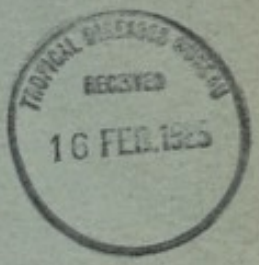
Report on the Medical and Sanitary Departments / Government of the Gold Coast.

GOVERNMENT OF THE GOLD COAST.



REPORT

ON THE

MEDICAL DEPARTMENT

FOR THE PERIOD

JANUARY, 1922—MARCH, 1923.

[Alexander (D.) Director = Med & San Services]

GOLD COAST:

GOVERNMENT PRESS, ACCRA

1923.

Price 3s.

With the compliments of the Director of Medical and Sanitary Services, Gold Coast Colony.

Annual Report on the Medical Department for the period January, 1922 - March, 1923.

Medical Department
P. O. Box 138,
Victoriaborg, Accra,
Gold Coast Colony,
January, 1925.

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CONTENTS.

REPORT FOR THE QUARTER 1st JANUARY TO 31st MARCH, 1922.

I.—ADMINISTRATION.

Table 1.—Medical Staff at 31st March, 1922.

1 Director of Medical and Sanitary Services.
1 Deputy Director of Medical and Sanitary Services.
1 Deputy Director of Sanitary Services.
1 Director of Medical Research Institute.
1 Assistant Director of Medical Service.
1 Specialist in Medicine.
1 Specialist in Surgery.
6 Senior Medical Officers.
2 Senior Sanitary Officers.
2 Pathologists.
32 Medical Officers (6 of whom are Medical Officers of Health).
1 Radiologist and School Medical Officer.
1 African Medical Officer.

35 Vacancies
- 1 Assistant Director of Medical Service.
- 1 Pathologist.
- 3 Assistant Pathologists.
- 21 Medical Officers.
- 4 Woman Medical Officers.
- 5 African Medical Officers.

1 Dental Surgeon.
1 Analytical Chemist.
1 Office Assistant and Accountant.
1 Dispensers' Instructor.
1 European Storekeeper.
4 Superintending Sanitary Inspectors.
1 Laboratory Superintendent.
1 Laboratory Assistant.

European Nursing Staff.

4 Senior Nursing Sisters.
10 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.
2 First Division Nurses.
1 Chief Clerk.
1 First Division Clerk.

(*b*) 4 First Division Sanitary Inspectors.
1 Sanitary Inspector and Training Officer.
1 Chief Clerk.
1 First Division Clerk.

(*c*) 1 Chief Attendant.
1 Assistant Chief Attendant.
1 Matron.

Table 2.—Financial.

(a) Statement of Revenue for the Quarter.

Revenue (Hospital fees)	£940 16 3

(b) Statement of Expenditure for the Quarter.

Medical Department (including Sanitation Branch)—

Personal Emoluments	£26,560 10 3
Other Charges	29,659 0 4
Total	£56,219 10 7

II.—PUBLIC HEALTH.

(a) General Remarks.

The following Table shows the most noteworthy contrasts in the Returns of Diseases treated during the years 1920, 1921, and the quarter ending 31st March, 1922 :—

Disease.		1920.	1921.	1st January to 31st March, 1922.
Small-pox		298	9	1
Chicken-pox		229	226	37
Dysentery		824	710	272
Enteric Fever		12	41	8
Influenza		885	184	69
Malaria	Tertian	823	904	199
	Quartan	9	27	11
	Aestivo Autumnal..	676	1,832	385
	Chronic	140	432	717
	Blackwater	36	21	10
	Unclassified..	3,021	2,730	487
Measles		149	19	35
Pneumonia		422	370	161
Rheumatic Fever		29	18	57
Sleeping Sickness		27	8	3
Whooping Cough		126	118	30
Alcoholism		44	28	3
Yellow Fever		3	4	5
Tuberculosis		355	337	138
Plague		—	—	—

(b) European Officials.

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

	1920.	1921.	1st January to 31st March, 1922.
Total number of Officials resident..	775	768	741
Average number resident	620	612	692
Total number on Sick List	626	674	191
Total number of days on Sick List	4,983	6,900	1,762
Average daily number on Sick List..	13.6	18.9	19.57
Percentage of Sick to average number resident ..	2.19	3.08	2.82
Average number of days on the Sick List for each patient	7.96	10.23	9.22
Average sick time to each resident..	8.03	11.27	2.54
Total number invalided	30	38	15
Percentage of invalidings to total residents ..	3.87	4.94	2.02
Percentage of invalidings to average number resident	4.83	6.20	2.16
Total Deaths	7	14	2
Percentage of Deaths to total residents	0.90	1.82	0.27
Percentage of Deaths to average number resident	1.13	2.28	0.28

Days on Sick List.

Causes.	1920.	1921.	1st January to 31st March, 1922.
Tropical Diseases	1,923	4,328	836
Non-Tropical Diseases	3,060	2,572	926
Totals	4,983	6,900	1,762

Causes of Invaliding of European Officials :—

Blackwater Fever (1), Tabes (1), Haemoptysis (1), Epilepsy (1) Otitis Media (1) Rheumatoid Arthritis (1), Debility (2) Anaemia (1) Mental Instability (1), Jaundice (1), Lameness (1) Neuralgia (1) Ulceration of the Bowel (1), Shell Shock (1) : Total 15.
The following Table shews in periods the approximate length of tour of those invalided.

8 months and under	9
9–16 months	6
17–21 months	Nil

All the 15 cases invalided were civilians.

The invalidings at the rate of 80.96 per 1,000 per annum, shew an increase on the previous two years.

	1920.	1921.	1st January to 31st March, 1922.
Invaliding rate (per 1,000)	38.71	49.47	20.24 per quarter.

Causes of Deaths of European Officials :—Gunshot wound (1) Heart Disease (1) : Total 2.

(c) African Officials.

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

	1920.	1921.	1st January to 31st March, 1922.
Total number officials resident	2,473	2,347	2,368
Average number resident	1,855	1,761	1,590
Total number on Sick List	768	681	255
Total number of days on Sick List	7,688	7,217	2,904
Average daily number on Sick List	21	19	32.26
Percentage of Sick to average number resident ..	1.13	1.07	2.02
Average number of days on Sick List for each patient	10.01	10.59	11.38
Average sick time to each resident	4.14	4.09	1.82
Total number invalided	6	9	8
Percentage of invalidings to total residents ..	0.24	0.38	0.33
Percentage of invalidings to average number resident	0.32	0.51	0.50
Total Deaths	8	8	—
Percentage of Deaths to total residents	0.32	0.34	—
Percentage of Deaths to average number resident	0.43	0.45	—

Causes of Invaliding of African Officials.—Leprosy (1), Tuberculosis (4), Gastritis (1), Urethral Stricture (1), Cerebral affection (1): Total 8.

Causes of Deaths of African Officials.—Nil.

(*d*) General European Population.

(i) Government Officials	741
(ii) Employés of Trading Firms	1,565
(iii) Employés of Mining Companies	518
(iv) Missionaries	77
Total	2,901

Table Shewing Sick, Invaliding and Death Rates of European Non-Officials.

How employed.	Number.	Deaths.	Invalided.	Death rate per cent.	Invaliding rate per cent.
1920.					
Merchants	1,506	20	47	1.35	3.17
Mining Companies ..	465	4	19	0.86	4.08
Missionaries	72	1	—	1.38	—
Totals	2,043	25	66	1.22	3.23
1921.					
Merchants	1,556	15	41	0.96	2.63
Mining Companies ..	541	2	10	0.36	1.84
Missionaries	74	1	2	1.35	2.70
Totals	2,171	18	53	0.82	2.44
1st January to 31st March, 1922.					
Merchants	1,565	5	14	0.32	0.90
Mining Companies ..	518	1	4	0.19	0.77
Missionaries	77	—	—	—	—
Totals	2,150	6	18	0.28	0.83

Causes of Invaliding of European Non-Officials.—Malaria (4), Blackwater Fever (1), Debility (4) Pneumonia (1), Nephritis (1), Neurasthenia (1), Typhoid Fever (1), Appendicitis (1), Mucous Colitis (1), Nervous Breakdown (1), Pulmonary Tuberculosis (1) Fractured rib (1): Total 18.

Causes of Deaths of European Non-officials.—Pneumonia (2), Blackwater Fever (2), Malaria (1), Cerebral Haemorrhage (1): Total 6.

European Mortality and Invaliding Rates, 1st January to 31st March, 1922.

Class.	Number.	Deaths.	Invalidings.	Death Rate per 1,000.	Invaliding rate per 1,000.
Official	741	2	15	2.70	20.24
Non-official	1,293	6	18	4.64	13.92
Totals	2,034	8	33	3.93	16.92

III.—SANITATION.

(A.)—Progress Report for quarter January—March, 1922.

(1.)—ADMINISTRATION.

The Deputy Director of Sanitary Services, two Senior Sanitary Officers and four Medical Officers of Health were in the Colony throughout the quarter.

Two Medical Officers of Health returned from leave in January—13th and 26th.

Two Superintending Sanitary Inspectors were in the Colony during the quarter and one returned from leave on 23rd March.

The Sanitary condition of the towns under Sanitary control was satisfactory.

No epidemics of a serious nature occurred during the period.

Forty cases of Influenza of a mild type and one fatal case of Yellow Fever were reported throughout the Colony during the quarter; there were no deaths from Influenza.

Ordinances.

The Governor's Order (38 of 1921) declaring Grand Bassam infected was revoked by Order No. 5 of 1922 (*Gold Coast Gazette* No. 3 of 1922).

(II)—PREVENTIVE MEASURES AGAINST.

(1.) Insect-borne diseases.

Malaria and Yellow Fever, etc.

The anti-mosquito campaign was continued with the usual vigour.

It is refreshing to record the fact that with the exception of two large towns (Elmina 5.2% and Bekwai 6.9%), the larval index was below 5%.

58,149 houses were inspected during the period.—31,692 being at Accra, 12,736 at Seccondee and 8,355 at Coomassie.

Anti-fly measures were carried out against the house and tsetse flies.

(2) Infectious and Epidemic Diseases.

Small-Pox.

Vaccinations. A table for comparison with corresponding quarters of previous two years is given below.

	1920.	1921.	1922.
Total vaccinations	53,345	21,362	26,992
Total verified successful	44,271	14,518	9,243
Percentage successful	79.9	68.9	34.2

The low percentage for 1922 is due to vaccinated persons not reporting themselves for examination.

The period under report marks the beginning of the reduction in numbers of Vaccinators—Trained Sanitary Inspectors doing the work.

There were 12 Vaccinators in the Staff, but four were about to be retrenched.

Plague.

No cases were reported, but anti-rat measures were adopted at all large stations.

221 rats were examined and destroyed at Accra.

(3) Endemic Diseases.

Preventive measures against Tuberculosis were adopted, but did not prove successful.

Helminthic Diseases.

There is nothing of interest to report.

Meat inspection at the Slaughter House and Market Stalls was carried out just as carefully and strictly as before at all large stations.

(III).—GENERAL MEASURES.

Conditions as regard to housing of Europeans have not improved.

Though the principle of Segregation of Government Officials is, as far as possible maintained, shortage of quarters has rendered it necessary for some officials to live in nonsegregated areas.

More than 80% of the European Mercantile community live in the Native town.

Water Supply.

The water supply of Accra has been analysed at frequent intervals. On the whole the excess lime treatment has been satisfactory and the purity of the water has been maintained.

The period under report is too short for further comments.

The Chlorination process has given satisfaction at Seccondee.

The demand for a pipe-borne water supply is still great in the other large towns in the Colony.

(B).—Measures to spread the Knowledge of Hygiene and Sanitation.

The training of probationary Sanitary Inspectors was carried out at all large centres.

A. CHARLES LORENA,

ACCRA, 19TH APRIL, 1923. *Acing Deputy Director of Sanitary Services.*

House to House Inspections during 1st Quarter of 1922.

Station.	Number of House Inspected.	Number in which Larvae Found.	Larval Index.
Accra	31,692	182	0.57
Nsawam	3,858	51	1.32
Koforidua	5,300	98	1.84
Addah	2,240	21	.93
Quittah	880	19	2.1
Akuse	2,375	19	.8
Somanyah	4,466	4	.04
Winnebah	1,783	26	1.4
Saltpond	1,097	10	.9
Cape Coast	5,881	35	.5
Seccondee	12,736	24	.1
Elmina	516	27	5.2
Tarquah	507	1	.19
Dunkwa	2,563	Nil	0%
Axim	1,174	12	1.01
Ho	420	11	.2
Coomassie	8,355	68	.8
Tamale	1,529	7	.4
Salaga	233	6	2.5
Kpong	2,006	2	.09
Bekwai	230	16	6.9
	58,149	639	1.09

METEOROLOGY.

Rainfall in Inches.

Station.	1919.	1920.	1921.	1st January to 31st March, 1922.
Accra	20.44	15.87	34.43	1.89
Aburi	34.54	36.40	50.83	3.29
Seccondee	38.25	34.65	40.40	1.72
Axim	56.05	66.43	88.13	8.27
Tarquah	59.36	68.19	71.05	10.60
Coomassie	37.08	50.98	66.94	5.26
Tamale	38.61	36.95	61.77	0.77

Hospitals and Dispensaries.

The total cases treated at the various Government Hospitals and Dispensaries during the Quarter was 20,473.

The following Table shows the total number of In-patients treated at Accra, Seccondee and Coomassie Hospitals.

Station.	1920.		1921.		1st January to 31st March, 1922.	
	Europeans.	Africans.	Europeans.	Africans.	Europeans.	Africans.
Accra	250	898	283	1,136	57	308
Seccondee	233	432	306	676	69	169
Coomassie ..	149	1,362	172	1,125	48	495
Totals ..	632	2,692	761	2,937	174	972

Prisons.

The health of the convicts in the Prisons of the Colony was generally satisfactory. No disease of epidemic character occurred during the year.

The daily average on the sick list was 49 per cent of the whole average strength, and there were eight deaths.

There was a total of 3 deaths in the Central Prisons at Accra, Seccondee and Coomassie. Of these, there was one death in Accra Prison due to sub-acute meningitis and broncho-pneumonia. There was one death in Seccondee Prison due to general paralysis. There was one death in Coomassie Prison due to abscess, thigh.

There were three executions during the Quarter.

Scientific.

In Appendix A. will be found the Report for the work done in the Medical Research Institute for the quarter January to March, 1922, by Dr. J. F. Corson.

In Appendix B. will be found the Report for the work done by Mr. R. Simmons, Analytical Chemist, for the quarter January to March, 1922.

D. ALEXANDER,

Director, Medical and Sanitary Services.

20TH APRIL, 1923.

TABLE IV.

1. Name of Towns.

Station.	1920.		1921.		1922, 1st quarter.	
	Approximate Area.	No. of proclaimed opened spaces.	Approximate Area.	No. of proclaimed opened spaces.	Approximate Area.	No. of proclaimed opened spaces.
Accra	4½ square miles.	27	5 square miles.	32	6.05 square miles.	32
Cape Coast ..	2½ square miles.	4	2½ square miles.	4	2½ ,,	4
Seccondee ..	3 square miles.	3	3 square miles.	3	3 ,,	3
Coomassie ..	9 square miles.	—	9 square miles.	—	9 ,,	—

2. Population.

Station.	1920.					1921.					1922, 1st quarter.				
	Natives.		Europeans.		Total.	Natives.		Europeans.		Total.	Natives.		Europeans.		Total.
	Males.	Females	Males.	Females		Males.	Females	Males.	Females.		Males.	Females.	Males.	Females	
Accra ..	13,340	11,300	346	76	25,062	21,018	17,390	457	72	38,937	22,364	19,025	430	70	41,889
Cape Coast	4,858	5,341	46	15	10,260	4,946	5,460	38	15	10,459	7,350	7,571	38	15	14,974
Seccondee	8,000	5,000	165	19	13,174	5,878	3,622	189	34	9,723	6,025	3,712	191	34	9,962
Coomassie	11,391	9,170	168	11	20,797	10,786	7,344	200	19	18,349	12,664	7,385	258	21	20,328

3. Housing.

Station.	1920.				1921.				1922 1st quarter.			
	Houses.		Huts.		Houses.		Huts		Houses.		Huts.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Accra	180	3,016	(see	houses.)	175	2,976	(see	houses.)	158	3,062	—	—
Cape Coast ..	33	1,366	—	321	30	1,370	—	326	30	1,201	—	—
Seccondee ..	106	1,504	—	—	89	1,536	—	—	37	1,201	—	—
Coomassie ..	48	1,300	—	71	81	1,537	—	71	81	1,553	—	—

4. Erection of New Buildings.

Station.	1920.		1921.		1922, 1st quarter.	
	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	99	—	213	—	—	—
Cape Coast ..	1	2	10	2	—	—
Seccondee ..	—	—	—	—	—	—
Coomassie ..	—	—	—	—	—	—

4. (b) Action Taken.

Station.	1920.		1921.		1922, 1st quarter.	
	No. of prosecutions.		No. of prosecutions.		No. of prosecutions.	
	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.
Accra	—	—	—	—	—	—
Cape Coast	—	—	—	—	—	—
Seccondee	—	—	—	—	—	—
Coomassie	—	—	—	—	—	—

5. Latrines.

Station.	1920.								1921.								1922, 1st quarter.							
	Number.				New ones.				Number.				New ones.				Number.				New ones.			
	Male.		Female.		Male.		Female.		Male.		Female.		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	41	453	41	239	3	14	3	13	46	473	38	259	5	20	5	20	48	535	40	291	2	26	2	16
Cape Coast	14	140	13	132	2	8	2	8	17	140	17	140	3	12	3	12	10	136	10	144	—	—	—	—
Seccondee	11	196	11	196	1	12	—	—	17	115	12	81	1	8	1	8	18	119	13	85	—	—	—	—
Coomassie	26	227	26	221	—	—	—	—	32	271	32	245	2	18	2	18	34	255	34	223	—	—	—	—

5. (b) Latrine (Private).

Station.	1920.							1921.							1922—1st quarter.							
	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.	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	378	580	—	70	—	—	—	—	494	650	—	88	—	—	—	—	538	677	—	90	—	—	—	—
Cape Coast	126	777	777	36	6	—	—	4	123	730	730	36	6	—	2	2	134	730	—	36	—	—	—	—
Secondee	225	220	220	50	—	—	1	—	245	233	430	50	—	—	—	—	245	320	22	56	—	—	—	—
Coomassie	98	446	—	—	—	—	—	—	132	403	—	42	—	—	—	—	236	443	—	73	—	—	—	—

6. Removal of Refuse.

Station.	1920.						1921.						1922.—1st quarter.					
	Dustbins.	Cart 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.	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	33	9	94 cart-loads	—	—	40	34	7	93	4	—	34	40	1 & 1 lorry.	98	4	—	41
Cape Coast	39	10	34 cart-loads.	—	—	32	39	10	55 cart-loads.	—	1 cart load.	31	38	10	56	—	1 cart load.	31
Seccondee	20	2 motor lorries.	25 cart-loads.	13	—	26	21	2 lorries	23 lorry loads.	—	—	23	21	2 lorries.	25 cart loads.	—	—	24
Coomassie	17	3	150 head loads.	1	unknown	45	20 incinerators	1	437 head loads.	1	17 head loads.	82	20 incinerators	1	216	—	45	2

7. Mode of Disposal of Excreta, Refuse and Offal.

1920.

Station.	Buried or trenched.					Burnt.		Thrown into sea.				Otherwise dealt with.		
	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.
Accra ..	—	—	—	—	—	—	560	94	—	—	—	5	—	—
Cape Coast ..	—	1	$\frac{1}{15}$	—	54	—	777	—	—	—	—	—	—	1
Seccondee ..	220	—	—	—	—	—	—	—	—	—	25	2	233	—
Coomassie ..	446	49	7	—	—	—	—	—	—	—	—	—	403	—

1921.

