoid—para A or B.
 Positive Natives 3 for Flexner Y 1 in 800.

WATER EXAMINATIONS.

TOTAL EXAMINATIONS=144.

	B coli in 100 c.c.	B coli in 10 c.c.	B coli in less than 10 c.c.	Negative.	Remarks.	Number Examined.
No. 1 Storage Reser- voir	2	3	—	10	—	15
No. 2 " " ..	4	—	—	4	—	8
No. 1 Final Filter ..	—	1	—	8	—	9
No. 2 " " ..	2	—	—	5	—	7
No. 3 " " ..	4	—	—	6	—	10
No. 4 " " ..	3	—	—	6	—	9
No. 5 " " ..	1	—	—	7	—	8
No. 6 " " ..	1	—	—	7	—	8
Laboratory Tap ..	18	2	—	32	B pyocya- neus in 8	52
Accra Mineral Waters	—	—	—	1	—	1
River Densu, Weshiang	—	—	1 in 0.1 c.c.	—	—	1
Kumasi Water ..	—	2	4 in	1	also 1 in 0.01 c.c.	8
Insuta Water ..	1	—	—	3	—	4
Sekondi Water ..	—	—	—	4	—	4

RATS RECEIVED FROM M.O.H. ACCRA.

	R. rattus	R. norvegicus	C. gambianus	Other species.	Monthly Total
April	19	6	189	—	214
May	10	1	218	—	229
June	51	23	216	30	320
July	50	36	166	36	288
August	25	—	136	8	169
September	29	11	95	—	125
October	64	5	102	—	171
November	60	16	102	83	261
December	214	—	158	42	414
January	27	—	105	—	132
February	9	1	128	—	138
March	14	1	102	—	117
Total 2,578.					

Examinations were made on any that seemed unhealthy in any way. This works out at about 10 per cent of the total.

No evidence of chronic plague found.

SPUTUM.

115 Sputa showed Tubercle Bacilli present in 98 of whom 2 were Americans and 1 European. 15 showed nearly pure cultures of the Pneumococcus while 2 showed the presence of Spirochaetes. It is doubtful if these spirochaetes are of any pathological significance.

URINES.

General Examinations	132	
for Bilharzia Haematobium	104	Present in 16.
Tubercle Bacillus	2	
Sugar percentage	30	
Gonococci	30	
Cultivations	1	

ULCERS SMEARS AND INFECTIVE DISCHARGES :—

Ulcers smears	= 11
Gonococci chiefly	= 23
Total	= 34

VACCINES :—

9 were made—mainly staphylococcal.

Plague vaccine is being experimented with at present and the outlook distinctly hopeful.

EXAMINATION OF FAECES.

SPECIMENS SENT FOR DIAGNOSIS AS TO TYPE OF DYSENTERY.

	European.	African.	Remarks.
Bacillary Dysentery (Microscopic) ..	1	45	3 only proved bacteriologically and by sera agglutinations
Amoebic " (") ..	3	51	E. histolytica present.
Entamoeba histolytica +(Necator americanus)	—	1	
Entamoeba " + Ascaris ..	—	10	
Entamoeba " + Schistosomum haematobium	—	1	
Entamoeba " + Flagellates ..	—	5	
" " + Strongyloides larva	—	—	
Balantidium coli	—	2	
Blastocystis hominis	—	2	
Entamoeba coli	—	7	
" " + flagellates	—	2	
Flagellates—Cercomonas—Tricomonas and Chilomastix	—	15	
Negative results	—	163	

Of the 46 Bacillary Dysenteries 36 were cultivated and tested against the different Sera but only in three cases could we get complete confirmation.

As there may be something to be learnt from this experience it is given in full. The table show the results obtained here and the results obtained at home.

I had asked Dr. Burgess to forward the cultures to me at St. Andrews University.

Date.	No.	Origin.	Character.	Direct Film.	Cults, N.R.A.	Motility.	Indol.	Lact.	Gluc.	Mann.	Malt.	Dult.	Milk.
5-11-25	451	Faeces.	Blood stained mucus.	Numerous leucocytes and r.b.c.	Few colonies B. coli many colorless colns.	No Motility.	1D 0 7D	0 0	A A	A A	0 0	0 0	A Sli. A 30D Neutral

Phenol Red indicator used for sugar and milk.

Organism tested against Sera V W X Y Z Neg.

The culture reached home in good condition and was subcultured six times. Fresh new sera obtained from the Lister Institute was used for agglutination The results were.
Organism agglutinates by sera V, Y, Z 1 in 800—not at all by X but our X serum was weak with control.

Date.	No.	Origin.	Character.	Direct Film.	Cults, N.R.A.	Motility.	Indol.	Lact.	Gluc.	Mann.	Malt.	Dult.	Milk.
14-12-25	503.	Faeces.	Liquid, blood stained mucus.	Numerous leucocytes and r.b.c.	Pure plate of colorless colns.	N.M.	1D 0 7D	0 0	A A	A A	0 0	0 0	A A 4D Neutral.

Phenol red indicator.

22-12 Organism agglutinated by Flex Y serum up to and diln of 1-50.

" not agglut. by V W X Z and Shiga serum
Patients serum agglutinates Ox Dys. Flex. Y cult. up to a diln of 1-50.
" " does not agglut. Ox Dys. Flex. V W X Z and Shiga cult.
" " " " Homologous culture.

HOME RESULTS

Sugar reactions as above.
Organism agglutinated by V Y and Z up to 1 in 800—slightly 1 in 200 W—not at all with Y (ut our X serum is weak with control).

Date.	No.	Origin.	Character.	Direct Film.	Cults. N.R.A.	Motility.	Indol.	Lact.	Gluc.	Mann.	Malt.	Dult.	Milk.
19-12-25	508	Faeces.	No mucus.	Many leucocytes.	B. coli and many colorless colns.	N.M.	1D 0 7D	0 0	A A	A A	A Sh A Sli	0 0	A Sli. A 14D A

Phenol red indicator

29-12 Organism agglutinated by Flex Y serum to 1-50, trace 1-125.
 " negative " V. W X Z and Shiga.
 Patients serum agglut. Homologous cult. 1/25 }
 " " Ox Dys. Flex. W cult. 1/50 } Negative in higher dilns
 " " " " Y " 1/125 }

HOME RESULTS-Sugar and Serum reactions as for 503.

Publications.—While on leave I collaborated with Dr. Tudhope, Lecturer in Pathology St. Andrew's University on the " Pathology of Prolonged Emetin Administration ". This article will be published in the Transactions of the Royal Society of Tropical Medicine.

The conclusions arrived at are as follows :—

1. Emetin is a protoplasmic poison, acting equally on all tissues, heart failure being the actual cause of death.
2. It is advisable to give as small a dose as is possible for the treatment of the Dysentery in cases where the heart or kidney are affected.
3. In a normally healthy individual it would appear advisable also to limit the number of doses as far as is possible and not to give within the 24 hours more than 1 grain of the drug.
4. The weakness produced after emetin administration is probably the result of the direct action of the Emetin on the muscle protoplasm.
5. Neuritis (of the type of alcoholic or arsenical neuritis) is not produced by Emetin but a motor fibre degeneration (as in lead palsy) is a possibility.

MISCELLANEOUS.

Under this heading are 60 items.

They include medico-legal findings such as the presence of blood—spermatozoa etc. Van den Berghs Reaction was done on several occasions.

One rat showed the condition of Rat leprosy.

Animal examinations were occasionally made which had nothing to do with ordinary Pathological work.

Special mention must be made of a head of cattle grazing near Korley Bu. They were dying by twos and threes daily.

Examination showed the condition to be Piroplasmosis no less than three varieties being found, *i.e.*, *P. bigeminum*, *P. parvum*—*P. mutans* and *Anaplasma marginale*.

Two dogs were kept under observation for rabies—Both were negative.

Other items were pleural effusions—cerebrospinal fluids—liver abscesses.—Leprosy smear and scrapings.

Mr. Leeson has kept all our instruments and steel hypodermic needles etc., in 0.2 per cent (1 in 500) Potassium Bichromate solution with excellent results, no rusting occurring at any time.

It again behoves me to put on record the loyalty and energy of the Staff both European and Native.

W. A. YOUNG,
Director, Medical Research Institute

APPENDIX B.

YELLOW FEVER AT ACCRA, SEPTEMBER, 1925.

THE CASE OF MR. ALEXANDER DRON.

Mr. Dron, a mechanic employed by the firm of Bartholomew & Co. Ltd., lived with three other European employees of the same firm at Adabraka, some hundred yards to the West of Nsawam Road. He was in his second tour of service and had completed eighteen months residence. He had not been inoculated against yellow fever, and was suddenly taken ill about 9 a.m. on the 2nd of September. It was originally stated that the illness commenced at 9 p.m. the previous day, but this turned out to be an error.

Mr. Dron enjoyed very good health during his stay on the Gold Coast. On the evening of September 2nd he enjoyed a whisky and soda and a cigar, and went to bed after a good dinner, and slept well. Awakening on September 2nd, he did not feel quite himself, took some salts and went to work. About 9 a.m. while going for his mail he was suddenly overcome by great weakness and fell in the street. He went straight home and to bed, where he was seen at 11 a.m.

He then looked very ill. His expression was anxious. Face flushed a deep red, the flush extending over chest down to the waist line. The eyes were glistening, the conjunctivae injected, and the sclerae showed a very faint icteric tint. The tongue was clean. Pain behind the eyes, with intolerance to light. Temperature 101.4, P.80. He was immediately removed to hospital and screened. Blood: no parasites and no pigment. Urine: very faintly acid, clear, no sediment, no albumin. Diagnosis: Yellow Fever. At 2 p.m. temperature 103, pulse 80. Thirty c.c. blood was taken for injection into guineapig, and 0.60 N.A.B. injected intravenously immediately after. At night patient vomited some bilious watery fluid of a faintly acid reaction and passed two loose motions, both probably the result of the salts taken earlier in the day.

