

Annual medical and sanitary report / Uganda Protectorate.

Contributors

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UGANDA PROTECTORATE.

LIST OF CONTENTS.

Annual Medical and Sanitary Report

FOR THE YEAR 1913.

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1914.

UNIVERSITY OF TORONTO

Annual Medical and Sanitary Report



PRINTED BY THE UNIVERSITY OF TORONTO PRESS

LIST OF CONTENTS.

	PAGE.
SECTION I.	
(a) MEDICAL STAFF	7
(b) FINANCIAL	9
SECTION II.	
PUBLIC HEALTH—	
(a) General Remarks	9
(1) General Diseases	11
(2) Communicable Diseases :—	
Mosquito or Insect-borne	12
Infectious or Epidemic	13
Helminthic	15
(b) European Officials	16
(c) Native Officials, including Asiatics	18
(d) General European Population	18
(e) General Native Population	19
SECTION III.	
SANITATION—	
(a) General Review of Work done :—	
(1) Administrative	20
(2) Preventive Measures—	
Mosquito and Insect-borne Diseases	22
Epidemic Diseases	24
(3) General Measures	26
(b) Measures taken to spread knowledge of Hygiene and Sanitation...	28
(c) Recommendations for Future Work	28
SECTION IV.	
METEOROLOGY	30
SECTION V.	
HOSPITALS AND DISPENSARIES—	
Accommodation	31
Diseases treated	31
Table A. Return of cases of the chief Communicable Diseases treated at the Government Hospitals and Dispensaries	33
Table B. Return showing total number of cases (with deaths) treated at each Station during the year	34
Buildings	34

UGANDA, PROTECTORATE.

PRINCIPAL MEDICAL OFFICER'S OFFICE,

ENTEBBE, UGANDA,

7th June, 1914.

SIR,

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

I have the honour to be,

Sir,

Your obedient Servant,

A. D. P. HODGES,

*Principal Medical Officer, Uganda
Protectorate.*

THE CHIEF SECRETARY

TO THE GOVERNMENT,

UGANDA PROTECTORATE.

UGANDA PROTECTORATE.

ANNUAL MEDICAL AND SANITARY REPORT

FOR THE

YEAR ENDING 31ST DECEMBER, 1913.

SECTION I.

(a) MEDICAL STAFF.

The Medical Staff consisted of :—

- Principal Medical Officer.
- Deputy Principal Medical Officer.
- Medical Sanitary Officer.
- 17 Permanent Medical Officers.
- 4 Temporary Medical Officers.
- 4 Temporary Medical Officers for dealing specially with venereal diseases.
- 1 Dental Surgeon.
- 2 Nursing Sisters.
- 2 European Dispensers.
- 2 Assistant Surgeons.
- 15 Sub-Assistant Surgeons.
- 8 Compounders.
- And a varying number of Native Attendants.

The Clerical Staff at Headquarters consisted of :—

European—

- Chief Clerk to the P. M. O.
- Assistant Clerk.
- Medical Storekeeper.

Asiatic—

- Fourth Grade Clerk.
- Fourth Grade Store Clerk.

African—

- Native Clerk.

Mr. B. S. Gledhill, Chief Clerk, resigned his appointment on 31st August, 1913, and his place had not been filled at the end of the year.

The following joined the Protectorate during the year on appointment from England :—Dr. W. T. P. Meade-King, Dr. F. C. Doble, Dr. R. J. A. Macmillan, Dr. A. D. Clanchy and Dr. W. L. Webb ; and two Indian Sub-Assistant Surgeons and two Compounders.

Promotions.—Dr. A. H. Owen and Dr. B. Spearman were promoted to Probationary appointments on the Permanent Staff.

Invaliding.—Dr. A. D. Clanchy was invalided from the Eastern Province and left for England in December.

Deaths.—Mr. N. Vaswani, Indian Sub-Assistant Surgeon, died at Usuku in the Eastern Province in June from plague contracted while assisting at a post-mortem examination. Mr. Vaswani had been for eleven months a most efficient and diligent assistant in carrying out the Anti-plague Measures in the Eastern Province, and his death is a matter of great regret.

Leave.—The following were on leave during the period stated opposite their names :—

	From	To
Dr. A. D. P. Hodges ...	19th May, 1913,	25th December, 1913.
Dr. J. H. Goodliffe ...	22nd May, 1913,	end of year.
Dr. A. C. Rendle ...	19th June, 1913,	do.
Dr. J. M. Collyns ...	1st January, 1913,	21st March, 1913.
Dr. J. H. Reford ...	1st January, 1913,	11th July, 1913.
Dr. C. H. Marshall ...	1st January, 1913,	27th October, 1913.
Dr. L. Sells ...	19th May, 1913,	end of year.
Dr. G. D. H. Carpenter	24th March, 1913,	25th December, 1913.
Dr. R. E. McConnell ...	1st January, 1913,	6th August, 1913.
Dr. H. L. Duke ...	19th May, 1913,	end of year.
Dr. A. D. Clanchy ...	Invalided.	
Dispenser J. D. Buckland	1st January, 1913,	3rd September, 1913.

The work of the Asiatic Subordinate Staff continues satisfactory, and has improved with the improvement in personnel which has recently taken place.

The improvement in personnel above referred to is apparently a direct consequence of a small increase in the initial salary paid. It is hoped that the new Rules for the employment of this Staff, which come into force in 1914, will still further improve matters.

Native Attendants continue to render satisfactory service on the whole, and there has been some improvement in the class of men obtained for this service. They are more frequently able to read and write a little and to speak a little English, so that they are becoming capable of higher training. An attempt is being made towards the special training of a limited number of the better educated Baganda youths at the Venereal Diseases' Hospital, Kampala. Captain Keane, R.A.M.C., who has succeeded in obtaining the services of some of these youths as Attendants, Clerks or Interpreters, is, with his assistant Medical Officers, giving a considerable proportion of his spare time to this experiment.

As stated in the Medical Annual Report for 1910, Native Attendants are, as a general rule, trained by the Medical Officers at the hospitals at which they are employed, and, owing to local ties, are practically non-transferable from station to station. Owing to this drawback there has hitherto been little scope for promotion, and no possibility of organising a Protectorate Staff of these employees. As pointed out last year, improvement in this direction depends on improvement in the general standard of education among natives.

At present natives are employed only as Dressers, Ward Attendants and, to a very limited but increasing extent, as Clerks. It is hoped that in the near future it may be possible to train and to employ a limited number as Dispensers.

(b) FINANCIAL.

The estimated expenditure of the Medical Department for the year 1913-1914 was as follows :—

MEDICAL DEPARTMENT.

Personal Emoluments—

Permanent Medical Officers	£9,293
Clerical Staff, Medical Storekeeper, Packers, Messengers, &c.	842
Temporary Medical Officers and subordinate staff for sleeping sickness preventive measures	1,912
Temporary Medical Officers and subordinate staff for dealing with venereal diseases	1,796
Medical Sanitary Officer	550
Dental Surgeon	300
Total personal emoluments	<u>£14,693</u>

Other Charges—

Epidemics and anti-malarial measures... ..	£600
Miscellaneous charges	1,143
For suppression of sleeping sickness	3,396
For dealing with venereal diseases	752
Total other charges	<u>£5,891</u>

HOSPITALS AND DISPENSARIES.

Personal Emoluments—

Pay of Nursing Sisters, Dispensers, Indian Medical Assistants and Native Attendants	<u>£3,946</u>
--	---------------

Other Charges—

Medical and Surgical Stores	£1,850
Upkeep of Hospitals	800
Miscellaneous charges	1,214
	<u>£3,864</u>

Total Charges—

Personal Emoluments	£18,639
Other charges	9,755
Total	<u>£28,394</u>

SECTION II.

PUBLIC HEALTH.

(a) GENERAL REMARKS.

The conditions of general health may be considered to have made satisfactory progress during the year. The number of cases treated has increased from 97,793 in 1912 to 112,624 in 1913, while the number of deaths among cases treated has declined from 247 to 236. The increase of cases is to be attributed to improved attendance.

In a very large proportion of cases the disease was not of a serious nature. Thus over 20,000 persons were treated for diseases of the skin, over 5,000 for myalgia, over 16,000 for digestive troubles, over 16,000 for coughs and bronchial troubles, over 6,500 for conjunctivitis, besides many others in smaller numbers for various minor ailments.

The total number of infective diseases treated was 20,363, against 19,568 in 1912, and this total included over 1,400 more cases of venereal disease than the total last year. There was, however, a further increase in blackwater fever cases among Europeans and Asiatics.

According to native returns there was a further decrease this year in the number of deaths attributed to the following communicable diseases, viz., dysentery from 759 in 1912 to 642 in 1913, plague from 1,282 to 1,138, sleeping sickness from 932 to 708, small-pox from 519 to 337, measles from 289 to 249. These figures do not include the special return for plague for Bukeddi, from which general native returns are not yet received. This return shows 2,154 deaths against 1,659 last year, but the increase is attributed by the District Medical Officer to improved methods in collecting records. The deaths attributed to syphilis increased from 1,758 to 2,287, and those attributed to gonorrhoea from 1,422 to 1,669.

Native returns do not distinguish between the different forms of fever, but there was a notable decrease in the number of cases of relapsing or tick fever shown in the hospital returns, namely, from 1,809 with 13 deaths to 797 with 11 deaths.

The diseases calling for special attention are plague, venereal diseases, and, to a less extent, tick fever, sleeping sickness and leprosy among natives, and malaria and blackwater fever among Europeans and Asiatics.

The native death returns, with which are combined the special return for plague in Bukedi, show that "fevers," venereal diseases, plague, chest complaints, *muhinyo* (including undulant fever and probably other diseases), paralysis and parturition were, in the order named, the chief causes of mortality.

The number of deaths attributed by natives to "child-birth" or parturition was 1,448, with a total of 36,284 living births, as against 1,049 for 30,469 living births last year. The difficulties encountered in inculcating the simple principles of hygiene were pointed out last year, but there is increasing reason to believe that some progress is being made.

Plague continues to be a source of serious anxiety in the Eastern Province, where it is being specially dealt with. The measures for controlling it are being extended as opportunity offers, and a special effort is contemplated during 1914. The use of preventive inoculation continues to be well reported on, and 9,106 inoculations have been made as compared with 13,458 last year. Operations have been hampered by want of staff, which was partly accounted for by the death of Sub-Assistant Surgeon Vaswani from plague as already reported.

The fact that there has been no noticeable extension of the disease beyond the endemic area and no very serious local epidemic, and especially that there has been no infection of any of the Lake Victoria ports, in spite of the rapid increase of trade and traffic in local produce, testifies to the industry and vigilance of the District Medical Officers, namely, Dr. L. Sells till the middle of May, and Dr. J. M. Collens during the rest of the year.

Venereal diseases continue to be very prevalent, but it is satisfactory to note a still further considerable increase in attendances for treatment at the Government Dispensaries. Compulsory legislation was enacted during the year both by Government and by the Native Parliament of Buganda Kingdom. An experiment in treatment under these conditions at a special hospital by a special staff practically commenced with the year 1914. The compulsory laws are at present applied locally for the purposes of this experiment, which it is hoped may lead to results which may justify further expenditure on this behalf and a consequent extension of operations with the necessary increase of staff.

The reduced number of admissions from tick fever points to an improvement, which it is to be hoped will be maintained. Improvements have been made in porters' camps and locations and in native prisons, and there has been some increase in mechanical transport with a corresponding diminution in porter traffic. The disease still, however, requires special attention.

Sleeping sickness has ceased to be a major cause of mortality, but, as pointed out last year, it is merely held in check by the established system of preventive measures. These measures are in many ways a serious check to the development of the country, but there appears to be as yet no chance of relaxing them to any extent, unless such a course becomes warranted by results of the special investigations which still continue.

During the year Miss M. Robertson, Protozoologist, reported in the Masindi-Buruli District the existence of a long trypanosome, morphologically of the *Gambiense-Brucei-Rhodesiense* type. This trypanosome is without doubt conveyed by *Glossina morsitans* to dogs, producing an acute and rapidly fatal disease in which keratitis is often a marked symptom.

It is a most important point for investigation whether this trypanosome is, or is likely to become, pathogenic to human beings, and special attention will be directed to this during 1914. At present, however, there is no positive evidence in favour of such a supposition, and the balance of evidence is against the conclusion that this trypanosome, or any of the other forms infecting cattle and game in the same area, is a new or recent introduction.

The system of segregation of lepers by natives locally in Camps or Settlements has not proved a success. A variation of the experiment is being made by segregating them in their own villages. Accommodation for leper convicts is found in Hoima Prison, but this is at a distance from headquarters, and difficulty in dealing with the few cases that occur still exists, especially as regards their transport. There is no reason to suppose that leprosy is on the increase.

Much attention has been given to the improved sanitation of townships. The greatest difficulties are naturally encountered in the older and larger townships in which insanitary conditions have become firmly established in the past, and their removal is hampered by vested interests. The work of the Local Sanitary Boards is reported by the Medical Sanitary Officer to have continued to be very satisfactory. As indicated last year, no radical or extensive improvements can be expected without free expenditure of money. The extent and rapidity of future improvement must depend very largely on the funds available.

The further increase in blackwater fever, which has been mentioned above, I believe to be due to a rapid increase in susceptible population, out of proportion to the increase in living accommodation and facilities suitable for such a population. This opinion is supported by the fact that among Government employees, who as a body are comparatively better situated as regards housing, mosquito protection and general conditions of living, there was no increase of incidence and the death rate was lower.

1.—GENERAL DISEASES.

There were 1,271 cases dealt with under this head, of which 1,119 were returned as debility and 112 as anæmia. The corresponding figures last year were 630 cases of debility and 104 anæmia. There were 6 cases attributed to gout and 4 to diabetes among natives, but these were returned by an Indian Compounder whose diagnosis could not at the time be checked.

No seasonal prevalence is indicated, and no special remarks are called for.

2.—COMMUNICABLE DISEASES.

(1) MOSQUITO OR INSECT BORNE.

Malaria, relapsing fever and sleeping sickness were the principal causes of sickness under this head.

Table A, in Section III. below, gives the number of cases of the chief communicable diseases returned from each station, their proportion to the total admissions and the percentage contracted outside the station.

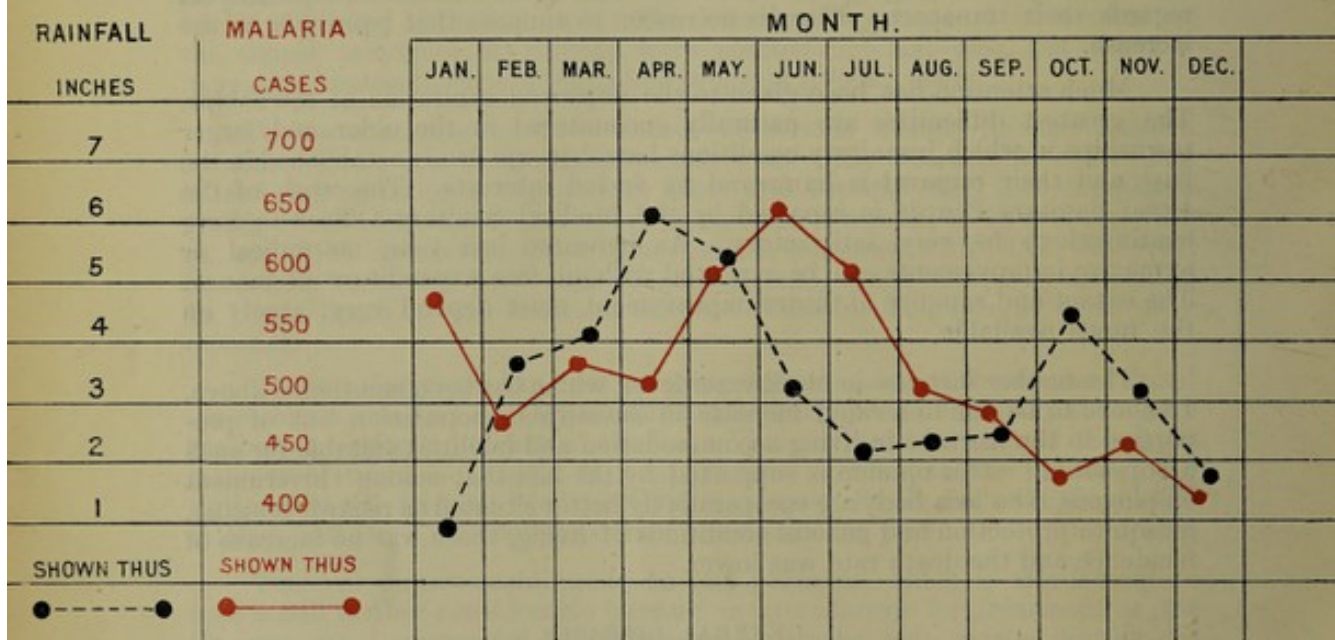
Malaria.—There were 6,426 cases under treatment, with 7 deaths, as compared with 6,363 cases and 10 deaths last year. The percentage of admissions for malaria of the total admissions was 5·7, as compared with 6·29 in 1912 and 7·49 in 1911.

The highest admission rate was in the months of May, June and July, when over 600 admissions were recorded each month. The lowest was in December, when there were 439 admissions.

Seasonal influence continues to be marked, as will be seen by the accompanying composite chart for the whole Protectorate, in which a definite relation is shown to the rainfall.

The general type was mild, and more than five-sixths of the cases were of the Aestivo-autumnal or tropical variety.

COMPOSITE CHART SHOWING INCIDENCE OF MALARIA IN THE UGANDA PROTECTORATE DURING 1913 IN COMPARISON WITH THE RAINFALL.



Blackwater Fever.—This was again more than usually prevalent and affected Europeans and Asiatics.

There were 58 cases with 12 deaths, including 19 Europeans with 2 deaths, as against 45 cases with 9 deaths last year, including 10 Europeans with 4 deaths. The total death rate remained the same, namely, 20 per cent.

Of the above total, 35 cases with 7 deaths were either treated by Medical Officers or their Assistants or were reported as occurring in their districts, while 23 cases (excluding 5 also returned by Government Hospitals) were returned from the Church Missionary Society's Hospital, Kampala, with 5 deaths.