Station.	Buried or trenched.			Burnt.			Thrown into sea.		Otherwise dealt with.			
	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.
Accra ..	—	—	—	—	650	—	12	—	93	—	—	—
Cape Coast ..	$\frac{1}{15}$	—	56	—	773	—	$\frac{1}{7}$ hd	—	—	$\frac{1}{15}$	—	1
Seccondee ..	2	—	—	—	—	—	—	—	23	—	320	—
Coomassie ..	hdld s. 4	—	450	—	—	—	—	—	—	—	443	—

1922, 1st quarter.

Station.	Buried or trenched.		Burnt.			Thrown into sea.		Otherwise dealt wth.		
	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.	Pails excreta per day.	Cartload refuse per day.	Cartload offal per day.
Accra ..	—	—	—	—	636	98	5	—	—	—
Cape Coast ..	—	—	55	—	730	—	$\frac{1}{7}$	—	—	—
Seccondee ..	2	—	—	—	—	—	—	—	—	2
Coomassie ..	14	—	216	—	—	—	—	—	—	—

8. Average Daily Number of Cartloads of Cans, Bottles and Incombustible Materials Removed from Houses and Compounds.

Station.	1920.	1921.	1922, 1st quarter.
Accra	29	23½	37⅓
Cape Coast	1 Cartload	1	1 Cartload
Seccondee	2 Cartloads	14 headloads	24
Coomassie	49 headloads	150 headloads	147

9. Water Supply.

Station.	1920.																	
	Pipe-Borne Water.			Well.				Tanks.								Barrels.	
				Public.		Private.		Public.			Private.		Nature of Tank.				
	Source.	Public standard pipe.	Private standard pipe.	No.	Mosquito proof.	No.	Mosquito proof.	Mosquito proof.	Above ground.	Mosquito proof.	Above ground.	Mosquito proof.	Wood.	Iron.	Concrete.	No.	Mosquito proof.
Accra	River Densu	55	411	—	—	165	157	5	7	7	126	121	22	103	20	68	68
Cape Coast	—	—	—	10	5	301	296	13	16	16	65	63	10	124	71	480	476
Seccondee	Anan-kwan	34	69	8	8	130	128	—	81	81	42	42	6	265	72	111	111
Coomassie	—	—	—	15	7	108	72	2	—	—	1	1	2	30	3	300	91

9. Water Supply—*continued.*

Station.	1921.																	
	Pipe Borne Water.			Well.				Tanks.									Barrels.	
				Public.		Private.		Public.			Private.		Nature of Tank.					
	Source.	Public stand pipe.	Private stand pipe.	No.	Mosquito proof.	No.	Mosquito proof.	Mosquito proof.	Above ground.	Mosquito proof.	Above ground.	Mosquito proof.	Wood.	Iron.	Concrete.		No.	Mosquito proof.
Accra	River Densu	57	665	—	—	162	147	—	—	—	139	117	7	148	12		41	39
Cape Coast	—	—	—	10	6	221	193	4	22	16	140	136	11	129	70		381	367
Seccondee	Anan-kwan.	34	69	—	—	45	43	—	77	77	176	176	2	231	33		114	114
Coomassie	—	—	—	16	3	142	31	3	—	—	44	44	3	38	3		367	115

9. Water Supply—(*continued*)

Station.	1922, 1st Quarter.																	
	Pipe-Borne Water.			Well.				Tank.								Barrels.		
				Public.		Private.		Public.		Private.		Nature of Tank.						
	Source.	Public Stand pipe.	Private Stand pipe.	No.	Mosquito proof.	No.	Mosquito proof.	Mosquito proof.	Above ground.	Mosquito proof.	Above ground.	Mosquito proof.	Wood.	Iron.	Concrete.	No.	Mosquito proof.
Accra	River Densu	59	746	—	132	132	2	—	—	—	74	69	3	15	2	26	23
Cape Coast	—	—	—	10	6	218	210	7	2	9	211	211	14	115	82	350	350
Seccondee	Anankwan	37	110	—	—	—	—	—	—	—	117	117	1	139	6	95	95
Coomassie	—	—	—	16	3	140	115	3	1	1	52	48	3	46	3	148	95

10. Drains (Masonry).

Station.	Masonry Drains.												Earth Drains.								
	1920.				1921.				1922, 1st Quarter.				1920.			1921.			1922, 1st Quarter.		
	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards. reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards cleaned.	Lineal yards constructed.	Frequency of cleaning.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.	Lineal yards cleaned.	Lineal yards dug.	Frequency of cleaning.
Accra ..	42,164	—	—	6,684	44,975	—	—	2,811	45,636	—	—	—	4,510	1,760	Quarterly	61,954	10,325	Every wk.	5,850	5 026	Every month.
Cape Coast	21,344	50	—	1,444	22,016	45	—	672	22,116	62	—	100	8,673	—	Continuously.	6,953	670	Continuously.	1,478	180	Twice a month
Seccondee	—	—	100	1,832	38,969	34	76	500	—	—	50	100	3,400	1,200	Monthly	9,004	7,233	Monthly	—	—	—
Coomassie	10,162	420	—	1,849	11,339	420	—	1,177	10,162	—	340	—	14,900	—	4 times a month.	—	—	When necessary.	550	—	When necessary.

11. Inspections and Prosecutions.

Station.	1920.								1921.							1922.—1st quarter.						
	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.	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.	Inspectors employed.	Houses inspected.	Houses where larvae were found.	Notices against larvae.	Persons fined for larvae.	Notices re insanitary conditions.	Persons fined for insanitary condition.	No. of Soda and Aerated Factories inspected.
Accra	17	118,613	1,087	199	805	735	50	—	22	123,069	862	102	620	813	62	4	22	31,692	182	50	160	336	1	4
Cape Coast ..	10	26,205	137	353	98	49	42	—	12	25,639	321	667	251	80	67	—	6	5,881	35	231	27	57	36	—
Seccondee ..	9	53,384	191	230	127	369	88	—	9	46,632	234	113	174	447	125	1	9	5,235	9	5	15	34	—	—
Coomassie ..	5	17,255	121	46	103	349	723	1	6	39,479	384	384	289	1,182	782	1	8	8,355	68	7	45	32	268	1

TABLE V.

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR 1ST JANUARY, 1922, TO 31ST MARCH, 1922.

Diseases.	Remaining in Hospital at end of 1921.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of March, 1922.	Remarks.
		New Cases.	Deaths.			
Infective Diseases.						
Beri-Beri	..	32	1	32	..	
Cerebro-Spinal Fever	..	2	2	2	..	
Chicken-Pox	8	29	..	37	3	
Dysentery	5	267	5	272	2	
Enteric	..	8	..	8	..	
Gonorrhœa	9	596	..	605	6	
Influenza	..	69	..	69	..	
Leprosy (*a*) Nodular	1	6	..	7	..	
(*b*) Anæsthetic	..	2	..	2	1	
Malaria (*a*) Tertian	..	199	..	199	4	
(*b*) Quartan	..	11	..	11	..	
(*c*) Aestivo-autumnal	1	384	..	385	2	
(*d*) Chronic Malaria	..	717	..	717	..	
(*e*) Blackwater	..	10	1	10	1	
(*f*) Unclassified	11	476	1	487	2	
Measles	..	35	..	35	..	
Pneumonia	7	154	15	161	13	
Relapsing Fever	..	1	..	1	..	
Rheumatic Fever	..	57	..	57	1	
Septicæmia	..	2	2	2	..	
Trypanosomiasis (Sleeping Sickness)	..	3	..	3	..	
Small-Pox	1	—	—	1	..	
Syphilis (*a*) Primary	3	70	..	73	1	
(*b*) Secondary	4	120	..	124	1	
(*c*) Inherited	..	15	..	15	..	
Tetanus	..	4	1	4	..	
Tuberculosis	3	135	3	138	5	
Whooping Cough	..	30	1	30	..	
Yaws	..	477	..	477	..	
Yellow Fever	..	5	1	5	..	
Other Diseases	1	251	1	252	..	
Intoxications.						
Alcoholism	..	3	..	3	..	
Morphinism	..	1	1	1	..	
Others	..	1	..	1	..	
General Diseases.						
	..	91	..	91	..	
Anæmia	..	2	..	2	..	
Anæmia—Pernicious	..	1	..	1	1	
Diabetes	..	11	..	11	..	
Exophthalmic Goitre	..	7	..	7	..	
Gout	..	2	..	2	..	
Rickets	1	349	..	350	..	
Rheumatism	..	147	..	147	1	
Other Diseases						
Local Diseases. Diseases of the Nervous System. Sub-section 1.	1	28	..	29	..	
Neuritis	..	11	3	11	..	
Meningitis	..	9	..	9	..	
Myelitis	..	1	..	1	..	
Hydrocephalus	..	23	..	23	..	
Other Diseases						
Sub-section 2.	..	1	..	1	..	
Apoplexy	3	4	1	7	2	
Paralysis	..	1	..	1	..	
Chorea	..	20	..	20	1	
Epilepsy	..	73	..	73		
Neuralgia	..	2	..	2	..	
Hysteria	1	24	..	25	..	
Other Diseases						
Carried forward	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR 1ST JANUARY, 1922, TO 31ST MARCH, 1922.

Diseases.	Remaining in Hospital at end of 1921.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of March, 1922.	Remarks.
		New Cases.	Deaths.			
Brought forward	..	..	..	..	..	
Sub-section 3.						
Mental Diseases—						
Idiocy	..	3	..	3	..	
Mania	..	14	..	14	..	
Melancholia	..	3	..	3	..	
Dementia	..	4	..	4	..	
Delusional Insanity	..	4	..	4	..	
Diseases of the Eye—						
Conjunctivitis	2	569	..	571	..	
Keratitis	..	14	..	14	..	
Ulceration of Cornea	..	49	..	49	..	
Iritis	..	16	..	16	..	
Cataract	..	6	..	6	..	
Other Diseases	1	98	..	99	..	
Diseases of the Ear—						
Inflammation	..	112	..	112	..	
Other Diseases	..	199	..	199	..	
Diseases of the Nose	..	33	..	33	1	
Diseases of the Circulatory System—						
Pericarditis	..	9	..	9	..	
Endocarditis	..	1	1	1	..	
Valvular Mitral	..	24	..	24	1	
„ Aortic	..	5	..	5	..	
„ Tricuspid	..	3	..	3	..	
„ Pulmonary	..	1	..	1	..	
Arterial Sclerosis	..	3	..	3	..	
Aneurism	..	3	1	3	..	
Other Diseases	1	43	..	44	1	
Diseases of the Respiratory System—						
Laryngitis	1	32	..	33	..	
Bronchitis	4	1,294	..	1,298	2	
Broncho-pneumonia	2	51	2	53	1	
Pleurisy	2	58	..	60	..	
Empyema	2	4	..	6	1	
Other Diseases	..	431	11	431	..	
Diseases of the Digestive System—						
Stomatitis	..	85	..	85	..	
Caries of teeth	..	255	..	255	..	
Glossitis	..	6	..	6	..	
Sore Throat	..	86	..	86	..	
Inflammation of Tonsils	..	43	..	43	..	
Gastritis	..	132	..	132	..	
Ulceration of Stomach	..	5	..	5	..	
Hæmatemesis	..	3	1	3	..	
Stricture of Stomach	..	3	..	3	..	
Dyspepsia	..	173	..	173	..	
Enteritis	..	228	..	228	..	
Appendicitis	..	9	..	9	..	
Colitis	1	5	..	6	..	
Ulceration of Intestines	1	3	..	4	..	
Hernia	3	81	1	84	11	
Diarrhœa	..	175	..	175	..	
Constipation	..	1,508	..	1,508	1	
Colic	..	115	..	115	1	
Hæmorrhoids	..	59	..	59	1	
Pancreatitis	..	1	..	1	..	
Hepatitis—Acute	..	42	..	42	..	
Abscess	..	25	..	25	..	
Cirrhosis	..	4	2	4	..	
Jaundice	2	19	1	21	..	
Peritonitis	1	3	..	4	..	
Ascites	..	10	1	10	..	
Other Diseases	2	32	1	34	..	
Carried forward ..	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR 1st JANUARY, 1922, TO 31st MARCH, 1922.

Diseases.	Remaining in Hospital at end of 1921.	Yearly Total. New Cases.	Yearly Total. Deaths.	Total Cases Treated.	Remaining in Hospital at end of March, 1922.	Remarks.
Brought forward	..	..	..	..	..	
Diseases of the Lymphatic System—						
Splenitis	..	38	..	38	..	
Inflammation of Lymphatic Gland	1	81	..	82	3	
Suppuration of Lymphatic Gland	..	48	..	48	2	
Lymphangitis	..	8	..	8	..	
Elephaptiasis	2	38	..	40	..	
Other Diseases	..	74	..	74	..	
Diseases of the Urinary System—						
Acute Nephritis	5	42	3	47	1	
Bright's Disease	..	9	2	9	1	
Pyelitis	..	1	..	1	..	
Calculus	..	1	..	1	..	
Renal Colic	..	1	..	1	..	
Cystitis	1	47	..	48	..	
Suppression	..	6	..	6	..	
Hæmaturia	..	12	1	12	2	
Chyluria	..	6	..	6	..	
Other Diseases	..	3	..	3	..	
Diseases of the Generative System—						
Male Organs :—						
Urethritis	.	16	..	16	1	
Gleet	..	7	..	7	..	
Stricture	1	48	1	49	3	
Prostatitis	..	5	..	5	..	
Soft chancre	3	142	..	145	5	
Inflammation of Scrotum ..	1	8	..	9	2	
Hydrocele	..	28	..	28	..	
Orchitis	3	68	..	71	..	
Epididymitis	..	15	..	15	..	
Abscess of Testicle	..	3	..	3	..	
Other Diseases	9	97	1	106	5	
Female Organs :—						
Ovaritis	..	4	..	4	..	
Ovarian Cyst	..	4	..	4	..	
Endometritis	..	74	..	74	1	
Displacement of Uterus	..	6	..	6	..	
Vaginitis	1	16	..	17	..	
Amenorrhœa	..	23	..	23	..	
Dysmenorrhœa	..	32	..	32	..	
Menorrhagia	..	16	..	16	..	
Leucorrhœa	..	4	..	4	..	
Abortion	..	18	..	18	..	
Delayed Labour	..	4	..	4	..	
Postpartum Hæmorrhage	..	1	..	1	..	
Retained Placenta	..	1	..	1	..	
Premature Birth	..	1	1	1	..	
Puerperal Septicœmia	..	5	1	5	..	
Mastitis	..	7	..	7	..	
Abscess of Breast	..	11	..	11	..	
Other Diseases	..	51	2	31	2	
Diseases of Organs of Locomotion—						
Osteitis	1	45	..	46	1	
Arthritis	4	128	..	132	..	
Spondylitis	..	2	..	2	..	
Bursitis	1	8	..	9	..	
Other Diseases	..	273	..	273	2	
Diseases of Connective Tissue—						
Cellulitis	1	176	..	177	5	
Abscess	10	383	1	393	4	
Elephantiasis	..	40	..	40	..	
Other Diseases	1	36	..	37	..	
Carried forward ..	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT PATIENTS) FOR 1ST JANUARY, 1922, TO 31ST MARCH, 1922.

Diseases.	Remaining in Hospital at end of 1921.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of March, 1922.	Remarks.
		New Cases.	Deaths.			
Brought forward	..	..	..	..	..	
Diseases of the Skin—						
Urticaria	..	26	..	26	..	
Eczema	1	77	..	78	..	
Boil	..	115	..	115	..	
Carbuncle	..	13	..	13	..	
Herpes	..	12	..	12	..	
Psoriasis	..	7	..	7	..	
Tinea	..	183	..	183	..	
Scabies	..	194	..	194	..	
Acne	..	11	..	11	..	
Prickly Heat	..	34	..	34	..	
Ulcers	63	1,420	1	1,483	29	
Other Diseases	..	326	..	326	7	
Injuries General	1	127	1	128	3	
Local	36	3,528	11	3,564	41	Not included in totals.
Surgical Operations	6	192	3	198	..	
Tumours	5	74	2	79	2	
Poisons	..	12	..	12	..	
Parasites	..	22	..	22	..	
Cestoda :—						
Tænia Solium	..	68	..	68	..	
Tænia Saginata	..	59	..	59	..	
Nematoda—						
Ascaris	..	52	..	52	..	
Dracunculus	3	363	..	366	11	
Filariasis	..	4	..	4	..	
Ankylostomiasis	1	57	..	58	1	
Oxyuris	..	3	..	3	..	
Others	..	12	..	12	..	
Insecta—						
Myiasis	..	1	..	1	..	
Others	2	24	..	26	..	
Total	242	20,231	89	20,473	202	

APPENDIX A.

MEDICAL RESEARCH INSTITUTE.

Accra Laboratory Report for the First Quarter of the Year, 1922.

A.—INTRODUCTION.

Owing to the change in the period to be covered by the Annual Report necessitating a separate report for the first quarter of 1922, this is presented in the form of a record of the routine laboratory work done. Reference to original work and special investigations is deferred for inclusion in the Annual Report for the Financial Year April 1st, 1922, to March 31st, 1923.

Dr. A. Ingram, Pathologist, was in sole charge until the 9th of February, on which date Dr. J. W. S. Macfie, Director of the Medical Research Institute, returned from leave. Dr. J. F. Corson, Pathologist, was absent on leave during the whole of the three months. Mr. F. Leeson, Laboratory Superintendent, was present throughout the period, and Mr. F W. Abbott, European Laboratory Assistant, was also present until the 22nd of January when he went on leave.

ACKNOWLEDGMENTS.

Donations of specimens were made by Dr. A. J. R. O'Brien, Dr. D. Duff, Dr. E. C. D. Braithwaite, Mr. R. Simmons and Mr. J. Loder, to whom grateful acknowledgments are made.

We are also indebted to the Imperial Bureau of Entomology and to the Liverpool School of Tropical Medicine for identifications of specimens and other help.

J. F. CORSON,

ACCRA, 28th NOVEMBER, 1922. *Acting Director, Medical Research Institute.*

B.—ROUTINE EXAMINATIONS.

I.—EXAMINATIONS OF CLINICAL MATERIALS.

The results are shewn in the following tables. There were apparently no cases of particular interest calling for special comment.

Table I.—Examinations of Clinical Materials.

Nature of the Examination.	Europeans.	Africans.	Totals.
Blood Examinations	39	56	95
Examinations of Faeces	4	8	12
Examinations of Urine	4	13	17
Examinations of Sputum	5	65	70
Miscellaneous Examinations	1	11	12

Blood Examinations.

Malaria parasites (Subtertian) were found in 3 out of 43 specimens. The Wassermann test was done in 21 cases and the Widal test for typhoid fever in 6 cases. A Sachs-Georgi test was also carried out along with the Wassermann test.

Examinations of Sputum.

Tubercle bacilli were found in 14 of the 55 specimens sent for that examination.

II.—POST-MORTEM EXAMINATIONS.

Table II.—Post-mortem Examinations.

Cause of Death.	Europeans.	Africans.	Cause of Death.	Europeans.	Africans.
Broncho-pneumonia	—	4	Morbus cordis	1	—
Burns	—	1	Nephritis	—	1
Fracture of Base of Skull	—	1	Pneumonia, lobar	—	1
Haemorrhage, traumatic	—	3	Tuberculosis of Lungs	—	5
Intestine, rupture of	—	1	do Pericardium	—	1
Meningitis, septic	—	2	Unknown	—	1
do pneumococcal	—	1	Yellow Fever.	—	1
				1	23
				24	

III.—EXAMINATIONS OF RATS.

Twenty-nine dead rats, received from the Sanitary Department, were examined. They included 17 *Mus. rattus*, 5 *Mus. decumanus*, and 4 *Cricetomys gambianus*.

IV.—EXAMINATIONS OF MOSQUITO LARVAE.

One hundred and ninety-seven samples containing mosquito larvae sent by the Medical Officer of Health, Accra, were examined. The results are shewn in Table III.