Treatment: N.A.B. 0.60 gramme. Diet: water and barley water, glucose up to 2 oz. a day. Complete rest in bed.

3rd September. He slept fairly well after being dull and drowsy during the day. Temperature fell from 101.4 in the morning to 100 by night. Pulse slowing. Urine: Scanty, every acid, no albumin, cellular debris with a few granular casts suspended in a cloud of mucus. Patient complained of a dazed giddy feeling in the head, and is drowsy. Face still flushed. Icterus of Sclerae pronounced. Slight epigastric tenderness at night. There is a constant slight nausea with complete Anorexia.

4th September. Temperature falling slowly and steadily. Pulse 48 at 10 a.m. Urine scanty, dark straw, very acid, cellular debris and many granular casts suspended in mucus, Albumin a trace. Sclerae yellow. Tongue coated down dorsum, with clean red tip and edges. Patient felt much better during the day. In the evening he became very restless and jumpy, but calmed down later and had a good night's sleep. From yesterday he has been taking Sodium Citrate $7\frac{1}{2}$ grains, Sp. Chloroform, $7\frac{1}{2}$ minims, peppermint water to $\frac{1}{2}$ ounce: every 2 hours.

5th September. Tongue cleaner. Patient feels much better. His appetite is returning and he was allowed to take a little solid food. Urine still scanty: acidity less marked, presence of albumin doubtful, deposit very slight. Pulse steady at 48.

7th September. Urine from yesterday clear, no albumin no sediment. Pulse continues at 48. Patient is taking small quantities of solid food and sitting up a little.

8th September. Constipation since day of admission, probably the cause of a slight rise of temperature to 99.8 today, relieved by a small dose of Hockin's Seidlitz powder.

11th September. Since 8/9 improvement has been continuous and uninterrupted. Urine copious and normal. Icteric tint of Sclerae disappearing. Discharged to-day.

26th September. Patient went on leave, in perfect health. The Icterus had completely disappeared, and he had resumed his ordinary duties for a week before sailing.

The diagnosis was founded on the Prostration, the facies, the relation of temperature and pulse, and the remarkably early appearance of icterus, and confirmed by the subsequent progress of the case.

The albuminuria was very slight and transient, a trace being found in the specimens passed on the third day. It was demonstrated by the heat test with the addition of dilute acetic and hydrochloric acids. No reaction was obtained with Heller's test. A trace like this easily escapes observation unless every specimen of urine passed within the first few days is carefully tested. Albuminuria is important AS A SIGN OF THE ACUTE NEPHRITIS accompanying even mild cases of yellow fever, and the latter may often be demonstrated earlier and with certainty by examining the Urinary Sediment, centrifuging if necessary. In this case the urine was clear and apparently normal on the first day. Cellular debris and a few granular casts were found on the second day, the casts increasing greatly in number by the fourth day, thereafter diminishing until the disappearance of all sediment on the sixth day. It is also important to notice the extreme acidity of the urine, which in this case appeared on the second day.

Treatment. This is the fourth successive case in Accra in which N.A.B. was given, and all four cases recovered, whereas the previous four cases proved fatal. While it is so far not demonstrated that N.A.B. has a specific action in yellow fever, these results are promising. The drug apparently has no harmful effect in this disease, and is worth trying consistently until its actual value can be deduced. Three of the cases received 0.3 gramme, and one 0.6. Perhaps 0.3 for women and 0.45 for men may be found a suitable dose. While it was possible to give N.A.B. on the first day in the last case, it was given on the 3rd day in two cases, and in one (Miss E., July, 1924) on the fourth. The last mentioned case was protracted and severe, and characterised by haemorrhages from stomach and bowel (black vomit and tarry motion). I should not hesitate to give N.A.B. at any stage of the disease unless Anuria had set in and the patient were in extremis. Some cases give an impression of repeated paroxysms and remissions, e.g. that Mr. Chablis (1924) who was first seen, and admitted to hospital, on the 6th day and lived to the 11th.

The administration of glucose as suggested by Dr. Andrew Balfour is a great advance in the dietetic treatment. He suggested its use in order to maintain the nutrition and function of the liver and so avoid the setting free of (toxic) ferments. It may be given up to 2 oz. in the 24 hours. It should not be given in bulk but added as a sweetening agent to bland fluids such as water and barley water, administered frequently all in small quantities. If administration by the mouth proves inadvisable, by giving rise to increased nausea and retching, it may be given intravenously in isotonic solution (5%). The Ampoules of glucose provided for this purpose have proved very useful. The rectal administration is occasionally successful, but the bowel is often intolerant, and it is doubtful whether much of fluid, if any, is retained.

Complete rest—the patient should on no account be disturbed if asleep—is essential, and alkalies may be useful in counteracting the acidity. If given in large doses they may induce nausea and vomiting. Five to ten grains of Sodium Citrate in solution every two hours is usually tolerated.

Noguchi's Serum not yet been available for treatment.

YELLOW FEVER AT ACCRA, MAY-JUNE, 1925.

THE CASE OF MR. VESEY-BROWN.

Mr. J. S. Vesey-Brown, aged 32, Agent for the Vacuum Oil Company, Limited, was in his second tour of two months. His first tour was spent in Nigeria. He had not previously suffered from yellow fever, and had not been inoculated against it. He left Sekondi, on May arriving in Accra, May, 24th. He left Accra for Ada, on May, 25th and stayed there until May, 27th, when he started on the return journey to Accra, where he arrived on May 28th, having spent the preceding night at Akuse.

On Thursday May 28th, he felt ill after a game of rackets in the evening, having been up to that time in perfect health. On Friday he was definitely ill with fever accompanied by headache, photophobia, pain in the back and thighs, and anorexia. He was first seen at 9 a.m., on May, 30th. His temperature then was 101.4, pulse 72. His face was very flushed, a dusky red colour. Eyes shining, conjunctivæ injected. There was definite jaundice of the Scleræ and marked photophobia. Tongue coated down the middle. Twitching of tendons at wrist. Pain in back and limbs. marked epigastric tenderness, and nausea. Complete anorexia. Skin dry. Specimens of blood and urine were taken at the time and examined at the Hospital. Blood, no parasites or malarial pigment found. Urine: scanty, strongly acid, no albumin, deposits mostly cells, many of them epithelial, and few cellular and granular casts. Diagnosis: Yellow Fever. He was at once removed to the Hospital and screened.

Treatment: N.A.B. 0.30 intravenously on admission to hospital. Sodium Citrate gr. 10 in solution every two hours reduced later to thrice daily, bland liquids containing glucose.

May, 31st. he slept fairly well. The temperature had fallen to 99 by 10 a.m., with pulse 74. By June 1st, when temperature had fallen below normal he felt much better, and on this and the following day a trace of albumin was found in the urine. Definite improvement set in on this day and patient was able to leave hospital recovered, though still weak, on June 6th, when he sailed for Freetown. On June 6th a faint icteric tint of the scleræ was still present.

The case was one of moderate severity and recovery rapid. The following symptoms call for special note :

The facial aspect : The dusky flushing of the face was very marked and still present to a lesser extent on May, 31st.

Photophobia, was very marked and persisted up to May, 31st. Mr. Baker, with whom patient was staying, stated that on May 29th, he found Mr. Vesey-Brown " hiding " in a darkened room.

Scleral Jaundice : This was present when first seen and increased up to June 1st. It was still present on discharge from hospital.

Faget's sign :—present when first seen. The pulse continued to fall in frequency for some days, the lowest recorded 52.

Epigastric tenderness and nausea :—these were marked, and the first persisted up to June 3rd. There was no vomiting.

Urine :—This remained strongly acid up to June, 6th when the reaction had become alkaline and the urine contained a deposit of phosphates. Albumin was present on June 1st and 2nd, but only a trace : no reaction was obtained by Heller's test (Nitric acid), and only an opacity with heat followed by acidification with dilute acetic and pure hydrochloric acid. A surer indication of the nephritis present was found in the deposit, always slight in amount

On the day of admission Casts were comparatively few, most of the deposit consisting of cells. On May 31st, few cells were found, the deposit consisting mostly of fully formed granular casts. By June 2nd this deposit was much less in amount, and had disappeared by June, 3rd.

YELLOW FEVER IN ACCRA, APRIL 1925.

THE CASE OF MR. BERNARD COLEMAN.

Mr. Bernard Coleman, aged 39, Assistant with F. & A. Swanzy Ltd., Nsawam, was admitted to the European Hospital, Accra at 9 p.m., on April 26th, 1925, suffering from yellow fever.

He gave the following history : In the Colony five years, four months this tour. Was quite well up to Thursday April 23rd, played tennis in the evening and went home and to bed feeling quite normal.

Sudden onset of " dry " fever at midnight. He had a violent temporary headache, feeling " as if horns were growing out of his temples ". Pain across stomach. Eyes very sensitive to light. He took 20 grains of quinine on Friday, and ten on Saturday.

He was drowsy the whole time and slept a good deal.

On Sunday he vomited twice, and feeling no improvement came into Accra, in the evening, and was admitted to hospital.

With commendable presence of mind Mr. Coleman, brought in with him two glass preserve jars containing his urine and vomit, which made an immediate diagnosis possible. The vomit was a reddish watery fluid containing a small deposit of black grumous matter (black vomit). The urine was very acid and albuminous (deposit after boiling and acidification with dilute acetic acid followed by pure hydrochloric acid, and contained some cellular deposit with a few hyaline and granular casts.)