The largest numbers of cases were returned from Kampala, 33, of which 5 originated elsewhere; Entebbe, 9, of which 1 originated elsewhere; and Jinja, 7, of which 2 originated elsewhere.

Further particulars are included in the special report on this disease already submitted.

Dengue Fever.—There were 19 cases recorded as against 5 in 1912, and 69 in 1911.

Yellow Fever.—Is not known to occur.

Elephantiasis.—Of this disease 43 cases were returned, 14 under the heading Lymphatic System, and 29 under Connective Tissue. Last year there were 26 cases, 7 returned under Lymphatic System and 19 under Connective Tissue.

Relapsing Fever.—There were 797 cases returned with 11 deaths. In 1912 there were 1,809 cases with 13 deaths, and in 1911, 1,084 cases with 17 deaths.

The admissions at Hoima fell from 559 to 279, and those at Kampala from 878 to 251.

As last year, the highest admission rates were in April and May. The lowest were in August and December.

Trypanosomiasis.—The decrease in Sleeping Sickness continues to be most satisfactory, and is believed to be general, though less marked in Busoga and in the south-western lake districts.

The total admissions were 96, including 45 to the Sleeping Sickness Camp and 51 to various stations. Of the latter, the majority were transferred to the Camp and count also as admissions there.

The deaths attributed to Sleeping Sickness in combined native and official returns were 708, as compared with 932 last year and 1,487 in 1911. Of these deaths, 57 are assigned to Buganda, 554 to Busoga, 41 to Bunyoro, 21 to Ankole, 29 to Toro, and 6 unknown. The corresponding figures last year were 82, 747, 84, 11, 5 and 3. The deaths in Buganda Kingdom have fallen from 8,003 in 1905 to 57 in 1913.

(2) INFECTIOUS OR EPIDEMIC DISEASES.

Beri-Beri.—No case of this disease has as yet come under observation.

Cerebro-Spinal Fever.—There were 6 cases recorded with 5 deaths. In 1912 there were 3 cases and 3 deaths, and in 1911 12 cases and 10 deaths.

Of the 6 cases, 4 occurred on lake steamers and the other 2 at Kakindu and Mbale in the Eastern Province.

Dysentery.—There were 434 cases with 6 deaths, as compared with 475 cases and 9 deaths last year. The majority were returned from various parts of the Northern Province. The disease was generally of a mild type and there was no serious epidemic. The only station showing an increased return was Masindi.

Native death returns show a still further decrease under this head.

Enteric Fever.—There was 1 case treated at the European Hospital, Entebbe. In 1912 there were 9 cases with 1 death, and in 1911 there were 40 cases with 4 deaths.

Erysipelas.—There was 1 case only, as compared with 3 last year.

Gonorrhœa.—There were 2,501 cases treated, of which 2,104 were dealt with at the General Hospitals and 397 at the Special Hospitals for Venereal Diseases. Last year there were 2,308 cases treated, of which 1,961 were dealt with at the General and 347 at the Special Hospitals.

In the native death returns 1,669 deaths are attributed to this disease, as against 1,422 last year.

Influenza.—There were 113 cases returned, as compared with 27 last year.

It is an open question whether this disease actually exists, as the complications and sequelæ common to it in other countries appear to be wanting. In my opinion the cases returned under this head are more likely to be Dengue or some fever of an allied type.

Leprosy.—Of this disease 16 cases came under observation, 3 of the Nodular and 13 of the Anæsthetic type. Last year 33 cases were returned, 17 of the Nodular and 16 of the Anæsthetic type.

Though certainly not common, the disease is probably more prevalent than would appear from the number of cases which find their way into the hospital returns. In the native returns 280 deaths are attributed to it, but several other diseases, including Tertiary Syphilis, are confused with it.

Measles.—There were 38 cases with 1 death, as compared with 35 cases and 2 deaths in 1912. Native returns attribute to it 249 deaths.

Undulant Fever.—No cases were returned under this head, as compared with 35 cases and 2 deaths in 1912. But 123 cases, with 1 death, were returned under the native name "Muhinyo." Cases of this disease were found by Sir David Bruce to carry the *micrococcus melitensis*, and it is probable that the above were really Undulant Fever.

Mycetoma.—One case of Madura Foot was returned from the Nile District. It is known to exist also in the Eastern Province, but is not often met with.

Plague.—There were 15 cases under treatment, 14 of which were fatal. In 1912 there were 27 cases with 25 deaths, and in 1911 there were 34 cases with 29 deaths.

According to native returns the deaths ascribed to Plague during the last four years were as follows:—

	1913.	1912.	1911.	1910.
Buganda ...	568	546	613	587
Busoga ...	468	667	1,286	1,952
Bukeddi ...	1,671	1,659	1,773	1,021
Teso ...	261	—	—	—
Lango ...	222	159	31	26
Unyoro ...	40	13	—	—
Toro ...	—	9	22	11
Ankole ...	62	47	9	26
Nile ...	—	No returns.		
	<u>3,292</u>	<u>3,100</u>	<u>3,734</u>	<u>3,623</u>

A Special Report on Plague will be found in Appendix No. II.

Pneumonia.—There were 200 cases with 46 deaths, as against 105 cases with 32 deaths last year. The cases were about evenly distributed.

Smallpox.—Only 8 cases were treated, and none were fatal. Last year 40 cases were treated, with 1 death.

Several alarming outbreaks occurred, but were met with promptness and energy by the Medical Officers and local authorities. No serious epidemic prevailed.

According to native returns the deaths under this head during the past four years have been as follows:—

	1913.	1912.	1911.	1910.
Buganda	10	18	58	146
Busoga	317	482	964	433
Unyoro	7	8	18	29
Ankole	3	11	4	25
Toro	—	—	—	4
Nile District	No returns.			
	<u>337</u>	<u>519</u>	<u>1,044</u>	<u>637</u>

Vaccination.—There were 4,535 vaccinations performed, as compared with 4,711 last year.

Of these 3,003 were successful, 413 had a modified result, 455 failed and the result of 664 was unknown. There was a distinctly higher percentage of successful results recorded than last year, and the greatest success was obtained with local (Nairobi) lymph.

Tables showing the numbers vaccinated and percentage results are given under Section III.

Syphilis.—Cases treated under this head at the General Hospitals have increased from 3,690 in 1911 to 6,159 in 1912, and further to 7,109 in 1913.

In addition 121 were treated at the Special Hospital for Venereal Diseases at Kampala and 182 at the Special Hospital at Masaka, making a grand total of 7,412 cases treated.

According to native returns the deaths attributed to Syphilis during the last four years were as under:—

	1913.	1912.	1911.	1910.
Buganda	561	633	517	554
Busoga	435	313	643	454
Unyoro	591	221	99	139
Ankole	498	379	224	300
Toro	202	212	267	150
Nile	No returns.			
	<u>2,287</u>	<u>1,758</u>	<u>1,750</u>	<u>1,597</u>

Tuberculosis.—Under this head 37 cases with 3 deaths were returned, as against 26 cases with 2 deaths last year.

There is no reason to believe that the disease is very prevalent or is on the increase. It is believed to be more common in the Western Province.

Yaws.—There were 537 cases recorded, as against 508 in 1912 and 500 in 1911.

(3) HELMINTHIC DISEASES.

There were 219 cases returned under Cestoda and 1,585 under Nematoda, as compared with 217 and 1,296 last year.

Of the Cestoda 214 were returned as *Tænia Solium*, but in my experience *Tænia Saginata* is much more common, and probably a considerable proportion of the cases should come under that head.

Of the Nematoda 1,088 were classed under *Ascaris*, 169 under *Dracunculus* and 286 under *Oxyuris*.

The returns of *Dracunculus* continue to be confined to the northern part of the Protectorate.

(b) EUROPEAN OFFICIALS.

The health of European Officials continues to be satisfactory.

There were 485 cases of sickness treated, with no deaths. In 1912 there were 385 cases with 2 deaths, and in 1911 395 cases with 5 deaths.

Of the 485 cases, only 319 were placed off duty, and the remainder continued to do duty while under treatment.

Of the total admissions, 155 were due to Malaria and 4 to Blackwater Fever. The other principal causes of admission were:—Diseases of the Digestive System, 101 cases; Injuries, chiefly of a slight nature, 48 cases; and Diseases of the Respiratory System, 16 cases.

The following Table shows the admissions under the three first-named heads, as compared with the two preceding years, and also the percentage which they formed of the total admissions:—

Diseases.	1913.		1912.		1911.	
	Cases.	Percentage of total admissions.	Cases.	Percentage of total admissions.	Cases.	Percentage of total admissions.
Malaria	155	31.9	138	36.0	140	37.0
Blackwater Fever ...	4	0.82	4	1.04	2	0.51
Digestive	101	20.82	68	17.0	86	22.0

Three European Officials were invalided during the year, the causes of invaliding being nervous breakdown (2) and Blackwater fever (1).

The following table shows the number of European Government Officials invalided during the past eight years, with the causes of invaliding:—

Disease.	1913.	1912.	1911.	1910.	1909.	1908.	1907.	1906.	Total.
Alcoholism	—	—	—	—	1	—	—	—	1
Blackwater Fever ...	1	—	—	1	—	3	—	—	5
Circulatory Affections ...	—	1	1	—	1	2	—	—	5
General Debility	—	—	2	1	1	—	2	—	6
Injuries	—	—	—	—	1	—	—	—	1
Malaria	—	—	—	—	—	—	—	1	1
Morphinism	—	—	—	—	1	—	—	—	1
Nervous and Mental Diseases	2	3	1	—	—	2	—	1	9
Sleeping Sickness	—	—	—	—	—	—	—	1	1
Urinary Affections	—	—	—	—	1	—	1	—	2
Total Invalided ...	3	4	4	2	6	7	3	3	32
Average number of European Government Officials ...	289	265	242	223	—	—	—	—	—
Percentage Invalided ...	1.03	1.51	1.65	.89	—	—	—	—	—

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF EUROPEAN OFFICIALS DURING 1913.

STATIONS.	Total number of Officials Resident.	Average number on sick list.	Total number of days on sick list.	Average number on sick list.	Percentage of sick to average number resident.	Average number of days on sick list for each patient.	Average sick time to each resident.	Total number invalided.	Percentage of invalidings to total residents.	Total deaths.	Percentage of deaths to total residents.	Percentage of deaths to average number resident.	Number of cases of sickness contracted away from residence.
Bombo	15	17	133	36	3.27	7.8	12.09	—	—	—	—	—	2
Butiaba	8	6	59	16	4.00	9.8	14.75	—	—	—	—	—	—
Entebbe	118	83	422	1.15	2.31	5.0	7.27	1	0.84	—	—	—	23
Fort Portal	36	9	149	40	1.00	10.0	37.25	—	—	—	—	—	6
Gondokoro	1	5	43	—	—	—	—	—	—	—	—	—	—
Gulu	28	6	40	—	—	—	—	—	—	—	—	—	3
Hoima	24	13	147	4	10.00	11.3	36.75	—	—	—	—	—	7
Jinja	102	52	171	46	3.06	3.2	11.40	—	—	—	—	—	24
Kakindu	12	19	91	25	3.12	4.7	11.37	—	—	—	—	—	—
Kampala	77	42	129	35	1.06	3.0	3.90	1	1.3	—	—	—	—
Kitgum	9	3	11	—	—	—	—	—	—	—	—	—	—
Kumba	2	2	5	—	—	—	—	—	—	—	—	—	—
Kumi	23	18	70	19	9.5	3.8	35.00	—	—	—	—	—	12
Masaka	3	—	—	—	—	—	—	—	—	—	—	—	—
Masindi	5	7	35	—	—	—	—	—	—	—	—	—	—
Mbale	59	24	393	1.07	15.42	16.3	56.14	—	—	—	—	—	18
Mbarara	25	5	55	15	3.00	11.0	11.00	—	—	—	—	—	—
Nabieso	3	—	—	—	—	—	—	1	.33	—	—	—	—
Nimule	19	8	18	—	—	—	—	—	—	—	—	—	2
Uganda Protectorate	569	319	1,971	5.4	3.19	6.17	11.66	3	.52	—	—	—	97

(c) NATIVE OFFICIALS, INCLUDING ASIATICS.

There were 942 cases treated with 3 deaths, as compared with 723 cases and 1 death last year.

Of the total admissions, 773 were placed off duty and 169 continued to do duty while under treatment.

The chief causes for admission were:—Malaria, 452 cases; blackwater fever, 12 cases with 2 deaths; diseases of the digestive system, 141 cases; of the respiratory system, 47 cases.

The chief causes last year were:—Malaria, 231 cases; fever of uncertain origin, 136 cases; digestive system, 116 cases; respiratory system, 51 cases; and blackwater fever, 3 cases.

In addition to the two deaths from blackwater fever, which occurred in Indian artificers employed up country, one sub-assistant surgeon died of plague contracted at a post-mortem examination.

Five Asiatic officials were invalided, the causes of invaliding being phthisis (3) and chronic malaria (2).

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF ASIATIC AND NATIVE OFFICIALS DURING 1913.

STATIONS.	Total number of officials resident.	Average number resident.	Total number on sick list.	Total number of days on sick list.	Average daily number on sick list.	Percentage of sick to average number resident.	Average number of days on sick list for each patient.	Average sick time to each resident.	Total number invalided.	Percentage of invalidings to total residents.	Total deaths.	Percentage of deaths to total residents.	Percentage of deaths to average number resident.	Number of cases of sickness contracted away from residence.
Bombo ...	24	20	15	58	15	75	3.86	2.9	—	—	—	—	—	1
Butiaba ...	10	5	42	82	22	3.66	1.95	16.4	—	—	—	—	—	—
Entebbe ...	84	57	136	436	1.19	2.08	3.64	7.6	2	—	—	—	—	6
Fort Portal...	7	4	5	21	—	—	—	—	—	—	—	—	—	—
Gondokoro...	3	3	33	77	—	—	—	—	—	—	—	—	—	—
Gulu ...	8	2	5	11	—	—	—	—	—	—	—	—	—	—
Hoima ...	6	3	12	112	—	—	—	—	—	—	—	—	—	—
Jinja ...	125	100	327	1,576	4.31	4.3	4.81	15.7	—	—	2	1.6	3.0	4
Kakindu ...	19	8	6	31	.08	1.0	5.16	3.8	—	—	—	—	—	—
Kampala ...	73	40	122	417	1.14	2.8	3.41	10.4	2	2.7	—	—	—	—
Kitgum ...	2	2	11	28	—	—	—	—	—	—	—	—	—	—
Kumba ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Kumi ...	24	2	6	94	—	—	—	—	1	—	1	4.1	—	—
Masaka ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Masindi ...	7	7	24	105	—	—	—	—	—	—	—	—	—	—
Mbale ...	9	4	8	84	.23	5.7	10.40	21.0	—	—	—	—	—	—
Mbarara ...	7	6	2	11	—	—	—	—	—	—	—	—	—	—
Nabieso ...	2	2	4	72	—	—	—	—	—	—	—	—	—	—
Nimule ...	9	3	15	42	—	—	—	—	—	—	—	—	—	—
Uganda Protectorate }	419	268	773	3,257	8.92	3.32	4.21	12.15	5	1.18	3	.71	1.11	11

(d) GENERAL EUROPEAN POPULATION.

The total European population was 823.

There were 953 cases treated and 8 deaths, as against 738 cases with 7 deaths in 1912, and 662 cases with 7 deaths in 1911.

Malaria was again the most frequent cause of illness, the number of admissions reaching 325 or 37·3 per cent. of the total, as against 31·8 per cent. in 1912, and 3·06 per cent. in 1911. Blackwater Fever contributed 19 cases, 2 of which were fatal, as against 9 cases with 3 deaths last year. Diseases of the Digestive System accounted for 196 cases.

The following Table shows the principal causes of sickness among Europeans for the last five years:—

Year.	Malaria.	Blackwater Fever.	Relapsing Fever.	Dengue.	Enteric.	Respiratory Affection.	Digestive Diseases.
1913 ...	325	19	3	15	1	36	196
1912 ...	235	9	10	1	2	30	128
1911 ...	203	4	5	5	5	18	152
1910 ...	225	9	3	11	—	35	130
1909 ...	170	10	15	14	—	34	71

In addition to the 2 deaths from Blackwater Fever already mentioned, there was one death from enteritis complicating Bright's disease, 2 from cardiac failure, one from cancer of liver, one from congenital malformation and inanition and one from premature birth and inanition. Only two of these deaths are included in the returns from Government Hospitals.

The following Table shows the number and causation of deaths among Europeans during the last six years:—

Cause of Death.	1913.	1912.	1911.	1910.	1909.	1908.	Totals.
Drowning (Accidental) ...	—	—	1	—	—	—	1
Blackwater Fever ...	2	3	1	3	4	—	13
Malaria ...	—	1	2	—	—	—	3
Enteric Fever ...	—	—	1	—	—	—	1
Erysipelas ...	—	—	1	—	—	—	1
Pneumonia ...	—	—	1	—	—	—	1
Enteritis ...	1	1	—	—	—	—	2
Uræmia ...	—	—	—	—	—	1	1
Hæmoptysis ...	—	—	—	—	—	1	1
Gastric Ulcer ...	—	—	—	—	—	1	1
Dysentery ...	—	—	—	—	1	—	1
Meningitis ...	—	—	—	—	1	—	1
Bright's Disease ...	—	—	—	—	1	—	1
Cerebral Embolism ...	—	—	—	—	1	—	1
Inanition ...	2*	2*	—	—	—	—	4
Alcoholism ...	—	—	—	2	—	—	2
Cancer ...	1	—	—	—	—	—	1
Cardiac Failure ...	2	—	—	—	—	—	2
Totals ...	8	7	7	5	8	3	38

* Infants.

(e) GENERAL NATIVE POPULATION.

The following figures, taken from the Blue Book dated March, 1913, show the Native population of the Uganda Protectorate:—

Buganda ...	696,688
Eastern Province ...	1,160,189
Western „ ...	481,741
Northern „ ...	400,943
Rudolf „ ...	150,000
Total ...	2,889,561

Births.—According to native returns there were 36,284 births in the districts from which these returns are made. Of these 17,766 were males and 18,518 females. Last year there were 30,468 births, 14,996 males and 15,472 females.