Table III.—Examinations of Samples of Mosquito Larvae.

Month of the Year.	Number of Samples examined.	Species of Mosquito larvae found and the number of samples in which they occurred.		
		Stegomyia fasciata.	*Culex fatigans.*	*Culex decens.*
January	72	65	6	1
February	82	82	—	—
March	43	42	2	—

V.—EXAMINATIONS OF WATER SAMPLES.

Twenty-five samples of water were sent for bacteriological examination by the Medical Officer of Health for Accra. A few samples of Soda Water were also examined.

APPENDIX B.

ANALYTICAL CHEMIST.

CHEMICAL LABORATORY,

ACCRA.

I assumed duty in the Colony on the 4th June, 1921.

For five months during which the Chemical Laboratory was being built and equipment installed for work of a chemical nature, I was permitted through the courtesy of the Director of Medical Research to make use of his Laboratory, and was thus enabled to carry out some simple biochemical investigations.

Towards the end of November, my Laboratory was sufficiently advanced for the performance of chemical work proper; the number of samples dealt with up to the 31st December, 1921, was 47; the samples may be classified as under :—

Chemico-legal.

Photographic chemicals	25
Forged currency notes	2
Photographs	.. 3
Human viscera—exhumed organs	.. 3

Examinations for poison.

Stomach contents	1
Foods, soups and meat ..	.. 3
Mineral	.. 1
Laundry "salts"	.. 1
Urine	.. 2

Customs.

Rum 1, Gin 1, Brandy 1 ..	.. 3

Public Works Dept.

Water-pipe incrustations ..	.. 3

With regard to the chemico-legal samples, these chiefly involved the identification of a number of photographic chemicals in connection with a criminal case of forging (photographic reproduction) and uttering of £1 notes of the West African Currency Board; evidence in this case was given in the High Court.

Evidence was given in a Coroner's Court in a case in which poison was suspected of having caused the death of a man, in this instance the body was exhumed. No poison was found in the viscera.

Among the substances examined was a specimen of Galena (Lead Sulphide) which is said to be used for cosmetic purposes in a similar manner as powdered Antimony; probably, the so-called Antimony is in reality Galena, and there may be risks of lead poisoning attending its use in this way.

No poison was found in the prepared foods though unsavoury ingredients such as wood-ashes and charcoal were present.

Analyses of samples of Spirits were made on behalf of the Customs with the view of determining their genuineness or otherwise.

The composition of the incrustation from the corroded interior of some of the Accra water service pipes and tanks was determined by analysis and report furnished thereon.

The bionomic effects of the Chlorides of different metals in varying concentration on the larvae of Stegomyia fasciata were studied, and it was shewn that the metallic ions excercise marked differences in their effects and in the concentration required for lethal results.

The Formol-Gel reaction (Gaté and Papacostas) with sera giving positive and negative Wassermann tests was studied and carried out under definite conditions as regards quantity, time and temperature using neutral 40 per cent Formaldehyde solution.

Out of 109 sera dealt with by this method 88 (80%) were in agreement with the results of the Wassermann tests, 54 being positive and 34 negative gels.

With the view of ascertaining whether the unripe or decayed fruits of the Ackee (*Blighia sapida*) are as toxic here as they are in the West Indies, extracts were made and fed to rats; but these animals proved unsuitable for the experiments and young "street" dogs were employed.

One of the dogs vomited two hours after ingesting the extract and died within 18 hours.

Post-mortem examination did not reveal the typical pathological changes recorded by Dr. Scott in Jamaica.

The supply of Ackees being at an end the experiments could not be repeated; it is proposed to resume them when fruits are available.

Determinations of the chemical composition and food values of native foodstuffs as prepared for consumption have been commenced, the prison diet being examined first.

* * * * *

Mr. I. A. Hammond was appointed Assistant in the Laboratory on 1st December, 1921.

The Laboratory, though small, is well equipped for chemical work and the Acetylene gas plant has, as was anticipated from past experience, proved very successful as a means of supplying and applying heat in a tropical Laboratory.

ROBERT SIMMONS, F.I.G.,

Analytical Chemist.

CONTENTS.

I.—Administration.

II.—Public Health.

III.—Sanitation.

REPORT FOR THE YEAR 1st APRIL, 1922, to 31st MARCH, 1923.

I.—ADMINISTRATION.

Table I.—Medical Staff at the 31st March, 1923.

1 Director of Medical and Sanitary Services.
1 Deputy Director of Medical and Sanitary Services.
1 Deputy Director of Sanitary Services.
1 Assistant Director of Medical Service.
1 Surgical Specialist.
1 Medical Specialist.
6 Senior Medical Officers.
2 Senior Sanitary Officers.
2 Pathologists.
30 Medical Officers (6 of whom are Medical Officers of Health).
1 Radiologist and School Medical Officer.
2 African Medical Officers.

28 Vacancies:
- 1 Director of Medical Research Institute.
- 1 Assistant Director of Medical Service
- 17 Medical Officers.
- 5 Women Medical Officers.
- 4 African Medical Officers.

1 Dental Surgeon.
1 Analytical Chemist
1 Office Assistant and Accountant.
1 Dispensers Instructor.
1 European Storekeeper.
4 Superintendent Sanitary Inspectors.
1 Laboratory Superintendent.
1 Laboratory Assistant.

European Nursing Staff.

4 Senior Nursing Sisters.
10 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.
2 First Division Nurses.
1 Chief Clerk.
1 First Division Clerk.
(*b*) 4 First Division Sanitary Inspectors.
1 Sanitary Inspector & Training Officer.
1 Chief Clerk.
1 First Division Clerk.
(*c*) 1 Chief Attendant.
1 Assistant Chief Attendant.
1 Matron.

Table II.—Financial.

(*a*) **Statement of Revenue 1st April, 1922, to 31st March, 1923 :—**

Revenue (Hospital Fees)	£3,523 15 2

(*b*) **Statement of Expenditure :—**

Medical Department (Including Sanitation Branch)—	
Personal Emoluments	100,514 19 1
Other charges	114,878 0 2
Total	£215,392 19 3

II.—PUBLIC HEALTH.

(a) General Remarks.

The following Table shows the most noteworthy contrasts in the Returns of Diseases treated during the year 1921, the Quarter ending 31st March, 1922, and for the period under review.

Disease.		1921.	1st January to 31st March, 1922.	1922–23.
Small Pox		9	1	3
Chicken Pox		226	37	212
Dysentery		710	272	908
Enteric Fever		41	8	19
Influenza		184	69	243
Malaria	Tertian	904	199	2,341
	Quartan	27	11	101
	Aestivo-Autumnal	1,832	385	1,371
	Chronic	432	717	1,865
	Blackwatet	21	10	48
	Unclassified	2,730	487	1,780
Measles		19	35	182
Pneumonia		370	161	599
Rheumatic Fever		18	57	132
Sleeping Sickness		8	3	15
Whooping Cough		118	30	379
Alcoholism		28	3	14
Yellow Fever		4	5	22
Tuberculosis		337	138	385
Plague		—	—	1

Dysentery.

There was a considerable increase over the number of cases that occurred in 1921, but the total deaths shew a decrease and as a result a much lower mortality rate.

Malaria.

A great increase on the number of cases treated in 1921, but the mortality is very low—10 deaths.

Blackwater Fever.

Forty-eight cases with six deaths occurred, as against 21 with 9 deaths in 1921, an appreciable decrease in the mortality rate.

Yellow Fever.

During the period which this report covers there were 18 cases of Yellow Fever definitely diagnosed, eight cases amongst Europeans with seven deaths (one female), 10 amongst Africans with six deaths, five of these practically seen for the first time after death. In addition there were two deaths in Europeans in which the P.M. findings were suspicious of Yellow Fever and four cases in Africans doubtful.

Tuberculosis.

No great change has taken place in the number of cases treated as compared with 1921.

The number of deaths known to have resulted was 43 as against 41 in 1921.

Guinea Worm.

872 cases were treated as compared with 889 in 1921.

Enteric Fever.

There has been a satisfactory decrease in the number of cases that have occurred for the period under review as against 41 in 1921.

(*b*) **European Officials.**

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

	1921.	1st January to 31st March, 1922.	1922–23.
Total number of Officials resident	768	741	979
Average number resident	612	692	719
Total number on the Sick List	674	191	800
Total number of days on the Sick List ..	6,900	1,762	7,781
Average daily number on Sick List	18.9	19.57	21.31
Percentage of sick to average number resident	3.08	2.82	2.96
Average number of days on the Sick List for each patient	10.23	9.22	9.72
Average sick time to each resident	11.27	2.54	10.82
Total number invalided	38	15	30
Percentage of invalidings to total residents ..	4.94	2.02	3.06
Percentage of invalidings to average number resident	6.20	2.16	4.17
Total deaths	14	2	6
Percentage of deaths to total residents ..	1.82	0.27	0.61
Percentage of deaths to average number resident	2.28	0.28	0.83

DAYS ON SICK LIST.

Causes.	1921.	1st January to 31st March, 1922.	1922–23.
Tropical Diseases	4,328	836	3,713
Non-tropical Diseases	2,572	926	4,068
Total	6,900	1,762	7,781

Causes of Invaliding of European Officials :—

Neurasthenia 6, Pulmonary tuberculosis 5, Debility 5, Malaria 3, Delusions 2, Mental Instability 1, Enlarged liver 1, D.A.H. 1, Dysentery 1, Paratyphoid fever 1, Insomnia 1, Panophthalmitis 1, Intestinal Stasis 1, Blackwater Fever 1 ; Total 30.

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

8 months and under	16
9–16 ,, ...	14
17–24 ,, ...	Nil.

The invalidings at the rate of 30.64 per 1,000 per annum show a decrease on the previous period of one year (1921).

	1921.	1st January to 31st March, 1922.	1922–23.
Invaliding rate per 1,000	49.47	20.24 per quarter.	30.64

Causes of Deaths of European Officials :—

Hyperpyrexia 1, Compound comminuted fracture and septicaemia 1, Blackwater fever 1, Yellow Fever 1, Dysentery 1 ; Encephalitis 1, Total 6.

(*c*) **African Officials.**

Table shewing Sick, Invaliding and Death rates of African Officials :—

	1921.	1st January to 31st March, 1922.	1922–23.
Total number of Officials resident	2,347	2,368	2,543
Average number resident	1,761	1,590	1,867
Total number on sick List	681	255	1,061
Total number of days on Sick List	7,217	2,904	10,269
Average daily number on Sick List	19	32.26	28.13
Percentage of Sick to average number resident	1.07	2.02	1.50
Average number of days on Sick List for each patient	10.59	11.38	9.67
Average sick time for each resident	4.09	1.82	5.50
Total number invalided	9	8	10
Percentage of invalidings to total residents ..	0.38	0.33	0.39
Percentage of invalidings to average number resident	0.51	0.50	0.53
Total deaths	8	—	13
Percentage of deaths to total residents ..	0.34	—	0.51
Percentage of deaths to average number residents	0.45	—	0.69

Causes of Invalidings of African Officials :—

Pulmonary Tuberculosis 2 ; G.P.I. 1 ; Carcinoma 1 ; Chronic Ulcers 1 ; Heart Disease 1 Lumbago 1 ; Diabetes 1 ; Keratitis 1 ; Defective eyesight 1 ; Total 10.

Causes of Deaths of African Officials :—

Nephritis 2 ; Pneumonia1 ; Peritonitis 1 ; Enteritis 1 ; Tetanus1 ; Pulmonary Tuberculosis 1 ; V.D.H. 1 ; Pyaemia 1 ; Bronchitis 1 ; Dysentery 1 ; Killed by an elephant 1 ; Drowning 1 ; Total 13.

(*d*) **General European Population.**

(i) Government Officials	979
(ii) Employés of Trading Firms	1,410
(iii) Employés of Mining Companies	521
(iv) Missionaries	88
Total	2,998

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

How employed.	Number.	Deaths.	Invalided.	Death rate per. cent.	Invaliding rate per cent.
1921.					
Merchants	1,556	15	41	0.96	2.63
Miners	541	2	10	0.36	1.84
Missionaries	74	1	2	1.35	2.70
Totals	2,171	18	53	0.82	2.44
1st January to 31st March, 1922					
Merchants	1,565	5	14	0.32	0.90
Miners	518	1	4	0.19	0.77
Missionaries	77	—	—	—	—
Totals	2,150	6	18	0.28	0.83
1922–23.					
Merchants	1,410	19	29	1.34	2.05
Miners	521	5	15	0.95	2.88
Missionaries	88	1	2	1.13	2.27
Totals	2,019	25	46	1.23	.2.27

Causes of Invaliding of European Non-Officials :—

Malaria 9, General Debility 3, Dementia 2, Heart Disease 2, Blackwater Fever 2, Appendicitis 2, Pulmonary Tuberculosis 2, Injuries 2, Rheumatism 2, Thrombo phlebitis 2, Conjunctivitis 1, Pleurisy 1, Jaundice 1, Colitis 1, Alcoholism 1, Ophthalmia 1, Adenitis 1, Hepatitis 1, Peripheral Neuritis 1 Bronchitis 1, Enteric Fever 1, Pyelitis 1, Dysentery 1, Cystitis 1, Pneumonia 1, Abdominal Adhesions 1, P.U.O. 1, Unfit for residence in tropics 1 ; Total 46.

Causes of Death of European Non-Officials :—

Yellow Fever 5, Blackwater Fever 6, Malaria 1, Unclassified Fever 1, Enteritis 1, Syncope 1, Pulmonary Tuberculosis 1, Intestinal Obstruction 1, Cut throat 1, Fractured Skull 1, Septicaemia 1, Heart Failure 1, Meningitis 1, Mitral Disease 1, Fatty degeneration of the Heart 1, Cancer 1 ; Total 25.

EUROPEAN MORTALITY AND INVALIDING RATES FOR THE YEAR.

Class.	Number.	Deaths.	Invalidings.	Death rate per 1,000	Invaliding rate per 1,000
Official	979	6	30	6.12	30.64
Non-Official	2,019	25	46	12.38	22.70
Totals ..	2,998	31	76	10.34	25.35

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III.—SANITATION.

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

I.—ADMINISTRATIVE.

(*a*) European Staff :—

The Deputy Director of Sanitary Services—Dr. J. M. Dalziel went on leave on 1st October, and has since retired from the service. Dr. A. C. Lorena—Senior Sanitary Office. —acted for the Deputy Director of Sanitary Services from 1st October to the end of the year.

Dr. H. O'Hara May—Senior Sanitary Officer—who has been promoted to Deputy Director of Sanitary Services, Sierra Leone, was about to leave the Colony on 31st March.

Dr. W. G. Watt—Medical Officer of Health—acted in the capacity of Senior Sanitary Officer from 1st October to the end of the year.

The following table shows the incidence of leave of the European Staff :—

Name of Officer.	Rank.	On leave.
Dr. J. M. Dalziel	D.D.S.S.	1st October, 1922, to 31st March, 1923.
Dr. A. C. Lorena	S.S.O.	14th May, 1922, to 20th September : 1922.
Dr. H. O'Hara May	S.S.O.	12th June, 1922, to 23rd November, 1922.
Dr. W. G. Watt	M.O.H.	1st May, 1922, to 6th September, 1922.
Dr. T. A. Dowse	,,	18th February, 1923, to 31st March, 1923.
Dr. D. J. F. O'Donoghue	,,	1st May, 1922, to 4th August, 1922.
Dr. P. S. Selwyn-Clarke	,,	No leave.
Dr. G. C. M. Davies	,,	18th March, 1923, to 31st March, 1923.
Dr. J. A. A. Duncan	,,	17th September, 1922, to 6th February 1923.
Mr. E. G. Gray	S.S.I.	21st January, 1923, to 31st March, 1923.
Mr. H. T. Lucas	,,	No leave.
Mr. P. P. Horn	,,	Arrived on 11th January, 1923.
Mr. V. R. Coe..	,,	Arrived on 21st February, 1923.

The appointment of one additional Medical Officer of Health and one Superintending Sanitary Inspector has been approved by the Governor.

(*b*) African Staff.

With the exception of short leave periods, 62 Sanitary Inspectors—four 1st Division and 58 2nd Division—were on duty throughout the year.

The following increase in the African Staff has been recommended :—

(*a*) Two Senior Division Sanitary Inspectors, and

(*b*) Four 2nd Division Sanitary Inspectors.

The agreement of one 1st Division Sanitary Inspector—a West Indian—was not renewed.

One 2nd Division Sanitary Inspector was dismissed, one resigned his appointment and one retired on pension.

The Sanitary organisation worked very satisfactorily, in spite of several outbreaks of infectious diseases at different centres in the Colony.

The following places were visited during the year by the Deputy Director of Sanitary Services and Senior Sanitary Officers :—

Coomassie, Bekwai, Seccondee, Cape Coast, Saltpond, Winnebah, Swedru and cocoa trading centres in the neighbourhood ; Nsawam, Kibbi, Nkawkaw and other towns along the Accra-Coomassie Railway ; Tarquah, Obuassi, Somanya, Kpong and Akuse.

ORDINANCES, ETC.

The following Ordinances, Orders-in-Council, Rules, etc., were made, during the year under report :—

Under the Quarantine Ordinance.

Order by the Governor No. 23 of 1922	.. Declaring Warri, in Nigeria, an infected place by reason of Yellow Fever.
,, ,, ,, No. 26 of 1922	.. Revoking the preceding.
,, ,, ,, No. 4 of 1923	.. Declaring Saltpond an infected place by reason of yellow fever.

Under the Infectious Diseases Ordinance.

Order in Council No. 20 of 1922	.. Declaring Saltpond an infected area by reason of yellow fever.
,, ,, No. 1 of 1923	.. Declaring Tarquah Mines region an infected area by reason of yellow fever.
,, ,, No. 3 of 1923	.. Revoking No. 20 of 1922 (above).
,, ,, No. 8 of 1923	.. Revoking No. 1 of 1923 (above).
,, ,, No. 15 of 1923	.. Declaring Saltpond an infected area by reason of yellow fever.

Under the Towns Ordinance.

Ordinance No. 2 of 1922	.. Amendment to, providing for passage or accommodation lanes for the purpose of giving access to premises.
Order in Council No. 10 of 1922	.. Revoking Order in Council made on 13th March, 1916, and applying the Ordinance to Anyinam.
,, ,, No. 24 of 1922	.. Applying the provisions to Nsuaem.
,, ,, No. 4 of 1923	.. Revoking the preceding and applying the provisions to Oda.
,, ,, No. 12 of 1923	.. Applying the provisions to Kwahu-Prahsu, Akwaseho, Jyajate, Kankang, Osino and Nkawkaw.

Under the Vaccination Ordinance.

Order in Council No. 10 of 1922	.. Amending Order No. 8 of 1920 with respect to Addah-Quittah District.

Under the Ashanti Administration Ordinance.

Order by the Governor No. 5 of 1922	.. Applying the Vaccination Ordinance to Coomassie, Wereso, &c.

Rule No. 24 of 1922	.. Rules with respect to Accra Public Markets.

Building Regulations for Cape Coast.

Bye-Law as to Sale of Meat in Accra and Christiansborg Markets.

Bye-Law under Section 38 sub-Section 2 (*a*) of the Town Council Ordinance as to removal of Night soil from Premises in which are kept private latrines (Accra).

II.—PREVENTIVE MEASURES AGAINST

(1).—Insect-borne Diseaes.

(*a*) Malaria, Yellow Fever, etc.

It is pleasing to record the fact that the preventive measures adopted during the 12 months under review, were more vigorous than in any corresponding period.

Better training has probably been instrumental in enabling the staff to do the house to house inspection in quicker time and with more satisfactory results—this being particularly the case at Coomassie, where about twice the amount of work was done with practically the same staff.

The anti-mosquito campaign was carried out along the usual lines, the Sanitation Staff confining their activities principally to the destruction of mosquito larvae and places suitable for the breeding of mosquitoes.