On admission he looked very ill. The eyes were injected and slightly jaundiced. Faget's sign present (Temperature 100.2, pulse 68.) Tongue coated, clean at tip and edges. Diagnosis : Yellow Fever.

Treatment : N.A.B. 0.30 grm. one hour after admission. Fluid diet, including glucose in solution.

By April 28th, (the 6th day of the illness) the temperature fell to normal being succeeded almost immediately by a rise to 100.2 after which there was a gradual subsidence with return to normal by May 2nd, when convalescence set in.

Patient rapidly improved and was able to proceed home on leave a week later, sailing by the Abinsi on May 9th.

The urine was scanty on admission, and on April 29th, only 6 ozs were passed. Albumin lessened steadily and was last found on May 1st, by which time the urine was becoming copious. Cells and casts were present up to April 28th

Jaundice : this was noticeable only in the Scleræ, which became a bright yellow, and persisted up to the day of discharge when a delicate lemon tint of the Scleræ was still perceptible

Anorexia and epigastric tenderness persisted for some time, and when patient was beginning to take solid food there was still a definite disinclination to take tea, normally his favourite beverage.

Headache persisted up to 28/4 when temperature dropped to normal, and did not reappear

Mr. Coleman stated that he was vaccinated against yellow fever 2 years ago. According to Noguchi's observations on guinea pigs and man, vaccination appears to confer immunity for a period of only six months. This was a case of moderate severity, and it is possible that the effects of vaccination may have persisted to some extent.

After seeing many fatal cases of yellow fever, I have come to the conclusion that the administration of N.A.B. (0.30 or 0.45), is advisable as the disease is Spirochaetal (Noguchi), and it should be given as soon as possible and regardless of the time the patient has been ill, unless he is obviously convalescent. The duration of some cases and their course seem to suggest that repeated intoxication from the virus is possible (comp. case of E. Chablis, who came under observation on the sixth day, and died on the eleventh).

There was no call for intravenous administration of glucose in this case, as fluids including small quantities of glucose were freely taken. Glucose by the rectum does little good. A glucose enema in this case was not retained, and in any case there is little chance of absorption owing to the irritable condition of the bowel.

G. E. H. LE FANU,
Medical Specialist,
31st May, 1925.

APPENDIX C

CHRONIC MALARIA AND MANIA.

Chronic Malaria Infections.—The reference is particularly with regard to infections with *P. Falciparum*—as the cause of series of perversions of consciousness, leading ultimately to maniacal outbursts, does not appear to be recognised, or to have received the attention it deserves.

The recognition of the potentialities in this direction, of a chronic malarial infection, is of prime importance to Medical men practising in the Tropics, and particularly in West Africa, where the percentage of malignant infections is so high.

In a country where Malarial infection amongst natives is perhaps of nightly occurrence and where the malarial parasite is so readily demonstrable, it is particularly difficult to implicate the malarial parasite as the cause of an obscure condition which afflicts a relatively small proportion of the number infected, and which in its course is practically symptomless, or at any rate, lacks those gross objective signs and symptoms which will stimulate the native sufferer to seek medical aid.

The mere demonstration of a crescent parasite in the blood of a patient so suffering, is obviously insufficient proof that the condition is due to the presence of such parasites in his blood, more information may perhaps be obtained from the results of treatment, and it is to the results of treatment in the accompanying notes of cases that it is desired to draw attention:—

Case I Bathurst 1913.—E.T. a Police Constable sent up for examination and certification as a lunatic.

It was alleged that the patient was incapable of understanding orders issued on parade or at other times, had failed to carry out orders given him by his superior officers and was looked upon as a lunatic by the entire force and made the butt of numerous jokes by his fellows.

On admission he was excited and incoherent, attempting violence to himself and others, needing a special guard. There were marked tremors of facial muscles, hands, tongue, and staccato speech.

Mental condition much impaired, could not maintain any mental effort, appeared just aware of the presence of his wife but shewed no interest in her. Temperature on admission normal. Blood examination proved negative to Malaria. Treatment Sedatives *e.g.*, Bromides and Chloral. Subsequently with the abatement of the initial symptoms Easton's Syrup was given.

Temperature remained normal for 5 days—then varied between 98.4 and 99 rising suddenly on the 21st day to 102 falling to normal the following day, after which it oscillated between 98.4 and 99—up to time of discharge—the 38th day.

Blood examined a week after admission again proved negative.

On the 21st day the patient appeared to be rather restless and excitable and I was urgently summoned in the afternoon; he was violent and incoherent, had eluded the guard, and had got out of hospital, but was pursued and captured on the roadway. His temperature was 101, rising—it reached 102 later.

A third blood examination at this period revealed, after prolonged search, one crescent parasite—the first definite evidence of a malarial infection.

As the patient rejected both food and medicine by mouth Quinine by intramuscular injection was administered and continued for a period—The patient now began to make rapid progress. The tremors of tongue, facial muscles and hand disappeared, appetite improved, he became calm, coherent in speech, shewed an interest in and conversed with his wife, shewed obvious affection for, and played with his children. His mental condition shewed marked and definite improvement.

He was able to recall events which occurred prior to his admission to hospital but was lazy regarding his actions whilst in hospital. He was discharged on the 38th day after admission, strongly advised to continue Quinine. His mental condition on discharge though considerably improved, nevertheless shewed evidence of definite impairment, this with continued treatment, there was every reason to believe, would gradually be overcome.

Remarks on the case I.—The mental impairment which culminated in an attack of acute mania was associated with very scanty crescent parasites in the blood.

2. The almost immediate, and decided benefit following the vigorous administration of Quinine encourages the belief that the condition was due to the Malarial infection and that the presence of crescent Parasites was not an accidental occurrence in a mentally afflicted patient.

3. That the condition was a Malarial one, was not disclosed till after prolonged examination of blood taken on three separate occasions.

4. The condition is not necessarily associated with clinical evidence of active malaria as indicated by temperature, &c.

5. The condition appears to be a toxic one, having no relation to the number of parasites present (vide a case of Masked Malaria reported by me and published in the *Lancet* 22nd January 1916, page 211 in which 690 crescent parasites were counted during the search for 100 Leucocytes, the case shewing no symptoms beyond a slight Gastritis, and no temperature).

Case II Kibi, Gold Coast Colony 1914.—A well developed adult male about 42, an alleged lunatic brought in handcuffed, sent in by the Chief of an outlying village to the District Commissioner, and by him referred to me for certification. It was alleged that the patient had suddenly "gone mad" and, for no apparent reason had assaulted some people in the village.

Patient was wild eyed, incoherent and throwing his manacled hands about in spasmodic jerks from the shoulder.

He had obviously put up a strenuous struggle before he had been overcome and handcuffed. There was a contused wound over the left eye and several abrasions on the back.

He refused to reply to any question put to him—rather, he did not seem to appreciate the fact that questions were being put to him, he kept turning his head from side to side looking into the space surrounding him, just as though he was scanning people around him and expected violence from them. His movements were choreic, purposeless, and he was constantly shifting his feet and his position. Temperature 99. Examination of blood revealed one crescent parasite after prolonged search.

He at first refused to take Quinine but after a couple of hours was persuaded to take it by mouth, the treatment with Quinine was pushed during a 10 days period of observation, at the end of which time the patient was brought before the District Commissioner, who noting the extraordinary change in the man's demeanour remarked "Good Lord is this the same man?" The patient was quiet rather reserved, but clearly in possession of all his faculties. His memory for past events was unimpaired. He did not quite appreciate what the "Court Palaver" was about.

Remarks on the case.—1. As in case I. An attack of acute mania associated with the presence in the blood of one crescent malarial parasite.

2. The rapid and satisfactory response to treatment with Quinine appears to suggest an intimate connection between the condition of the patient and the infecting parasite.

3. The severity of the symptoms out of all proportion to the number of parasite seen in the blood.

4. Clinical evidence of active Malaria—as evidenced by temperature, slight or nil.

Case III Saltpond, Gold Coast Colony, 1923.—Hausa man, young adult about 26 years of age sent to hospital by the Police, for report as to mental condition. It was alleged that he had suddenly stripped himself and proceeded along the street abusing and threatening harm to those he met.

On examination patient was very quiet, appeared to be terrified at being in the hands of the Police, speech uncertain and stuttering—tremors of hands and tongue. Memory defective, tongue foul and thickly coated, breath very offensive—*Ascaris dermatitis* all over the body ova of *ascarides* plentiful in *fæces*—Blood 2 smears taken, the first was negative, the second shewed one malarial crescent parasite, with high Eosinophile count.

Treatment with Santonin and Calomel followed by Quinine. Benefit immediate and pronounced—was kept under treatment for 2 weeks and then discharged normal.

Remarks on the case.—1. The association of an imperative act with the presence in the blood of malarial crescent parasite.

2. The rapid and satisfactory response to Quinine treatment, indicating a close association between the symptoms and the presence of the malarial infection—a marked improvement in mental condition resulted during the course of treatment.

3. Clinical evidence of active malaria—nil.

Case IV, Saltpond, Gold Coast Colony, 1923.—Patient seen in the Out-Patient Department. Mentally confused, staccato speech, tremors of facial muscles, hands and tongue. History of illness for the past three years during which he took native treatment but without benefit.

Ascaris dermatitis over body, ova of ascarides in fæces Blood examination shewed 3 crescent parasites with high Eosinophilia—Quinine in mixture form was prescribed, patient refused to stay in the hospital—was lost sight of subsequent to this attendance at hospital. This case appeared to me one well on the way towards the extreme maniacal condition shewn in cases 1 and 2.

Case V Conclusions.—The above cases appear to point definitely to a close association between certain maniacal symptoms and malarial infections and it is a moot point as to whether or not there may be an association between certain criminal acts and chronic malarial infection.