Deaths.—According to the same returns there were 32,612 deaths, against 27,151 last year, in the same districts.

For the total population dealt with, *i.e.*, 1,455,351, the birth rate per 1,000 was 24·93 and the death rate 22·41. Last year the rates were respectively 24·2 and 21·5.

Busoga shows the highest birth rate, *viz.*, 44·6, and Buganda shows the lowest birth rate, 12·87, and also the highest relative death rate, 17·20.

As explained in previous reports, the native returns, though of considerable interest, are not yet sufficiently reliable for the compilation of accurate statistics.

SECTION III.

SANITATION.

(a) GENERAL REVIEW OF WORK DONE.

(1) ADMINISTRATIVE.

Tours of Inspection.—During the year, besides frequent visits to Jinja and Kampala, I was only able to make one visit to Masaka, one to Bombo and two tours in the Eastern Province, one of which was in company with the Acting Principal Medical Officer and Professor Simpson.

A Sanitary Inspector was appointed for Kampala, but had not arrived in the country before the end of the year.

The headings under the Municipal Vote in the Estimates which refer to measures of sanitation have been now classed under a separate sub-head, in order that an estimate of the sanitary expenditure may be made in the future.

The Local Sanitary Committees have continued to give satisfaction.

TOWN PLANNING.

In order to cope with the serious problems associated with this subject, the services of Professor Simpson were secured, and in October he made a short tour in the Protectorate and gave valuable advice on this and other matters of sanitation.

The danger to the community generally of the growth of the cotton industry in the plague endemic area has shown the importance of separating cotton warehouses and ginneries from the residential part of townships.

In consequence it has been decided in each town as far as possible to reserve, as an anti-plague measure, a zone of 300 yards in width between the residential and manufacturing quarters; and as an anti-malarial measure to reserve a zone of similar dimensions between Europeans and Asiatics.

With these objects in view extensive alterations have been made in the plans of the towns of Namasagali and Bugondo, important inland ports connected with the cotton industry.

Though there has been little difficulty in applying these principles to towns such as the above, which have not yet been built over to any extent, in the older towns, where long leases have been granted and many buildings of a permanent nature have been erected, their application has been a serious problem.

In Kampala especially, the industrial, commercial and residential quarters of both Europeans and Asiatics are closely intermingled, a condition of affairs which was severely commented upon by Professor Simpson in his report, in which he gave his opinion that the Asiatic community should be removed to another site *in toto*.

In order to consider the practicability of this undertaking a "Town Planning Committee," with the Principal Medical Officer as President, was convened in November.

The Committee, though being almost unanimous in the opinion that the only remedy would be the entire removal of the bazaar to another site, considered that the procedure would entail expense which the resources of the Protectorate would be unable to meet.

A new site has, however, been selected to which the occupants of the bazaar will be gradually removed as opportunity arises, and no more leases will be granted on the old site to Asiatics.

Professor Simpson further condemned the leasing of large plots to Asiatics with permission to sublet, a practice which has resulted in subdivision of the plots, and overcrowding of the inhabitants.

The Town Planning Committee has induced the Land Officer to agree to provide a standard size plot of 50 feet by 100 feet for Asiatic occupation, with restrictions laid down in the lease with regard to subletting.

LAWS PASSED, &c.

The following additions and amendments to the various Ordinances dealing with public health have been published during the year in the Official Gazette :—

The Sleeping Sickness Ordinance.—All previous legislation dealing with Sleeping Sickness has been recodified by enacting a new "Sleeping Sickness Ordinance."

Under the new Ordinance the infected areas have been re-proclaimed and defined and Rules drawn up regulating the infected areas, with schedules setting forth "Exempted Areas," "Authorised Ferries and Landing Places," and "Authorised Steamer, Sailing and Ordinary Traffic Routes," as well as "Authorised Fishing Areas" with further regulations for the control of fishing.

Two further large tracts of country in the Eastern and Western Provinces have been declared "Infected Areas."

Under the Dangerous Diseases Ordinance.—A series of Rules were published, called the "Venereal Diseases Rules," providing for the compulsory detention and treatment of persons infected with Venereal Disease. This legislation was enacted to be concurrent with the Native Law mentioned below.

Under the Township Ordinance.—(1) Rules were drawn up applicable to Entebbe giving powers to remove or cause to be removed all pineapples, bananas and other water holding plants from residential quarters.

(2) "Township Venereal Rules" were published for the control of prostitutes and other persons in the towns of Entebbe, Kampala and Jinja, infected with venereal disease.

(3) A Rule applicable to all townships restricted the area of buildings to one-half of any town plot.

(4) The revision of the Township Rules has been the subject of prolonged discussion by the Board appointed for the purpose, and the draft was completed by the end of the year, but the question of the application of the Rules to various towns delayed the publication until January, 1914.

The new Township Rules give legal powers to Local Sanitary Boards, which are appointed by the Governor, and which constitute the Township Authority for carrying out the provisions of the Rules.

Those dealing with Public Health include in particular (1) provision for the abatement of nuisances, of which an extensive list is defined, special attention being paid to mosquito breeding places. Directions are detailed at length as to the procedure to be adopted for the abatement of nuisances, notices to be served, the institution of prosecution and powers of entry, &c.; (2) a comprehensive series of building rules, enforcing the submission of plans of all buildings for sanction by the Township Authority, with regulations laid down with the object of ensuring soundness of material and structure, the prevention of overcrowding, adequate ventilation and the exclusion of rats. Other Rules deal with anti-malarial regulations, refuse and sewage disposal, drainage, control of markets, meat inspection, offensive trades, &c.

At present the Township Rules are applied in their entirety to the three largest towns, viz., Entebbe, Kampala and Jinja. In order to secure proper sanitary control, especially of town planning and building, the Rules are applied in varying degree to the smaller townships, where their application will be extended as necessity arises and circumstances permit.

The Buganda Lukiko (Native Parliament) under guidance of the administrative and medical authorities, have enacted a law whereby provision has been made for the compulsory notification and treatment of cases of venereal disease in the Buganda Kingdom.

(2) PREVENTIVE MEASURES.

MOSQUITO AND INSECT-BORNE DISEASES.

Malaria.

1. *Petty Anti-Malarial Measures—*

(a) The anti-malarial gangs have, as in previous years, been employed in inspection of compounds and elsewhere in the stations, removal thence of small receptacles liable to contain larvæ, clearing of roof gutters, filling up of small excavations, and the weekly emptying of water barrels.

(b) Clearing of long grass and planting of short grass by the municipal staff. A clean sweep was made of the bananas and pineapples in the residential compounds at Entebbe.

2. *Major Measures—Reclamation of Swamps—*

The drainage of the swamps at Masindi, Hoima, Butiaba and Mbale has been kept up as in 1912.

A large area of low-lying land below the Botanical Gardens at Entebbe, which had been drained some years ago and had been latterly neglected, has been reclaimed by opening up the old drains and making new ones where necessary, converting what was previously a morass, breeding myriads of anopheles, into a practically dry piece of ground.

The work of reclamation of the Nakivubo Swamp at Kampala has, since August, been conducted on a more satisfactory basis, chiefly owing to the employment of a number (average 25) of convicts to supplement the labour supplied by the Public Works Department. Proper levels have been taken, and the central channel, which has been carried for nearly 600 yards lower down than in 1912, has been deepened by two feet, and in many places straightened.

New cross drains of a total length of 381 yards have been cut and graded, and all cross drains have been diverted so as to enter the main channel at an angle which prevents silting up at the junction.

A cattle trough has been erected and a fence put up to prevent cattle damaging the banks of the drains in the swamp.

Besides an area of 35,000 square yards which has been planted with sweet potatoes, a space of 20 feet on either side has been cleared along the banks of the central channel.

No drainage has been done, however, on the native-owned portion of the swamp, and on the large area leased to an Indian little or nothing has been done.

3. Gauze Wire Protection—

It has been decided in the future to provide wired-in verandahs in lieu of the screened doors and windows, where possible, on all Government residences.

4. Quinine Distribution—

In order to encourage the prophylactic use of quinine, according to a notice published in the Official Gazette in December, non-officials can now obtain it from the Government dispensaries at almost cost price.

The amount of quinine consumed during 1913 throughout the Protectorate was :—

5-grain tabloids and tablets, 73,100.
In powders, 180 lbs. 14 ozs.

5. Racial Segregation—

Vide Town Planning.

Trypanosomiasis.—No fresh clearing of jungle infested with *Glossina palpalis* has been undertaken, but the upkeep of former clearings has not been neglected.

The regulations for the control of the infected areas have been enforced as far as possible, but no systematic supervision can be maintained over the islands in Lake Victoria owing to lack of water transport.

In November it was reported that natives had been seen on the islands, and in order to send a police force to investigate, a steamer had to be chartered at great expense (£15 per diem).

In consequence of the discovery by Miss Robertson, in the *Glossina morsitans*, of a trypanosome bearing morphological resemblance to the *Trypanosoma Rhodesiense*, which therefore may possibly become pathogenic to human beings, clearing operations have been begun along the Masindi Port-Masindi-Butiaba Road where this species of tsetse fly is found in great numbers. However, there has been no evidence to show that any human being has been infected with the new trypanosome, and the clearing is intended to be experimental only, as it is doubtful whether it has any effect on the habits of the *Glossina morsitans*.

Yellow Fever.—No cases have been recorded, but the *stegomyia* mosquito is to be found everywhere. The measures adopted for the reduction of the *anopheles* mosquito apply equally to the former species.

Filariasis.—No special measures have been taken against this disease.

Spirillum Fever.—Labour camps and Rest houses infested with ticks have been rebuilt as often as practicable.

The native prisons in various parts of the country have usually formed a focus for the spread of this disease. One or two of these have been renewed this year.

EPIDEMIC DISEASES.

Plague.—The Acting Principal Medical Officer in his report on a special tour in the plague endemic area existing in the three cotton growing districts—Teso, Lango and Bukedi—has recommended several measures additional to those already in force to be adopted for the prevention of plague, and these recommendations were supported by Professor Simpson in his report. They include :—

(A) *Measures to prevent the spread of Plague from the endemic area to other Districts.*—These are chiefly directed against the export of unginned cotton from the above area.

(B) *Measures to deal with Plague in the endemic area.*—Principally :—

1. Increase of the present staff to the number of three Medical Officers, three Sub-Assistant Surgeons, and thirty-five Plague Inspectors.
2. Accurate reporting of cases as well as deaths in the endemic area.
3. The continuance of inoculation of contacts with prophylactic serum.
4. Rat destruction on a larger scale.

(C) *Measures for prevention of Plague in Towns and Trade Centres.*

1. The exclusion of cotton stores, markets and ginneries from townships.
2. The control of ginneries and stores by legislation dealing with siting and construction.
3. Establishment of Isolation Hospitals and Segregation Camps at Mbale, Jinja and Kampala, and a Segregation Camp at Entebbe.
4. Purchase of disinfectors for Entebbe, Jinja, Kampala and Mbale.

Though for many reasons, chiefly financial, the adoption of the majority of these measures has had to be postponed, action has been taken as far as possible as follows :—

(A) As the greater number of working ginneries in the country have been already established outside the endemic area, prohibition of the export thence of unginned cotton could not be enforced without seriously affecting the industry.

(B) In the endemic area a Medical Officer was appointed for plague work in the Lango district, but was in a short time invalided and has not yet been replaced.

No extra Sub-Assistant Surgeons were available for plague work, but the preventive measures adopted previously have been carried out with increased energy this year owing to the employment of a larger staff of *Plague Inspectors* (to the number of 16).

Their duties, under the direction of the Medical Officer, are to :—

(a) Report immediately outbreaks of plague, with number of deaths.

(b) Supervise (i.) The isolation of the sick ; (ii.) The segregation of contacts ; (iii.) The burning of infected houses, clothing, etc. ; (iv.) The prompt disposal of the dead.

The latter is an important measure, as the local customs prevailing at funerals have hitherto contributed largely to the spread of plague.

Prophylactic Inoculation.—The serum employed was supplied from Bombay and also from the Lister Institute. The latter has the disadvantage of being supplied in large phials containing 21 doses, so that, when only a few inoculations have to be performed at a time, a portion of the serum has to be thrown away; it is reported, however, to have given better results than the serum from Bombay, and to have been less painful on injection. There appears to have been little difficulty generally in persuading the natives to submit to inoculation. The number of inoculations performed in the plague area was 9,106. The reports show that though the inoculation has not resulted in absolute immunity, the sick and death rate among the inoculated has been proportionately small.

Rat Destruction.—A campaign was begun against rats in the three districts in September by offering a reward of two cents per rat.

In the Teso district the natives did not take the matter up, but in the Bukedi district over 31,000 rats were brought in before the end of the year, while in the Lango district the results have been beyond expectation. The natives there have taken to rat-catching with surprising zeal, digging up the nests and bringing in the four legs with the tail of the litters as well as of the adult rats. The numbers collected in this district were so great that fresh grants of money had to be sent for rewards and the price for rats from litters reduced to one cent. The Administrative Officer, Mr. E. L. Scott, reported that at Kalaki, a cotton centre where plague is endemic, over 30,000 rats were brought in in one day.

The total number paid for up to December 31st was 153,606.

If these measures can be kept up on this scale the results should be far reaching, as the plague in this district has been confined hitherto to circumscribed areas.

(c) *Plague prevention in Towns.*—The exclusion of ginneries, etc., has been already referred to under Town Planning.

The new Township Rules provide that the foundations of all new buildings shall be made rat-proof in construction and material.

Disinfectors have been ordered through the Crown Agents.

The building of Isolation Hospitals and Segregation Camps has had to be postponed for financial reasons.

The port of Kisumu in British East Africa having been a declared "Infected Port" during the whole year, all ships have been subjected to inspection at the three principal Uganda ports.

Cerebro-Spinal Meningitis.—In consequence of the epidemic of this disease which occurred in British East Africa, increased vigilance was exercised in the inspection of ships at the Uganda ports. A few cases were discovered among the passengers and crews, but these were promptly isolated and the effects burnt, and supervision of contacts maintained as far as possible, with the result that no spread of the disease occurred.

Smallpox.—The endemicity of smallpox in the cotton growing districts has this year received due attention.

The Native Plague Inspectors were directed to report cases and deaths of smallpox and carry out the same preventive measures as in the case of plague.

Fines were imposed on the chiefs who neglected to carry out instructions given them as to isolation of patients, etc.

Vaccination was carried out as far as possible, but the amount of vaccine available was totally inadequate as a general prophylactic; consequently,

vaccination could only be performed on occupants of Police Lines and a few others who were able to attend at the Government Dispensaries, besides as many contacts as possible on the occurrence of a fresh outbreak of the disease.

The following table shows the vaccinations performed and the lymph used :—

Result.	Calf Lymph.		Arm to Arm.		Lymph used (No. of persons).		
	Primary.	Secondary.	Primary.	Secondary.	Nairobi.	Lister Institute.	
						Lanolinated.	Dried.
Successful... ..	2,926	58	19	—	2,666	305	32
Modified	407	6	—	—	349	29	35
Failed	432	23	—	—	345	101	9
Unknown... ..	663	1	—	—	573	86	5
Totals	4,428	88	19	—	3,933	521	81

The following table shows the percentage of results obtained with the various lymphs :—

Lymphs.	Successful.	Modified.	Failed.	Unknown.
Nairobi Lymph... ..	79·34	10·38	10·26	14·56
Lanolinated	70·11	6·66	23·21	16·50
Dried	42·10	46·05	11·84	6·17

Cholera, Dysentery, Enteric and Helminthic Diseases.—No special measures have been taken against these, beyond those directed against safeguarding the water supply, etc., in towns.

One case of enteric occurred and there was a probability that the infection was acquired on one of the railway passenger steamers.

On two of these ships the arrangement of the water supply plant is insanitary. This has been pointed out to the Railway authorities, but though some improvements have been made much remains to be done.

Leprosy.—Nothing further has been done in the matter of segregation of lepers.

(3) GENERAL MEASURES.

SEWAGE DISPOSAL.

No new public latrines have been built in the various towns. The methods of collection of night soil have undergone no change.

I regret to state that the incinerators at Kampala have latterly not proved as successful as I anticipated; this is partly due to their repeatedly requiring structural repairs, but chiefly due to lack of efficient stoking, as it has been found that the natives object to the work, consequently a large portion of the night soil has had to be buried.

RUBBISH COLLECTION AND DISPOSAL.

Collection of refuse from streets and compounds in the larger towns has been difficult owing to the insufficient amount of carts and labour for the purpose, especially at Kampala.

The amount of vegetable refuse is large and, in the absence of proper dustbins, unsightly heaps of insanitary refuse accumulate in the town, which often have to await clearance for days.

Some of the rubbish is burnt, but the majority dumped in heaps outside the town.

WATER SUPPLY.

Improvements have been made in the surface wells by providing them with a masonry coping with a pipe for the outflow, to avoid the necessity of dipping.

Nothing further has been done with regard to the establishment of pipe-borne water supplies at Entebbe, Jinja or Kampala.

DRAINAGE.

533 yards of masonry drains were laid down in Kampala and 35 yards in Entebbe. There are no masonry drains in Jinja.

With the growth of the towns, the need for the establishment of proper drainage systems on a permanent basis becomes more pressing every year. In Kampala, especially, slop water and other filth accumulates in the badly graded earth drains in the streets, constituting a nuisance which the small municipal staff is unable to deal with.

CLEARANCE OF GRASS AND BUSH.

The clearing of jungle as an anti-Sleeping Sickness measure has been kept up as in the preceding years, and the stations have been kept clear of long grass, and the areas planted with French grass extended as far as the municipal funds have allowed.

SLAUGHTER HOUSES AND MARKETS, &c.

A new Slaughter House has been built at Kampala.

The site of the pit used for dumping offal at Entebbe, which was formerly in a marsh, has been moved to a drier spot.

Meat inspection is in the hands of the Veterinary Department.

Some structural improvements have been made in the meat market at Entebbe.

BUILDINGS.