Accra was fortunate in obtaining the whole-time services of a Trained School Medical Officer during the last three months of the year.

The following table shows the work done by this School Medical Officer—Dr. Mary Magill—between 22nd January and 31st March, 1923.

	No. Examined.	Enlarged Spleens.	Parasites.	Quartan.	Subtertians.
Girls—Government ..	329	79 or 20.9%	11 or 14%	10	1
Girls—Wesleyan ..	184	47 or 25.8%	7 or 14%	3	4
Christiansborg—Infants	232	42 or 11.8%	7 or 14.6%	4	3
Christiansborg—Junior	131	14 or 10.6%	2 or 14.2%	1	1
Christiansborg—Kinder-garten	135	30 or 22.3%	6 or 20%	6	0
Total ..	1,011	211 or 20.8%	33 or 15.6%	24	9

It is interesting to note that the lower percentage of enlarged spleens at the Christiansborg—Infants and Junior Schools—is the direct result of quinine administered to the children by Dr. Beveridge during the previous year.

With regard to Quinine Administration, Dr. Magill writes as follows :—

> " The routine administration of quinine was instituted in each school immediately after the inspection, all children with enlarged spleen being put upon the quinine list. These children were especially chosen as they were obviously malarial subjects, and also because a possible subsequent diminution in the size of the spleen would give a rough index of the efficiency of the treatment.
>
> 211 out of the 1,011 children examined are now receiving a weekly dose of quinine sulphate in solution, those under the age of ten taking five grains, those over ten taking 7½ grains. I gave ten grains to the elder children at the outset, but reduced this to 7½ on account of the complaints of headache and dizziness."

The School Medical Officer, however, only attended to School children under 12 years of age.

Those above that age, were dealt with by the Medical Officer of Health, who administered quinine and quinidine to 260 scholars.

For lack of supervision, no systematic distribution of quinine was possible in other towns in the Colony.

Quartan parasites were only found in 24 children or 12.3%, and Subtertian in 9 or 4.7%, a percentage which compares very favourably with the figure (42.16%) given in last year's report. It may be mentioned that the blood smears were taken during the rains (June) last year, while this year they were taken during the dry season (February and March.

The rule forbidding African children from residing in the European Residential Area has been as far as possible enforced, but two very young children were found living in the compound of a senior Official at Coomassie in January.

Efforts have again been made to clear water holding trees from the European Reservation Areas.

Yellow Fever prevailed at different centres of the Colony during the year under report.

Sporadic cases occurred at Accra in July, September, December and March, at Tarquah in November, at Cape Coast in February, and near Tamale in November—all these cases ended fatally.

At Saltpond—December to March—and at Tarquah—December and January—it broke out in epidemic form with a case mortality of 50% at both places—14 cases and 7 deaths having occurred at Saltpond, and 2 cases and one death at Tarquah.

Throughout the Colony there were altogether 23 cases, 9 being Europeans with a case mortality of 8 or 88.8%, and 14 Africans with a case mortality of 7 or 50%.

Considerable strain was thrown on the Sanitation Staff to adopt measures to prevent the spread of Yellow Fever, but the work was done cheerfully and successfully, the situation being well in hand at the end of the year.

With Yellow Fever occurring at different centres practically at the same time, the shortage of appliances for fumigation purposes was seriously felt and pre-historic methods had to be improvised to cope with the situation, suitable appliances will, however, be ordered early in the next financial year.

Fumigation on a very extensive scale had to be carried out at Saltpond and Tarquah, practically every house in the town having been dealt with at the former place.

Trypanosomiasis.

The usual work of clearing likely haunts of tsetse-flies near towns was carried out.

A spot map of the Accra District prepared by the Director of Medical Research shows that the town of Accra is completely free from tsetse-flies—the nearest fly area being about 10 miles distant.

(2).—Infectious and Epidemic Diseases.

The diseases reported monthly by post for the information of the Secretary of State and the Ministry of Health are Plague, Cholera, Yellow Fever, Small-pox, Typhus, Relapsing Fever, Dysentery, Cerebro-spinal Fever, Acute Poliomyelitis, Influenza and Pneumonia.

Copies of these reports are also forwarded to the Medical Director to the League of Nations, Geneva.

Cases of Yellow Fever, Plague or Small-pox are notified by cable to the Secretary of State and to neighbouring Governments.

No cases of Plague, Typhus or Cholera occurred during the year.

Enteric Fever.

Four cases of Enteric occurred at Accra during the year as compared with 12 in the previous year.

Two patients were admitted to the European Hospital—one in June and one in August both recovered. One African case proved fatal in June.

One case was successfully treated at the Native Hospital in November.

The usual preventive measures were enforced.

Diarrhoea and Dysentery—

Cases of Diarrhoea and Dysentery were very common throughout the Colony, in spite of the strict measures adopted for the protection of food-stuffs from flies, the careful removal and disposal of sewage and refuse, and the protection of water supplies.

Chicken Pox.

Several mild cases of this disease occurred in different parts of the Colony—no deaths were reported.

Small-Pox and Vaccination.

13 sporadic cases of a very mild type were reported during the year—one being in the Northern Territories, and 12 in Ashanti and the Colony.

Vaccinations were carried out very energetically—the nine vaccinators, with the occasional assistance of Sanitary Inspectors, vaccinated 122, 566 persons, 46,588 or 38.01% being successful.

The percentage of successful vaccinations continues to be unreliable, as over 50% of persons vaccinated do not report themselves again for examination.

The activities of the vaccinators are apparent on the following table, which shows nearly half a million vaccinations during the last 6 years.

VACCINATIONS.—1917 to 1922-23.

	1917.	1918.	1919.	1920.	1921.	1922-23.
Total Vaccinations ..	21,293	14,700	21,467	221,386	87,449	122,566
Total verified successful ..	15,619	10,726	16,943	177,085	58,073	46,588
Percentage verified successful	77·3	73	78.9	80	66.4	38.01

Relapsing Fever.

Seven cases of Relapsing Fever were reported in Accra—first diagnosed in a European, an Italian contractor. Subsequent cases were in natives, none of them belonging to Accra.

The diagnosis of these cases was only made after the finding of spirochaetes in the peripheral blood.

There is some uncertainty as to the vector of this in West Africa—the possibility of mosquitoes being instrumental in conveying the disease is not being lost sight of.

Application is being made for the disease to be included in the list of Infectious Diseases in Chapter 61 of the Laws of the Colony, as this will give greater facilities to deal with the outbreak. In the meantime, the preventive measures adopted are isolation and delousing of the patient, disinfection and fumigation of premises.

Plague.

As stated before, no case of plague was reported during the year, but the anti-rat campaign was carried out energetically at all the large towns on the Coast.

In Accra alone, 914 rats were trapped by the Municipal rat-catcher during the year—of these 389 were examined bacteriologically—and large quantities of rat poison and many traps were lent out to householders.

The Medical Officer of Health, Accra, in his Annual Report says :—

> " A continuous war was waged against rats. Steps were taken to protect food from these vermin as far as possible ; a high standard of cleanliness was demanded from occupants of premises who were also called upon to fill in rat holes with stones and glass and to remove all kinds of refuse daily, especially that of a suitable character to provide food or nesting places ; refuse dumps were carefully fired and top dressed and rats were killed by poison and traps."

Cerebro-Spinal Fever.

Only two fatal cases of Cerebro-spinal Fever were reported during the year—the deceased in one case being a native of the Northern Territories who died at Accra, the second case being in a native of Accra.

No cases were reported from the area in the Northern Territories where the disease is said to be endemic.

Influenza.

A sudden out break of Influenza occurred at Accra during January and part of February. The disease was of a mild type and 29 cases with no deaths were reported. 56 sporadic cases of a mild type were reported from different stations in the Colony, Ashanti and the Northern Territories.

One death from Influenza occurred at Accra in July.

(3).—Endemic Diseases.

Tuberculosis.

An experiment was made during the year to deal with Tubercular patients by isolation open air and heliotherapy.

So far this experiment has been confined to Accra and, though early to discuss the results, it has been successful enough to justify its adoption at Seccondee next year.

Ten huts have been set aside for tubercular patients ; these huts being provided with canvas beds, blankets, spitting cups, bed pans, clinical charts, etc.

The patients are encouraged to spend a greater part of the day in the open air, and if strong, are provided with material for mat making or chicken farming.

The mortality of cases treated at this experimental hospital appears high—of 40 patients admitted, 16 or 40% died ; but it must be realized that, isolation not being compulsory, only cases too far advanced in the disease came under treatment.

It is to be hoped that this small isolation camp will in course of time develop into a large Sanatorium for tubercular cases.

The other preventive measures adopted at Accra against the occurrence and spread of Tuberculosis are the following :—

(*a*) Notification of cases by Government Medical Officers.
(Notification, not being compulsory, is not observed by private medical practitioners).

(*b*) Voluntary isolation of cases so notified at a Phthisis Colony at the Contagious Diseases Hospital.

(*c*) Disinfection of the quarters occupied by patients prior to admission to hospital.

(*d*) Education of cases that come under observation as regards refraining from promiscuous spitting and in the use of the spitting cup.

(*e*) The examination of contacts with cases admitted to Hospital or with fatal cases certified by private medical practitioners. Advice regarding ventilation, diet and segregation being given if any symptoms of Phthisis are found.

(*f*) Medical examination of all Kroo immigrants and School children.

(*g*) Examination of Meat and Milk for signs of tubercular infection.

(*h*) Amendment of building regulations so as to provide for compulsory ventilation.

(*i*) General sanitary measures.

(*j*) Instructions to the Sanitary Staff.

The main object aimed at by these measures is the removal of foci of infection from contact with the general population and great credit is due to Dr. Selwyn-Clarke, Medical Officer of Health of Accra, and the Sanitary Staff under him, for the efficient manner in which this work is being carried out.

Leprosy.

The incidence of leprosy in the Gold Coast is an unknown quantity, and until a suitable staff is available nothing can be done to cope with the disease.

No one doubts that there is a considerable number of lepers going about the country, carrying out their usual daily avocations—the Medical Officer of Health of Accra in his annual report for 1922 produces the photograph of a leper selling vegetables. Leprosy is not a notifiable or a legally infectious disease, and this Department has not the legal power to enforce any measures to prevent its spread.

As in the cases of tuberculosis, an experiment has been made by the Medical Officer of Health of Accra to deal with some of the local lepers.

To quote from his report :—

> " The success of the treatment with Moogrol of three lepers admitted to the embryo Leper Colony at the Contagious Diseases Hospital during 1922, encouraged a further three lepers to apply for admission and treatment during the first quarter of 1923.
>
> In addition to farming Cassada, these patients have been able to make a large number of white-wash and tar brushes from material collected in the immediate vicinity of the hospital. These brushes have been used in connection with white-washing latrines, dustbins, etc.
>
> The objection to carrying on work amongst lepers unsupported by legal powers lies in the fact that under existing laws they cannot be compulsorily segregated and may leave the hospital at any period during their treatment. This arrangement is unsatisfactory and obviously gives rise to waste of public money."

A special staff will be necessary to ascertain the incidence of this disease and to administer the leper Colony, if the disease is to be kept in check.

Helminthic Diseases.

Little information is available as to the incidence of ankylostomiasis.

Tape Worm is the common parasite found in the Colony.

The larval form of Tenia Solium—*Cysticercus cellulosae*—was found in 444 carcases of pigs out of 3,701 slaughtered in Accra. The proportion in the bovine form—*Tænia Saginata*—being still higher ; *Cysticercus Bovi* being found in the carcases of 457 out of 2,863 oxen slaughtered in Accra.

The preventive measures adopted against tape worm are strict meat inspection and the prohibition of slaughter elsewhere than at the slaughter-house.

III.—GENERAL MEASURES.

Housing.

(*a*) *Europeans.*

The principle of Segregation of Government Officers was maintained as far as possible, only the irreducible minimum of adult Africans being allowed to sleep at the Residential Area.

Steps were taken to keep away native children from this Area.

The majority of European employees of Mercantile Firms, however, still reside in the Native town, though space is available for them to build in healthier localities.

The system of " doubling up " still continues among junior Government officials, but provision is being made for building the required number of bungalows, and it is hoped that the evils and inconveniences of " doubling up " will soon be non-existent.

(*b*) *Africans.*

Congested areas are being dealt with in several towns in the Colony and Ashanti.

At Cape Coast the new township of Amanful will do away with the present congested parts of the town, while a very elaborate scheme has been put forward for the relaying out of a large part of Coomassie.

Schemes for the lay-out of several towns along the new Accra-Coomassie Railway have been prepared and approved.

Routine Work.

As stated before, the routine work of the Department has been satisfactorily maintained, though the Sanitation Staff was for sometime reduced at some stations to enable men to be detailed for duty in connection with outbreaks of yellow fever.

The figure for house inspection is very good, 453,522 houses having being inspected during the year, the larval index being .89%.

There were 3,142 prosecutions for having mosquito larvae in the premises and 3,087 convictions, the fines amounting to £1,334.

Other insanitary conditions led to 5,836 prosecutions, with 5,706 convictions and £1,874 in fines.

185 cases were dismissed or cautioned.

The larval index in the four principal towns was as follows :—

Accra	.73%
Cape Coast	.77%
Seccondee	.18%
Coomassie	1.87%

Sanitary Improvements.

Sanitary conveniences such as latrines, wash-houses, dustbins, etc., were built at various towns.

The water carriage latrine at Falcon Hill was completed during the year.

Sewage Disposal.

There is no change in the method of sewage disposal.

Its disposal into the sea gives rise to pollution of the foreshore in towns not provided with a suitable tipping depot.

Water carriage system should be introduced in large towns like Accra, Seccondee and Winnebah, which have a pipe-borne water supply.

Water Supply.

The excess lime treatment of the water supply of Accra continued to give satisfactory result, with the exception of the 6 months (July—December) when the banks of both reservoirs were being raised.

Chlorination continues giving good results at Seccondee.

Coomassie, Cape Coast and Saltpond are in urgent need of a pipe-borne water supply.

B. coli were found in the European water supply (Prempeh Well) at Coomassie, and most bungalows are now being provided with tanks for the collection of rain water.

It is expected that Winnebah will have a pipe-borne water supply in a month or two.

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

A properly equipped training centre for Sanitary Inspectors was opened at Accra in November, under a very capable West Indian Sanitary Inspector.

The curriculum of studies includes all the most important subjects in connection with Tropical Hygiene and Sanitation.

The scheme for training is divided into two parts :

1st—A course of three months in practical Sanitation. No probationer is appointed to an out-station until he has put in the course, and Junior Sanitary Inspectors are being brought in from out-stations in rotation for the same purpose.

2nd—A course of three months in theoretical Sanitation for Senior Inspectors—*i.e.*, Inspectors who have been in the Service for 5 or 6 years.

49 Students attended the 1st course—of these were eight appointed Sanitary Inspectors and four were dismissed as unsuitable.

In all Government and Assisted Schools, instruction in Hygiene, both theoretical and practical, commences in Standard IV. and continues up to Standard VII. Instruction in the same subject is also given throughout the four years' course in all Junior Trade Schools.

To facilitate this training, officers of this Department have, with the assistance of the Director of Education, published several pamphlets on subjects appertaining to Sanitation. These pamphlets are written in simple language for the benefit of school teachers.

The following chapters have so far been published :—

Our Enemy the Rat	by Dr. Dalziel.
Our Enemy the Fly	„ „
Food and Diet	„ „
Vaccination or Small-pox	„ „ Selwyn-Clarke.
Personal Hygiene	„ „ Lorena

The following are in the press :—

Hygiene of the Home	by Dr. Dowse.
Elementary Anatomy and Physiology	„ „ Brohier.
Clothing	„ „ Rice

Chapters on Infant Welfare and Mothercraft are being prepared.

Prison.

The sanitary condition of the Prisons throughout the Colony has been very satisfactory.

Attention has been paid to the food and water supplies of convicts, with the result that no epidemic of any kind has been reported during the year.

The ventilation of the cells in all prisons of the four large towns in the Colony is reported as being good.

C.—RECOMMENDATION FOR FUTURE WORK.

1. One additional Medical Officer of Health to investigate the incidence of Leprosy.
2. A Sanatorium for Tuberculous Patients.
3. Pipe-borne water supplies for Coomassie, Cape Coast and Saltpond.
4. Draining of Lagoon at Saltpond.
5. Two more whole-time School Medical Officers.
6. Provision of water carriage sewage system in all towns with a pipe-borne water supply.
7. Increase of European and African Sanitary Staff.
8. Segregation of Kroo labour.

A. G. LORENA,

Acting Deputy Director of Sanitary Services

ACCRA, 25TH MAY, 1923.

IV.—METEOROLOGY.

Rainfall in inches.

Station.	1920.	1921.	1st January to 31st March, 1922.	1922–23.
Accra	15.87	34.43	1.89	26.53
Aburi	36.40	50.83	3.29	52.32
Seccondee	34.65	40.40	1.72	50.66
Axim	66.43	88.13	8.27	65.42
Tarquah	68.19	71.05	10.60	62.23
Coomassie	50.98	66.95	5.26	65.25
Tamale	36.95	61.77	0.77	38.48

V.—HOSPITALS AND DISPENSARIES.

11. The total cases treated at the various Government Hospitals and Dispensaries during the year was seventy-one thousand, two hundred and three (71,203).

The following Table shews the total number of In-patients treated at Accra, Seccondee and Coomassie Hospitals.

Station.	1921.		1st January to 31st March, 1922.		1922–23.	
	Europeans.	Africans.	Europeans.	Africans.	Europeans.	Africans.
Accra ..	283	1,136	57	308	233	999
Seccondee ..	306	676	69	169	235	550
Coomassie ..	172	1,125	48	495	147	1,379
Totals ..	761	2,937	174	972	615	2,928

Prisons.

The prisons of the Gold Coast Colony can be divided into three classes, as follows:—1st, Prisons built as such and of a permanent nature; 2nd, those built as prisons but of a semi-permanent nature; 3rd, those consisting of forts, etc., adapted for prison purposes.

Of those in the first category, Seccondee Central Prison is the largest and accommodates about 400 prisoners; Tarquah Obuassie, Akuse are smaller, with accommodation for about eighty prisoners.

Seccondee Central Prison is used exclusively as a convict establishment, no prisoner being admitted with a sentence of less than two years except in very exceptional cases. The others are used as local prisons for short sentence prisoners.

Those prisons in the second category are chiefly in Ashanti and Togoland; they are substantially built of swish and in most cases have roofs of a permanent nature.

The third category consists of the Prisons at Accra, Cape Coast Fort Orange Seccondee, Elmina and Axim; these are all old forts built by the British, Dutch and Portuguese; they make tolerably useful prisons, but in many ways are not suited for such, especially in view of modern ideas of ventilation and sanitation.

In all the prisons at all times, except when undergoing punishment, association is the rule ; with the exception of Seccondee Central and Ussher Fort, Accra, practically all the labour is extramural, *i.e.*, Farming, Sanitation work in the townships where the prisons are, etc.

The average daily lock-up during the year 1922–23 was 1,635.

The daily sick report was 1.24%. There were 29 deaths. The causes of the deaths, (other than judicial execution) were Tuberculosis 3, Cerebral Malaria 1, Exhaustion 2, Cardiac Failure 8, Peritonitis 2, Uraemia 1, Pneumonia 1, Dysentery 2, Beriberi 3, Abscess of Liver 1, Chronic Colitis 1, Chronic Enteritis 1, Retention of Urine 1, Gastric Ulcer and Secondary Colitis 1, and Nephritis 1.

The death rate per thousand based on the daily average lock-up was 1.77.

The completion of a block of cells in Ussher Fort, Accra, considerably eased the situation with regard to overcrowding in James Fort Prison, Accra.

The requirements of the Health authorities have as far as possible been met with.

There was no alteration in the dietary scale, which appears to be a very liberal one.

VI.—SCIENTIFIC.

In Appendix A will be found the Annual Report of the Medical Research Institute for the year 1922, by Dr. A. Ingram.