The evidence of the cases mentioned above would appear to point to the possibility of such an association—the medico legal interest of such association is obvious.

The late Sir, Patrick Manson, in his lectures at the London School of Tropical Medicine instanced the case of a young British Officer stationed in Assam, who after a period of residence there was accused of misappropriation of Mess Funds, tried by Court Martial and found guilty. Shortly after this was invalided home and admitted into a Home for mental cases—Seen by Sir Patrick, subsequent to his admission the case was proved to be one of chronic malaria and appropriate treatment resulted in complete cure. The case was reported to the War Office and the Officer was re-instated. From the above it would appear :—

- (1) That Chronic Infection with the *P. Falciparum* is capable of producing a condition of emotional and nervous instability with symptoms of Neurasthenia at one end and Mania at the other.
- (2) That the stage of chronic infection may remain latent for a considerable time and that the extreme condition is brought about by some unknown determining cause, by cold, starvation, alcohol, over exertion *i.e.* just as an attack of Blackwater Fever is brought about.
- (3) That in this extreme condition, symptoms of the development of which may not be previously recognised, imperative or impulsive acts may be committed—this may explain some of the many suicides.
- (4) That when in this condition, the patient is temporarily unconscious of the acts being performed by him, that is, is temporarily insane.
- (5) That evidence of malarial infection in such cases is by no means readily obtained by microscopic examination or by clinical signs.
- (6) That such cases respond readily to treatment and that the result of treatment might afford a clue which may not be obtainable by microscopic examination.
- (7) That the parasite at this particular period appears to be the sexual form of *P. Falciparum*—Young ring forms being characterised by their absence.
- (8) That the predominant symptoms closely resemble the symptoms of incipient Delirium Tremens.
- (9) That the condition is a toxæmia.

Case V Winneba, 1925.—A well dressed Native of " Educated type, about 30 years " of age and styling himself " Professor " came into the consulting room and announced, and stutteringly remarked " Doctor it is an urgent matter, so please excuse me ". " I want you to come with me to open a certain box in my room into which I saw a young girl put some bad " juju ". " they are trying to do me harm " &c., &c., who exactly " they " were, he could not define. He was excitable, tremulous and obviously mentally confused, showed marked tremors of tongue and staccato speech.

I spoke gently to him and calmed him somewhat and then put him questions regarding his health, his initial replies appeared perfectly rational and to the point, but after a moment he would lose the thread of conversation and appear lost, then with a decided effort, would gather his wits together and try to resume the conversation, fail and would finally utter a " huh " and smile.

In reply to questions he stated he was quite well, gave no history of malarial attacks but admitted having had a sore on his penis an indefinite time previously.

His temperature at the time was 100 °, no enlargement of spleen or liver—no evidence of scars or eruptions on his body, no evidence of any scar on penis.

Blood smears were made and a dose of Bromide given and the patient was induced to agree to come up for treatment daily. Blood examination revealed the presence of 1 crescent parasite in the 3rd film examined.

The patient failed to turn up the next day and the day following. I was on the road to completely overlooking the case, when about the 6th day, he was brought up before me by the Police regarding the state of his mind. It appeared that the people he was staying with had gone before the District Commissioner, and had sworn an affidavit that the man was a lunatic and a proper person for confinement.

On arrival he was noisy and excited, shewed marked tremors of hands and tongue, staccato speech and appeared intensely annoyed at being in the hands of the Police. Temperature was still at 100°F. He refused to take Quinine by mouth and violently resisted any attempt at treatment. He was forcibly held down however and Quinine was administered intramuscularly and a Bromide and Chloral Draught given intrarectally. This was repeated daily for 4 days, at the end of which time the patient was quieter, appeared more rational and agreed to take Quinine by mouth. This was given in grs x doses twice daily in mixture form, and to ensure that he took the medicine, the patient was brought up to the hospital and the medicine given in my presence.

At the end of a week of this treatment, the patient being now calm and quite rational, he remarked that he had a complaint to make. Asked to state his complaint he said he objected to the presence of the Police—that the little boys jeered at him each time he was escorted to the Hospital and that if I could see my way to liberate him from Police control he would promise to come up regularly for treatment, particularly as he realised the benefit he had received from the treatment given him.

Having received a similar promise before I was rather suspicious and kept him a few days more under treatment, at the end of which time I certified to the Police that there did not now appear to be any need for further Police control.

He was accordingly liberated, but, Alas for trust in human promises!, the patient failed to turn up and on enquiries being made I was given to understand that he had fled the town.

Remarks on the case.—1. Here again the association of crescent parasite with severe psychic disturbances of a degree sufficient to lead people to dub the patient "insane."

2. The marked and rapid improvement under quinine, gave one every reason to believe a close association between the symptoms and malaria.

3. The rapid improvement under quinine therapy would appear to negative any idea of the condition being due to syphilis—even if his statement regarding a sore on penis were true.

SAM. L. BROHIER.

APPENDIX D.

REPORT FROM DISTRICT OF YENDI NORTHERN TERRITORIES ON EFFECT OF BISMUTH TARTRATE IN TREATMENT OF YAWS AS NOTED IN THE DISTRICT.

On 12th June 1925, 8 ozs of Bismuth Sodium Tartrate was received. Treatment with same was begun on 16th June, 1925, and the supply lasted till 11th August, 1925. In all 944 intramuscular injections were given 0.5 gr. for infants increasing according to age, up to 3 to 4.5. grs. for adults—As most of these people visit the Dispensary, get one injection and go back to their villages it is almost impossible to get a clear idea of the exact effect of any drug—There were too few cases of active yaws in the town of Yendi to give definite results although result in the town seemed to be as good as those after treatment with N.A.B. It was therefore decided to test out the results in the village of Demon. One hundred cases of active secondary yaws were collected in the village mostly amongst children between 3 and 6 years of age, too old to be carried and too young to walk into Yendi.

50 received N.A.B., injections varying between 0.1 and 0.2 grams. 50 received B.S.T., injections varying between 1 and 2 grains. A fortnight latter a second visit was paid to Demon. The children seen on the second visit had been treated with B.S.T., and no trace of yaws was found on any of them. The skin was healed and recovered with a fine furfuraceous desquamation, almost as if the children had been powdered. As the Chief could not understand why I should wish to see children who were completely cured and there were plenty more yaws in the District, I had to be content with seeing 10 Children all of whom were B.S.T., cases. He also reported that no one had been sick after the injections but that the buttocks remained painful for 3 days. There were no cases of abscess. Later on one or two cases treated, with N.A.B., were found and examined. These showed what is commonly found after a single injection of N.A.B. One child had still a solitary yaw at the back of the head. Another one over the skin another one on the buttock (the parts where yaws are most persistent.)

Cases of tertiary Yaws.—1. On the 15th June, a woman suffering from tertiary yaws—osteitis and arthritis was brought to Hospital being unable to walk. She received 3 grains of B.S.T., intramuscularly on the 16th June, and 4.5. grains on the 25th June,—At the same time she was put on the Mercury by mouth.

On the 24th August, she reported in the office well and fit and perfectly able to get about As she had been a particularly bad case she received a further small injection of N.A.B.

2. Awa, Cook, Yendi Trade School reported with Clavus being unable to walk properly and quite unable to sleep at night. Two days after first injection of B.S.T., the pain was relieved After the second injection she refused to return for further treatment as her feet were quite relieved.

3. Children with tertiary yaws contraction and marked deformity are difficult to treat. One injection is of little use, and, in their debilitated condition, repeated injections of N.A.B., tend to form abscesses. Intravenous injections are *always* impossible in these cases. Two very bad cases were brought to Hospital recently. One, a boy of about 10 with multiple ulcers and contractions of both elbows and knees was quite unable to stand and could not sit or lie down properly but accommodated himself on a small stool in a sideways position. We were enabled to give B.S.T., injections weekly as the swelling of the buttock always cleared up within the time. The case though not finished is clearing up rapidly but since he has gone on to N.A.B., the swelling remains for a longer time and the injections are therefore more irregular. Any abscess information in these cases being very undesirable.

The second case a girl of about the same age with similar though not such marked deformity due as in the first case to contraction of the hamstrings and biceps muscles and multiple superficial ulceration is now able to walk fairly comfortably to Hospital. A boy of 10 with marked bony deformity unable to walk or stand has improved so far under B.S.T. that he now comes a considerable distance to Hospital with the aid of a stick.

4. *Arsenic fast cases.*—Bawa, a boy of about 9 attended Hospital in 1923, with ordinary secondary yaws. He received N.A.B. treatment but the yaws did not yield. He returned in 1924, and again received treatment. In 1924, he received further treatment whilst I was in England. In February 1925, he was brought again, this time with considerable bony deformity. Under B.S.T. treatment the spots have cleared and the boy is much improved.

Conclusions.—In coming to a conclusion about Bis. Sod. Tartrate treatment in yaws it must be borne in mind that in using this drug I have given what I considered absolutely adequate treatment to all cases. With the vast number of people attending Hospital I have seldom been able to give adequate N.A.B. treatment. At the same time in cases where an apparently efficient dose of N.A.B., was given, treatment after one injection had frequently to be repeated. As yet I have had no complaint of recurrence of secondary yaws after B.S.T., treatment. A sufficient time has not however elapsed to prove this point.

2. The muscular reaction is less than with N.A.B., a point of great importance with the native.
3. In 944 injections there has been no complaint of abscess formation.
4. Owing to the reported different composition of Bis. Sod. Tartrate compounds and my lack of experience with this drug I have not yet given it intravenously. Should a further supply of the drug be forthcoming I should be pleased if instructions re intravenous injection could accompany same, as the intravenous method is the easier with the native.
5. I should not care to say that N.A.B., can always be replaced by Bis. Sod. Tartrate, but in the vast majority of yaw cases it is certainly a very effective substitute.