Prisons.—The management of the Government prisons is conducted in a satisfactory manner as regards cleanliness, but many of them are far too overcrowded, especially the Mbale prison and the Central Jail at Kampala. In order to alleviate this condition in the latter prison a portion of the convicts were housed in a temporary prison at Kampala Port, where they are employed in wood-cutting for the fuel supply of the Lake steamers.

The buildings in the Central Jail were increased this year by the addition of one large accommodation cell, eight solitary cells, a cook-house and latrines—the latter of good pattern.

Though the new additions have to some extent relieved the crowded state of the jail, the average cubic space per prisoner for sleeping purposes was only increased to 200 cubic feet.

Should it become necessary to return the convicts now at Kampala Port to the Central Jail, an appalling state of overcrowding will result.

I may mention here that the jail enjoys a salubrious position at the top of the hill on which the town is built, and hence a large area is used up which would otherwise be divided into several valuable residential plots.

The prison at Mbale, which is unfinished, is also too close to the European residential quarters.

(b) MEASURES TAKEN TO SPREAD KNOWLEDGE OF HYGIENE
AND SANITATION.

Lectures on Hygiene have been given to the rank and file of the Military and Police by Medical Officers as in 1912.

The various Missions in the country have instituted some form of elementary teaching in hygiene in all schools, though in the majority of them there is a lack of system or regularity.

In the advanced schools under the Church Missionary Society, weekly lectures on the subject have been given by the medical men attached to the Society, and in one school Dr. Prout's "Lessons in Elementary Hygiene," in English, has been used as a text book. The latter publication is in the course of translation into Luganda by the Church Missionary Society.

Verbal instruction is given to chiefs and others by the Medical Officers while on tour in the elementary principles of plague and smallpox prevention, and pamphlets in the vernacular distributed with the same object.

(c) RECOMMENDATIONS FOR FUTURE WORK.

ADMINISTRATIVE.

The appointment of a Medical Officer of Health for Kampala. This was recommended by Professor Simpson.

At present there is one Medical Officer only, who besides his clinical medical work has to conduct the inspection of ships when necessary at the Port, which is seven miles from the Town, and he therefore has not much time for general sanitation work.

The appointment of a Sanitary Engineer has been recommended for the Protectorate by the Town Planning Committee. Such an appointment would be a great advantage, especially in dealing with town planning.

The Infectious Diseases Ordinance requires revision as, for instance, it provides for no penalty to enforce the surveillance of passengers after landing from infected ships.

PLAGUE AND SMALLPOX.

The existing measures for the prevention of plague should be continued with increased energy, and those additional measures which have been recommended above should be undertaken as early as circumstances permit.

Of those requiring urgent attention I would mention in particular :—

(1) The regulation of the cotton industry so as to limit the range of transport of unginned and unpressed cotton.

(2) The removal of cotton stores and ginneries which are in close proximity to crowded quarters of towns.

(3) The establishment of Isolation Hospitals and Segregation Camps without delay, so as to be prepared for any epidemic in the more important towns and ports.

(4) The systematic examination of rats for plague infection in towns outside the endemic area which are constantly threatened with an

epidemic, viz., Kampala, Jinja and Entebbe. The importance of this was pointed out by Professor Simpson in his report.

(5) The increase of the medical and sanitary staff to a strength sufficient for the carrying out of the projected measures.

Most of the above schemes for the prevention of plague apply equally to the prevention of smallpox.

In addition, the need for extending the dissemination of vaccination to embrace the whole population calls for immediate action, especially in the cotton growing districts, where smallpox is widely endemic.

SLEEPING SICKNESS.

The regulations for the suppression of Sleeping Sickness must continue to be enforced, and the work of clearing of fly-infested jungle at ports, ferries, etc., maintained for an indefinite period.

Some form of mechanical water transport, such as a motor-launch, which should be large enough for safety in all weathers, should be provided to facilitate the patrol by the police and administration, and the medical supervision of the islands and infected shores of Lake Victoria.

It could also be used for the sanitary inspection of the smaller ports which have no regular steamer service, and would be an invaluable assistance to the work of research in the islands.

GENERAL MEASURES.

It is to be hoped that in future the estimates for the Municipal Vote, which governs all routine sanitation work, will not have to be cut down as they have hitherto.

The rate of wage for labour is rising concurrently with the development of the country; and increased funds are required yearly to maintain each growing town in a state of sanitation.

RECLAMATION OF SWAMPS.

To complete the proposed drainage operations of the swamp at Kampala within a few years, constant supervision by a European overseer and a much larger labour staff are needed, but the funds will not allow of this at present.

Therefore, steady progress in the work must be aimed at, but the chief obstacle to this is the intermittent supply of labour which the Public Work Department is able to provide.

I understand that the loan of convict labour is only a temporary one, but, considering the fact that the high malarial sick rate in the adjoining town cannot be reduced till the swamp is drained, the supply of prison labour should not only be increased but put on a permanent basis.

WATER SUPPLY.

Pipe-borne water supplies are required for the three larger towns. In the scheme for the supply of Kampala sufficient water should be provided to enable the street drains to be flushed out daily.

SEWAGE DISPOSAL.

A double bucket system for the collection of night soil would be an improvement for Kampala.

The partial failure of the incinerator at Kampala leads one to advocate the trenching of the whole of the night soil for the time being, as it can now be carried out scientifically under the supervision of the European Sanitary Inspector. The trenching ground now in use, however, will interfere with the future extension of the town if it develops as rapidly as it has done hitherto, and owing to the limited amount of available Government land no suitable spot has been found further out; therefore, I am still of the opinion that incineration is the best method of dealing with the night soil, and that, ultimately, a large destructor will have to be provided.

I do not recommend the institution of a bucket system of latrines in small towns, until they have reached a state of growth which warrants the appointment to them of a responsible Sanitary Inspector.

The ordinary pit privy is quite sanitary, provided it is not placed too near to dwelling houses, or so as to be likely to contaminate the water supply, and is properly constructed so as not to collect rain water.

RUBBISH DISPOSAL.

Householders should be compelled to provide metal dustbins of a regulation pattern to facilitate the collection of house refuse.

In Kampala an increase of the scavenging staff and of the number of carts is required.

DRAINAGE.

Masonry drains are urgently needed for the sanitary improvement of the town of Kampala.

PRISONS.

The necessary additions to the Central Jail at Kampala should be made as soon as can be managed to increase the cell accommodation and avoid overcrowding.

Some structural additions should be made at the larger prisons whereby leper convicts may be segregated from the others.

In making the above recommendations I am aware that the execution of some of them, though urgently required for the public health of the country, may have to be postponed until the financial state of the Protectorate improves.

C. J. BAKER,

*Medical Sanitary Officer, Uganda
Protectorate.*

SECTION IV.

METEOROLOGY.

All available information under this head is given in Table V.

SECTION V.

HOSPITALS AND DISPENSARIES.

ACCOMMODATION.

The Hospital accommodation in the Protectorate was as follows:—

There was one Government Hospital for Europeans, situated at Entebbe. This Hospital has four single-bed wards and one two-bed ward, giving a total accommodation of six beds.

There was one Asiatic Hospital at Entebbe with three beds. Apart from this, Asiatics are treated either in their own houses or in the Native Hospitals.

The accommodation for Natives was as follows:—

	No. of Beds.		No. of Beds.
Entebbe Civil ...	22	Brought forward ...	114
Do. Military ...	12	Mbale ...	8
Do. Isolation ...	4	Mbarara ...	6
Bombo Military ...	7	†Fort Portal ...	4
*Hoima Civil ...	24	Kumba ...	3
Kampala ...	20	Namasagali ...	4
Jinja ...	12	Nimule ...	6
†Masaka ...	8	†Seroti ...	4
‡Masindi ...	5		
Carried forward ...	114	Total ...	149

At each of the above stations a Dispensary is attached to the Hospital. There were also Dispensaries, with buildings of a temporary nature, at Butiaba, Gondokoro, Gulu, Kitgum, Kumi and Nabieso.

In addition to the General Hospitals and Dispensaries, there were in use during the year two Special Hospitals for Venereal Diseases, with treatment rooms attached, at Kampala and Masaka respectively, and a Sleeping Sickness Camp at Kyetume. These buildings are all of a temporary nature. There was also a small temporary Isolation Hospital for plague at Mbale.

The total number of cases treated at the General Hospitals and Dispensaries was 112,624, with 236 deaths. Of these, 1,979, with 155 deaths, were in-patients, and 110,645, with 81 deaths, were out-patients.

The total number treated in 1912 was 97,810, with 247 deaths. Of these, 2,321, with 147 deaths, were in-patients, and 95,489, with 100 deaths, were out-patients.

In addition to the above total, 465 cases of Venereal Disease were returned as treated at the Special Hospitals at Kampala and Masaka, and 471 at the Venereal Ward attached to the General Hospital at Kampala.

The number of new admissions to the Sleeping Sickness Camp was 45, as against 115, 153 and 592 respectively in the preceding three years. The number of cases remaining in Camp at the end of last year was 253, deaths during the year 84, discharges 35, remaining at the end of this year 179.

A number of cases of ordinary ailments among the staff and the surrounding natives were treated at this Camp, but statistics of them are not kept.

DISEASES TREATED.

The most important or most prevalent communicable and infectious diseases which were treated at the General Hospitals and Dispensaries are recorded above, under Head II. (a) (ii.).

* A considerable proportion of the accommodation in temporary buildings.

† Temporary buildings.

‡ Permanent buildings not yet completed.

In addition, there were 537 cases of Yaws and 1,889 cases returned as Pyrexia, or fever of uncertain origin. These are classed in the Tables of diseases as "Fever undefined." Three of these cases were fatal.

General Diseases were 1,271 in number, of which 9 were fatal.

Diseases of the Nervous System accounted for 2,781 cases and 12 deaths. A large majority of these are returned under Neuralgia, Headache and Hysteria. Only 36 were treated as in-patients.

Diseases of the Eye numbered 7,236, including 6,702 cases of Conjunctivitis.

Diseases of the Ear were 1,963, including one fatal case of Otitis Media.

Diseases of the Nose were 1,616 in number, and 10 were in-patients.

Diseases of the Circulatory System were 72, with 9 deaths, 8 cases, with 4 deaths, being treated in Hospital.

Diseases of the Respiratory System amounted to 16,710, with 23 deaths. Of these, 157 cases, with 13 deaths, were in-patients. These cases included 16,101 returned as Bronchitis, 5 of which were fatal, 108 of Bronchopneumonia, 10 of which were fatal, and 309 of Pleurisy, 4 of which were fatal.

Diseases of the Digestive System contributed 16,244 cases, with 13 deaths. Of these, 148, with 10 deaths, were treated in Hospital. Dyspepsia accounted for 3,052 cases, Diarrhoea for 2,254, Constipation for 5,229, and Colic for 2,002.

Diseases of the Lymphatic System were 1,038, including 31 in-patients.

Diseases of the Urinary System were 65, with 4 deaths, and 21 were in-patients.

Diseases of the Generative System numbered 1,166 cases. Of these, 713 were males and 435, with 8 deaths, were females, including 40 males and 16 females treated in Hospital.

Diseases of the Organs of Locomotion contributed 6,482 cases, of which 5,192 were classed as Myalgia.

Diseases of the Connective Tissue gave 1,940 cases, including 1,150 cases of abscess, of which 5 were fatal. In-patients numbered 99.

Diseases of the Skin accounted for 21,619 cases, of which 11,266 were classed as Scabies, 7,448 as Ulcers, 881 as Boils, 479 as Eczema and 416 as Tinea. There were also 207 cases returned as Oriental Sore, but there was no bacteriological confirmation of this diagnosis, and the presence of leishmania in the Protectorate has not hitherto been demonstrated.

Injuries, of which 9,485, with 20 deaths, are returned as Local and 116, with 2 deaths, as General, accounted for 9,601 admissions. Of this total, 304 were treated in Hospital.

Tumours were 75 in number, with one death.

Poisons caused 59 admissions, with one death.

Animal Parasites.—Among these were recorded 219 cases of Cestoda and 1,585 of Nematoda, the latter including 1,088 cases of Ascaris, 286 of Oxyuris and 169 of Dracunculus.

The number of Surgical Operations recorded was 1,615, of which 142 were performed on in-patients.

TABLE A.
RETURN OF CASES OF THE CHIEF COMMUNICABLE DISEASES TREATED AT THE GOVERNMENT HOSPITALS AND DISPENSARIES IN 1913.

STATIONS.	MALARIA.				BLACKWATER FEVER.		RELAPSING (TICK) FEVER.				DYSENTERY.				DENGUE FEVER.		ENTERIC FEVER.		PLAGUE.		SMALL-POX.	
	Cases.	Deaths.	Percentage of total Admissions.	Percentage con- tracted outside Station.	Cases.	Deaths.	Cases.	Deaths.	Percentage of total Admissions.	Percentage con- tracted outside Station.	Cases.	Deaths.	Percentage of total Admissions.	Percentage con- tracted outside Station.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Bombo	341	1	2.87	4.25	—	—	2	—	.01	100.00	3	—	.02	—	—	—	—	—	—	—	—	—
Butiaba	243	—	12.71	25.00	1	—	4	—	.20	—	36	—	1.88	—	—	—	—	—	—	—	—	—
Entebbe	487	—	6.58	8.50	9	2	29	1	.39	31.10	7	—	.09	—	—	—	1	—	—	—	—	—
Toro	1,096	1	5.90	—	1	—	19	—	.10	—	23	—	.12	—	—	—	—	—	—	—	—	—
Gondokoro	59	—	4.76	—	—	—	—	—	—	—	18	—	1.45	—	—	—	—	—	—	—	—	—
Gulu	142	—	5.87	92.26	—	—	1	1	.04	—	31	2	1.28	—	—	—	—	—	—	—	—	—
Hoima	352	1	3.51	82.90	1	—	279	—	2.78	96.78	83	—	.82	79.52	—	—	—	—	—	—	—	—
Jinja	384	—	7.06	13.55	7	3	7	2	.12	100.00	11	1	.20	—	—	—	—	—	—	—	1	—
Kampala	585	1	4.64	1.55	10	1	251	4	1.99	100.00	47	1	.37	2.12	19	—	—	—	—	—	—	—
Kakindu	169	—	8.75	56.15	3	1	—	—	—	—	1	—	.05	—	—	—	—	—	—	—	—	—
Kitgum	30	—	3.55	10.00	—	—	—	—	—	—	2	—	.23	—	—	—	—	—	—	—	—	—
Kumba	95	—	5.27	57.89	—	—	—	—	.11	47.10	24	—	1.33	—	—	—	—	—	1	1	—	—
Kuni	157	2	6.16	100.00	1	—	—	—	—	—	5	—	.19	100.00	—	—	—	—	—	—	—	—
Masaka	139	—	2.40	—	—	—	89	1	1.53	—	—	—	—	—	—	—	—	—	—	—	—	—
Masindi	378	—	4.17	80.96	1	—	55	—	.60	33.66	67	—	.73	50.00	—	—	—	—	—	—	—	—
Mbale	210	—	4.50	—	1	—	8	—	.17	70.00	1	—	.02	—	—	—	—	14	13	3	—	—
Mbarara	1,046	1	12.80	73.90	—	—	50	1	.61	—	11	—	.13	36.36	—	—	—	—	—	—	—	—
Nabieso	222	—	9.46	96.37	—	—	—	—	—	—	24	—	1.02	—	—	—	—	—	—	—	1	—
Nimule	165	—	10.68	—	—	—	—	—	—	—	10	—	.64	—	—	—	—	—	—	—	1	—
Northern Garrison...	126	—	5.07	—	—	—	1	1	.04	—	30	2	1.20	—	—	—	—	—	—	—	—	—
Totals, or Average	6,426	7	5.70	—	35	7	797	11	.70	—	434	6	.38	—	19	—	1	—	15	14	8	—

TABLE B.

The following table shows, by Stations, the total number of cases treated, with deaths, at Government Hospitals and Dispensaries, and also the number treated as In-Patients during the years 1913 and 1912 :—

STATION.	1913.				1912.			
	Total Cases.*		In-patients.		Total Cases.*		In-patients.	
	Treated.	Deaths.	Treated.	Deaths.	Treated.	Deaths.	Treated.	Deaths.
Bombo	11,859	6	205	—	12,742	24	382	10
Butiaba	1,911	2	42	2	—	—	—	—
Entebbe—European Hospital	266	1	40	1	184	3	51	1
Entebbe—Civil Hospital ...	6,484	19	329	16	7,662	32	382	32
Entebbe—Military Hospital	641	—	168	—	585	—	140	—
Fort Portal	18,574	3	56	3	14,646	6	54	4
Gondokoro	1,237	2	—	—	975	4	—	—
Gulu	2,416	12	3	1	1,952	7	—	—
Hoima	10,021	13	128	6	9,527	22	154	10
Jinja	5,438	20	159	16	5,691	27	195	20
Kakindu	1,930	3	41	2	2,155	2	41	2
Kampala—Civil Hospital ...	12,581	42	263	35	13,792	27	313	24
Kampala—Military Hospital	26	—	—	—	590	1	140	1
Kigezi	—	—	—	—	1,367	2	78	2
Kitgum	844	—	—	—	—	—	—	—
Kumba	1,801	5	74	4	—	—	—	—
Kumi	2,546	11	50	9	3,027	5	26	3
Masaka	5,788	9	108	9	4,165	11	78	9
Masindi	9,060	9	76	7	3,871	8	45	4
Mbale	4,662	37	113	24	3,835	45	97	9
Mbarara	8,168	14	99	14	7,627	15	135	15
Nabieso	2,345	1	—	—	1,971	2	—	—
Nimule	1,544	7	25	6	1,446	4	10	1
Northern Garrison	2,482	20	—	—	—	—	—	—
Totals	112,624	236	1,979	155	97,810	247	2,321	147

* Includes all cases whether treated as Indoor or Outdoor cases.

BUILDINGS.

The following additions, improvements or repairs were made during 1913 :—

Namasagali.—Small permanent Hospital and Dispensary built. Expenditure £365.

Seroti.—Temporary Hospital and Dispensary (wattle and daub). Expenditure £100.

Masindi.—Part construction of Permanent Hospital and Out-houses. Expenditure £149.