Appendix B—Annual Report on Venereal Clinic, Accra.

D. ALEXANDER,

Director, Medical and Sanitary Services.

31ST JULY, 1923.

TABLE IV.

1. Names of Towns.

Station.	1920.		1921.		1922.	
	Approximate area.	No. of proclaimed opened spaces.	Approximate area.	No. of proclaimed opened spaces.	Approximate area.	No. of proclaimed opened spaces.
Accra	4½ Square miles.	27	5 Square miles.	32	6.05 Square miles.	32
Cape Coast	2½ Square miles.	4	2½ Square miles.	4	2½ ,,	4
Seccondee	3 Square miles.	3	3 Square miles.	3	3 ,,	3
Coomassie	9 Square miles.	—	9 Square miles.	—	9 ,,	—

2. Population.

Station.	1920.					1921.					1922–23.				
	Natives.		Europeans.		Total.	Natives.		Europeans.		Total.	Natives.		Europeans.		Total.
	Males.	Females.	Males.	Females.		Males.	Females.	Males.	Females.		Males.	Females.	Males.	Females.	
Accra	13,340	11,300	346	76	25,062	21,018	17,390	457	72	38,937	21,018	17,390	457	72	38,937
Cape Coast	4,858	5,341	46	15	10,260	4,946	5,460	38	15	10,459	7,350	7,571	38	15	14,974
Seccondee	8,000	5,000	165	19	13,174	5,878	3,622	189	34	9,723	6,500	5,000	280	38	11,818
Coomassie	11,391	9,170	168	11	20,797	10,786	7,344	200	19	18,349	12,665	7,398	237	27	20,327

3. Housing.

Station.	1920.				1921.				1922.			
	Houses.		Huts.		Houses.		Huts.		Houses.		Huts.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Accra ..	180	3,016	See Houses.		175	2,976	See Houses.		162	3,101	—	—
Cape Coast ..	33	1,366	—	321	30	1,370	—	326	30	1,201	—	302
Seccondee ..	106	1,504	—	—	89	1,536	—	—	173	1,568	—	—
Coomassie ..	48	1,300	—	71	81	1,537	—	71	81	1,553	—	71

4. Erection of New Buildings during the years.

Station.	1920.		1921.		1922-23.	
	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	99	—	213	—	—	157
Cape Coast ..	1	2	10	2	—	—
Seccondee ..	—	—	—	—	—	—
Coomassie ..	—	—	—	—	—	—

4. (*b*) Action Taken.

Station.	1920.		1921.		1922–23.	
	No. of Prosecutions.		No. of Prosecutions.		No. of Prosecutions.	
	Huts.	Houses.	Huts.	Houses.	Huts.	Houses.
Accra	—	—	—	—	—	—
Cape Coast ..	—	—	—	—	—	—
Seccondee ..	—	—	—	—	—	—
Coomassie ..	—	—	—	—	—	—

5. Latrines.

Station.	1920.								1921.								1922–23.							
	Number.				New ones erected.				Number.				New ones erected.				Number.				New ones erected.			
	Male.		Female.		Male.		Female.		Male.		Female.		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.	Seat.
Accra ..	41	453	41	239	3	14	3	13	46	473	38	259	5	20	5	20	48	535	40	291	2	26	2	16
Cape Coast	14	140	13	132	2	8	2	8	17	140	17	140	3	12	3	12	9	113	9	130	—	—	—	—
Seccondee	11	196	11	196	1	12	—	—	17	115	12	81	1	8	1	8	20	115	20	81	1	8	—	—
Coomassie	26	227	26	221	—	—	—	—	32	271	32	245	2	18	2	18	34	255	34	223	—	—	—	—

5. (b) Latrines—Private.

Station.	1920.								1921.								1922–23.							
	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of Night soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of Night soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.	Number.	Pails removed daily.	No. of clean pails substituted for dirty ones.	No. of Night soil men.	Cesspools.	Cesspools cleansed.	New Cesspools.	Cesspools abolished.
Accra	378	580	—	70		—	—	—	—	494	650	88	88	—	—	—	563	695	695	92	—	—	—	—
Sape Coast	126	777	777	3	6	6	1	4	123	730	730	730	36	6	—	2	134	730	—	30	—	—	—	—
Ceccondee	225	220	22	0	50	—	—	—	—	245	233	430	50	—	—		308	357	384	50	—	—	—	—
Coomassie	98	44	6	—	—	—	—	—	—	132	403	42	42	—	—	—	240	489	478	67	—	—	—	—

6. Removal of Refuse.

Station.	1920.							1921.							1922–23.						
	Dustbins	Carts removing street refuse.	Amount of refuse removed daily from street.	Carts removing refuse from yard and premises.	Amount of refuse from yards and premises.	Men employed.	Dustbins.	Carts removing street refuse.	Amount refuse removed daily from street.	Carts removing reuse 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	33	9	94 C. lds.	—	—	40	34	7	93	4	—	34	38	11	130*	4	*	56
Cape Coast	39	10	54 C. lds.	—	—	32	39	10	55 C. lds.	—	1 cart ld.	31	38	10	56	1	1 C.ld.	34
Seccondee	20	2 motor lorries.	25 C. lds.	13	—	26	21	2 lorries	23 lorry	—	—	23	21	2 lorries	25*C. lds.	—	—	24
Coomassie	17	3	150 hlds.	1	unknown	45	20 incinerators.	1	437 hlds. 8d.	1	17 hlds.	82	21 Incinerators.	1	176	2	43 hlds.	2

7. Mode of Disposal of Excreta, Refuse, and Offal.

Station.	1920.												1921.												1922–23.											
	Buried or Trenched.			Burnt.			Thrown into Sea.			Otherwise dealt with.			Buried or Trenched.			Burnt.			Thrown into Sea.			Otherwise dealt with.			Buried or Trenched.			Burnt.			Thrown into Sea.			Otherwise dealt with.		
	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartload refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartload refuse per day.	Cartloads offal per day.	Pails Excreta per day.	Cartloads refuse per day.	Cartloads offal per day.
Accra ..	—	—	—	—	—	—	560	94	—	—	—	5	—	—	—	—	—	—	650	—	12	—	93	—	—	—	—	—	—	—	695	130	24	—	—	—
Cape Coast	—	1	1/15	—	54	—	777	—	1/7	—	—	2	—	1	1/15	—	56	—	773	—	1/7	—	—	1/15	—	1	1/15	—	55	—	730	—	—	—	—	—
Seccondee	220	—	—	—	—	—	—	—	—	—	25	—	233	—	2 hlds	—	—	—	—	—	hld.	—	23	—	360	—	—	—	—	—	—	—	—	—	—	—
Coomassie	446	49	7	—	—	—	—	—	—	—	—	—	403	—	4	—	450	—	—	—	—	—	—	—	489	166	12	—	199	—	—	—	—	—	—	—

8. Average Daily Number of Cartloads of Cans, Bottles, and Incombustible Materials cleared from Houses and Compounds.

Station.	1920.	1921.	1922–23.
Accra	29	23½	33
Cape Coast	1 Cart Load.	1	1 Cart Load.
Seccondee	2 Cart Loads.	14 Head Loads.	29
Coomassie	49 Head Loads.	150 Head Loads.	166

9. Water Supply.

Station.	1920.																	
	Pipe-Borne Water.			Well.				Tanks.								Barrel.		
				Public		Private.		Public		Private		Nature of Tank.						
	Source.	Public Standpipe	Private StandPipe.	No.	Mosquito proof	No.	Mosquito proof.	Mosquito proof.	Above ground.	Mosquito proof.	Above ground.	Mosquito proof.	Wood.	Iron.	Concrete.	No.	Mosquito proof.
Accra	River-Densu	55	411	—	—	165	157	5	7	7	126	121	22	103	20	68	68
Cape Coast	—	—	—	10	5	301	296	13	16	16	65	63	10	124	71	480	476
Seccondee	Anan-kwan.	34	69	8	8	130	128	—	81	81	42	42	6	265	72	111	111
Coomassie	—	—	—	15	7	108	72	2	—	—	1	1	2	0	3	300	91

9. Water Supply.—(*continued*).

Station.	1921.																	
	Pipe Borne Water.			Well.				Tank.								Barrel.		
				Public		Private.		Public		Private.		Nature of Tank.						
	Source	Public standpipe.	Private standpipe.	No.	Mosquito proof.	No.	Mosquito proof.	Mosquito proof.	Above ground.	Mosquito proof.	Above ground.	Mosquito proof.	Wood.	Iron.	Concrete.	No.	Mosquito proof.
Accra	River-Densu	57	665	—	—	162	147	—	—	—	139	117	7	148	12	41	39
Cape Coast	—	—	—	10	6	221	193	4	22	16	140	136	11	129	70	381	367
Seccondee	Anan-kwan	34	69	—	—	45	43	—	77	77	176	176	2	231	33	114	114
Coomassie	—	—	—	16	3	142	31	3	—	—	44	44	3	38	3	367	115

9. Water Supply —*continued.*

Station.	1922—23.																	
	Pipe-Borne Water.			Well.				Tanks.								Barrels.		
				Public.		Private.		Public.			Private.		Nature of Tank.					
	Source.	Public stand pipe.	Private stand pipe.	No.	Mosquito proof.	No.	Mosquito proof.	Mosquito proof.	Above ground.	Mosquito proof.	Above ground.	Mosquito proof.	Wood.	Iron.	Concrete.	No.	Mosquito proof.
Accra	River Densu.	69	755	—	—	124	124	2	—	—	74	73	3	15	2	26	23
Cape Coast	—	—	—	10	6	212	202	7	2	9	211	211	14	115	82	393	356
Seccondee	Anan-kwan.	36	110	—	—	4	4	—	—	—	117	113	1	139	36	36	39
Coomassie	—		—	16	3	162	115	—	—	—	64	62	3	58	3	255	132

10. Drainage.

Station.	Masonry Drains.												Earth Drains.								
	1920.				1921.				1922–23.				1920.			1921.			1922–23.		
	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards.	Lineal yards reconstructed.	Lineal yards repaired.	Lineal yards constructed.	Lineal yards 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	42,164	—	—	6,684	44,975	—	—	2,811	50,312	—	—	5,337	4,510	1,760	Quarterly.	61,954	10,325	Every week	48,357	24,724	Every month
Cape Coast	21,344	50	—	1,444	22,016	45	—	672	24,516	336	10	2,400	8,673	—	Continuously.	6,953	670	Continuously.	2,112	230	Twice monthly.
Seccondee	—	—	100	1,832	38,969	34	76	500	—	55	530	85	3,400	1,200	Monthly.	9,004	7,233	Monthly.	9,952	1,457	Monthly.
Coomassie	10,162	420	—	1,849	11,339	420	—	1,177	11,702	—	—	1,540	14,900	—	4 times a month.	—	—	When necessary.	8,580	850	When necessary.

11. Inspections and Prosecutions.

Station.	1920.								1921.								1922.							
	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	No. of Soda and Aerated Factories inspected.	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Person fined for larvæ.	Notices re sanitary conditions.	Persons fined for insanitary conditions.	No. of Soda and Aerated Factories inspected.	Inspectors employed.	Houses inspected.	Houses where larvæ were found.	Notices against larvæ.	Persons fined for larvæ.	Notices re insanitary conditions.	Persons fined for insanitary conditions.	No. of Soda and Aerated Factories inspected.
Accra	17	118,613	1,087	199	805	735	50	—	22	123,069	862	102	620	813	62	4	22	146,286	1,100	128	1,039	1,484	7	4
Cape Coast	10	26,205	137	353	98	49	42	—	12	25,639	321	667	251	80	67	—	12	22,293	172	366	131	101	96	—
Seccondee	9	53,384	191	230	127	369	88	—	9	46,632	234	113	74	447	125	1	11	70,422	133	72	109	353	28	1
Goomassie	5	17,255	121	46	103	349	723	1	6	39,479	384	384	189	1,182	782	1	7	34,083	639	39	565	316	1,114	1

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1922-23

Diseases.	Remaining in Hospital at end of 31-3-22.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1922-23.	Remarks
		Admissions.	Deaths.			
Infective Diseases.						
Beri-Beri	..	55	4	55	1	
Chicken-Pox	3	209	..	212	9	
Dengue	..	11	..	11	..	
Diphtheria	..	1	..	1	..	
Dysentery	2	906	23	908	1	
Enteric	..	19	..	19	2	
Erysipelas	..	12	..	12	..	
Gonorrhœa	6	1,211	1	1,217	4	
Influenza	..	243	..	243	..	
Leprosy (*a*) Nodular	..	41	..	41	1	
(*b*) Anæsthetic	1	3	..	4	..	
Malaria (*a*) Tertian	4	2,337	3	2,341	6	
(*b*) Quartan	..	101	..	101	..	
(*c*) Aestivo-autumnal	2	1,369	2	1,371	4	
(*d*) Chronic Malaria	..	1,865	1	1,865	2	
(*e*) Blackwater	1	47	6	48	..	
(*f*) Unclassified	2	1,778	4	1,780	6	
Measles	..	182	..	182	..	
Malta Fever	..	1	1	1	..	
Pneumonia	13	586	71	599	8	
Relapsing Fever	..	72	..	72	8	
Rheumatic Fever	1	131	..	132	1	
Septicæmia	..	29	3	29	..	
Trypanosomiasis (Sleeping Sickness)	..	15	..	15	..	
Small-Pox	..	3	..	3	..	
Syphilis (*a*) Primary	1	270	..	271	1	
(*b*) Secondary	1	194	4	195	2	
(*c*) Inherited	..	77	3	77	..	
Tetanus	..	17	8	17	..	
Tuberculosis	5	380	43	385	13	
Whooping Cough	..	379	..	379	..	
Yaws	..	1,368	1	1,368	2	
Yellow Fever	..	22	15	22	..	
Other Diseases	..	205	3	205	4	
Intoxications.						
Alcoholism	..	14	1	14	..	
Morphinism	..	2	..	2	..	
Others	..	3	..	3	..	
Anæmia	..	263	1	263	1	
Anæmia—Pernicious	..	4	1	4	..	
Diabetes	1	9	..	10	..	
Exophthalmic Goitre	..	13	..	13	..	
Gout	..	5	..	5	..	
Hodgkin's Disease	..	2	..	2	1	
Rickets	..	10	..	10	..	
Scurvy	..	3	..	3	..	
Rheumatism	..	1,162	2	1,162	2	
Other Diseases	1	1,043	5	1,044	1	
Local Diseases. Diseases of the Nervous System. Sub-section 1.						
Neuritis	..	235	..	235	1	
Meningitis	..	14	2	14	..	
Myelitis	..	1	..	1	..	
Hydrocephalus	..	2	..	2	..	
Encephalitis	..	1	1	1	..	
Abscess of Brain	..	4	2	4	..	
Congestion of Brain	..	6	..	6	..	
Other Diseases	..	48	4	48	1	
Sub-section 2.						
Apoplexy	2	19	..	21	2	
Paralysis	..	33	2	33	..	
Chorea	..	3	..	3	..	
Epilepsy	1	59	3	60	..	
Neuralgia	..	387	..	387	..	
Carried forward	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1922-23.

Diseases.	Remaining in Hospital at end of 31-3-22.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1922-23.	Remark.
		Admissions.	Deaths.			
Brought forward	..	..	..	..	..	
Hysteria	..	21	..	21	..	
Other Diseases	..	171	2	171	..	
Sub-section 3.						
Mental Diseases—						
Idiocy	..	14	..	14	..	
Mania	..	56	..	56	..	
Melancholia	..	4	..	4	..	
Dementia	..	16	..	16	..	
Delusional Insanity	..	21	..	21	..	
Other Diseases	..	13	..	13	..	
Diseases of the Eye—						
Conjunctivitis	..	1,908	..	1,908	1	
Keratitis	..	62	..	62	..	
Ulceration of Cornea	..	105	..	105	..	
Iritis	..	56	..	56	..	
Optic Neuritis	..	3	..	3	..	
Cataract	..	101	..	101	..	
Other Diseases	..	320	..	320	1	
Diseases of the Ear—						
Inflammation	..	402	..	402	..	
Other Diseases	..	615	..	615	..	
Diseases of the Nose—	1	269	..	270	..	
Disease of the Circulatory System—						
Pericarditi	..	9	1	9	..	
Endocarditis	..	23	3	23	1	
Valvular Mitral	1	111	6	112	1	
,, Aortic	..	8	..	8	..	
,, Tricuspid	..	1	..	1	..	
,, Pulmonary	..	1	..	1	..	
Arterial Sclerosis	..	5	..	5	1	
Aneurism	..	14	1	14	..	
Other Diseases	1	144	7	145	1	
Diseases of the Respiratory System—						
Laryngitis	..	132	..	132	..	
Bronchitis	2	5,614	3	5,616	1	
Broncho-pneumonia	1	201	9	202	1	
Abscess of Lung	..	1	..	1	..	
Gangrene of Lung	..	1	..	1	..	
Emphysema	..	4	..	4	..	
Pleurisy	..	247	3	247	..	
Empyema	1	19	..	20	..	
Other Diseases	..	803	2	803	1	
Diseases of the Digestive System—						
Stomatitis	..	407	..	407	..	
Caries of teeth	..	986	..	986	..	
Glossitis	..	71	..	71	..	
Sore Throat	..	294	..	294	..	
Inflammation of Tonsils	..	302	..	302	..	
Gastritis	..	566	..	566	..	
Ulceration of Stomach	..	31	..	31	..	
Hæmatemesis	..	14	..	14	..	
Dilatation of Stomach	..	4	..	4	..	
Stricture of Stomach	..	1	..	1	..	
Dyspepsia	..	735	..	735	..	
Enteritis	..	490	6	490	..	
Appendicitis	..	42	..	42	..	
Colitis	..	119	2	119	..	
Ulceration of Intestines	..	23	..	23	..	
Hernia	11	311	7	322	6	
Diarrhœa	..	1,567	3	1,567	..	
Constipation	1	4,510	2	4,511	1	
Carried forward ..	..	..	..	..	..	

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR, 1922–23.

Diseases.	Remaining in Hospital at end of 31-3-22.	Yearly Total.		Total Cases Treated.	Remaining in Hospital at end of 1922–23.	Remarks.
		Admissions.	Deaths			
Brought forward	..	..	..	..	..	
Colic	1	552	..	553	1	
Hæmorrhoids	1	205	..	206	1	
Pancreatitis	..	5	..	5	..	
Hepatitis—Acute	..	240	1	240	..	
Abscess	..	26	1	26	..	
Cirrhosis	..	10	1	10	..	
Jaundice	..	48	..	48	..	
Peritonitis	..	65	2	65	..	
Ascites	..	37	1	37	2	
Other Diseases	..	361	1	361	..	
Diseases of the Lymphatic System—						
Splenitis	..	342	..	342	..	
Inflammation of Lymphatic Gland	3	340	1	343	2	
Suppuration of Lymphatic Gland	2	188	..	190	..	
Lymphangitis	..	51	..	51	1	
Elephantiasis	..	49	..	49	2	
Other Diseases	..	40	..	40	..	
Diseases of the Urinary System—						
Acute Nephritis	1	102	11	103	..	
Bright's Disease	1	45	4	46	..	
Pyelitis	..	8	..	8	..	
Calculus	..	7	..	7	..	
Renal Colic	..	3	..	3	..	
Cystitis	..	231	..	231	1	
Vesical Calculus	..	1	..	1	..	
Suppression	..	7	..	7	..	
Hæmaturia	2	32	..	34	..	
Other Diseases	..	36	..	36	..	
Diseases of the Generative System—						
Male Organs :—						
Urethritis	1	119	..	120	2	
Gleet	..	32	..	32	..	
Stricture	3	202	2	205	7	
Prostatitis	..	71	1	71	1	
Soft chancre	5	210	..	215	1	
Condyloma	..	12	..	12	..	
Inflammation of Scrotum ..	2	41	1	43	..	
Hydrocele	..	87	..	87	1	
Orchitis	..	177	..	177	..	
Epedidymitis	..	91	..	91	..	
Abscess of Testicle	..	13	..	13	..	
Other Diseases	5	318	1	323	7	
Female Organs :—						
Ovaritis	..	29	..	29	..	
Ovarian Cyst	..	36	..	36	..	
Endometritis	1	214	..	215	..	
Displacement of Uterus	..	44	..	44	..	
Vaginitis	..	55	..	55	..	
Amenorrhœa	..	78	..	78	..	
Dysmenorrhœa	..	97	..	97	..	
Menorrhagia	..	41	..	41	..	
Leucorrhœa	..	30	..	30	..	
Abortion	..	37	..	37	1	
Delayed Labour	..	22	4	22	..	
Postpartum Hæmorrhage ..	..	3	..	3	..	
Retained Placenta	..	8	..	8	..	
Premature Birth	..	4	..	4	..	
Puerperal Septicaemia	..	13	..	13	1	
Mastitis	..	74	..	74	..	
Abscess of Breast	..	6	..	6	..	
Other Diseases	2	126	3	128	2	
Diseases of Organs of Locomotion—						
Osteitis	1	149	..	150	2	
Arthritis	..	331	..	331	5	
Carried forward						

RETURN OF DISEASES AND DEATHS (IN AND OUT-PATIENTS) FOR THE YEAR 1922-23.