HELEN McD. HENDRIE,

Medical Officer, Yendi.

3rd September, 1925.

APPENDIX E.

THIS REPORT THOUGH NOT EMBRACING THE CURRENT YEAR IS INSERTED AS A PAPER OF CONSIDERABLE INTEREST ON A SUBJECT WHICH IS AT PRESENT ATTRACTING SPECIAL ATTENTION.

REPORT ON THE INCIDENCE OF SLEEPING SICKNESS IN THE LAWRA DISTRICT, OCTOBER, 1924.

CAUSE OF INVESTIGATION.

The D.C Lawra-Tumu, sent me (July, 1924,) the particulars of eight cases of Sleeping Sickness which had occurred in and around Lawra during the last 12 months. It was thought that enquiry would bring to light further cases of the disease, which proved to be the case, the D.C. Lawra-Tumu taking great trouble to locate all recent cases.

In view of the fact that the Lawra District was devastated by an epidemic of Sleeping Sickness some 40 years ago, it was considered important to find out if the factors favourable to epidemic prevalence still existed. With a view to investigating this point, to examining such Sleeping Sickness cases as were still alive and confirming the diagnosis and finding out the infection rate (by gland palpation) of the people in the area affected, I proceeded to Lawra.

The examination of the inhabitants of the various villages took me from September 30th to October, 11th. The D.C., Lawra-Tumu was good enough to place the service of a reliable interpreter at my disposal.

HISTORICAL I.

2. Some 40 years ago an epidemic of Sleeping Sickness (Lobe " Kingwon ") of very great severity swept over the Western Half or one-third of the Lawra-Tumu District. Before that, Sleeping Sickness had been unknown there, although it had been endemic on the other side of the Black Volta for a long time previously.

The epidemic lasted for 2-3 years, Baghari (where it started) and the Kamba River area suffering the most.

3. Very many people died there.

1. This is based mainly on a statement by one the Chief of Lawra.

2. Headman of Toori: Before S.S. arrived in this country my small father went across the river and there saw many people dying with the disease. He himself contracted the disease and returned to Toori where he died of it. This trouble had not been seen in Toori previously. Acting Headman of Metar: " S.S. was not known before the epidemic only reports of its existence from people who had crossed to the other side of the river.

3. Chief of Ggempe: All the villages round Ggempe were implicated. That is why they have so few people now. The Kamba R. area was deserted and people will not even now return to farm there. Kenwob and Tinbille are two villages which were deserted and have never been "rebuilt". Baghari Atabieri, Olibili, etc., are all instances of villages which have never recovered properly from the effects of the epidemic. At Biveri, Amburi and Dikpwe (near Lawra) as many people are said to have died during the epidemic as form the population now.

4. In the north Gegepem was affected and probably Nandow.

In the south, Burifu. Eastwards, the epidemic spread to Bazimi and probably further, and south eastwards to Buaborn and Daffiama (Wa District).

5. This statement as regards the cutting down of trees and others dying was heard from several sources.

6. If this statement is true it might account for the epidemic. The Lobes on the other side of the Volta had a lowered resistance due to lack of food, S.S. became endemic amongst them, large numbers of these people were then brought into a country where S.S. was either unknown or occurred infrequently but where tse-tse were present in large numbers. As far as rapidity of spread is concerned, comparison might be made with the introduction of the disease into Uganda.

7. It would seem that Barbatu did not kill the people ruthlessly but only took as slaves the able-bodied, leaving the old and sick. These latter used to return to the villages at night after Barbatu had left that particular village.

8. The explanation might involve several factors: 1st that the epidemic exhausted itself naturally; 2nd that the infecting strain being very virulent and the people having little immunity nearly all those infected died; 3rd, as a result of having to take refuge in a country which had scarcely enough food itself, only the healthiest would survive to return; 4th, possibly the fly began to leave the area about that time.

1. But only some 5-6 miles due north (and then 2 miles west).

2. By this is meant that they were all alive at some period during the preceding 12 months not that their sickness began then.

4. The disease extended to Lawra and surrounding villages and as far South as Burifu. At that time, there was no communication between villages at any distance as the Lobes were always fighting amongst themselves, so that nobody knew exactly how far the epidemic spread.

5. The country round Lawra was then well-wooded; there were many swamps and water lay about in the shade of trees in the rainy season. Tsetse fly ("nakwo") were very numerous, especially in certain parts. At Bweri, one would be surrounded by many of them when sitting down and talking. Shortly after the epidemic, the trees were cut down and many others (esp. Shea-butter trees) died.

6. As a result of cutting down the trees the tsetse fly disappeared. Farms were made, where before there were trees and swamp, and now-a-days there are many more farms, and all much bigger than previously. Tsetse are now practically confined to the rivers, only occasionally are odd ones found round cattle near the villages.

Before the epidemic, there was no Sleeping Sickness on this side of the River, but much on the other side. The Lobes on that side had had several bad harvests and were almost starving, so large numbers of them were sold into villages on this side especially at Baghari.

7. While the epidemic was at its height, Barbatu, on one of his slave-driving raids, invaded the country and drove the people across the River, they taking their sick with them.

8. After Barbatu retired Northwards again, the Lobes came back, but the sickness did not recommence amongst them in its epidemic form in spite of the fact that the next harvest was a bad one

PRESENT STATE OF AFFAIRS.

1. The area involved by the recorded cases of Sleeping Sickness extends from Baghari, 7 miles North-West of Lawra, to Metaw, 3 miles due South. The Black Volta River in this extent forms the base of a triangle whose sides meet at Bazini, some 9 miles East of Lawra. The area is probably some 50-60 square miles, enclosing Lawra itself and some 19 small villages of scattered compounds.

2. The Number of cases of Sleeping Sickness which occurred in this area during the preceding 12 months was 29, 6 of whom were admitted to be still alive and were seen by me. That this figure covers all the cases of Sleeping Sickness occurring in the Western part of the Lawra-Tumu, District is unlikely, since, as far as statistics regarding enlarged posterior cervical glands are reliable, it will be

seen from figures given below that the area North of the above is more heavily infected. Further, it was the area which suffered most severely during the epidemic, and it is also type of country more favourable for tse-tse fly round Lawra. Moreover, it was the only part where I saw tse-tse except on the banks of a river. Taking these factors into account, there is room to suspect that as large a percentage of cases of Sleeping Sickness must occur there as within the 6 miles radius of Lawra. Allowance must also be made for cases of Human Trypanosomiasis in which Sleeping Sickness symptoms have not developed.

(3) The 29 recorded cases are made up as follows :—

10 men	}	of these 6 are still alive.
13 women		
5 boys		
1 girl		

(4 women (all about 30 years of age)).
(2 boys (both about 10 years of age)).

The number of villages involved by these 29 cases is 14.

Lawra itself has the largest number of admitted cases, viz 6.

(4) Then comes Atabieri with 4.

8 villages calculated (on a small scale map) as being 3 miles or less from the Black Volta have had 22 cases.

6 villages, more than 3 miles from the River, have had 7 cases.

(5) The people in these 14 villages were examined by gland palpation. They numbered 2,282 adults.

(6) Of the 29 recorded cases, 23 were adults. This gives a sickness rate of 1.01%

In the 8 villages 3 miles or less from the Black Volta the number of adults examined was 891 and the number of adult recorded cases, 17. This gives a percentage of 1.9.

In the 6 villages more than 3 miles from the River the number of adults examined was 1,391, adult recorded cases 6, and percentage therefore 0.43.

Gland palpation after the first 2 days was confined to adults as the margin of error in children was too great owing mainly to dirty and infected scalps as also to the liability of children to enlarged glands from slight and unrecognised causes. In these examined, about 80% had enlarged glands. The criterion during the examination was one or more easily palpable glands on both sides of the neck either along the posterior margin of the sternomastoids or in the supra clavicular fossae. Very few glands were met with of the enlarged soft type : nearly all were small and hard.

The number of villages visited was 27, and the number of adults examined 3,654. Of these, 278 or 7.6% had enlarged posterior cervical glands on both sides of the neck. Of these 278, 59.7% were men, and 40.3% women.

(7) 16 of the villages visited are roughly 3 miles or less from the Black Volta or the Kamba rivers, both of which are infested by tse-tse, especially the latter. The number of adults examined in these 16 villages was 1,351 of whom 184 or 13.6% have enlarged glands

3. The Lobes and Dagatis have both got the same names for trypanosomiasis : one, signifying debility, "inguaron" (sic) and the other signifying the final stage of the disease "kingwon" (sic).

4. Atabieri is about 1 mile from Baghari.

5. Children were excluded. In all but 2 cases I think it can safely be said that the whole population turned out for examination at Lawra, the Lobes only were examined : at Tongo, the people had not been warned before-hand to collect.

6. The % is really slightly higher as only 12 villages had adult cases.

7. The Kamba is a tributary of the Black Volta.

The remaining 11 villages, more than 3 miles from either river have an adult population of 2,305, of whom 94 or 4.1% have enlarged posterior cervical glands.

8. 131 adults with enlarged glands and 23 cases.

(8) The relationship of recorded adult cases of Sleeping Sickness to glandular enlargement in the 12 villages where Sleeping Sickness is known to have occurred in adults in the last year is roughly 1 to 6.

9. The number of adults with enlarged glands in the 27 villages was 278.

(9) If it were permissible to deduce from this that for every 6 adults showing evidence of infection by the *Trypanosoma Gambiense* (as shown by enlarged posterior cervical glands) 1 develops Sleeping Sickness, then for the area over which the investigation was carried out the total number of adult cases for last year would be, not 23, but 46.