Entebbe.—Construction of Operating Room for Native Hospital. Expenditure £31. Maintenance and repairs of European and of Native Hospital, £4 17s. 4d.

Bombo.—Construction of quarters for Native Attendants and of latrines. Expenditure £35.

Mbarara.—Re-thatching temporary Hospital Out-houses. Expenditure £1 5s. 9d.

Jinja.—Removal of Post-mortem Room to new site. Expenditure £12 14s.

Total Expenditure on construction and maintenance, £698 18s. 1d.

In addition, £395 was expended on the construction, equipment and fittings of the special Venereal Diseases Hospital at Kampala, the greater part of the labour for which was supplied free of charge by the Native Chiefs. The buildings are of a temporary nature.

The Expenditure anticipated during 1914-15 is as follows :—

<i>Kampala</i> .—Construction of an Asiatic Ward	...	...	£100
<i>Jinja</i> .—Construction of an Asiatic Ward	...	...	100
Attendants' Quarters, Native Hospital	...	...	60
<i>Masindi</i> .—Completion of Hospital and Dispensary	...	...	300
<i>Bombo</i> .—Construction of New Ward	...	...	200
<i>Gulu</i> .—Construction of Temporary Hospital and Dispensary	...	...	70
<i>Entebbe</i> .—Attendants' Quarters, Native Hospital	...	...	60
Isolation and Quarantine Buildings at <i>Entebbe, Kampala, Jinja</i> and <i>Mbale</i>	...	...	1,785
Total	...	...	<u>£2,675</u>

The following buildings are also required :—

Mbale.—An extra Ward.

Mbarara.—An extra Ward, a Post-mortem Room, permanent Out-houses.

Masindi.—Medical Officer's Quarters.

Masaka.—New Hospital and Dispensary, Medical Officer's Quarters and Assistant's Quarters.

Fort Portal.—Permanent Hospital and Dispensary.

Gulu.—Assistant's Quarters.

It is proposed to set aside the old Provincial Commissioner's house at Jinja for temporary use as Nurse's Quarters and a European Ward.

SECTION VI.

SCIENTIFIC.

The following reports were transmitted direct to the Royal Society :—

An Interim Report on work on *Trypanosoma Pecorum*, by Miss Muriel Robertson, M.A.

Progress Reports, eight in number, by Mr. W. F. Fiske, on "The Bionomics of *Glossina Palpalis*."

The following papers were published during the year :—

"Some Trypanosomes recovered from Wild Game in Western Uganda," by Dr. H. L. Duke, B.A., M.B., etc., in the Royal Society's Report No. XIV. of the Sleeping Sickness Commission.

"Notes on the Struggle for Existence in Tropical Africa," by Dr. G. D. H. Carpenter, B.A., M.B., etc., in *Bedrock*, October, 1913.

Second Report on "The Bionomics of *Glossina Fuscipes (Palpalis)* of Uganda," by Dr. G. D. H. Carpenter, B.A., M.B., etc., in the Royal Society's Report No. XIV. of the Sleeping Sickness Commission.

Also the various papers by Miss M. Robertson, M.A., and Dr. H. L. Duke, B.A., M.B., enumerated in last year's report, were published in the Royal Society's Report No. XIII. of the Sleeping Sickness Commission.

A paper, by Dr. C. H. Marshall, on "Some Experiments with the *Micrococcus Melitensis*," was published in the Journal of the London School of Tropical Medicine and Hygiene.

A paper on "The occurrence of Bronchial Spirochaetosis in Uganda Protectorate," by Dr. J. A. Taylor, M.B., will be found in Appendix No. IV. to this report.

A paper was published by Dr. R. E. McConnell, M.D., on "Some Observations on the Larva of *Auchmeromyia Luteola*," in the Bulletin of Entomological Research, and another on "Dracontiasis," in the Journal of the Canadian Medical Association.

A Report, by Miss M. Robertson, M.A., on "The Trypanosome infections of *Glossina morsitans* in the Masindi-Buruli District of Uganda," has already been transmitted to the Secretary of State for the Colonies.

ENTOMOLOGICAL COLLECTIONS.

The following were transmitted home by members of the Medical Department through the Government Entomologist:—

Specimens of biting flies, mosquitoes and ticks	...	...	670
Other specimens...	...	...	4,765
Total	...	...	<u>5,435</u>

In addition, probably about an equal number of specimens were either taken or sent direct, and a considerable number were so damaged on reaching Headquarters, either in transit or owing to climatic conditions, that they were not worth forwarding to Europe.

Glossina longipennis, hitherto unknown in this Protectorate, was taken by Mr. H. B. Owen, M.B., in Rudolf Province.

TABLE I.

RETURNS.

RETURN SHOWING THE MEDICAL STAFF AND THE PRINCIPAL MEMBERS OF THE SUBORDINATE STAFF.

Name and Qualifications.	Rank or Appointment.	Where stationed on 31st December, 1913.	Remarks.
A. D. P. Hodges, C.M.G., M.D. (Lond.), M.R.C.S., L.R.C.P.	Principal Medical Officer	Entebbe	
C. A. Wiggins, M.R.C.S., L.R.C.P., F.E.S.	Deputy Principal Medical Officer	Do.	
C. J. Baker, M.R.C.S., L.R.C.P. ...	Medical Sanitary Officer	Do.	
Captain G. Lane, R.A.M.C. (S.R.), L.R.C.S. & P. (Edin.), L.F.P.S. (Glas.)	Medical Officer	Bombo	
G. C. Strathairn, M.B., Ch.B., D.P.H. (Edin.)	Do.	Kampala	
R. A. L. van Someren, M.D., Ch.B., D.P.H. (Edin.)	Do.	Jinja	
J. H. Goodliffe, M.D., C.M. (Aberdeen)	Do.	On leave	
A. C. Rendle, M.D., B.C., D.P.H. (Camb.), M.R.C.S., L.R.C.P.	Do.	Do.	
J. M. Collyns, M.B., D.P.H. (Lond.), M.R.C.S., L.R.C.P.	Do.	Mbale	
J. H. Reford, B.A., M.D., B.Ch., B.A.O., L.M. (Dub.), D.T.M. (Liverpool)	Do.	Hoima	
C. H. Marshall, M.R.C.S., L.R.C.P. ...	Do.	On tour	
H. B. Owen, M.B., B.C., D.T.M. & H. (Camb.)	Do.	Nile Province	
L. Sells, L.R.C.P. (Edin.), L.S.A. ...	Do.	On leave	
J. A. Taylor, M.B., Ch.B. (Edin.), L.M. (Dub.), D.T.M. (Liverpool)	Do.	Entebbe	
J. E. Hailstone, M.A. (Camb.), M.R.C.S., L.R.C.P.	Do.	Kyetume Sleeping Sickness Camp	
G. D. H. Carpenter, B.A., M.D., B.Ch. (Oxf.), M.R.C.S., L.R.C.P.	Do.	Kome Island	Special Sleeping Sickness Investigations.
R. E. McConnell, B.A., M.D., C.M. (Montreal), D.T.M. (Liverpool)	Do.	Fort Portal	
H. L. Duke, B.A., M.B., B.C., D.T.M. and H. (Camb.)	Do.	On leave	
B. Spearman, M.A., M.B., B.C., D.T.M. and H. (Camb.)	Do.	Gulu	
A. H. Owen, M.R.C.S., L.R.C.P., D.T.M. and H. (Camb.)	Do.	Kampala	Special Service in connection with Venereal Diseases.
Capt. G. J. Keane, R.A.M.C., M.D., Ch.B., D.T.M. (Liverpool)	Temporary Medical Officer	Do.	Seconded from R.A.M.C. for Special Work in connection with Venereal Diseases Work.
H. R. Neilson, M.B., Ch.B. (Aberdeen)...	Do.	Mbarara	
W. T. P. Meade-King, M.R.C.S., L.R.C.P.	Do.	Entebbe	
F. C. Doble, M.R.C.S., L.R.C.P. ...	Do.	Masaka	Special Service in connection with Venereal Diseases.
R. J. A. Macmillan, M.B., Ch.B. (Edin.), D.T.M. (Liverpool)	Do.	Kumi	
W. L. Webb, M.R.C.S., L.R.C.P. ...	Do.	Kampala	Special Service in connection with Venereal Diseases.
Miss M. Robertson, M.A. ...	Protozoologist	Do.	Employed on Sleeping Sickness Extended Investigations.
G. S. Bateman, L.D.S., R.C.S. (Eng.), 1902	Government Dentist	On tour	
Miss B. Petherbridge ...	Nursing Sister	Entebbe	
Miss B. V. Hearsom ...	Do.	Do.	
Mr. F. E. Westray ...	Dispenser	Fort Portal	
Mr. J. D. Buckland, M.P.S. ...	Do.	Mbale	
Mr. H. Flint ...	Assistant Clerk, P.M.O.'s Office	Entebbe	
Mr. T. J. Cross ...	Medical Store-keeper	Do.	

Also the following Indian Medical Assistants :—

2 Assistant Surgeons,
12 Sub-Assistant Surgeons, and
7 Compounders.

TABLE II.

FINANCIAL.

See Section I. (b) of Report. (Page 9.)

TABLE III.

POPULATION STATISTICS.

See Section II. Public Health. (e) General Native Population. (Page 19.)

TABLE IV.

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

1. NAME OF TOWN—ENTEBBE.

—				Approximate area.	Number of Proclaimed Open Spaces.
1911	...	...	...	12 sq. miles	12
1912	...	...	...	12 sq. miles	12
1913	...	...	...	12 sq. miles	13

2. POPULATION.

—		Number of Asiatics.		Number of Natives.		Number of Europeans.		Total.
		Males.	Females.	Males.	Females.	Males.	Females.	
1911	...	353		9,569		80	35	—
1912	...	293	60	5,751		92	45	—
1913	...	243	83	3,033	2,678	76	50	—

3. HOUSING.

—				Number occupied by Europeans.	Number occupied by Natives and Asiatics, includes boys' quarters.
Number of Houses—					
1911	...	...	...	71	182
1912	...	...	...	75	336
1913	...	...	...	*74	550

Number of Huts—

1911	...	...	...	...	No record
1912	...	...	...	...	1,220
1913	...	...	...	...	1,233

* 3 European quarters converted into Asiatics' quarters.

4. MOSQUITO PROTECTION OF HOUSES.

—	1911.	1912.	1913.
Number of European houses wholly mosquito-protected ...	61	65	67
Number of European houses with mosquito room ...	9	9	9
Number rendered during the year wholly mosquito-protected	4	4	3
Number rendered during the year partially mosquito-protected	Nil	Nil	Nil

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

—	1911.	1912.	1913.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings ...	1	4	3
Number of houses erected with sanction as to site, construction, and relation to other buildings ...	4	20	3
Number of huts erected with sanction as to site, construction, and relation to other buildings ...	No record	82	13
Number of houses built without sanction ...	Nil	Nil	Nil
Number of huts built without sanction ...	Nil	Nil	Nil

ACTION TAKEN.

—	Number of Prosecutions.		Number Demolished.	
	Huts.	Houses.	Huts.	Houses.
1911 ...	No record	No record	No record	No record
1912 ...	Nil	2	18	1
1913 ...	Nil	Nil	11	Nil

6. MARKETS.

—	Total Number.	Number Paved and Drained.	Number unpaved.
1911 ...	3	1	2
1912 ...	3	1	2
1913 ...	3	1	2

7. SLAUGHTER-HOUSES.

—	Total Number.	Number Paved and Drained.	Number Unpaved.
1911 ...	1	1	Nil
1912 ...	1	1	Nil
1913 ...	1	1	Nil

8. LATRINES.

	For Males.		For Females.	
	Number.	Number of Seats.	Number.	Number of Seats.
Number of Public Latrines :—				
1911	12	48	Nil	Nil
1912	12	48	Nil	Nil
1913	12	48	Nil	Nil
Number of new Public Latrines erected during the year :—				
1911	Nil	—	Nil	—
1912	Nil	—	Nil	—
1913	Nil	—	Nil	—
Number of Public Latrines repaired during the year :—				
1911	1	—	—	—
1912	1	—	—	—
1913				
Number of Public Latrines demolished during the year :—				
1911	Nil	Nil	Nil	Nil
1912	Nil	—	—	—
1913	Nil	—	—	—

	1911.	1912.	1913.
Number of Private Latrines	360	390	400
Average number of pails of nightsoil removed daily ...	—	—	456
Average number of soiled pails removed and clean pails substituted	—	—	37
Number of nightsoil men employed to clean latrines and remove excreta	23	25	27
Number of cesspools	No record	950	930
Number of cesspools cleansed	Nil	Nil	Nil
Number of new cesspools constructed during the year	—	—	57
Number of old cesspools abolished	—	—	20
Number of cesspools oiled regularly by Department ...	—	—	Nil

9. REMOVAL OF REFUSE.

	1911.	1912.	1913.
Number of dustbins	1	1	1
Number of carts at work daily to remove refuse from streets	9	12	13
Amount of refuse removed daily	36	48	52
Number of carts at work daily to remove refuse from yards and premises	included in the above		
Amount of refuse removed daily from yards and premises ...			
Number of men employed for removing refuse	28	34	33

10. MODE OF DISPOSAL OF EXCRETA, REFUSE, AND OFFAL.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.
Buried or trenched	309	250	152	34	44	46	1	1	1½
Burnt	129	200	304	2	4	6	—	—	—
Thrown into sea	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Otherwise dealt with									

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY, AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1911.	1912.	1913.
1	1½	1

12. WATER SUPPLY.

Nature of Water Supply.	1911.	1912.	1913.
Pipe-borne water :—			
Source (river, lake, or spring) :—			
Number of linear yards	Nil	Nil	Nil
Number of stand-pipes along roads			
Number of stand-pipes in compounds and houses			
Wells :—			
Public :—			
Number	1	1	1
Number with pumps protected against surface water and mosquito-protected	Nil	Nil	Nil
Private :—			
Number	Nil	Nil	1
Number protected against surface water and mosquito-protected	—	—	1
Tanks :—			
Public :—			
Number underground	Nil	Nil	Nil
Number mosquito-protected and served by pumps			
Number above ground			
Number mosquito-protected			
Number of 400 gallons capacity or less			
Number above 400 gallons			

Nature of Water Supply.	1911.	1912.	1913.
Tanks:—			
Private:—			
Number underground	1	1	1
Number mosquito-protected	1	1	1
Number above ground	116	155	158
Number mosquito-protected	—	—	158
Number of 400 gallons capacity or less	Nil	Nil	Nil
Number above 400 gallons	116	155	158
Nature of tank:—			
Wood	Nil	Nil	Nil
Iron	115	152	152
Concrete	1	3	6
Barrels:—			
Number	No record	No record	No record
Number mosquito-protected	"	27	25

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains:—		
Lineal yards of masonry drains:—		
1911	No record	No record
1912	1,327	259
1913	1,362	353
Lineal yards reconstructed during the year:—		
1911	No record	No record
1912	"	"
1913	"	"
Lineal yards repaired during the year:—		
1911	No record	No record
1912	"	"
1913	"	"
Lineal yards of new drains constructed during the year:—		
1911	No record	No record
1912	400	259
1913	35	94
Earth drains or ditches:—		
Number of linear yards of ditches cleaned:—		
1911	No record	No record
1912	30,600	"
1913	No record	"
Number of linear yards of ditches dug and graded:—		
1911	No record	No record
1912	"	"
1913	"	"
Average frequency of clearing ditches of grass:—		
1911	No record	No record
1912	2 monthly	2 monthly
1913	2 monthly	2 monthly

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1911.	1912.	1913.
*Number of square yards of weeds, grass, and vegetation cut and removed	Approximately 3 square miles		
Average frequency of clearance of rank vegetation on same area	Approximately 2 monthly		

* Including a large area cleared for Sleeping Sickness prevention.

15. EXCAVATIONS AND LOW-LYING LAND.

	1911.	1912.	1913.
Number of pools and excavations	No record	No record	12
Number of excavations filled up	"	"	7
Amount of low-lying and marsh land raised and drained ...	"	3	30 acres
Number of pools, marshes, streams, &c., fish-stocked ...	Nil	Nil	Nil
Number of cubic yards of material used for filling up pools and excavations	No record	No record	No record
Number of persons fined for making new excavations ...	Nil	Nil	Nil
Average number of men daily employed in filling up pools, &c.	8	12	10

16. OILING.

	1911.	1912.	1913.
Number of drains oiled... ..	No record	—	2
Number of pools and excavations oiled	"	—	3
Number of tanks and barrels oiled	"	—	No record
Average number of men daily employed for oiling drains, pools, and watertanks or barrels	"	1	1

17. INSPECTIONS AND PROSECUTIONS.

	1911.	1912.	1913.
Number of inspectors employed	1	1	1
Number of houses inspected	—	512	518
Number of houses where larvæ were found	—	—	23
Number of notices served to remove conditions causing the breeding of larvæ	—	—	78
Number of persons fined for having mosquito larvæ on premises	Nil	Nil	Nil
Number of notices served to remove insanitary conditions on premises	No record	32	8
Number of persons fined for not removing insanitary conditions after notice	"	2	Nil
Number of soda and aerated water factories inspected ...	1	1	1

(Signed) H. O'NEIL, CAPT.,

District Commissioner.

TABLE IV.—*continued.*SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR
IN THE TOWN.

1. NAME OF TOWN—KAMPALA.

	Approximate area. Acres.	Number of Proclaimed Open Spaces.
1911	1,416.6	6
1912	1,404.48	7
1913	1,404.48	7

2. POPULATION.

	Number of Natives.		Number of Europeans.*		Number of Asiatics.		Total.
	Males.	Females.	Males.	Females.	Males.	Females.	
1911	—	—	47	15	—	—	—
1912	3,594	762	87	12	532	132	4,455
1913	1,376	424	107	42	574	175	2,698

* There is a large floating European population not included in these figures.