Diseases.	Remaining in Hospital at end of 31-3-22.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total Cases Treated.	Remaining in Hospital at end of 1922-23.	Remarks.
Brought forward						
Spondylitis	..	3	..	3	..	
Bursitis	..	94	..	94	..	
Other Diseases	2	901	1	903	3	
Diseases of Connective Tissue—						
Cellulitis	5	602	1	607	5	
Abscess	4	1,289	5	1,293	10	
Elephantiasis	..	58	..	58	2	
Other Diseases	..	118	..	118	..	
Diseases of the Skin—						
Urticaria	..	72	..	72	..	
Eczema	..	201	..	201	..	
Boil	..	935	..	935	..	
Carbuncle	..	17	..	17	..	
Herpes	..	60	..	60	..	
Psoriasis	..	25	..	25	..	
Tinea	..	518	..	518	..	
Scabies	..	852	..	852	..	
Acne	..	47	..	47	..	
Prickly Heat	..	91	..	91	..	
Ulcers	29	6,752	9	6,781	49	
Other Diseases	7	757	3	764	1	
Injuries General	3	864	24	867	8	
Local	41	7,544	17	7,585	25	
Surgical Operations	..	2,569	5	2,569	10	Not included in totals.
Tumours	2	308	4	310	8	
Malformations	..	19	1	19	..	
Poisons	..	78	2	78	..	
Parasites—Animal—						
Trematoda (Flukes)	..	7	..	7	..	
Others	..	33	..	33	2	
Cestoda :—						
Tænia Solium	..	658	..	658	..	
Tænia Saginata	..	276	..	276	..	
Nematoda—						
Ascaris	..	410	1	410	..	
Trichina	..	1	..	1	..	
Dracunculus	11	872	1	883	11	
Filariasis	..	15	..	15	..	
Ankylostomiasis	1	269	2	270	1	
Oxyuris	..	30	..	30	..	
Others	..	24	..	24	..	
Insecta—						
Myiasis	..	7	..	7	..	
Others	..	564	..	564	..	
Not Diagnosed	..	136	..	136	..	
Total	202	70,821	382	71,023	268	

APPENDIX A.

ANNUAL REPORT OF THE MEDICAL RESEARCH INSTITUTE FOR THE YEAR APRIL 1st, 1922—MARCH 31st, 1923.

CONTENTS.

A.—INTRODUCTION.

The Director, Dr. J. W. Scott Macfie, was in charge of the Institute from the 1st April to the 10th November, when he went on leave. Dr. J. F. Corson acted as Director from the departure of Dr. Scott Macfie till the middle of January, when he also proceeded on leave. Dr. A. Ingram acted in a similar capacity up to the end of the period under review. Mr. F. Leeson, the Laboratory Superintendent, was on duty for ten months, proceeding on leave at the beginning of February; he was relieved by Mr. F. W. Abbott, the Laboratory Assistant.

Dr. Corson was transferred to Seccondee at the end of June for the purpose of opening a branch laboratory in that town, there he was joined by Mr. Abbott in July. Dr. Corson had to return to Accra early in October, but Mr. Abbott remained in Seccondee to carry on routine work till the end of January. If one is justified in drawing conclusions from the amount of material that these officers were called upon to examine during the short time the laboratory was in efficient working order, there appears to be a growing need for these branch establishments, and it is to be hoped that when the financial conditions of the Colony improve that branch laboratories will be opened on a permanent footing in Coomassie and Seccondee.

The two motor vehicles attached to the Institute proved most useful throughout the year in carrying on certain work outside the immediate vicinity of Accra, notably in the survey of the Accra District for tsetse-fly undertaken by the Director in August and September, and in the various excursions to outlying villages for the purpose of collecting snails with a view to determining the intermediate host or hosts of *Schistosoma hæmatobium* in the Gold Coast.

During the year an important piece of work was done by the Director and Dr. Corson in their investigation of the larval forms of Filaridæ found in the skin of natives of the Gold Coast, they report the discovery of a new species which they have named *Agamofilaria streptocerca*. The Director continued his research on the role of the Cockroach in disease, and in conjunction with him further work was done in the study of the biting midges of West Africa, in the investigation of the early stages of certain mosquitos indigenous to the Accra District, and also in the examination of the genital armature of the female of fifty species of West African mosquitos.

The most interesting event during the year was an outbreak of Relapsing Fever, hitherto unrecorded in the British West African Colonies, although met with by the French in 1921 in the Haut Sénégal et Niger in the region of Mopti and Timbouctou (Kerrest, Gambier et Bouron : Bull. Soc. Path. Exot., XV., pp. 320—331).

To Dr. G. E. H. LeFanu, Medical Specialist in charge of the European Hospital is due the credit of reporting the first case in the Gold Coast.

The staff of the laboratory desires to acknowledge receipt of many gifts of specimens and material throughout the year and wishes especially to thank the following contributors :—Dr. K. B. Allan, Captain R. S. Baker, Major W. P. Beal, Dr. S. L. Brohier, Dr. F. H. Cooke, Mr. H. E. Course, Dr. A. Crawford, Dr. D. Duff, Miss A. M. Evans, Dr. J. R. Forde, Dr. M. W. Fraser, Dr. S. Goodbrand, Miss K. Gordon, Mr. P. P. Horn, Dr. P. S. Selwyn-Clarke, Dr. G. E. H. LeFanu, Mr. H. T. Lucas, Dr. A. J. R. O'Brien, Dr. J. M. O'Brien, Mr. R. Simmons.

We have again to thank the Imperial Bureau of Entomology for help rendered in the identification of entomological material, and we have to express our indebtedness once more to the Liverpool School of Tropical Medicine for the privilege granted to us of working in their laboratories. Our thanks are also due to Mr. T. Southwell and to Miss A. M. Evans of the Liverpool School of Tropical Medicine, for the identification of specimens of parasitic worms and of fleas, and we wish finally to acknowledge with gratitude the help given by Colonel M. Conolly, Frimley Green, Surrey, in the identification of specimens of snails.

Mention must also be made with gratitude of the loyal co-operation of the Junior Staff, both European and African, in carrying on the routine work of the Institute throughout the year.

A. INGRAM,

Acting Director, Medical Research Institute.

ACCRA, 19TH MAY, 1923.

B.—ROUTINE EXAMINATIONS.

(I)—Examinations of Clinical Materials.

The amount of clinical material examined—to judge from the figures shown in Table I.—was somewhat in excess of that of the preceding year, this was partly due to a larger number of specimens being forwarded for examination, but mainly resulted as a consequence of a more careful record being kept of those examinations which fall under the heading " Miscellaneous."

Most of the clinical material has again been furnished by the Senior Medical Officer in charge of the European Hospital and by the Medical Officer in charge of the Native Hospital but a larger number of specimens was received from the Medical Officer in charge of the Asylum, the Prison, and Cantonments, and we are indebted to the Medical Officer of Health for a large number of blood-films from school children and for specimens of sputum from patients in the Contagious Diseases Hospital. The Medical Officer in charge of the Venereal Clinic supplied the greater proportion of the sera for the Wassermann test. It has to be recorded that greater use of the laboratory was made during the year by Medical Officers in out-stations, especially in the vicinity of Accra, as shown by the increasing amount of material referred to us to be reported upon from places outside Accra.

Table I.—Examinations of Clinical Materials.

Nature of Examination.	Europeans.	Africans.	Totals.
Blood Examinations	272	912	1,184
Examinations of Faeces	58	106	164
Examinations of Urine	15	67	82
Examinations of Sputum	13	211	224
Miscellaneous Examinations	—	—	528
Total ..	—	—	2,182

Blood Examinations.

The number of examinations of blood was slightly less than in the preceding year and the number of examinations of other clinical material being more; the proportion of blood examinations to the total number of examinations made was considerably reduced, yet it exceeded one half of the whole. As was the case last year this preponderance was due to the examination of the blood of a number of children; a few of these children belonged to outlying villages, but the majority were children attending school in Accra and their blood was examined at the request of the Medical Officer of Health. It may be stated that the Medical Officer of Health was investigating the effect of small doses of quinine and quinidine upon the parasite rate of these school children; to begin with the blood of the children was examined for malarial parasites and a record made of the finding in each case—only a single film of blood and often a very badly made film at that was examined from each child—thereafter each child was given a weekly dose of quinine or of quinidine (five grains of either drug) according to the group to which he belonged for twelve consecutive weeks, and a fortnight after the administration of the last dose a film of blood from each child was examined for parasites. It will, therefore, be apparent that the figures in Table II. as regards school children are not comparable with those given in the report of the preceding year.

512 films from school children were examined, 87 of these films showed parasites—16.9%—; *Plasmodium falciparum* occurred alone in 74 of the films, *Plasmodium malariae* occurred alone in 12, *P. falciparum* and *P. malariae* occurred together in one case, crescents were seen in only one film and *P. vivax* was not found at all.

The Medical Officer of Health, Dr. P. S. Selwyn-Clarke, kindly permits the statement to be made here that the small doses of quinine and of quinidine employed were insufficient to render the blood of all the children free from parasites; still, these small doses produced a considerable reduction in the percentage of those showing parasites in the peripheral blood. A full account of Dr. Selwyn-Clarke's investigation will be given elsewhere.

In Table II. the results of the examinations of European and African patients whose blood was sent in to be examined for malarial parasites are shown for comparison with those of the school children. There is very little difference in the percentage of infected noticeable in the Africans, be they adults or children, whereas in the previous year, when no treatment or selection of the children was adopted, the percentage of infected in children was 41.6, while that of the adult patients was 15. The absence of Simple Tertian malaria is notable; in the previous year's report attention was called to its increase. Crescents were observed in the blood of one European; they were not found in the blood of a single adult African.

Table II.—Blood Examinations for Malarial Parasites.

	Number examined.	Number found infected.	Percentage found infected.	Species of malarial parasites.		
				M.T.	Q.	M.T.+Q
Africans—School children ..	512	87	16.9	74	12	1
Hospital patients	91	13	14.2	12	1	—
Europeans—patients ..	154	35	22.7	33	2	—

Blood films from a fatal case of malaria in a European male aged about 29 were received from the Medical Officer, Koforidua, in January, 1922. (This case and the case of aneurysm of the mitral valve recorded under the heading 'Post-mortem Examinations' were not reviewed in the interim report for the first three months of 1922). The clinical history of the case, kindly given us by the Medical Officer, Koforidua, and the Medical Specialist, Accra, was as follows:—Patient, who had previously spent seven years in India where he had enjoyed excellent health, was a new-comer to the Gold Coast. He arrived in Accra from Koforidua about three weeks before his fatal illness, upon a convalescent trip after an attack of catarrhal jaundice, during which he had been instructed to take ten grains of quinine daily, as he had suffered from "fever" early in December; apparently he improved rapidly in Accra, but after a short interval had an attack of epigastric pain with a return of the jaundice when he was admitted to hospital on the 29th December. His condition on admission was not grave, his temperature was normal, his pulse was 74 per minute, he was very sallow and there was icterus of the conjunctivae, his urine contained no albumen, and his blood showed no malarial parasites. He remained in hospital from the 29th December to the 2nd January, during which time he was given no quinine, but on the 3rd—the day of his discharge—he was given five grains of quinine and told to continue this dose daily unless instructed to the contrary. Patient returned to Koforidua, and there appears to have been nothing amiss with him till the 16th January when he sent for the Medical Officer to whom he complained of headache and malaise; his temperature was normal. As he had recently had jaundice, calomel and a saline purgative were ordered for him. The Medical Officer had to leave Koforidua for a few days and did not see the patient till the morning of the 19th, but elicited from a friend that the patient became feverish and vomited during the night 16th—17th; during the 17th the fever was less, but the vomiting continued all day; on the 18th the vomiting stopped and the fever was distinctly less, the temperature of the patient taken by the Dispenser in the evening was 102° F. When seen by the Medical Officer on the morning of the 19th, the patient was restless and slightly delirious, his skin was dry and jaundiced, his eyes sunken, his liver was tender and his spleen palpable, his urine was bile-stained and contained much albumen, he had sordes on his lips and was passing liquid stools the colour of Tincture of Iodine, his temperature in the axilla was 101° F. and his pulse at 9.30 a.m. was 102 and of good volume. At 11.30 a.m. the pulse began to flag, becoming irregular and intermittent, and patient gradually sank dying at 3 p.m.

The Medical Officer, Koforidua, kindly forwarded two blood films made on the morning of the patient's death, and portions of the liver, spleen and kidney for examination. Sections made from these organs after fixing in Schaudinn's fluid showed numerous malignant tertian parasites in the red corpuscles occupying the lumina of the blood vessels of all these organs, ring forms, half-grown forms and sporulating forms being distinguishable; the sections of the liver and spleen showed melanin, but not in large quantity, and sections of these viscera treated with ferrocyanide of potassium and with dilute hydrochloric acid did not give the Prusssian Blue reaction.

The blood films showed a very heavy infection with ring-forms of *P. falciparum*, in each field of the miscroscope one corpuscle in every five harboured one or more parasites, two or three parasites in one corpuscle were quite common, four and five in one corpuscle occurred, but were rare. Free rings were seen once or twice. Pigmented polymorphonuclear and large mononuclear leucocytes were abundant, and both these forms of leucocytes had engulfed numerous parasites. A differential count of 500 leucocytes showed 49.8% to be polymorphonuclears, 26% to be large mononuclears and transitionals, and 24.2% to be lymphocytes Of the 249 polymorphonuclears counted, 231 appeared to belong to class I. and II. of Arneth, thus showing a distinct " shift to the left."

This case may be compared with one described by Dr. Macfie in the Accra Laboratory Report for the year 1914, to which it bears a close resemblance.

On the 16th March, the first case of Relapsing Fever was discovered in the European Hospital and before the end of the month seven cases were diagnosed in Africans ; many cases have occurred in Africans more recently, but do not call for comment in this report.

The spironema found in the blood films examined at the laboratory apparently differs in no way from that causing Relapsing Fever in other parts of the world so far as morphology is concerned. One hundred spironemata, twenty-five taken as they came in four blood films from different cases, were drawn with the camera lucida and measured by means of t he compas, method ; the sh ortest was 10 μ in length, the longest, in a film which showed many double forms was 44 μ in length, and the average length was 22.1 μ.

Inoculations of blood procured from cases in the Native Hospital by courtesy of Dr. A. J. R. O'Brien, the Surgical Specialist, were made into white rats and into monkeys. The white rats proved insusceptible to the strain, nine were used in all—with the exception of one, which on the morning following its inoculation showed two spironemata in a film of its blood and none thereafter—they never showed any spironemata in their blood, although films were examined daily for nearly a fortnight after inoculations. Monkeys proved susceptible, however, in two instances developing a temperature and showing spironemata in the blood three days after inoculation ; but the spironemata were present for only a single day in the case of a mangabey and for two days in the case of a small baboon ; neither of the monkeys had a relapse or showed spironemata in their blood on any subsequent occasion.

Attempts to convey the disease by the agency of bugs and mosquitos which had been fed on infected cases likewise proved unsuccessful ; lice have only recently been received in any quantity from infected persons ; possibly the experiments which are being carried on now may prove the louse to be the carrier as it is known to be in European, Asiatic and North African Relapsing Fevers.

Wassermann tests were made of 283 samples of blood serum, 48 from Europeans and 235 from Africans. Sachs-Georgi tests were also carried out in 75 cases in addition to the Wassermann test ; the results corresponded very closely, indeed, when the supply of materials for carrying out the Wassermann test fails to reach us from England, we are dependent entirely upon the Sachs-Georgi test. Widal tests were done in 54 cases ; of these 27 were European and 27 were African, the result was positive in five cases, all being European.

Examinations of Faeces.

The majority of the specimens of faeces of Europeans sent in for examination were from cases suspected of suffering from dysentery or typhoid fever. *E. histolytica* was found in one case, but in no instance was any bacillus of the dysentery or typhoid groups of organisms isolated from the stools.

In the cases of Africans the specimens of faeces submitted for examination were usually accompanied by a request that search be made for eggs of worms. In the one hundred and six specimens examined eggs of " Hookworm " were found in twenty-three, eggs of *Ascaris lumbrocoides* in fifteen, eggs of *Trichiuris trichiura* in eleven, eggs of *Taenia saginata* in two, all and eggs of *Oxyuris vermicularis*, of *Schistosoma haematobium* and of *Schistosoma mansoni* were each found once. *E. histolytica* was found in twelve cases.

Examinations of Urines.

The samples of urine submitted for examination were more numerous than those of last year, but revealed nothing of special interest ; as usual in those specimens derived from Africans the examination commonly asked for was whether Bilharzia ova were present or not ; of thirty-one samples examined these ova were found in eight. A considerable amount of experimental work has been done during the year in endeavouring to discover the common intermediate host or hosts of *Schistosoma haematobium* in the Accra District, but up to the present time none of the species of snails exposed to infection with miracidia, hatched from ova of this worm, has provided furcocercous cercariae capable of infecting monkeys or rats.

Examinations of Sputum.

There was a decided increase in the number of samples of sputum sent in for examination as compared with that of the previous year. In a minority of cases we were asked to report upon the presence or absence of pneumococci and streptococci in the sample submitted, with a view to the making of vaccines if those organisms were found. A distinctly larger proportion of the specimens examined showed the tubercle bacillus than in previous years in the cases of Africans; how far this is due to an actual increase of tubercular disease amongst the natives or how far it is due to more careful following up of doubtful cases and more thorough examination of patients is a moot point. Many of the specimens in which the tubercle bacillus was found were sent in by the Medical Officer of Health derived from cases of phthisis which he had isolated in the Contagious Diseases Hospital.

Bacillus tuberculosis was found in four of thirteen specimens of sputum in the cases of Europeans; it was found in fifty-five of two hundred and eleven specimens in the cases of Africans.

Miscellaneous Examinations.

Under this heading are included all examinations of clinical material that have not been dealt with already, examinations of specimens sent in from the slaughter-house by the Sanitary Authority, examinations of material obtained from sick animals, autopsies of animals, examinations of "exhibits" forwarded by the police, sections of morbid viscera submitted for examination and the making of vaccines, etc.

As has been previously stated, the examinations under this heading appear to have increased considerably in the past year; in reality, this is not the case, but is due to a more accurate record having been kept of the work done in the laboratory from day to day.

Few of these examinations seem to call for comment; mention has been made already of the investigations of the Director and of Dr. Corson as regards the larval forms of the Filariidae found living in the skin of the natives of the colony; a full account of this work will be found in the Annals of Tropical Medicine and Parasitology, Vol. XVI, pp. 407—416 and pp. 459—471.