10. This was the case in 3 of the 6 cases seen by me.

(10) Doubt has been thrown on the value of gland palpation as a test of infection. In children, it is especially deceptive. In elderly people, it is scarcely ever in evidence, probably as a result of immunity. In younger people, who are those most apt to be infected, the enlargement is not constant in the 1st stage of the disease, while in the final or Sleeping Sickness stage it is often either absent or difficult to make out.

Further, the enlargement may be due to other causes, especially scalp affections. In areas where the population is intensely infected with trypanosomiasis (as certain parts of the Congo), the sign is probably a good index: as regards the Lawra District where the disease is sporadic the margin of error is much greater.

DISTRIBUTION OF TSE-TSE FLY AND SPECIES FOUND.

1. Only tachinoides and palpalis were seen by me in the Lawra District, though morsitans is known to occur. Sleeping Sickness Bureau Bulletin January 1909:—Distribution of Tse-tse Flies in British Colonies—Gold Coast: Lorha River—*G. tachinoides*, Westn. *G. morsitans*, Westn.

(1) Tse-tse fly are found along the course of the Black Volta and of its tributary, the Kamba, and probably also of its other tributary the Konyon-kwon.

As regards the latter tributary, I saw no tse-tse there on two brief visits, and the river, especially near the main road and near the village of the same name, is open with very little shade, and did not appear favourable for palpalis or tachinoides, though perhaps suitable for other species. The presence of tse-tse here then is merely surmised. The banks of the Kamba River on the other hand, appear to offer ideal breeding grounds for tse-tse, especially palpalis and tachinoides.

2. About 1 mile south of Penyatti.

(2) The part of the river near where the main road crosses it was examined. On the bank of the river, just beside the road, a dozen tse-tse were caught in a very short time.

They were all tachinoides. Below Penyatti the river has high banks of sandy soil with patches of pure sand, the banks being devoid of grass. Both banks are densely wooded with large shade trees, the roots of which are partly uncovered and spread above ground forming numerous sheltered areas suitable for depositing larvae. Above Penyatti, the banks are also high, but here they are grass-covered as well as wooded. Further upstream, the river is said to be more open, with grass-covered banks, but here also tse-tse are numerous. Two tse-tse, both tachinoides, were caught in the Rest-House grounds at Penyatti, and I was bitten by one on the road between Penyatti and the river. These were the only occasions during my stay in the Lawra District that I saw tse-tse flies other than at a river. The occurrence of tse-tse along the banks of the Black Volta is too well known to be more than mentioned.

The 12 tse-tse caught at the Kamba were all tachinoides.

At the ferry at Baghari 17 fly were caught, 14 of which were tachinoides and 3 palpalis.

A few fly caught at the Black Volta opposite Lawra were mostly tachinoides with a few palpalis. These were not preserved.

Lobe villages are made up of scattered compounds which may be as far as a quarter of a mile apart. In the rainy season and for about a month afterwards the compounds are completely hidden by tall guinea corn. During the rainy season, tse-tse fly in small numbers are said to occur in the swamps near the villages, occasionally odd ones being found in the villages themselves, but this applies more to the half-dozen or so of low-lying villages near the Volta. During this time, men and women are bitten while making their farms and also while going from one village to another, swampy ground having to be crossed in many instances. With the drying up of the swamps after the rainy season, the tse-tse are said to disappear again. I crossed several of these small swamps or marshes while trekking between villages but never saw a tse-tse, nor were any of those with me bitten on any occasion. Moreover, the Lobe name for tse-tse (nakwo) stands for any large biting fly, including Tabanidae and Stomoxys.

On the other hand, this appearance with the rainy season and disappearance with the dry in fairly open country is not inconsistent with the habits of most species of tse-tse.

(3) Of more importance, however, in favour of the occurrence of tse-tse in the swamps near the villages are the cases of the boy at Nanyar and the two women at Bazini who are said never to have left their villages (with the exception of the boy who used to visit some relative at the neighbouring village of Kasara). In all the other recorded cases which occurred in villages more than 3 miles from the Black Volta River (and which were investigated in this respect) the person infected had crossed to French country at some time or other, if a woman, to visit the markets, which the women are said to do in large numbers in the dry season.

WHERE INFECTION IS GOT.

(1) In view of the extensive inter-communication with French Country across the Black Volta, largely favoured by the fact that the other side is inhabited by Lobes also and by the markets held there; it seems reasonable to suppose that infection is incurred at the ferries and fords.

(2) Also, it may be contracted while in French country.

Further, during the dry season, the water for several of the villages lying near the river including Lawra itself very often, has to be drawn from the Black Volta, the local supply drying up.

There are two other possible sources of infection, viz., the swamps near the villages in the rainy season, and the farms near the swamps or those near the River banks. The Lobes do not fish, so infection is not got in this manner.

As regards a reservoir for the trypanosome, wild animals may be excluded with the exception of riverine species (crocodile are fairly numerous) as game is very scarce in the area in question.

(3) There remain domestic stock and man. There is very little sickness amongst the former, and cattle and horses do not seem suffer much from trypanosomiasis.

3. Case numbered 9, 10 and 11.

1. I was informed that between Gegempe and Burifu there were some 15 ferries and fords, of which the ferry at Baghari, where the cattle come across, is the largest and most important.

2. Trop. Diseases Bull., April, 1924 p.307. Le Dantu: "Etat sanitaire de la pop. indigene—dans la colonie de la Haute Volta." Sleeping Sickness is found only in the region of the Black Volta at one point 2 species of tse-tse were captured and trypanosomiasis were detected in the blood of 8 out of 12 natives. Trypanosomiasis of horses is common in all the south of the colony so that they are reared with difficulty.

3. I have, however no definite information on this subject.

DESCRIPTION OF COUNTRY AS REGARDS FAVOURABLENESS
FOR TSE-TSE.

Around Lawra the country is very open, trees are scattered with wide intervals between and are mostly of the orchard bush type. Near the river, the country is open grass land with bare patches and very few trees. There are areas of $\frac{1}{4}$ mile square near the river which are quite open and without shade. In the dry season, these must form impenetrable barriers to the passage of tse-tse from the river inwards to the villages.

Around Baghari, and North from there, the country looked very favourable for tse-tse. It is well-wooded, and though the trees are mainly of the small bush type yet there are many large shade trees also. In the rainy season, the grass is long and there are many collections of water and small streams.

A word may be said in comparison of the conditions prevalent in the Lawra District with those in the Western Gonja District. In the Lawra District, tse-tse are rarely seen except at the rivers; in the Western Gonja District, they are very numerous. The species is said to be palpalis, var Wellmani. In that part of the Lawra District where Sleeping Sickness is known to occur game is scarce; in the Western Gonja District game is plentiful. It would be interesting to know to what extent Sleeping Sickness occurs in the latter district.

PARTICULARS OF CASES.

A. COLLECTED BY D.C. LAWRA-TUMU.

Case No. 1

A young man of Lawra: died 16th July, 1924, began to be sick about $3\frac{1}{2}$ months previously: first complained of pains in the chest, could not rise, then got better and was able to work for about a month. Second illness: complained of weakness in all his limbs and became very emaciated: talked foolishly and was not sensible: no headache, no cough, no more than ordinary native habit of spitting.

Case No. 2

A young man of Lawra: died 18th July, 1924: illness of stomach started last Xmas: stomach trouble did not get better and he was very thin: used to go to his farm and work for a short time and then sit down half-asleep: talked foolishly, complained of pains all over his body on returning one night and the next day he died: he had a cough.

Case No. 3

A young man, still alive, started to get very fat last Christmas, and had very bad headaches for about a month; talked foolishly: headache disappeared but he became very weak, any little exertion makes him shake: goes to sleep at any odd moment such as when drinking Peto: since 29th June, 1924, he has been unable to rise: he has no pains but cannot speak: does not eat properly: no headache: has a cough: has 3 small swellings on back of neck. Cannot control his urine. (This case has since died).

Case No. 4

A young girl alive now at Olibili, got very fat about Christmas and swellings appeared on the back of the neck: did not complain of pain: about 4 months ago attended a funeral custom and fell down in the midst of a dance apparently asleep: after that used to go off to sleep at any time: then complained that her body pained her and for last 2 months has not been able to get up: headache: cough: talks foolishly: very weak and unable to feed herself (Since dead).

Case No. 5

A middle-aged man in Lawra-Zongo died in June last: sick about 1 month: got fat: talked foolishly: went to sleep at any odd moment: continual and uncontrollable passing of urine: cough.

Cases No. 6 & 7

A young woman and a young man of Bweri, died end of May with same symptoms as No. 3.

Case No. 8

A young man of Amburi: same symptoms as No. 3: attended by M.O., Wa last year: has since died.

A young boy of Nanyar : complained of pains in the head and got very thin : continually went to sleep at odd times : died March last : duration of illness, 3 months : no cough, swellings, nor rash.

Case No. 9

A woman of Bazini : complained of pains all over her body : got very fat : slept most of the 24 hours : headache with attacks of fever : little appetite : no cough, no skin trouble. Duration of illness 2½ months. Died October, 1923.

Case No. 10

Woman of Bazini : pains all over body : got very thin and weak : headache : used to go off to sleep at odd moments : as she became emaciated she became a very light colour (light brown). Ill, 4 months. Died end of last year.

Case No. 11

A young man of Metaw : pains in head and ears : got better for a time but not strong enough to work : after a time complained of pains all over the body and talked foolishly : went to sleep at odd moments : if he moved, he shook all over : towards end of illness, he had swelling of hands and feet. Continual passing of urine. Ill 5 months.