3. HOUSING.

	Number occupied by Europeans.	Number occupied by Natives.	Number occupied by Asiatics.
Number of Houses :—			
1911	40	208	—
1912	56	353	No record
1913	68	270	200

Number of Huts :—

1911	No record.
1912	308
1913	443

4. MOSQUITO PROTECTION OF HOUSES.

	1911.	1912.	1913.
Number of European houses wholly mosquito-protected ...	40	56	60
Number of European houses with mosquito room	Nil	Nil	2
Number rendered during the year wholly mosquito-protected	Nil	Nil	1
Number rendered during the year partially mosquito-protected	Nil	Nil	Nil

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1911.	1912.	1913.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	5	3	2
Number of houses erected with sanction as to site, construction, and relation to other buildings	125	58	52
Number of huts erected with sanction as to site, construction, and relation to other buildings	No record	180	135
Number of houses built without sanction	Nil	Nil	Nil
Number of huts built without sanction	Nil	Nil	Nil

ACTION TAKEN.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1911	Nil	Nil	Nil	Nil
1912	Nil	Nil	Nil	Nil
1913	Nil	Nil	Nil	Nil

6. MARKETS.

	Total number.	Number paved and drained.	Number unpaved.
1911	1	Nil	1
1912	1	Nil	1
1913	1	Nil	1

7. SLAUGHTER-HOUSES.

	Total number.	Number paved and drained.	Number unpaved.
1911	Nil	Nil	Nil
1912	Nil	Nil	Nil
1913	1	1	Nil

8. LATRINES.

	For Males.		For Females.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1911	11	42	Nil	Nil
1912	11	42	Nil	Nil
1913	11	42	Nil	Nil
Number of new Public Latrines erected during the year :—				
1911	Nil	Nil	Nil	Nil
1912	Nil	Nil	Nil	Nil
1913	Nil	Nil	Nil	Nil
Number of Public Latrines repaired during the year :—				
1911	Nil	Nil	Nil	Nil
1912	Nil	Nil	Nil	Nil
1913	2	4	Nil	Nil
Number of Public Latrines demolished during the year :—				
1911	Nil	Nil	Nil	Nil
1912	Nil	Nil	Nil	Nil
1913	Nil	Nil	Nil	Nil

	1911.	1912.	1913.
Number of Private Latrines	220	284	391
Average number of pails of nightsoil removed daily ...	505	568	433*
Average number of soiled pails removed and clean pails substituted	Nil	Nil	Nil
Number of nightsoil men employed to clean latrines and remove excreta	27	27	33
Number of cesspools	1	1	1
Number of cesspools cleansed	1	1	1
Number of new cesspools constructed during the year ...	Nil	Nil	Nil
Number of old cesspools abolished	Nil	Nil	Nil
Number of cesspools oiled regularly by Department	Nil	Nil	Nil

* Larger pails and departure Ind. Cgt.

Larger pails have been in use this year in Police lines, etc., and therefore a smaller number.

9. REMOVAL OF REFUSE.

	1911.	1912.	1913.
Number of dustbins	Nil	Nil	Nil
Number of carts at work daily to remove refuse from streets	4	4	5
Amount of refuse removed daily	Nil	10	—
Number of carts at work daily to remove refuse from yards and premises	3	3	5
Amount of refuse removed daily from yards and premises	No record	No record	No record
Number of men employed for removing refuse	22	22	22

10. MODE OF DISPOSAL OF EXCRETA, REFUSE, AND OFFAL.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.
Buried or trenched	Nil	13	—	Nil	Nil	Nil	Nil	Nil	Nil
Burnt	505	555	433	32	48	24	3	5	Nil
Thrown into Sea	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Otherwise dealt with	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY, AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS, AND COMPOUNDS.

1911.	1912.	1913.
3	5	1

12. WATER SUPPLY.

Nature of Water Supply.	1911.	1912.	1913.
Pipe-borne water :—			
Source (river, lake, or spring) :—			
Number of linear yards	Nil	Nil	Nil
Number of stand-pipes along roads... ..			
Number of stand-pipes in compounds and houses ...			
Wells :—			
Public :—			
Number	2	2	4
Number protected against surface water and mosquito protected			
Private :—			
Number	Nil	Nil	1
Number protected against surface water and mosquito-protected			
Tanks :—			
Public :—			
Number underground	Nil	Nil	Nil
Number mosquito-protected and served by pumps			
Number above ground			
Number mosquito-protected... ..			
Number of 400 gallons capacity or less			
Number above 400 gallons			

Nature of Water Supply.	1911.	1912.	1913.
Tanks :—			
Private :—			
Number underground	1	2	3
Number mosquito-protected	Nil	Nil	Nil
Number above ground	No record	No record	86
Number mosquito-protected	—	—	44
Number of 400 gallons capacity or less	10	20	20
Number above 400 gallons	37	42	60
Nature of tank :—			
Wood	Nil	Nil	Nil
Iron	47	62	88
Concrete	1	2	3
Barrels :—			
Number	Nil	Nil	1
Number mosquito-protected			

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains:—		
Lineal yards of masonry drains:—		No record
1911	600	369
1912	600	369
1913	1,153	
Lineal yards reconstructed during the year:—		Nil
1911	600	Nil
1912	Nil	Nil
1913	10	Nil
Lineal yards repaired during the year:—		—
1911	Nil	—
1912	100	—
1913	Nil	—
Lineal yards of new drains constructed during the year:—		
1911	Nil	Nil
1912	Nil	Nil
1913	533	Nil
Earth drains or ditches:—		
Number of linear yards of ditches cleaned:—		Nil
1911	14·00	Nil
1912	17·220	Nil
1913	17·753	Nil
Number of linear yards of ditches dug and graded:—		Nil
1911	Nil	Nil
1912	3,000	Nil
1913	2,733	Nil
Average frequency of clearing ditches of grass:—		No record
1911	9	No record
1912		
1913		

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1911.	1912.	1913.
Number of square yards of weeds, grass and vegetation cut and removed	No record	98,031	346,031
Average frequency of clearance of rank vegetation on same area	9	9	3

15. EXCAVATIONS AND LOW-LYING LAND.

	1911.	1912.	1913.
Number of pools and excavations	No record	Nil	1
Number of excavations filled up	2	1	1
Amount of low-lying and marsh land raised and drained ...	Nil	Nil	* 400,000 sq. yards
Number of pools, marshes, streams, &c., fish-stocked ...	Nil	Nil	Nil
Number of cubic yards of material used for filling up pools and excavations	No record	No record	600
Number of persons fined for making new excavations ...	Nil	Nil	Nil
Average number of men daily employed in filling up pools, &c.	Nil	Nil	60

* In process of clearing.

16. OILING.

	1911.	1912.	1913.
Number of drains oiled	Nil	Nil	Nil
Number of pools and excavations oiled	Nil	Nil	Nil
Number of tanks and barrels oiled	Nil	Nil	Nil
Average number of men daily employed for oiling drains, pools, and watertanks or barrels	Nil	Nil	Nil

17. INSPECTIONS AND PROSECUTIONS.

	1911.	1912.	1913.
Number of inspectors employed	1	1	1
Number of houses inspected	All houses	—	537
Number of houses where larvæ were found	No record	—	58
Number of notices served to remove conditions causing the breeding of larvæ	Nil	Nil	58
Number of persons fined for having mosquito larvæ on premises	Nil	Nil	Nil
Number of notices served to remove insanitary conditions on premises	21	22	2
Number of persons fined for not removing insanitary conditions after notice	Nil	2	Nil
Number of soda and aerated water factories inspected	1	2	2

(Signed) H. A. MACKENZIE,

for District Commissioner.

TABLE IV.—*continued.*SUMMARY OF ROUTINE SANITARY WORK DONE DURING THE YEAR
IN THE TOWN.

1. NAME OF TOWN—JINJA.

—	Approximate area.	Number of proclaimed open spaces.
1911	2,560 acres	1 Busoga Sq.
1912	(approximate) 4 square miles	5 Tennis Sports (European, Goan and Indian).
1913	Do.	5 do. do. do.

2. POPULATION.

—	Number of Natives.*		Number of Europeans.		Total.
	Males.	Females.	Males.	Females.	
1911 (approximately) ...	819	560	23	8	1,410
1912	1,500	800	62	19	2,381
1913	1,800	1,138	65	21	3,024

* Including 450 Asiatics.

3. HOUSING.

—	Number occupied by Europeans.	Number occupied by Natives, including Asiatics.
Number of Houses :—		
1911	23	101
1912	27	147
1913	63	171

Number of Huts :—

1911	550 (approximately)
1912	850 (")
1913	948 (")

4. MOSQUITO PROTECTION OF HOUSES.

—	1911.	1912.	1913.
Number of European houses wholly mosquito-protected ...	15	25	27
Number of European houses with mosquito room ...	}	}	}
Number rendered during the year wholly mosquito-protected			
Number rendered during the year partially mosquito-protected			

5. ERECTION OF NEW BUILDINGS DURING THE YEAR.

	1911.	1912.	1913.
Number of public buildings erected with sanction as to site, construction, and relation to other buildings	1	—	3
Number of houses erected with sanction as to site, construction, and relation to other buildings	No record	30	13
Number of huts erected with sanction as to site, construction, and relation to other buildings	150	300	300
Number of houses built without sanction	Nil	16	Nil
Number of huts built without sanction	400	550	150

ACTION TAKEN.

	Number of Prosecutions.		Number demolished.	
	Huts.	Houses.	Huts.	Houses.
1911	Nil	Nil	Nil	Nil
1912	Nil	Nil	Nil	Nil
1913	Nil	Nil	Nil	Nil

6. MARKETS.

	Total number.	Number paved and drained.	Number unpaved.
1911	1	—	1
1912	1	—	1
1913	1	—	1

7. SLAUGHTER-HOUSES.

	Total number.	Number paved and drained.	Number unpaved.
1911	1	1	—
1912	1	1	—
1913	1	1	—

8. LATRINES.

	For Males.		For Females.	
	Number.	Number of seats.	Number.	Number of seats.
Number of Public Latrines :—				
1911	—	—	—	—
1912	3	12	—	—
1913	3	12	—	—
Number of new Public Latrines erected during the year :—				
1911	—	—	—	—
1912	3	12	—	—
1913	Nil	Nil	—	—
Number of Public Latrines repaired during the year :—				
1911	} No record	Nil	—	—
1912				
1913				
Number of Public Latrines demolished during the year :—				
1911	} No record	Nil	—	—
1912				
1913				

	1911.	1912.	1913.
Number of Private Latrines	No record	123	206
Average number of pails of nightsoil removed daily...	—	140	200
Average number of soiled pails removed and clean pails substituted	—	—	400
Number of nightsoil men employed to clean latrines and remove excreta	9	14	15
Number of cesspools	15	4	13
Number of cesspools cleansed	—	—	—
Number of new cesspools constructed during the year	—	2	4
Number of old cesspools abolished	—	11	4
Number of cesspools oiled regularly by Department...	—	—	—

9. REMOVAL OF REFUSE.

	1911.	1912.	1913.
Number of dustbins	Nil	Nil	Nil
Number of carts at work daily to remove refuse from streets	2	3	3
Amount of refuse removed daily	No record	18	20
Number of carts at work daily to remove refuse from yards and premises	Included in above		
Amount of refuse removed daily from yards and premises			
Number of men employed for removing refuse	9	48	50

10. MODE OF DISPOSAL OF EXCRETA, REFUSE AND OFFAL.

	Daily average number of pails of excreta.			Daily average number of cartloads of refuse.			Daily average number of cartloads of Slaughter House and Market Offal.		
	1911.	1912.	1913.	1911.	1912.	1913.	1911.	1912.	1913.
Buried or trenched ...	Nil	Nil	Nil	No record			No record	$\frac{1}{2}$	1
Burnt ...	—	100	30	—	—	20			
Thrown into Nile ...	No record	40	170						
Otherwise dealt with									

11. AVERAGE DAILY NUMBER OF CARTLOADS OF TIN CANS, BOTTLES, BROKEN CROCKERY AND OTHER INCOMBUSTIBLE MATERIAL REMOVED FROM HOUSES, HUTS AND COMPOUNDS.

1911.	1912.	1913.
No record	1	1

12. WATER SUPPLY.

Nature of Water Supply.	1911.	1912.	1913.
Pipe-borne water :—			
Source (river, lake or spring) :—			
Number of linear yards ...			
Number of stand-pipes along roads...			
Number of stand-pipes in compounds and houses ...			
Wells :—			
Public :—	Nil	Nil	Nil
Number ...			
Number with pumps protected against surface water and mosquito-protected...			
Private :—			
Number ...			
Number protected against surface water and mosquito-protected ...			
Tanks :—			
Public :—			
Number underground ...			
Number mosquito-protected and served by pumps...			
Number above ground ...			
Number mosquito-protected ...			
Number of 400 gallons capacity or less ...			
Number above 400 gallons ...			

Nature of Water Supply.	1911.	1912.	1913.
Tanks :—			
Private :—			
Number underground ...	Nil	Nil	Nil
Number mosquito-protected ...	—	—	—
Number above ground ...	No record	23	33
Number mosquito-protected ...	—	23	33
Number of 400 gallons capacity or less ...	—	23	31
Number above 400 gallons ...	—	2	2
Nature of tank :—			
Wood ...	—	—	—
Iron ...	—	25	33
Concrete ...	—	—	—
Barrels :—			
Number ...	—	—	—
Number mosquito-protected ...	—	—	—

13. DRAINAGE.

Nature of Drainage.	Public.	Private.
Masonry drains :—		
Lineal yards of masonry drains :—		
1911	No masonry drains in Jinja	
1912		
1913		
Lineal yards reconstructed during the year :—		
1911		
1912		
1913		
Lineal yards repaired during the year :—		
1911		
1912		
1913		
Lineal yards of new drains constructed during the year :—		
1911		
1912		
1913		
Earth drains or ditches :—		
Number of linear yards of ditches cleaned :—		
1911	No record	
1912		
1913		
Number of linear yards of ditches dug and graded :—		
1911	Every month	
1912		
1913		
Average frequency of clearing ditches of grass :—		
1911	Every month	
1912		
1913		

14. CLEARANCE OF UNDERGROWTH, LONG GRASS AND JUNGLE.

	1911.	1912.	1913.
*Number of square yards of weeds, grass and vegetation cut and removed approximately	1,540,000	1,543,960	1,570,000
Average frequency of clearance of rank vegetation on same area	Every	month	

* Includes a large area cleared for sleeping sickness prevention.

15. EXCAVATIONS AND LOW-LYING LAND.

	1911.	1912.	1913.
Number of pools and excavations	—	1	—
Number of excavations filled up	—	—	—
Amount of low-lying and marsh land raised and drained ...	—	—	—
Number of pools, marshes, streams, &c., fish-stocked ...	—	—	—
Number of cubic yards of material used for filling up pools and excavations	—	—	—
Number of persons fined for making new excavations ...	—	—	—
Average number of men daily employed in filling up pools, &c.	—	—	—

16. OILING.

—	1911.	1912.	1913.
Number of drains oiled... ..	—	—	—
Number of pools and excavations oiled	—	1	—
Number of tanks and barrels oiled	—	—	—
Average number of men daily employed for oiling drains, pools, and watertanks or barrels	—	—	—

17. INSPECTIONS AND PROSECUTIONS.

—	1911.	1912.	1913.
Number of inspectors employed	1	1	1
Number of houses inspected	—	174	200
Number of houses where larvæ were found	—	42	70
Number of notices served to remove conditions causing the breeding of larvæ	—	42	70
Number of persons fined for having mosquito larvæ on premises	—	—	—
Number of notices served to remove insanitary conditions on premises	No record	10	12
Number of persons fined for not removing insanitary con- ditions after notice	—	—	—
Number of soda and aerated water factories inspected ...	1	1	2

—	Population.	Total.
Asiatic population	450	450

(Signed) G. P. V. JERVOISE,

District Commissioner, Busoga.

TABLE V.

ENTEBBE METEOROLOGICAL STATEMENT FOR THE YEAR 1913.

Lat. 0° 4' 31" N. Long. 32° 28' E. Height of Barometer above M. S. L. 3,842 Feet.

Month.	At 7 P.M.				At 2 P.M.				At 9 P.M.								No. of days Rain fell.
	Barometer corrected and reduced to 32° F.	Attached Thermometer.	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32° F.	Attached Thermometer.	Dry Bulb.	Wet Bulb.	Barometer corrected and reduced to 32° F.	Attached Thermometer.	Dry Bulb.	Wet Bulb.	Maximum Temperature.	Minimum Temperature.	Sunshine. hrs. mts.	Rainfall. In.	
JANUARY	26.230	67.1	65.2	62.5	26.203	80.6	78.7	72.2	26.218	71.3	69.8	67.0	80.1	63.1	6.00	0.63	7
FEBRUARY	26.141	68.1	66.2	63.6	26.112	78.5	76.5	70.3	26.124	71.3	69.2	66.2	80.1	64.5	5.42	7.32	15
MARCH	26.151	68.3	66.5	64.4	26.126	78.1	76.3	70.4	26.144	69.9	68.7	65.6	79.0	64.3	5.32	9.51	15
APRIL	26.148	68.5	66.7	64.4	26.124	77.4	75.2	70.8	26.132	70.2	68.4	65.5	78.1	63.9	3.59	12.71	25
MAY	26.152	68.0	66.4	64.2	26.136	76.6	76.4	71.4	26.149	69.8	67.8	65.1	78.4	63.3	3.44	10.64	26
JUNE	26.195	67.4	65.7	63.4	26.174	76.3	74.3	70.4	26.188	69.5	67.8	65.3	77.9	62.6	5.32	0.97	10
JULY	26.198	66.0	64.1	61.8	26.177	76.6	74.5	69.9	26.193	69.0	67.3	64.7	78.1	60.9	5.09	3.22	6
AUGUST	26.197	67.9	64.8	62.7	26.198	79.2	82.3	70.3	26.187	70.4	67.3	64.8	77.9	62.2	6.57	1.41	6
SEPTEMBER	26.187	69.6	66.2	63.8	26.178	84.6	80.3	72.7	26.171	71.0	67.7	65.3	80.4	62.4	6.51	1.71	5
OCTOBER	26.204	69.7	66.4	64.1	26.191	82.1	77.8	70.4	26.200	70.4	67.4	64.4	81.8	62.1	5.45	4.42	13
NOVEMBER	26.187	70.0	66.8	63.8	26.175	81.7	78.3	71.8	26.184	71.0	67.8	63.9	82.0	61.7	4.13	0.90	11
DECEMBER	26.189	69.7	66.5	63.7	26.168	79.6	76.4	68.9	26.183	70.5	68.0	64.4	82.9	62.0	4.56	2.98	10
MEAN FOR YEAR	26.181	68.3	65.9	63.5	26.163	79.2	77.2	70.8	26.172	70.3	68.1	65.1	79.7	62.7	5.21	Total. 56.42	149

W. R. RUTTER,
Chief Forestry Officer.

COMPARATIVE RAINFALL STATEMENT, SHOWING THE MONTHLY RAINFALL FOR THE YEAR 1913 OF FORTY-EIGHT LOCALITIES OF THE UGANDA PROTECTORATE.