No fewer than 6 specimens of Loa loa removed from the conjunctivae of natives were received from Dr. Duff stationed at Quittah; apart from testifying to the skill of the operator, this number seems to suggest that Loa loa is a commoner parasite, or at least "migrates" more frequently in the Quittah district than in the more westerly parts of the colony.

A specimen of cancer of the uterus was very kindly presented to the museum by Dr. G. E. H. LeFanu; the case, that of a native of less than thirty years of age, first came under Dr. LeFanu's notice in the early part of 1922 when he found the disease in an advanced stage; considering it to be a maligant growth, Dr. LeFanu removed a small portion, which, upon examination at the laboratory, was reported to be an epithelioma; the patient died in July and an examination of a series of sections at a later date confirmed the nature of the tumour.

Another interesting specimen received from the same donor was that of a heart and portion of the aorta of a male native, who died suddenly; the aorta shows very extensive atheromatous patches, of which those immediately distal to the sinuses of Valsalva have become, not merely calcareous, but osseous.

Onchocerca Armillata Raillet et Henry was found in the aorta of several oxen killed at the slaughter house.

In September, a case of diphtheria was discovered in a native child by the Director; this appears to be the first record of the disease in the Colony.

A film of blood obtained from an ox at the slaughter-house showed *Achromaticus macfiei* Fran§a; it will be remembered that this piroplasma was discovered in films of blood taken from an ox at Tamale, in 1916, by the late Dr. E. W. Graham and sent to the laboratory for examination.

Sections of the viscera of twelve cases suspected to have died of Yellow Fever were examined; the morbid histology appeared to confirm the diagnosis in eight of these cases.

(II .—Post-mortem Examinations.

One hundred and four post-mortem examinations were made during the year. The various causes to which death was attributed will be found in the attached table (Table III). Pulmonary disease again accounted for the largest number of deaths, claiming 35.5% of the total; accidents, chiefly in connection with motor vehicles, were responsible for ten deaths, 9.6% of the total.

Two of the postmortem examinations which revealed interesting pathological conditions are referred to below :—

(1) A European man, aged thirty-six years, died at Accra in February, 1922, of heart failure after an illness which had lasted nearly a month. At the autopsy both lungs showed broncho-pneumonic consolidation, especially of the upper lobes. The right pleural cavity contained about thirty ounces of clear straw-coloured fluid. The liver was depressed and considerably enlarged, being in a state of chronic venous congestion, the spleen was enlarged and congested. The pericardium contained a slight excess of fluid, but there were no adhesions. The heart was hypertrophied, it weighed almost seventeen ounces : the right side was slightly dilated, otherwise it showed no gross abnormality : the wall of the left ventricle was hypertrophied, but appeared to be healthy. The aortic valves bore firm vegetations, which seemed to be of considerable age, there was extensive atheromatous disease of the first part of the aorta, and the coronary arteries showed rigid and patulous orifices. The principal lesion was found, however, in the anterior cusp of the mitral valve : from the middle of this cusp there projected towards the auricle a large aneurysmal sac which had ruptured, leaving a wide and irregular opening. The diameter of the sac was about 12 mm.; round the ragged margin of the ruptured portion were a few small vegetations and in the marginal portions of the cusp not involved in the aneurysmal dilation were numerous small white thickened areas. Sections of the wall of the left ventricle showed a slight increase of interstitial fibrous tissue and sections of the coronary arteries showed a high degree of endarteritis.

A full account of this case has appeared in the Annals of Tropical Medicine and Parasitology, Vol. XVI, pp. 119—125.

(2) A native male of about thirty years of age was admitted to Colonial Hospital early in March, 1923 ; he gave a somewhat obscure history of having received injury in a motor car accident a fortnight previously ; at the time of admission there did not appear to be any definite symptoms of injury to the viscera, but the patient was detained under observation ; he died rather suddenly on the 6th of March and a post-mortem examination was made within a few hours of death.

The body was not greatly emaciated. The pericardium contained about three ounces of serous fluid, it, together with the heart, was pushed over to the left side, the left lung was completely collapsed and bound down by adhesions of old standing, the right lung was very voluminous with emphysematous borders. The stomach and upper portions of the small intestine seemed to be normal, but the last three feet of the ileum and nearly the whole of the colon were of a dark purple colour. The liver showed venous engorgement, but nothing otherwise noteworthy, the kidneys also showed congestion, the spleen was greatly enlarged and upon removal was found to be the site of an abscess cavity the size of an orange ; the abscess burst while the spleen was being handled and the contents discharged exactly resembled the grumous pus met with in hepatic abscess. The walls of the cavity were very ragged and irregular, scrapings made from the wall showed *E. Histolytica*, though these were not very active in movement. The spleen measured about 6" x 3½" x 3" and weighed 624 grammes. The colon, especially the caecum and the first two feet, showed numerous ulcers with ragged and undermined edges ; the last three feet of the ileum exhibited a slate coloured mucosa coated with blood-stained mucus. Amoebic abscess of the spleen is rare according to Rogers (Bowel Diseases in the Tropics, 1921, p. 382). The thymus gland removed from the body of a female native child, whose death was apparently due to acute peritonitis, was found to weigh 52.5 grammes.

Table III.—Post-mortem Examinations.

Cause of death.	European	African	Cause of death.	European	African
Abscess of Brain	—	1	Hepatitis, acute	—	1
Abscess of lung	—	1	Malaria	1	2
Abscess of spleen	—	1	Marasmus	—	1
Aneurysm, Aortic	—	1	Morbus cordis	2	3
Blackwater Fever	1	—	Nephritis, chronic	—	2
Bronchitis	—	1	Pemphigus, neonatorum	—	1
Broncho-pneumonia	—	13	Pericarditis, pneumococcal ..	—	1
Cerebral congestion	—	1	Pericarditis, tubercular	—	1
Cerebral haemorrhage	—	1	Peritonitis, general	—	6
Cerebro-spinal meningitis ..	—	3	Phthisis, pulmonalis	—	14
Decapitation	—	1	Pneumonia, lobar	—	9
Dysentery (bacillary)	—	1	Rupture of colon	—	1
Ectopic gestation, ruptured ..	—	2	Rupture of Kidney	—	1
Encephalitis, acute	1	—	Rupture of Liver	—	1
Enteritis, tubercular	—	1	Rupture of liver and spleen ..	—	2
Fractures, multiple	—	2	Schirrhus of mamma	—	1
Fracture of pelvis	—	1	Septicaemia	—	3
Fracture of ribs	—	1	Strangulation, suicidal	—	2
Fracture of skull	—	1	Tuberculosis, general	—	1
Fracture of spine	—	1	Wound of liver	—	1
Gastro-enteritis	—	2	Yellow Fever	—	3
Gunshot wounds	—	3			
Haemorrhage (middle meningeal)	—	1		6	98
Haemorrhage (post-partum) ..	—	1		104	

(III).—Examinations of Rats.

Two hundred and eighty-six rats were sent for examination during the year by the Medical Officer of Health, Accra. None was found to be infected with plague. In Table IV. the number of rats and the species received from month to month are shown ; it will be noticed that, as was the case last year, the total number of *M. rattus* is greater than that of *C. gambianus* and that very few *M. decumanus* were captured as compared with the other two species.

Table IV.—Examinations of Rats.

	1922.									1923.			
Species of rat ..	April.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
Mus. rattus	15	15	13	12	23	26	—	7	1	28	3	8	151
Mus. decumanus	6	—	3	—	3	—	—	—	—	4	—	2	18
Cricetomys gambianus	21	19	3	15	15	12	4	14	5	4	2	3	117
Totals ..	42	34	19	27	41	38	4	21	6	36	5	13	286

As has been remarked previously (Accra Laboratory Report for 1917) it is curious how *M. rattus*, which in 1908, was a rare species (Report on Plague in the Gold Coast, by Prof. W. J. Simpson) has now become the most prevalent species, and that *M. decumanus*, which in 1908, was the most prevalent species is now the rarest of the three species captured by the Sanitary Officers in the houses and yards of Accra.

(IV).—Examination of Water.

One hundred and ten samples of Accra water and one sample of water from Cape Coast were examined bacteriologically during the year at the request of the Sanitary Department; in addition, eight samples of locally manufactured aerated water were examined in the same way for the Medical Officer of Health. The results of these examinations appear to indicate an improvement in the state of the water supplied as compared with that of the previous year.

(V).—Examination of Mosquito Larvae in Samples of Water collected by the Sanitary Department, and other Entomological Notes.

Seven hundred and eighty-one samples containing mosquito larvae were submitted for examination by Dr. P. S. Selwyn-Clarke, the Medical Officer of Health for Accra, during the year. The number of samples sent in and the species of mosquito found in them in each month of the year are shown in Table V.

Tabel V.—Examinations of Samples of Mosquito Larvae.

	1922.									1923.				
	April.	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	March.	Totals.	Percentage occurrence in the sample
Number of samples.	68	109	100	73	26	56	63	71	28	61	42	84	781	
Aedes argenteus Poir ..	61	90	77	59	25	45	54	60	24	58	42	72	667	85.4
Culex fatigans Wied ..	6	14	22	6	1	6	4	11	—	2	—	5	77	9.8
Culex thalassius Theo ..	—	—	2	11	3	1	2	1	—	—	—	2	22	2.8
Anopheles costalis Loew	2	3	1	2	—	4	1	—	1	—	—	1	15	1.9
Culex decens Theo ..	—	1	3	1	—	—	—	—	—	—	—	4	9	1.1
Aedes (Och) irritans Theo	—	1	—	—	—	—	3	—	—	—	—	2	6	0.7
Culex (Culiciomyia) nebulosa Theo	—	2	1	1	—	—	—	—	—	—	—	1	5	0.6
Aedes (Och) albocephalus Theo	—	—	—	—	—	2	—	—	—	1	—	—	3	0.3
Aedes (Och) apicoannulatus Edw	—	2	—	—	—	—	—	1	—	—	—	—	3	0.3
Aedes (Och) abnormalis Theo	—	—	—	—	—	—	—	—	—	—	—	2	2	0.2
Aedes (Stg) metallicus Edw	—	1	1	—	—	—	—	—	—	—	—	—	2	0.2
Culex tritaeniorhynchus Giles	—	1	1	—	—	—	—	—	—	—	—	—	2	0.2
Lutzia tigripes, Grpré ..	—	—	—	1	—	—	—	—	—	—	—	1	2	0.2
Aedes (Stg) luteocephalus Newst	—	1	—	—	—	—	—	—	—	—	—	—	1	0.1
Culex (culiciomyia) macfiei (Edw)	—	—	1	—	—	—	—	—	—	—	—	—	1	0.1

Fifteen species were found in the samples as compared with twenty in the previous year. It was stated in the report for the year 1921, that the larger number of species appearing in the samples as compared with the smaller numbers found in the two preceding years might be the result of the heavy rainfall of 1921, but that it was more likely to be due to the fact that the Sanitary Department was gradually extending its sphere of influence and thus tapping new sources of supply. Further consideration, however, seems to suggest that there are other factors concerned in the variation in the number of species which appear in the samples in different years, *e.g.*, the rainfall in the year 1917 was 44.2 inches, in the year 1918 it was 32.37 inches; both these years being years of the war it is unlikely that the Sanitary Department was extending its area of inspection—but more probable that it was curtailing it—yet in 1917 with a rainfall of 44.2 inches only seven species were found, while in 1918 with a rainfall of 32.37 inches the number of species found was 17.

A species of mosquito new to science was reared from larvae found in a rot-hole in a tree at Ofako in May : the same species was reared from larvae found in a sample of water collected by the Sanitary Department from a rot-hole in a tree at Adjabeng Lodge in June.

This mosquito willl shortly be described by Mr. F. W. Edwards of the British Museum Mr. Edwards proposes to name the mosquito Culex (Culiciomyia) macfiei. With this addition and *Anopheles domicolus* Edw which was reared from larvae, the total number of species of mosquitos known to occur in Accra is now sixty-six.

No adult mosquitos collected in houses were submitted for identification by the Sanitary Department during the year.

Table VI.—The Relationship of Rainfall and the commonest species of Mosquito Larvae found in samples submitted by the Sanitary Department.

Year.	Rainfall in inches.	Number of samples of mosquito larvae submitted.	Percentage occurrence of the six commonest mosquitos found in the samples submitted.					
			Aedes argenteus	*Culex fatigans*	*Culex decens*	*Culex thalassius*	*Lutzia tigripes*	*Anopheles costalis*
1917	42.2	457	77.3	22.8	0.4	0.4	0.4	1.0
1918	32.37	637	78.7	17.52	5.42	1.35	0.15	5.6
1919	20.4	801	90.6	11.0	1.2	0.6	0.4	1.0
1920	15.87	700	91.4	11.1	0.3	0.4	—	0.1
1921	34.43	532	71.6	22.9	1.8	2.6	2.2	2.2
1922–23	26.53	781	85.4	9.85	1.1	2.8	0.2	1.9

Table VI. is a reproduction from last year's report with the addition of the data for the twelve months April 1st, 1922, to March 31st, 1923. It will be seen that with a rainfall of 26.53 inches the percentage occurrence of *Aedes argenteus* (*S. fasciata*) in the samples was 85.5 for the twelve months; this is confirmatory of the suggestion made in the previous report that with a reduction of the rainfall there is an increased percentage of *Aedes argenteus* to be found in the samples of larvae submitted for examination and that this increased percentage is, in all probability, due to the fact that, whilst other mosquitos find the collections of water in which they lay their eggs reduced in numbers in a season of low rainfall, *Aedes argenteus*, which lays its eggs in small collections of water and preferably in water stored in domestic utensils, is little, if at all, affected by a reduction of the rainfall in a town with a pipe-borne water supply such as Accra.

Miss A. M. Evans, of the Liverpool School of Tropical Medicine, very kindly offered some time ago to examine all consignments of fleas sent to her with a view to determining if there be any seasonal variation in the prevalence of species upon the rats found in houses and yards in Accra. Accordingly collections of fleas were made from the rats sent in by the Sanitary Department from the 1st August, 1921, to the 31st July, 1922, the rats as received being separated into species, placed in tin drums, chloroformed, and after death brushed to remove any fleas which had not fallen upon the white paper at the bottom of the tin. These collections were submitted month by month to Miss Evans, whose determinations of species will be found in Table VII.

Table VII.—Record of Fleas taken on Rats in Accra 1st August, 1921, to 31st July, 1922.

Months	Species of rat.	*X. aequisetosus* ♂	*X. aequisetosus* ♀	*X. cheopis* ♂	*X. cheopis* ♀	*Ct. felis* ♂	*Ct. felis* ♀	*X. astia* ♂	*X. astia* ♀	*X. brasiliensis* ♂	*X. brasiliensis* ♀	*E. gallinaceus* ♂	*E. gallinaceus* ♀
1. August, 1921 ..	*C. gamb.*	14	12	3	3	—	—	—	—	—	—	—	—
2. September, 1921 ..	*C. gamb.*	3	7	—	—	1	5	—	—	—	—	—	—
3. October, 1921 ..	*C. gamb.*	6	1	—	—	1	—	—	—	—	—	—	9
4. November, 1921 ..	*C. gamb.*	42	74	—	1	—	1	—	—	—	—	—	—
	M. rattus.	—	1	2	—	—	—	—	—	—	—	—	—
5. December, 1921 ..	*C. gamb.*	17	13	—	—	—	—	—	—	—	—	—	—
	M. rattus.	—	—	7	9	—	—	—	—	—	—	—	—
6. January, 1922 ..	*C. gamb.*	29	40	—	—	—	—	—	—	—	—	—	—
	M. decum.	—	1	1	3	—	—	—	—	—	—	—	—
	M. rattus.	—	—	5	2	—	—	—	—	—	—	—	—
7. February. 1922 ..	*C. gamb.*	117	153	—	—	7	5	—	—	—	—	—	—
	M. decum.	—	1	8	—	—	—	—	—	—	—	—	—
	M. rattus.	4	4	8	14	—	—	—	—	—	—	—	—
8. March, 1922 ..	*C. gamb.*	122	88	—	—	—	—	—	—	—	—	—	—
	M. rettus.	—	—	3	3	1	—	—	—	—	—	—	—
9. April, 1922	*C. gamb.*	3	4	—	—	—	—	—	1	—	—	—	—
	M. decum.	—	—	2	1	—	—	9	13	—	—	—	—
	M. rattus.	1	—	1	1	—	—	—	—	—	—	—	—
10. May, 1922	*C. gamb.*	123	108	—	—	—	—	1	1	—	1	—	—
11. June, 1922	*C. gamb.*	44	80	—	—	—	—	—	—	—	—	—	—
	M. decum.	—	—	1	1	—	—	—	—	—	—	—	—
	M. rattus.	—	—	8	7	—	—	—	—	—	—	—	—
12. July, 1922	*C. gamb.*	37	41	—	—	—	—	—	—	—	—	—	—
	M. rattus.	—	—	2	3	—	—	—	—	—	—	—	—

Miss Evans' identifications are most interesting, they show that the prevalent flea upon *Cricetomys gambianus* is not *X. cheopis.* Roths, but *X. equisetosus* End, and indeed that *C. gambianus* is but scantily infested with *X. cheopis* as compared with *Mus rattus* or *Mus decumauus.* Whether *X. aequisetosus* is as efficient a vector of *B. pestis* as *X. cheopis* has yet to be determined. The finding of *X. astia* Roths upon *M. decumanus* and *C. gambianus* in April and May is of great interest, as the occurrence of *X. astia* in Africa has not been recorded previously. *X brasiliensis* Baker is also recorded for the first time from the Gold Coast. Five species of the *genus Xenopsylla* Glink are now known to occur upon rats in Accra, *X. nubicus* Roths having been taken in 1919 on *Arvicanthis rufinus* Temn and on *Mus rattus* in 1921.

The director conducted a survey of the Accra District for tsetse in August and September; the results of his survey largely correspond with those obtained by Dr. J. J. Simpson in 1912; in one or two places where tsetse fly was present in 1912, it was not found, 1922.

Apparently, there are only two species inhabiting the Accra plain, namely *G. palpalis* R—D and G. *longipalpis* Wied, and neither of these is to be found within a radius of 7–8 miles of Accra: increased transport facilities and more frequent communication with the interior do not seem to have introduced more tsetse fly into Accra itself. Concerning the carrier of the prevailing epidemic of Relapsing Fever a few remarks may be made.

Ornithodorus moubata Murray, the carrier of *S. duttoni* in the Congo and East Africa has never been taken in the Gold Coast and *Ornithodorus sevignyi* Aud, the carrier of Relapsing Fever in Egypt and in Somaliland, is also unknown in the colony. *Ornithodorus talaje* Guérin Méneville, the carrier of Relapsing Fever in Panama, was found by Graham on *C. gambianus* during the epidemic of Plague in Accra in 1908 (Report on Plague in the Gold Coast in 1908, W. J. Simpson, pp. 22), it was again found on *Mus decumanus* during the slight outbreak of Plague at Accra in 1917; however, owing to its rarity it is unlikely that *O. talaje* is the prevalent carrier of the present epidemic in Accra. *Argas persicus* Oken is supposed by some people to be a common parasite of fowls in the Gold Coast, but there is no authentic record of its occurrence; moreover, it has been shown by Edm. Sergent and H. Foley (Trans, Roy. Soc. Trop. Med. and Hygiene, Volume XVI., pp. 170–187) that *Argas persicus* is not a carrier of *S. berbera* in North Africa whereas *Pediculus humanus* is an efficient one. It seems most probable that the carrier in the Gold Coast is *Pediculus humanus*.

C.—A LIST OF THE PAPERS PUBLISHED.

The following is a list of the papers published during the year by the members of the staff of the Medical Research Institute :—

1. " Two further cases of Cardiac Aneurysm. "

   A. Ingram and J. W. Scott Macfie.

   Annals of Trop. Med. and Parasitology, Vol. XVI, pp. 119–125.

2. " On the Genital Armature of the Female Mosquito. "

   J. W. Scott Macfie and A. Ingram.

   Annals of Trop. Med. and Parasitology, Vol. XVI, pp. 157–188.