Case No. 12

A Woman of Tongo : pains in the head : frequently went off to sleep when being spoken to : got very fat : slight exertion caused exhaustion and shakiness : latter part of illness, slept all the time and took little food. Ill, 5 months. Died end of last year.

Case No. 13

A Woman of Atabieri : swelling on each side of neck : got very fat : went off to sleep at odd moments : talked foolishly : had headaches : had good appetite until near the end : no cough, no skin trouble. Ill, 3 months.

Case No. 14

A young boy of Atabieri : swelling on each side of neck : pains all over the body : got very thin : headaches : went off to sleep suddenly : little appetite : no skin trouble : no cough. Ill, 2 months.

Case No. 15

A young man of Atabieri : pains in head and neck : continually went off to sleep : cough : skin itched : got very thin. Ill, 5 months.

Case No. 16

B. LOCATED BY D.C. LAWRA-TUMU.

A Woman of Lawra, about 30 years old. Name, Vollo. Has been ill for 8 months. Complained first of pains in ears and at side of neck : swellings appeared on both sides of neck : she had headache and pains in the legs, also attacks of fever : 2 months ago, walking became impossible on account of weakness. She is languid and apathetic, though does not often fall asleep in the daytime.

Case No. 17

On examination emaciation pronounced, pupils enlarged, skin dry and coarse, no fever, pulse 100 and weak. Tremor of tongue, tremor right arm and hand ; intention tremor left hand : too weak to hold out her arms herself. Knee jerks absent, no Kerandel. Posterior cervical glands small and hard, not suitable for puncture. Thick blood film made, but negative. Given 7 grs. atoxyl intramuscularly, twice at a week's interval.

Case No. 18

A Woman of Lawra about 30 years of age, by name Youra. Ill, for 2 months. Sullen, refuses to speak about her condition. Her husband says she has been getting steadily weaker, always sitting down and leaning against supports. Can walk without support but only with difficulty. Neck glands small and hard, not suitable for puncture. Thick blood film negative.

Case No. 19

A young boy of Bweri (9 years old) : ill for 8 months : emaciated, always sleeping, used to fall asleep over his food. Fever at times.

Paralysis of sphincters before death which occurred end of August last.

Case No. 20

A Woman of Baghari, about 20 years old, by name Jemme. ill, for 9 months. Attacks of fever, increasing weakness, inability to work : constant sleepiness and lethargy : no headache, no pains in the neck. Her mother stated that the woman had had several epileptoid attacks recently and that she had never suffered from these before her present illness began. Condition when seen :—

Walks with aid of stick leaning heavily. Apathetic, answers intelligently but very slowly and after an interval. Pulse 100, weak. Only one small gland palpable, not suitable for puncture. Thick blood film negative. Atoxyl given once.

- Case No. 21 Young Woman of Baghari : complained of pains in the head : got very weak : always sleeping. Died August.
- Case No. 22 A Woman of Olibili about 30 years of age, name Lehre. Ill, for 4 months. Complains of headache, pains all over the body, and pains in the back of neck. Dazed, vacant expression. Understands when spoken to, but answers in monosyllables. Sleeps a lot during the day, very weak, can walk unsupported but only with difficulty. Condition when seen :—pulse 96, weak. One enlarged gland on each side of neck, that on left side fairly soft and painful. One film made but no trypanosomes seen. Blood film negative. 7 grs. Atoxyl given.
- Case No. 23 A young boy of Dikpwe (10 years old) by name Pide. Ill for 6 months. History of pains in the head attacks of fever, pains in the neck, sleeps a great deal : if he gets up after being asleep, he is apt to fall down again, can walk all night, but is apt to fall down at times : getting fat : not fit for work : has itchy papular eruption on right leg and buttock. No trypanosomes found. 5 grs. Atoxyl given.
- Case No. 24 A young boy of Dikpwe, about same age as previous case ; name Baje. Ill for 8 months. Weak, not fit for work : sleeps a great deal : getting fat : looks drowsy and apathetic complains of "slack skin*" : liable to fall down when he walks : questions have to be repeated before he understands them. Neck glands enlarged. No trypanosomes found on one examination. 5 grs. Atoxyl given.
- Case No. 25 A woman of Amburi : got fat : always sleeping : about 1 week before death she fell down while walking and was never able to get up again. Died end of last year.
- Case No. 26 A woman of Tanchara ; ill, 1 month got very weak, always 'leaning' : used to fall asleep over her food : became very thin : swellings at back of neck ; no pains only weakness : could not walk. Died, August last. Used to go to the markets in French country.
- Case No. 27 A woman of Zambaw : got very thin and weak : used to fall asleep whenever she sat down. Died, August last. Used to go to the markets in Fr. country.
- Case No. 28 A man of Tanpia. Died from 'Kingwon' (Sleeping Sickness about July last. No particulars could be got.
- Case No. 29 A man of Atabieri. No particulars could be got.

SPECIAL SYMPTOMS.

As regards the above case histories, I think all the cases can be labelled Sleeping Sickness with the exception of the first two which are doubtful. I am inclined, however, to include them also, as cases with atypical symptoms.

In the majority of cases, there is at first a history of the patient getting fat. This is probably merely a result of inactivity combined, in the majority of cases with unimpaired appetite ; to a certain extent it may also imply oedema of the face, etc. In cases 3, 12, 15 and 17, there is a history of tremor : in one (20), a history of epileptoid seizures. In several cases there is no history of headache or pains in the neck, merely weakness, lethargy and emaciation. Case No. 11 is very interesting ; as the patient became thinner the skin gradually assumed a light brown colour.

The average duration of the Sleeping Sickness stage in those who died was 4 months.

TREATMENT.

(1) Given :—Atoxyl was given to the 6 cases seen. Two of these were boys who each got 5 grs. of Atoxyl intramuscularly. The other four were women who each got 7 grs. Atoxyl, the dose being repeated in the case of the two women belonging to Lawra.

(2) Proposed :—An endeavour will be made to have the sick people brought to Wa for systematic treatment.

MICROSCOPIC WORK.

This was uniformly negative. The reason for this, apart from bad technique, was that only one gland was aspirated in any one person and on only one occasion. Further examination was not possible on account of constant trekking. Special cases were chosen for gland puncture, about 20 in all, and in each case a thick blood film was made at the same time. No trypanosomes were seen. Leishman's stain was used in all cases. Very few glands were discovered which could be described as enlarged and soft.

CONCLUSIONS.

(1) The cases of Sleeping Sickness recorded would never have been known of but for the investigations of the District Commissioner Lawra-Tumu. Similar investigations in the Western Gonja District, and also in the villages along the course of the Black Volta between Lawra and Bole, might be productive of interesting information as to the incidence of Sleeping Sickness.

(2) The great majority of villages visited, from Gegempe in the north and Burifu in the south and for a distance eastwards from the Black Volta of some 6-9 miles, have probably at least one case of Sleeping Sickness every year. In certain villages the incidence is greater. (Note 1).

(3) Judging from the scarcity of tse-tse and the general unfavourableness of the country for them (Note 2) there is no reason for believing that the number of cases occurring annually in the Lawra District is likely to increase. (Note 3).

(4) There is no data for a statement, however, regarding the increase or decrease in recent years of Human Trypanosomiasis amongst the Lobes in the Lawra District, as cases have been recorded for last year only. If, in future, it is made compulsory for all chiefs and headmen to report to the District Commissioner all cases of Sleeping Sickness, then it will be easier to arrive at an opinion on this point.

(5) The infection is contracted in the great majority of cases at the Black Volta, either when crossing by the ferries or fords when drawing water in the dry season, or when making farms near the river in the wet season. (Note 4) Natives have a habit before and after crossing a river of sitting down at the waterside for a time, thus increasing their chances of being bitten by tse-tse.

(6) Statistics given above show how much greater are the incidence of Sleeping Sickness and of enlarged glands amongst the population of those villages which are roughly three miles or less from the Black Volta, than amongst those who live at a greater distance. This supports the above conclusion, for the people who live three miles or less from the River are those who draw their water from it in the dry season and who use the fords most. Also, granted that some of the tse-tse leave the river banks during the rainy season, these are the people who are most liable to be bitten as they will have the greater number of tse-tse around their villages.

(7) Even on the supposition that Sleeping Sickness was once more on the increase amongst the Lobi people, there is no possibility of the disease extending (by direct extension) Southwards into the Wa District in view of the absence of tse-tse, except along the course of the Black Volta where the disease probably takes an annual toll in the Wa and Bole Districts.

1. During the previous 12 months, 6 cases in Lawra and 4 in Ataberi. The headman of Bweri admitted to having 2, 3, or 4 cases most years, (although he also said that some years there were no cases).

2. This does not apply north of Lawra.

3. In this connection, however, the Sleeping Sickness Bureau Bulletin of January, 1909, may be quoted. Page 122: we have in the Gold Coast a Colony which is threatened with an invasion of Sleeping Sickness, on the one side from Togoland where there is an endemic focus a few miles from the border; on the other from the French Niger where, north and north-west of the Northern Territories S.S. is prevalent Bouffard (.....) writes that the most important centre of human trypanosomiasis in the bend of the Niger is the district of Lobi, and this appears to touch the north-western border of the Northern Territories. There is a considerable traffic of natives to and fro across that part of the Volta which is near the infected area in Togoland; whether there is traffic between Lobi and the Northern Territories there is no information but these districts are separated by the Black Volta only which is, in its upper part, and probably here also, fly-infected. From Graham and other observers we learn that *G. palpalis* is widely spread over the Gold Coast Colony.

Clearly all that is needed to produce a widespread epidemic is the introduction of some persons harbouring a virulent strain of *T. gambiense*."

4. Possibility of the infection being got in Fr. country is purposely missed out here.

5. Whether these measures are feasible is another matter.

(8) The incidence of human trypanosomiasis in the Lawra District could be reduced by the following prophylactic measures, (Note 5).