MONTH.	ENTEBE.		NIMULE.		JINJA.		MBARARA.		MASAKA.		GONDOKORO.		FORT PORTAL.		BUTIABA.		MASINDI.		GULE.		KAMPALA.		MEALE.		MURENDI.		BUDO.	
	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.
JANUARY ...	0.63	7	Nil		0.61	4	0.10	1	1.35	6	Nil		1.38	4	0.84	2	0.57	2	0.15	1	2.37	8	0.01	1	1.01	5	2.53	5
FEBRUARY ...	7.32	15	4.24	4	5.11	9	2.13	12	1.40	10	5.82	2	4.08	10	0.52	1	3.84	9	3.63	10	3.95	15	3.07	11	6.08	11	3.92	10
MARCH ...	9.51	15	1.12	1	3.27	13	3.14	13	2.08	11	0.21	2	5.32	7	1.62	3	3.36	9	1.83	6	7.68	15	4.14	4	4.85	9	7.34	12
APRIL ...	12.71	25	6.28	10	8.15	18	1.80	5	6.58	16	3.41	12	6.24	17	3.35	8	5.34	13	7.13	21	10.16	24	9.81	23	5.77	15	8.69	22
MAY ...	10.64	26	7.56	10	8.01	20	2.24	10	4.59	17	3.16	9	5.83	20	3.21	6	5.48	14	6.85	23	5.06	20	6.54	28	2.87	9	3.83	13
JUNE ...	0.97	10	5.68	6	0.80	5	1.65	4	0.93	8	2.78	7	6.27	16	3.95	9	11.54	11	5.86	13	2.17	13	7.55	18	4.73	9	1.57	4
JULY ...	3.22	6	6.83	5	2.81	3	0.28	2	0.59	2	2.15	7	0.48	3	0.23	4	2.44	8	4.32	19	2.61	11	3.87	17	1.44	4	0.92	4
AUGUST ...	1.41	6	3.83	3	1.46	4	0.10	2	0.54	4	2.66	7	2.03	7	2.06	8	6.68	13	5.86	15	0.83	7	2.02	11	4.22	7	2.27	6
SEPTEMBER...	1.71	5	0.34	1	3.23	8	0.39	4	1.37	4	1.65	4	5.20	11	2.16	6	4.65	6	0.46	6	3.50	8	1.62	8	5.53	11	2.48	5
OCTOBER ...	4.42	13	4.58	5	3.44	11	3.48	12	1.57	10	1.66	10	10.54	20	4.76	10	5.42	14	7.66	22	1.78	20	4.58	14	5.06	16	2.65	9
NOVEMBER ...	0.90	11	6.86	4	2.19	11	4.21	14	3.19	15	0.34	5	5.56	15	4.13	9	4.43	18	3.39	12	2.72	20	2.30	13	1.75	8	3.99	8
DECEMBER ...	2.98	10	Nil		2.45	6	1.41	6	0.89	6	Nil		0.15	1	0.51	4	1.25	5	1.65	3	2.77	12	1.68	7	0.58	6	2.95	7
TOTAL ...	56.42	149	47.32	49	41.53	112	20.93	85	25.08	109	23.84	65	53.08	131	27.34	70	55.00	122	48.79	151	45.60	173	47.19	155	43.89	110	43.14	105

COMPARATIVE RAINFALL STATEMENT, SHOWING THE MONTHLY RAINFALL FOR THE YEAR 1913 OF FORTY-EIGHT LOCALITIES OF THE
UGANDA PROTECTORATE—continued.

MONTH.	BUKONA.		NAMESAUF.		NABESIO.		KUMI.		HOIMA.		NAMU- KEREH.		NABUMALI.		IGANGA.		BITITI.		BUKUMI.		RUBAGA.		NGOMA.		KISUMU.		KIVUVE.	
	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.
JANUARY	0.68	4	0.22	1	Nil	Nil	0.40	2	1.87	4	0.04	1	1.53	2	0.61	7	2.63	7	2.54	5	Nil	1.15	4	1.21	2			
FEBRUARY	5.24	13	2.68	4	4.16	5	5.07	12	2.43	9	2.33	15	4.20	8	4.16	12	1.10	4	5.71	9	3.38	6	4.80	12	5.23	11		
MARCH	4.78	14	1.75	4	4.70	5	3.93	8	1.96	10	5.98	21	8.07	10	4.13	8	2.75	7	9.23	11	3.58	8	6.85	11	6.72	13		
APRIL	8.60	17	4.96	9	3.73	8	5.74	12	5.26	16	11.52	25	6.56	7	3.38	13	5.68	13	9.08	16	8.79	16	15.12	21	7.15	19		
MAY	8.46	28	4.77	10	6.04	10	4.38	21	2.17	...	6.98	29	11.21	17	3.28	16	4.20	10	4.18	11	8.22	19	10.04	19	5.43	18		
JUNE	4.78	15	2.53	4	8.12	7	7.58	16	1.50	8	3.66	23	2.71	6	1.78	10	1.80	7	1.27	4	10.44	12	0.55	5	2.43	7		
JULY	3.68	11	1.27	4	2.25	6	4.76	12	0.45	3	3.57	19	2.55	6	3.02	8	1.69	6	1.11	...	3.18	...	2.91	9	2.36	6		
AUGUST	2.92	12	2.77	7	2.60	4	5.56	7	2.15	8	1.75	21	1.99	7	2.10	7	1.98	5	1.31	4	2.12	...	0.71	5	1.17	5		
SEPTEMBER	1.73	10	2.80	6	1.36	3	0.80	3	2.98	5	1.37	11	3.99	7	2.32	10	4.24	11	3.88	8	1.98	...	1.72	5	3.83	10		
OCTOBER	5.87	18	5.32	8	10.25	11	7.63	14	6.07	18	2.11	18	5.09	15	5.01	16	4.08	14	1.47	8	7.46	...	2.15	9	4.10	14		
NOVEMBER	3.44	15	2.56	7	3.92	9	5.06	10	2.45	12	2.89	18	2.97	7	3.32	12	1.97	10	2.46	14	4.60	...	4.10	4	2.02	13		
DECEMBER	2.51	8	1.36	3	Nil	1	0.17	1	3.64	7	1.90	8	1.68	6	1.89	11	0.95	2	2.21	8	0.06	1	2.29	7	4.61	13		
TOTAL	52.69	165	32.99	67	47.13	68	60.20	110	32.93	100	44.10	209	52.55	98	35.00	130	33.07	96	44.45	98	53.81	62	52.39	111	46.26	131		

COMPARATIVE RAINFALL STATEMENT, SHOWING THE MONTHLY RAINFALL FOR THE YEAR 1913 OF FORTY-EIGHT LOCALITIES OF THE
UGANDA PROTECTORATE—continued.

MONTH.	KAYA- LONGO.		MAGIYE.		NANDERE.		MONIKO.		KERITIA.		BOMBO.		BWAVE.		BUGALLA ISLAND (Sene).		SANGO BAY.		MVUBA.		KAKUMIRO.		BUNYARU- GURU.	
	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.
JANUARY	1.76	6	0.28	2	0.46	3	2.49	6	2.45	6	0.07	1	4.24	10	3.49	11	...	...	...	...	1.71	4	1.37	6
FEBRUARY	5.01	13	3.67	8	4.73	12	3.48	7	4.37	14	4.22	11	6.23	14	7.35	18	1.34	7	...	...	2.85	9	4.19	17
MARCH	6.27	13	4.95	10	4.90	11	4.94	11	5.91	14	2.20	7	6.78	12	...	...	6.45	7	...	...	3.91	9	3.90	11
APRIL	...	...	5.93	17	5.82	17	7.02	15	9.61	19	2.57	14	8.79	18	...	...	14.02	17	...	...	7.16	20	7.26	23
MAY	3.45	23	4.85	16	7.88	18	6.29	17	7.42	16	2.52	17	4.74	19	...	...	11.20	20	4.38	8	2.12	11	8.63	24
JUNE	2.35	11	2.03	8	3.02	13	0.50	3	0.13	1	0.22	6	2.25	16	...	...	1.74	4	...	...	...	...	2.60	12
JULY	...	...	1.37	5	2.48	10	2.40	7	2.08	3	1.21	9	4.70	5	...	...	Nd	...	...	...	1.29	8	2.78	6
AUGUST	3.15	11	0.77	5	2.33	10	2.97	6	1.97	5	1.25	9	1.26	7	...	...	0.39	2	...	...	2.48	9	1.30	7
SEPTEMBER	4.47	11	3.24	11	2.43	11	3.41	11	5.46	8	2.36	10	3.19	8	...	...	1.21	3	...	...	4.37	9	4.25	14
OCTOBER	6.20	17	4.34	19	5.48	15	3.88	13	5.55	14	3.94	16	3.81	20	...	...	2.73	7	...	...	6.49	15	7.25	17
NOVEMBER	2.68	10	2.95	14	2.81	12	5.73	15	4.29	10	1.40	10	2.50	13	...	...	4.14	12	...	...	3.13	13	4.33	10
DECEMBER	3.57	10	2.23	11	1.74	10	4.25	10	4.43	9	2.20	8	2.53	9	...	...	3.55	4	...	...	0.14	2	0.67	4
TOTAL	38.91	125	36.61	126	44.08	142	47.36	121	53.67	119	24.16	118	51.02	151	10.84	29	46.77	83	4.38	8	35.65	109	48.53	151

COMPARATIVE RAINFALL STATEMENT, SHOWING THE MONTHLY RAINFALL FOR THE YEAR 1913 OF FORTY-EIGHT LOCALITIES OF THE
UGANDA PROTECTORATE—continued.

MONTH.	KITIGONDO.		KABYAZA.		KADOMA.		KITUMBULI.		KITALYA.		MARINDI PORT.		LUGOMBE.		NAMBEYA (Bukwera).	
	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.	In.	No. of days.
JANUARY ...	1.62	6	...	...	...	...	1.15	3	...	...	0.08	1	0.23	1	...	...
FEBRUARY ...	4.88	15	...	...	...	...	6.22	13	...	...	1.79	9	2.15	6	...	...
MARCH ...	4.16	12	...	...	...	...	5.80	12	...	...	6.76	15	4.42	8	...	...
APRIL ...	5.80	18	...	...	...	...	7.74	16	...	...	3.44	16	6.44	11	...	...
MAY ...	6.22	18	...	...	...	...	10.90	29	...	...	3.89	14	4.10	13	...	...
JUNE ...	1.81	5	2.77	10	4.02	11	6.52	15	...	...	5.29	9	4.18	7	...	...
JULY ...	0.50	2	2.57	19	1.65	8	1.34	7	1.78	7	3.43	7	...	...	...	...
AUGUST ...	1.03	2	2.53	9	3.06	13	3.19	9	2.88	9	0.96	4	...	...	...	...
SEPTEMBER...	0.58	5	4.76	12	1.04	10	0.68	6	4.73	9	1.24	5	...	...	...	...
OCTOBER ...	2.41	10	3.58	13	4.92	17	5.77	15	7.65	14	...	...	...	...	...	...
NOVEMBER ...	3.69	9	4.51	23	4.59	16	3.60	16	3.15	13	...	...	...	...	3.69	17
DECEMBER ...	1.56	7	1.92	10	2.24	11	2.15	9	2.68	9	...	...	...	...	2.18	8
TOTAL ...	34.26	109	22.64	96	21.52	86	55.06	150	22.87	61	26.88	80	21.52	46	5.87	25

W. R. RUTTER,
Chief Forestry Officer.

TABLE VI.

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1913.

Diseases.	Remain- ing in Hospital at end of 1912.	Yearly Total.		Total Cases Treated.	Remain- ing in Hospital at end of 1913.	Remarks.
		Ad- missions	Deaths.			
INFECTIVE DISEASES.						
Beri-Beri	—	—	—	—	—	
Cerebro-Spinal Fever	—	6	5	6	—	
Chicken-Pox	1	14	—	15	2	
Cholera	—	—	—	—	—	
Dengue	—	—	—	—	—	
Diphtheria	—	—	—	—	—	
Dysentery	—	22	1	22	—	
Endocarditis—infective	—	—	—	—	—	
Enteric	—	1	—	1	—	
Erysipelas	—	—	—	—	—	
Gonorrhoea	3	58	—	61	1	
Influenza	—	1	—	1	—	
Kala Azar	—	—	—	—	—	
Leprosy—(a) Nodular	—	—	—	—	—	
(b) Anaesthetic	—	—	—	—	—	
Malaria—(a) Tertian	—	34	—	34	1	
(b) Quartan	—	2	—	2	—	
(c) Aestivo-autumnal	1	179	4	180	—	
(d) Chronic Malaria	—	8	1	8	2	
(e) Black-water	—	4	1	4	—	
Measles	—	5	—	5	—	
Undulant Fever	—	—	—	—	—	
Plague	—	11	9	11	—	
Pneumonia	1	98	27	99	—	
Rabies	—	—	—	—	—	
Relapsing Fever	4	69	6	73	1	
Rheumatic Fever	—	2	1	2	—	
Septicæmia	—	1	1	1	—	
Trypanosomiasis (Sleeping Sickness)	—	39	7	39	4	
Small-Pox	—	5	—	5	—	
Syphilis (a) Primary	—	13	—	13	1	
(b) Secondary	7	69	3	76	1	
(c) Tertiary	1	31	5	32	4	
(d) Inherited	—	4	—	4	—	
Tetanus	—	—	—	—	—	
Tuberculosis	1	8	3	9	—	
Whooping Cough	1	—	—	1	—	
Yaws	—	5	—	5	—	
Yellow Fever	—	—	—	—	—	
Pyrexia	2	91	2	93	1	
Mumps	—	12	—	12	—	
Muhinyo	—	5	—	5	—	
INTOXICATIONS.						
Alcoholism	—	2	—	2	—	
Morphinism	—	—	—	—	—	
Others	—	—	—	—	—	
GENERAL DISEASES.						
Anæmia	1	11	3	12	—	
Anæmia—Pernicious	—	—	—	—	—	
Diabetes	—	—	—	—	—	
Exophthalmic Goitre	—	—	—	—	—	
Gout	—	—	—	—	—	
Leucocythæmia... ..	—	—	—	—	—	
Hodgkin's Disease	—	—	—	—	—	
Myxœdema	—	—	—	—	—	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1913—continued.

Diseases.	Remain- ing in Hospital at end of 1912.	Yearly Total.		Total Cases Treated.	Remain- ing in Hospital at end of 1913.	Remarks.
		Ad- missions	Deaths.			
GENERAL DISEASES—continued.						
Purpura...	—	1	1	1	—	
Rickets ...	—	—	—	—	—	
Scurvy ...	—	1	—	1	—	
Debility ...	—	16	4	16	—	
Others ...	—	11	—	11	1	
LOCAL DISEASES.						
DISEASES OF THE NERVOUS SYSTEM.						
Sub-section 1.						
Neuritis ...	—	1	—	1	—	
Meningitis ...	—	3	3	3	—	
Myelitis ...	—	—	—	—	—	
Hydrocephalus ...	—	—	—	—	—	
Encephalitis ...	—	—	—	—	—	
Abscess of Brain ...	—	—	—	—	—	
Congestion of Brain ...	—	—	—	—	—	
Others ...	—	1	—	1	—	
Sub-section 2.						
Apoplexy ...	—	4	4	4	—	
Paralysis ...	1	4	1	5	—	
Chorea ...	—	—	—	—	—	
Epilepsy ...	—	4	—	4	—	
Neuralgia ...	—	7	—	7	—	
Hysteria ...	—	1	—	1	—	
Others ...	—	5	1	5	—	
Sub-section 3.						
Mental Diseases—						
Idiocy ...	—	1	—	1	1	
Mania ...	—	—	—	—	—	
Melancholia ...	—	—	—	—	—	
Dementia ...	—	1	1	1	—	
Delusional Insanity ...	—	1	—	1	1	
Others ...	—	2	—	2	—	
Diseases of the Eye—						
Conjunctivitis ...	1	11	—	12	—	
Keratitis ...	—	—	—	—	—	
Ulceration of Cornea ...	—	6	—	6	—	
Iritis ...	—	3	—	3	—	
Optic Neuritis ...	—	—	—	—	—	
Cataract ...	1	1	—	2	—	
Others ...	—	1	—	1	—	
Diseases of the Ear—						
Inflammation ...	—	2	—	2	—	
Other Diseases ...	—	—	—	—	—	
Diseases of the Nose—						
Rhinitis ...	—	1	—	1	—	
Coryza ...	—	9	—	9	—	
Diseases of the Circulatory System—						
Pericarditis ...	—	1	—	1	—	
Endocarditis ...	—	—	—	—	—	
Valvular Mitral ...	—	5	4	5	—	
Aortic ...	—	—	—	—	—	
Tricuspid ...	—	—	—	—	—	
Pulmonary ...	—	—	—	—	—	
Arterial Sclerosis ...	—	—	—	—	—	
Aneurism ...	—	—	—	—	—	
Others ...	—	2	—	2	—	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1913—continued.