3. " West African Ceratopogoninae," Part II.

   A. Ingram and J. W. Scott Macfie.

   Annals of Trop. Med. a d Parasitology, Vol. XVI, pp. 243–282.

4. " A note on the prevalence of Ceratopogonine Midges on the Windows of the Accra Laboratory. "

   A. Ingram and J. W. Scott Macfie.

   Annals of Trop. Med. and Parasitology, Vol. XVI, pp. 301–303.

5. " The Ascaris of Cattle. "

   J. W. Scott Macfie.

   Annals of Trop. Med. and Parasitology, Vol. XVI, pp. 311–313.

6. " The Occurrence of Larvae of *Onchocerca volvulus* Leuck in the skin of natives of the Gold Coast."

   J. F. Corson.

   Annals of Trop. Med. and Parasotology, Vol. XVI, pp. 407–420.

7. " Observations on the role of Cockroaches in Disease."

   J. W. Scott Macfie.

   Annals of Trop. Med and Parasitology, Vol. XVI, pp. 441–448.

8. " Observations on *Onchocerca volvulus* "

   J. W. Scott Macfie and J. F. Corson.

   Annals of Trop. Med. and Parasitology, Vol. XVI, pp. 459–464.

9. "A new species of Filarial Larva found in the skin of natives of the Gold Coast."

   J. W. Scott Macfie and J. F. Corson.

   Annals of Trop. Med. and Parasitology, Vol. XVI, pp. 465–471.

10. "Certain Nurseries of Insect Life in West Africa".

J. W. Scott Macfie and A. Ingram.

Bulletin Entomo. Research, Vol. XIII, pp. 291–294.

11. "*Aphiochaeta xanthina* Speiser as an intestinal parasite in the Gold Coast."

A. Ingram.

Je. of Trop. Med. and Hygiene, Vol. XXV, pp. 113–115.

12. "Perforation of the Ileum probably caused by *Ascaris lumbricoides*."

A. Ingram.

Jr. of Trop. Med. and Hygiene, Vol. XXV, pp. 211–212.

13. "Prevalent Diseases of the Gold Coast."

J. W. Scott Macfie.

Trans. Roy. Soc. Trop. Med. and Hygiene, Vol. XVI, pp. 156–161.

14. "Notes on certain post-mortem appearances of the Viscera in Pneumonic Infections of West African Natives."

A. Ingram and J. F. Corson.

Trans. Roy. Soc. Trop. Med. and Hygiene, Vol. XVI, pp. 167–169.

APPENDIX B.

THE ANNUAL REPORT ON THE VENEREAL CLINIC IN THE ACCRA NATIVE HOSPITAL FROM APRIL, 1922, TO MARCH 31st, 1923.

General Review of the work done during the year.

The task before us is always growing in difficulty and in complexity, and to some extent in evasiveness, because the whole question of Venereal Diseases touches the life of all the people of the Gold Coast from so many different standpoints. Still, I am of opinion that the educational campaign which has been carried on by me during the year has been productive of healthy results, and signs are not wanting to show that the far-reaching effects and dangers of Venereal diseases are now understood in this district as they never were before the establishment of the Venereal Clinic in Accra.

And out of this knowledge, I hope, will spring an awakening conscience and sense of the terrible responsibility involved in acquiring or in communicating these diseases. I believe that sense would be deepened if we were able by legislation to brand the communication of these diseases as the shocking crime we know it to be.

It is not intended, neither is it necessary, on the submission of my second Annual Report of the Clinic to give a historical account of Yaws as the disease has existed in this part of the world for centuries, nor to offer any remarks on its origin in Africa or Arabia as generally credited, or on the place it ought to hold in Nosological systems, a matter on which writers on Yaws differ in opinion.

The object of my including Yaws as a useful adjunct to the Venereal Clinic is based on numerous incidental observations for the past ten years, and in my opinion—to judge aright of the causes of certain physical existence of Syphilis and of Yaws in the country—it is needful to study these diseases not merely as distinct nosological entities, but also in connection with the general health condition of the inhabitants and with the type of living character of other endemic maladies most prevalent among them.

There is a series of pseudo-syphilitic phenomena met with in the natives thought by some to have connection with yaws. First among these is a destructive ulceration of the soft palate and the fauces and sometimes of the nose. With or without this there may be destructive ulceration of the nasal cartilages resembling *lupus exedens.* Occasionally either on the face or elsewhere there is a cutaneous affection resembling *lupus vulgaris.*

Syphilis was unknown among the natives of this district until recently. It has been observed lately in the West Indian Islands that the destructive processes of Syphilis are less in a district where yaws is prevalent among the natives. If all the tertiary manifestations of framboesia could be grouped as tertiary syphilis, I think we should have cases of a nervous type of the disease. I have only seen one single case of the nervous type of Syphilis since the Clinic was started

Opinions are divergent as to the hereditary transmission of Yaws (congenitally at all events it seems never to have occurred). It is possible that as in Syphilis a child born of a mother who was suffering from Yaws during pregnancy inherits a certain morbid condition as the result of infection through maternal blood, and that instead of exhibiting all the phemomena of the diseases it will in course of time be affected with some of the late manifestations of the diseases only. This may, of course, be considered inheritance of the disease, and may explain parenthetically conditions observed in persons who have apparently never suffered from yaws which were attributed by some in the early part of the last century and by some in modern times to congenital syphilis. I will limit myself, however, to a consideration of the fact which has been adduced in support of the contention that Yaws and Syphilis are as they now exist different diseases inasmuch as in both, organisms have been discovered. To illustrate this manifestation I quote the following cases which came under my notice during the year.

Case I.—Male, aged 25, had yaws when about two years. A year ago he developed a gummatous ulceration of the soft palate followed by a complete destruction of the whole of the nasal cartilages, fauces and part of upper jaw. The ulceration extended as far back as to the Vortex.

Case II.—(*a*). A boy, aged 15, came to the Clinic with gummatous ulceration all over the body resembling congenital syphilis. The parent denied having suffered from syphilis or from yaws, but she admitted that during pregnancy she was infected with yaws. Although this child was born healthy without any signs of syphilis or framboesia : the boy subsequently developed gummatous ulceration resembling congenital syphilis.

Case II.—(*b*). A multipara, aged 35, suddenly developed a gummatous ulceration during seven months' pregnancy on the right side of the back and on the left loin. She denied having suffered from either yaws or syphilis during the early part of her life, but the only thing she could remember was that she was told by her mother that she (the mother) had yaws when she was about six months in utero. Wasserman was done and the result was positive. She under-went a full course of treatment and she has now perfectly recovered and has delivered a healthy child without any manifestation of congenital syphilis.

Case III.—Secondary Syphilis in a Moshi man with a typical shotty rash on the chest, face and back resembling Small-pox.

Case IV.—Primary Framboesia in a Fulani man and the effect of N. A. B. after one week's injection.

The Effect of Modern Treatment on both Diseases.

It would not be out place if I touch briefly on the treatment of both diseases prior to the establishment of the Clinic on the Gold Coast in January, 1921, and before the free treatment of syphilis and of Yaws with Salvarsan in the District. The popular treatment of both diseases, especially tertiary framboesia, was an internal administration of potasium iodide in a regulated dosage according to the age and stage of the disease and an inunction of grey ointment.

During 1910, and up to 1918, this treatment was supposed to be specific and attracted a large number of patients from all over the country to the Basel Medical Mission at Aburi and Odumase. Some of the local merchants took advantage of the situation and started ordering potassium iodide and grey ointment which were sold indiscriminately all over the country.

Of the various substitutes of original Salvarsan, the only one which has been used in the Clinic is Neo-Arseno-Billon. This preparation in my experience is more specific for yaws than it is for syphilis, and the percentage of the positive Wasserman test is greater in yaws than in syphilis. In my own private practice before the Clinic was started, I had been using Neo-Salvarsan, Galyl and other substitutes ; but Neo-Salvarsan in my opinion seemed to be more efficacious in the treatment of syphilis. Neo-Arseno-Billon has a marvellous effect, however, on primary and secondary framboesia.

Two fortnightly intra-muscular injections of 0.3 grm were given to a large number of children—average age between 1–12 years—which has had an extraordinarily successful effect, and whether we should consider this as specific and curative is left to be determined if these children will not subsequently show tertiary manifestation of yaws. There were no complications in these cases except few local manifestations, which, in my opinion, were due to sepsis as some of these children were very dirty and ill-fed.

The procedure in treating the tertiary cases is by giving six intra-venous injections of Neo-Arseno-Billon and eight 0.6 intra-muscular injections of mercury. This represents the first full course of treatment. There were few relapses within an interval of three months. These relapses had a further course of six intra-venous injections and eight 0.6 intra-muscular injections of mercury, and none of them has had any further relapse. There were few complications in the treatment of these cases. The following complications were noticed. Four cases of jaundice, and two cases of ex-foliative dermatitis. These symptons were noticed after the second injection.

Accommodation.

The work of this branch was carried on thoughout the year in the same building at the Native Hospital which has never been suitable for such a work, as it is both inconvenient and inadequate. With an appreciably increased attendance, the lack of accommodation is becoming acute and the extension of the scope of work is seriously handicapped.

Staff.

The Staff consisted of two Assistant Male Nurses drawn from general nurses in training' one Female Nurse and a labourer. There was a certain amount of inconvenience caused by the frequent change of the male Nurses, and it was not until the month of May that this error was rectified by the Medical Officer in Charge of the Native Hospital. Since then, one of the male Nurses has been permanently attached to the Clinic and has been discharging his duties satisfactorily. The Female Nurse suddenly resigned her post in the month of July, because I believe, she had no inclination for that kind of work. Luckily, however, her place has been filled by a better class nurse whose appointment has materially raised the tone of the female side of the Clinic.

Attendance.

The number of the native patients availing themselves for treatment at the Clinic steadily increases, though the opportunities of continuous observation are not as complete as one would wish as frequently the patients feeling no immediate benefits resort to their own native medicines. Coupled with this is the lack of secrecy. This, in my opinion, has contributed largely to the disinclination of natives suffering from venereal diseases to take full advantage of the Clinic. It is rather significant also to remark that since the Clinic was started in January, 1921, I have not seen one single European patient or a better class native availing himself of the Clinic. Personally, I do not think this is due to lack of confidence, but rather to class distinction which I am sure will be rectified as soon as there is adequate accommodation, as almost all the patients who attended the Clinic during the year were paupers.

Attendance in Syphilis.

There was an appreciable number of attendances in syphilitic cases in both males and females as compared with last year. It is rather regrettable, however, that having regard to the high infantile mortality—of which I am sure between 20 and 30 per cent is due to syphilis —the number of patients availing themselves of the Clinic should have been higher. I am still hopeful that as our work progresses the patients who were suffering from syphilis will take full advantage of the Clinic. 150 patients altogether were treated during the year.

Gonorrhoea.

There was a fairly increased number of attendances in gonorrhoea patients. The increase is more noticeable in the female patients. This was due to a certain extent to a lecture given to the women in the vernacular explaining the nature of this disease which they call ' Anidan'; also to the raiding of two Bordels by the Medical Officer of Health. Two special days in the week were arranged for the treatment of female patients solely. The male attendance in gonorrhoea should have been higher, as I am certain that about 50 per cent of all the men in the district are in one way or the other suffering from gonorrhoea.

Soft Chancre.

The number of Soft-Chancroid patients treated during the year shows an increase of about 150 per cent as compared with last year. Still, I am of opinion that this number ought to have been doubled or trebled ; but I suppose the patients suffering from such a disease and without causing them any inconvenience are satisfied to apply antiseptics.

Yaws.

There has been a most extraordinary attendance by patients suffering from primary and tertiary framboesia in both children and adults. This I consider was due to the wonderful effects of modern treatment of yaws. These patients came from coast towns. A fair number also came from Winnebah district and a few cases from the Akwapim District. 1,081 children were treated during the year and 1,436 adults. The number of patients discontinuing the treatment was very, very small ; only about ten per cent of the total number discontinued.

Propaganda Work.

Five lectures in English on Venereal Diseases were delivered to the public during the year explaining the dangers and the far-reaching effects of venereal diseases. One lecture in the vernacular on gonorrhoea and syphilis was delivered exclusively to a female audience.

In-Patients.

There were a fair number of admissions into the Hospital during the year. Those suffering from syphilis were admitted to the Casual Ward.

Total number admitted were as follows :—

Gonorrhoea—Male	25	Female	5
Syphilis—Male	30	Female	—

Treatment.

This has been free throughout the year to all patients who attended the "Clinic."

No. of total attendances 12,550
No. of total Patients treated 3,100
I. No. of Gonorrhoea Patients .. 402

	Gonorrhoea. Male.	Gonorrhoea. Women.	Remarks.
No. ceased to attend Clinic :—			
(*a*) Before completing Course	49	9	58 ceased.
(*b*) Completing Course but before test	210	11	221 cured.
Final test	7	—	7 cured.

II. No. of Soft Chancre treated .. 31
No. of injection of N A B 5,917
No. of injection of Mercury 600
III. No. of Syphilitic patients 150

	Males.	Females.	Remarks.
No. Ceased before full course	15	10	25 ceased.
No. completing 1st full course	4	1	5 } 9 completed course.
No. completing 2nd full course	3	1	4 }

IV. No. of Framboesic patients 2,517

	Tertiary Primary. Male.	Female.	Children.	Remarks.
No. ceased before completing course ..	109	178	—	287 ceased.
No. completing 1st full course	20	15	—	35 } 40 completed Course.
No. completing 2nd full course	2	3	—	5 }
No. of Children treated	—	—	1,081	All cured.

Laboratory Report.

The usual fortnightly Wasserman test was carried out throughout the year.

223 specimens of blood were examined. It is rather interesting from a scientific point of view to state that Wasserman test is more positive in patients suffering from Yaws than those suffering from syphilis even after the first full course of treatment. The number of dried specimens (Gram's test) examined during the year was 205. Out of this 110 were found to contain Gonococci. Owing to lack of accommodation no demonstration of Sp. Pallida was done during the year.

RECOMMENDATION.

Accommodation.

It is most desirable that when accommodation is available one distinct Irrigating Room should be provided for the better class patients, since so far as I have been able to gather, the reason why this class of the community has not availed itself of the advantages afforded by the Clinic is their dislike to mix up with the class of patients attending the Clinic.

It would be useful also if we could provide accommodation for admission of a few In-patients and for cases coming from distant places.

Propaganda Work.

Apart from five lectures given to the public during the year nothing in the nature of propaganda work was done. I am, however, still of opinion that if a small Committee is formed with a view of enlisting the co-operation of the public our campaign against Venereal diseases will be greatly enhanced.

Yaws Patients.

As Framboesia cannot be scientifically grouped as " Venereal," and the object of the Clinic is not to treat this disease specially, but patients suffering from the disease were allowed to be treated there on account of the modern treatment of the disease which is identical with the treatment of syphilis : and considering the large number of patients treated during the year, I respectfully suggest that in the coming year apart from paupers, Children and Government Officials who should be treated freely as before, some nominal charge should be introduced as some of those who attend the ' Clinic ' can afford to pay.

C. E. REINDORF,

Temporary Medical Officer in Charge of Venereal Clinic.

APPENDIX C.

ANALYTICAL CHEMIST.

Report on the work done during the year April, 1922, to 31st March, 1923.

CHEMICAL LABORATORY,

ACCRA.

The number of samples dealt with was 181 and comprised the following :—

Examination for Poisons.

Human viscera	4
Stomach contents	2
Plants	6
Native medicines	2
Whisky	2
Water	1

Medical.

Drugs for purity	10
Sera	46
Urine	3

Sanitary Services.

Diets	10
Wines	3
Butter	3
Water	4

Customs.

Patent Medicines	56
Potable Spirits	6
Wines	5
Medicinal Wines	3
Miscellaneous	15
	181

In addition, 72 gallons of locally denatured Trade Spirits were distilled in the Laboratory during the course of several weeks, yielding 35 gallons of 80 per cent. Alcohol suitable for burning purposes in spirit lamps.

No poison was found in the pathological specimens submitted for analysis, and the native medicines proved to be harmless. A specimen of whisky which had been tampered with contained Iodine in solution.

The plant specimens examined for poisonous or medicinal principles consisted of the fruits and seeds of Thevetia nerifolia and bark of Alstonia congensis ; the bark of Rauwolfia vomitoria, the seeds of Jatropha curcas, and the bark of two unidentified trees.

The fruits and seeds of Thevetia nerifolia were subjected to an investigation. The pulp of the fruit was stated to have caused dermatitis on the arm of a child, but experiments did not substantiate this.

The fruit and seeds contain the poisonous glucoside, Thevetin, and sometime was spent in isolating this substance and devising tests for its recognition in cases of poisoning.

It has been suggested that the bark of Alstonia congensis contains an alkaloid which might be used as a substitute for Quinine. The barks of other species of Alstonia in Australia and the Philippines are used as febrifuges, and are known to contain various alkaloids and bases

A specimen of the bark of the local Alstonia (congensis) from Ashanti was examined and found to contain an alkaloid which resisted the usual methods of purification.

Chemically, however, it differs from the Cinchona alkaloids.

An examination was also made of the bark of a tree (botanical name unknown) which was credited with purgative properties. No resin or other active principle was found in it beyond the usual tannin. It is probable that many native plant remedies to which purgative properties are attributed owe their laxative action to the hot water which accompanies their preparation and use.

The bark of Rauwolfia vomitoria was examined.

The specimen came from Sierra Leone where, it is said, the Hausas use it in the form of a decoction for preventing the access of weevils to Kola nuts.

Unfortunately, the specimen was too small for detailed analysis, and the only feature observed was the presence of a bitter Glucoside.

A large number of imported patent medicines was examined on behalf of the Customs Department with the view of determining not only the percentage of Alcohol contained in them, but also their potability as alcoholic beverages.

This, in most cases, entailed the indentification of the ingredients, for the European criterion of a nauseous drink, in so far as an appeal to the palate was concerned, was not considered applicable.

In addition to the work of the Laboratory, the attendant, Mr. I. A. Hammond, has been given a course of instruction in elementary Chemistry and has now attained the standard of the Senior Cambridge Local Examination in practical work.

Appended are the average results of analysis of the dietaries of the Prisons and Asylum in Accra.

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

ROBERT SIMMONS,

Analytical Chemist.

COOKED FOODS.

	Water.	Protein.	Fat.	Carbohydrate.	Crude Fibre.	Ash.	Calories. per lb.	Food* units.
Prison.								
Kenki	57.92	4.58	2.05	33.90	0.80	0.75	800	50.5
Akassa	95.36	0.33	0.09	4.10	0.05	0.07	86	5.1
Plantain ..	61.14	1.27	0.52	35.36	1.10	0.61	702	40.3
Rice	76.33	2.80	0.10	20.43	0.20	0.14	435	27.7
Coco Yam ..	55.66	2.31	0.15	40.47	0.47	0.94	800	46.6
Sweet Potato ..	61.41	2.30	2.00	32.61	0.90	0.78	732	43.4
Cassava.. ..	57.85	1.34	0.51	38.39	1.22	0.69	759	43.0
Soup	91.92	0.71	1.54	4.25	1.54	1.01	157	9.9
Fish cooked ..	42.12	40.92	7.36	—	—	9.60	1,087	120.7
do. uncooked	35.73	48.49	5.67	—	—	10.11	1,134	135.4
Asylum.								
Kenki	63.19	4.00	1.79	29.66	0.70	0.66	700	44.1
Coco Yam ..	54.26	2.47	0.17	41.59	0.41	1.10	806	48.2
Rice	74.10	3.05	0.13	22.65	0.22	0.15	481	30.6
Cassava.. ..	65.87	1.06	0.42	31.08	1.01	0.56	612	34.8
Soup	97.42	0.55	0.51	0.72	0.07	0.73	45	3.4

*Total obtained by adding the percentage of Carbohydrate to 2.5 times the sum of the percentage of fat and protein.