(a) Making the ferries and fords across the Black Volta tse-tse free. This, of course, would be impossible without similar action being taken on the French side. Also, there would still remain the possibility of infection being got in French country.

(b) The protection of men making farms near the river by making a bare area between the farms and the river.

(c) By prohibiting the collection of water at the river during the dry season at any part other than the tse-tse free areas.

(d) By filling in the low-lying ground near and between villages during the dry season. This is hardly feasible in undulating country but something might be done in the way of drainage (preferably sub-soil) in those cases where there is a (temporary) stream to drain into.

(e) The diminution of the human reservoir by bringing the sick to Wa for systematic treatment. Wa is tse-tse free, and has the only Hospital for the Lawra, Wa and Bole Districts. If it is not feasible to institute curative treatment by having the sick brought to Wa, the next best measure would be to have the sick brought periodically (say every three to four months) to Lawra, and there to receive a short intensive course of atoxyl (Note 6) with the object of keeping their blood free from trypanosomes and so preventing them acting as reservoirs from which others could be infected (Note 7).

6. Say 2, or 3, large doses.

7. In view of the scarcity of fly in the villages there is probably no great danger of this occurring.

RECOMMENDATIONS.

(1) Ferries and fords to be cleared of bush for 30 yards up and down stream. This area to be extended if necessary.

(2) Drainage to be applied to such swamp-lands (existing during the rainy season only) as can be proved to harbour tse-tse by personal observation.

(3) Insistence on the notification by Chiefs and Headmen of all cases of Sleeping Sickness which may occur in future.

(4) The segregation of the sick at some part where they can receive systematic treatment, and which is at the same time tse-tse free.

LOBE ACCOUNT OF THE ORIGIN OF THE EPIDEMIC.

The origin of the epidemic of forty years ago, was that a witch living at Baghari crossed the River to a market at a place near Manoa and there filled the corn she had taken with her to sell with the disease. She brought it back to Baghari, and tried to sell it, but other people knowledgeable as regards witchcraft knew that the disease was in the corn and so warned all people not to buy. She then took the corn to Manoa, where also nobody would have anything to do with it, so she threw it away and cows came and ate it.

The meat from the cattle was eaten both in Manoa and in Baghari, and many people got sick and died in Baghari. The sick people at Baghari were partially segregated and given separate eating bowls and ate by themselves, but they used to cross over to Manoa and the sick people of Manoa used to come to Baghari and there drink out of the same calabash of "peto" with healthy people, so that the disease spread very fast.

NOTES BY DISTRICT COMMISSIONER, LAWRA-TUTU.

It would appear that the Lobes consider Sleeping Sickness contagious, as they segregate cases in a separate room with separate cooking utensils, etc.

The Woman who died at Tongo was isolated in a compound by herself and after death her hand was broken.

STATISTICS REGARDING NUMBER OF CASES OF S.S. AND OF ENLARGED GLANDS.

A. VILLAGES 3 MILES OR LESS FROM THE BLACK VOLTA OR KAMBA.

Village.	Number of Adults with enlarged cervical glands.	Number of Adults examined (all adult pop. in great majority of cases.)		Percentage.		Percentage.	Number of Cases of Sleeping Sickness who were sick or died within the last year.			Per centage Adult cases of S.S. to number of Adults examined.	Per centage Adult cases of S.S. to number of Adults with enlarged cervical glands.	
		M.	F.	M.	F.		1	2	3			
Bweri	13	10	3	200	—	—	6.5	1	1	1	1.0	15.4
Amburi	6	4	2	57	—	—	10.5	1	1	—	3.5	33.3
Dikpwe	36	14	22	156	—	—	23.1	—	—	2	—	—
Furu	10	9	1	168	—	—	5.9	—	—	—	—	—
Metaw and Tollew ..	13	10	3	129	53	76	1.0	1	—	—	0.8	7.7
Olibili	7	4	3	46	23	23	15.2	—	1	1	2.2	14.3
Atabieri	6	4	2	31	18	13	19.3	2	1	1	9.7	50.0
Baghari	18	8	10	99	45	54	18.0	—	2	—	2.0	11.1
Penyibi	4	—	4	55	21	34	7.3	—	—	—	—	—
Penyatti	10	5	5	56	34	22	17.9	—	—	—	—	—
Sone	11	8	3	55	30	25	20.0	—	—	—	—	—
Vene	8	5	3	34	21	13	23.5	—	—	—	—	—
Sabar	6	4	2	26	14	12	23.1	—	—	—	—	—
Kunkuri	6	4	2	32	13	19	18.7	—	—	—	—	—
Matanga	4	2	2	34	18	16	11.8	—	—	—	—	—
Lawra	26	11	15	173	66	107	15.0	4	2	—	3.5	23.0
Totals 16	184	102	82	1,351	356	414	13.6	9	8	5	1.3	9.2

B. VILLAGES MORE THAN 3 MILES FROM THE BLACK VOLTA OR KAMBA.

Koli	5	1	4	72	34	38	6.9	—	—	—	—	—
Toori	19	14	5	264	—	—	7.2	—	—	—	—	—
Konyon-Kwon near river of same name	8	5	3	281	125	156	2.8	—	—	—	—	—
Tanchara	4	4	—	440	200	240	0.9	—	1	—	0.2	25.0
Tongo near Konyon-Kwon R.	4	2	2	30	21	9	13.3	—	1	—	3.3	25.0
Zamban	15	9	6	545	252	293	2.8	—	1	—	0.2	6.7
Nanyar	4	2	2	115	64	51	3.5	—	—	1	—	—
Kasara	8	6	2	184	87	97	4.3	—	—	—	—	—
Tanpia	5	3	2	163	73	90	3.1	1	—	—	0.6	20.0
Gegempe	8	7	1	111	47	64	7.2	—	—	—	—	—
Bazini	14	11	3	98	73	25	14.3	—	2	—	0.2	14.3
Totals 11	94	64	30	2,303	976	1,063	4.1	1	5	1	0.26	6.4
16	184	102	82	1,351	356	414	13.6	9	8	5	1.3	9.2
Grand Totals 27	278	166	112	3,654	1,332	1,477	7.6	10	13	6	0.6	8.3

APPENDIX F.

RETURN SHOWING NUMBER OF CASES TREATED IN THE VENEREAL CLINIC FOR THE YEAR 1925-26 INCLUDING DISEASES OTHER THAN VENEREAL, SUCH AS YAWS, ETC.

	Primary Syphilis.		Secondary Syphilis.		Tertiary Syphilis.		Congenital Syphilis.		Soft Chancres.		Gonorrhoea.		Condition other than Venereal.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
I. Remaining under treatment 1st April, 1925	261	5	116	182	274	267	—	—	—	—	81	224	482	381	1,214	1,059
II. New Cases	40	3	48	33	61	21	1	1	135	—	818	772	95	48	1,198	878
(a) Completed I full Course	37	2	33	35	43	30	—	—	—	—	—	—	117	158	230	225
(b) Completed II full Course	17	—	20	17	23	20	—	—	—	—	—	—	61	65	121	102
(c) The full course	—	—	—	—	—	—	—	—	—	—	559	338	—	—	559	338
(d) The full Course with final test	—	—	—	—	—	—	—	—	—	—	203	—	—	—	203	—
(e) Ceased to attend before completion of full course	8	—	14	7	20	18	—	—	—	—	135	91	—	—	177	116
III. Discharged after completion of Course	17	—	20	17	23	20	1	—	—	—	203	—	61	65	325	102
IV. Remaining under treatment 1st April, 1926	239	6	97	156	249	220	—	—	—	—	2	567	389	206	976	1,155

APPENDIX G.

REPORT ON THE WORK OF THE X'RAY DEPARTMENT DURING THE YEAR 1ST APRIL,
1925 TO 31ST MARCH, 1926.

During the year under report the Radiographer, Mr. L. M. Forsyth, was present until the 2nd January, 1926, when he handed over prior to proceeding on leave to Mr. C. J. Price, Dispensing Instructor, pending the arrival of a relief. Mr. C. J. Price, worked from 2nd January till the 18th of February, when he was relieved by Mr. A. Buckner, Assistant Radiographer.

The generating apparatus is sufficiently powerful for present requirements and is efficient.

The total number of cases dealt with during the year is 748 classified as under :—

Examinations of bones	411 cases.
Examinations of Spinal Column	51 "
Examinations of Head	40 "
Examinations of Mastoid Area	6 "
Examinations of Chest	94 "
Barium or Opaque Meals	15 "
Examinations of Abdomen	26 "
Gun shot Wounds of various parts	11 "
Kidney	13 "
Aneurism	10 "
Heart	4 "
Dental Cases	25 "
Sinuses injected with B.I.P.	18 "
Gall Bladder	4 "
Bladder	4 "
Glands Neck	3 "
Foreign Body, Neck	3 "
Organs of generation (Female)	8 "
Foreign body thorax	1 case.
Foreign body localisation (not found)	1 "
 Total	 748 "

Three cases of the glands of the neck, two of uterine fibroid, one of epithelioma of the tongue and one of carcinoma of the cervix were treated by X'Ray Therapy, during the period.

Treatment.—In the Treatment Room there was a total 1,397 attendances, as under :—

For Hemiplegia	949 attendances.
" Arthritis	215 "
" Peripheral Neuritis	39 "
" Synovitis Ankle	39 "
" Gonorrhoeal Orchitis	28 "
" Sciatica	13 "
" Epididymitis	11 "
" Elephantiasis	41 "
" Manual Massage	62 "
 Total	 1,397 "

Manual Massage was commenced on the 1st March, 1926, as routine after treatment to fractures, etc.