Diseases.	Remain- ing in Hospital at end of 1912.	Yearly Total.		Total Cases Treated.	Remain- ing in Hospital at end of 1913.	Remarks.
		Ad- missions	Deaths.			
LOCAL DISEASES—continued.						
Diseases of the Respiratory System—						
Laryngitis	—	1	—	1	—	
Bronchitis	—	94	1	94	1	
Broncho-pneumonia	—	22	9	22	1	
Abscess of Lung	—	—	—	—	—	
Gangrene of Lung	—	—	—	—	—	
Emphysema	—	1	—	1	—	
Pleurisy	1	30	3	31	1	
Empyema	—	—	—	—	—	
Others	—	8	—	8	—	
Diseases of the Digestive System—						
Stomatitis	—	3	1	3	—	
Caries of teeth	—	1	—	1	—	
Glossitis	—	—	—	—	—	
Sore Throat	—	3	—	3	—	
Inflammation of Tonsils	—	2	—	2	—	
Gastritis	—	3	—	3	—	
Ulceration of Stomach... ..	—	—	—	—	—	
Hæmatemesis	—	1	—	1	—	
Dilatation of Stomach	—	—	—	—	—	
Stricture of Stomach	—	—	—	—	—	
Dyspepsia	—	14	—	14	—	
Enteritis	—	1	1	1	—	
Appendicitis	—	1	—	1	—	
Colitis	—	4	—	4	—	
Ulceration of Intestines	—	—	—	—	—	
Sprue	—	—	—	—	—	
Hernia	1	15	2	16	1	
Diarrhoea	—	52	2	52	1	
Constipation	—	11	—	11	—	
Colic	—	26	—	26	—	
Hæmorrhoids	—	1	—	1	—	
Pancreatitis	—	1	1	1	—	
Hepatitis—Acute	—	—	—	—	—	
Abscess	—	1	1	1	—	
Cirrhosis	—	—	—	—	—	
Jaundice	—	2	2	2	—	
Peritonitis	—	2	—	2	—	
Ascites	—	—	—	—	—	
Others	—	3	—	3	—	
Diseases of the Lymphatic System—						
Splenitis	1	1	—	2	—	
Inflammation of Lymphatic Gland	—	18	—	18	—	
Suppuration of Lymphatic Gland	—	8	—	8	—	
Lymphangitis	—	1	—	1	—	
Elephantiasis	—	1	—	1	—	
Others	—	1	—	1	—	
Diseases of the Urinary System—						
Acute Nephritis	—	3	3	3	—	
Bright's Disease	—	3	1	3	—	
Pyelitis	—	—	—	—	—	
Calculus	—	—	—	—	—	
Renal Colic	—	1	—	1	—	
Cystitis	—	4	—	4	—	
Vesical Calculus	—	—	—	—	—	
Suppression	—	—	—	—	—	
Hæmaturia	—	1	—	1	—	
Chyluria	—	—	—	—	—	
Other Diseases	1	8	1	9	—	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1913—continued.

Diseases.	Remain- ing in Hospital at end of 1912.	Yearly Total.		Total Cases Treated.	Remain- ing in Hospital at end of 1913.	Remarks.
		Ad- missions	Deaths.			
LOCAL DISEASES—continued.						
Diseases of the Generative System—						
Male Organs—						
Urethritis	—	1	1	1	—	
Gleet	—	1	—	1	—	
Stricture	—	6	—	6	1	
Prostatitis	—	—	—	—	—	
Soft chancre	—	8	—	8	—	
Condyloma	—	—	—	—	—	
Inflammation of Scrotum	—	—	—	—	—	
Hydrocele	—	3	—	3	—	
Orchitis	—	7	—	7	—	
Epididymitis	—	2	—	2	—	
Abscess of Testicle	—	—	—	—	—	
Others	1	11	—	12	—	
Female Organs—						
Ovaritis	—	—	—	—	—	
Ovarian Cyst	—	—	—	—	—	
Endometritis	—	1	—	1	—	
Displacement of Uterus	—	—	—	—	—	
Vaginitis	—	—	—	—	—	
Amenorrhœa	—	—	—	—	—	
Dysmenorrhœa	—	1	—	1	—	
Menorrhagia	—	1	—	1	—	
Leucorrhœa	—	—	—	—	—	
Abortion	—	1	—	1	—	
Delayed Labour	—	2	2	2	—	
Postpartum Hæmorrhage	—	—	—	—	—	
Retained Placenta	—	2	1	2	—	
Premature Birth	—	—	—	—	—	
Puerperal Septicæmia	—	1	1	1	—	
Mastitis	—	—	—	—	—	
Abscess of Breast	—	1	1	1	—	
Others	—	6	—	6	—	
Diseases of Organs of Locomotion—						
Osteitis	—	3	—	3	—	
Arthritis	—	16	—	16	—	
Spondylitis	—	7	2	7	—	
Bursitis	—	7	—	7	—	
Myalgia	—	18	—	18	—	
Others	—	11	—	11	—	
Diseases of Connective Tissue—						
Cellulitis	3	24	—	27	—	
Abscess	7	63	5	70	1	
Elephantiasis	—	1	1	1	—	
Others	—	1	—	1	—	
Diseases of the Skin—						
Urticaria	—	1	—	1	—	
Eczema	—	1	—	1	—	
Boil	—	8	—	8	—	
Carbuncle	—	2	—	2	—	
Herpes	—	1	—	1	—	
Psoriasis	—	1	—	1	—	
Oriental Sore	—	2	—	2	—	
Tinea	—	—	—	—	—	
Scabies	—	6	—	6	—	

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1913—*continued.*

Diseases.	Remain- ing in Hospital at end of 1912.	Yearly Total.		Total Cases Treated.	Remain- ing in Hospital at end of 1913.	Remarks.
		Ad- missions	Deaths.			
LOCAL DISEASES— <i>continued.</i>						
Diseases of the Skin— <i>continued.</i>						
Acne	—	—	—	—	—	
Prickly Heat	—	1	—	1	—	
Ulcers	3	51	—	54	1	
Others	—	4	—	4	—	
Injuries—General	—	6	4	6	—	
Local... ..	21	277	8	298	16	
Surgical Operations	—	142	1	142	1	
Tumours	—	5	1	5	—	
Malformations	—	—	—	—	—	
Poisons	—	4	1	4	—	
Snake bite	—	3	—	3	—	
Parasites—Animal	—	—	—	—	—	
Protozoa	—	—	—	—	—	
Trematoda (Flukes)	—	—	—	—	—	
Cestoda—	—	—	—	—	—	
Tænia Solium	—	—	—	—	—	
Tænia Saginata... ..	—	1	1	1	—	
Unclassified	—	1	—	1	—	
Nematoda—	—	—	—	—	—	
Ascaris	—	—	—	—	—	
Trichocephalus Dispar.	—	—	—	—	—	
Trichina	—	—	—	—	—	
Dracunculus	—	18	—	18	1	
Filariasis	—	5	—	5	—	
Strongylus	—	2	—	2	1	
Ankylostomiasis	—	—	—	—	—	
Oxyuris	—	—	—	—	—	
Insecta—	—	—	—	—	—	
Myiasis	—	—	—	—	—	
Jiggers	1	38	—	39	1	
Total	66	1,913	155	1,979	48	

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1913.

Diseases.	Total Cases Treated.	Deaths.
INFECTIVE DISEASES.		
Beri-Beri	—	—
Cerebro-Spinal Fever	6	5
Chicken-Pox	24	—
Cholera	—	—
Dengue	19	—
Diphtheria	2	—
Dysentery	434	6
Endocarditis—infective	—	—
Enteric	1	—
Erysipelas	1	—
Gonorrhœa	2,104	1
Influenza	113	—
Kala Azar	—	—
Leprosy (a) Nodular	3	—
(b) Anæsthetic	13	—
Malaria (a) Tertian	638	—
(b) Quartan	38	—
(c) Aestivo-autumnal	5,369	6
(d) Chronic Malaria	381	1
(e) Black-water	35	7
Measles	38	1
Undulant Fever	—	—
Plague	15	14
Pneumonia	200	46
Rabies	—	—
Relapsing Fever	797	11
Rheumatic Fever	21	3
Septicæmia	1	1
Trypanosomiasis (Sleeping Sickness)	51	7
Small-Pox	8	—
Syphilis (a) Primary	1,042	—
(b) Secondary	2,465	2
(c) Tertiary	2,139	5
(d) Inherited	1,463	1
Tetanus	1	1
Tuberculosis	37	3
Whooping Cough	68	—
Yaws	537	—
Yellow Fever	—	—
Pyrexia	1,889	3
Mumps	286	—
Muhinyo	35	—
Other Diseases	89	1
INTOXICATIONS.		
Alcoholism	5	—
Morphinism	4	—
Others	—	—
GENERAL DISEASES.		
Anæmia... ..	112	4
Anæmia—Pernicious	4	—
Diabetes	4	—
Exophthalmic Goitre	2	—

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1913—*continued.*

Diseases.	Total Cases Treated.	Deaths.
GENERAL DISEASES—<i>continued.</i>		
Gout	7	—
Leucocythæmia	—	—
Hodgkin's Disease	—	—
Myxœdema	—	—
Purpura... ..	1	1
Rickets	—	—
Scurvy	17	—
Debility... ..	1,119	3
Other Diseases	5	1
LOCAL DISEASES.		
DISEASES OF THE NERVOUS SYSTEM.		
Sub-section 1.		
Neuritis	13	—
Meningitis	4	3
Myelitis	—	—
Hydrocephalus	—	—
Encephalitis	—	—
Abscess of Brain	—	—
Congestion of Brain	—	—
Other Diseases	71	—
Sub-section 2.		
Apoplexy	5	3
Paralysis	13	1
Chorea	—	—
Epilepsy	74	1
Neuralgia	1,557	—
Hysteria	17	—
Other Diseases	1,011	3
Sub-section 3.		
Mental Diseases—		
Idiocy	6	—
Mania	3	—
Melancholia	1	—
Dementia	1	1
Delusional Insanity	1	—
Other Diseases	4	—
Diseases of the Eye—		
Conjunctivitis	6,702	—
Keratitis	56	—
Ulceration of Cornea	102	—
Iritis	126	—
Optic Neuritis	4	—
Cataract	35	—
Other Diseases	211	—
Diseases of the Ear—		
Inflammation	1,356	1
Other Diseases	607	—
Diseases of the Nose—		
Coryza	960	—
Rhinitis... ..	594	—
Other Diseases	62	—

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1913—*continued.*

Diseases.	Total Cases Treated.	Deaths.
LOCAL DISEASES—<i>continued.</i>		
Diseases of the Circulatory System—		
Pericarditis	1	—
Endocarditis	3	—
Valvular Mitral	18	6
Aortic	1	—
Tricuspid	—	—
Pulmonary	1	1
Arterial Sclerosis	1	—
Aneurism	—	—
Other Diseases	47	2
Diseases of the Respiratory System—		
Laryngitis	86	—
Bronchitis	16,101	5
Broncho-pneumonia	108	10
Abscess of Lung	—	—
Gangrene of Lung	—	—
Emphysema	10	—
Pleurisy	309	4
Empyema	1	—
Phthisis	7	—
Other Diseases	88	4
Diseases of the Digestive System—		
Stomatitis	1,059	1
Caries of teeth	922	—
Glossitis	13	—
Sore Throat	707	—
Inflammation of Tonsils	537	—
Gastritis	53	—
Ulceration of Stomach	—	—
Hæmatemesis	8	—
Dilatation of Stomach	1	—
Stricture of Stomach	—	—
Dyspepsia	3,052	—
Enteritis	18	1
Appendicitis	5	—
Colitis	23	—
Ulceration of Intestines	—	—
Sprue	—	—
Hernia	58	2
Diarrhoea	2,254	4
Constipation	5,229	—
Colic	2,002	—
Hæmorrhoids	41	—
Pancreatitis	1	—
Hepatitis—Acute	27	1
Abscess	—	—
Cirrhosis	3	—
Jaundice	36	2
Peritonitis	1	—
Ascites	16	—
Other Diseases	178	2
Diseases of the Lymphatic System—		
Splenitis	94	—
Inflammation of Lymphatic Gland	605	—
Suppuration of Lymphatic Gland	286	—
Lymphangitis	24	—
Elephantiasis	14	—
Other Diseases	15	—

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1913—*continued*.

Diseases.	Total Cases Treated.	Deaths.
<i>LOCAL DISEASES—continued.</i>		
Diseases of the Urinary System—		
Acute Nephritis	3	2
Bright's Disease	8	1
Pyelitis	—	—
Calculus	—	—
Renal Colic	3	—
Cystitis	14	—
Vesical Calculus	4	—
Suppression	5	—
Hæmaturia	12	—
Chyluria	1	—
Other Diseases	15	1
Diseases of the Generative System—		
Male Organs—		
Urethritis	23	—
Gleet	34	—
Stricture	30	—
Prostatitis	5	—
Soft chancre	282	—
Condyloma	23	—
Inflammation of Scrotum	4	—
Hydrocele	33	—
Orchitis	195	—
Epididymitis	12	—
Abscess of Testicle	3	—
Other Diseases	69	—
Female Organs—		
Ovaritis	4	—
Ovarian Cyst	—	—
Endometritis	6	—
Displacement of Uterus	5	—
Vaginitis	1	—
Amenorrhœa	12	—
Dysmenorrhœa	66	—
Menorrhagia	51	—
Leucorrhœa	123	—
Abortion	25	1
Delayed Labour	8	3
Postpartum Hæmorrhage	1	—
Retained Placenta	9	1
Premature Birth	—	—
Puerperal Septicæmia	3	2
Mastitis	30	—
Abscess of Breast	44	—
Other Diseases	65	1
Diseases of Organs of Locomotion—		
Osteitis	173	—
Arthritis	642	1
Spondylitis	8	—
Bursitis	85	—
Myalgia	5,192	—
Other Diseases	382	1
Diseases of Connective Tissue—		
Cellulitis	722	—
Abscess	1,150	5
Elephantiasis	29	—
Other Diseases	39	—

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1913—*continued.*

Diseases.	Total Cases Treated.	Deaths.
<i>LOCAL DISEASES—continued.</i>		
<i>Diseases of the Skin—</i>		
Urticaria	115	—
Eczema	479	—
Boil	881	—
Carbuncle	11	—
Herpes	106	—
Psoriasis	88	—
Oriental Sore	207	—
Tinea	416	—
Scabies	11,266	—
Acne	25	—
Prickly Heat	13	—
Ulcers	7,448	—
Other Diseases	564	—
Injuries—General	116	2
Local	9,485	20
Surgical Operations	1,615	—
Tumours	75	1
Malformations	1	—
Poisons	59	1
Parasites—Animal	2	—
Protozoa	—	—
Trematoda (Flukes)	—	—
Cestoda—		
Tenia Solium	214	1
Tenia Saginata... ..	3	—
Unclassified	2	—
Nematoda—		
Ascaris	1,088	—
Tricocephalus Dispar	2	—
Trichina	169	—
Dracunculus	37	—
Filariasis	—	—
Strongylus	—	—
Ankylostomiasis	—	—
Oxyuris	286	—
Other Diseases	3	—
Insecta—		
Myiasis	7	—
Jiggers	262	—
Other Diseases	238	—
Total	112,624	236

(Sgd.) A. D. P. HODGES,
Principal Medical Officer,
Uganda Protectorate.

ENTEBBE,

1914.

APPENDIX I.

GOVERNMENT DENTAL SURGEON.

During 1913 the following stations have been visited :—

Kampala	...	...	...	...	...	7	Visits
Entebbe	...	...	...	...	...	5	do.
Jinja	...	...	...	...	...	3	do.
Mbale	...	...	...	...	...	1	do.
Mubendi	...	...	...	...	...	1	do.
Fort Portal	...	...	...	...	...	1	do.
Mbarara	...	...	...	...	...	1	do.
Masaka	...	...	...	...	...	1	do.
Masindi	...	...	...	...	...	1	do.
Hoima	...	...	...	...	...	1	do.
Bombo	...	...	...	...	...	1	do.

2. Including travelling 195 days have been spent in these visits.

3. The number of patients attended is 254
 The number of visits of patients is 363

4. Mechanical work has been necessary in twelve cases :—

4 for artificial dentures
 4 for crowning
 4 for repairs to dentures.

5. In the following table the work and time spent is proportioned out to the stations visited.

Month.	Station.	No. of days travelling to and working in.	No. of patients attended.	No. of visits.
January	Kampala	14	9	27
January	Jinja	8	13	16
February	Entebbe	9	30	44
February	Kampala	2	3	5
March and April	Mubendi	37	10	15
	Ft. Portal			
	Mbarara			
	Masaka			
April	Kampala	14	19	30
May	Entebbe	9	25	32
May	Entebbe	5	6	6
June	Jinja	6	10	10
July	Kampala	14	18	26
August	Mbale	7	14	17
August	Kampala	2	2	5
August	Entebbe	8	24	31
September and October	Masindi	33	19	28
	Hoima			
	Bombo			
October	Jinja	6	8	15
November	Kampala	9	11	14
December	Entebbe	8	28	32
December	Kampala	4	5	10
Total		195	254	363

(Sgd.) G. STANLEY BATEMAN,

Government Dental Surgeon, Uganda.

APPENDIX No. II.

PLAGUE REPORT FOR 1913 FOR THE DISTRICTS OF BUKEDI, TESO AND LANGO.

The disease is here considered for the three districts of Lango, Teso and Bukedi.

The total number of deaths recorded for the year in these three districts was 2,153 as compared with 1,819 in 1912, an increase of 334.

These totals are made up as follows:—

	Deaths in 1913.	Deaths in 1912.	Increase.	Decrease.
Lango	222	160	62	—
Teso	261	333	—	72
Bukedi	1,671	1,326	345	—
Totals ...	2,154	1,819	407	72

These figures are not to be relied on, as the returns from Lango have been very irregular.

Tables are attached giving the monthly figures for the various counties in the different districts.

LANGO.

There are 6 counties in this district, viz.:—Kioga, Dokolo, Kwanja, Maruzi, Koli and Bruti.

At present the disease is found only in Kioga County, and in that county it is almost wholly confined to the Banyoro living on the north coast of Lake Kioga; although deaths have been reported during the year at three places far inland, *e.g.*, Kaburamaido, Pilitok and Lwala.

These cases with one exception occurred during the height of the epidemic, which commenced in May and lasted until August; and there is practically no doubt that the disease was conveyed to these places from the Kelle area; in fact, I was personally able to prove this in the case of the outbreak at Lwala, where one person died and one recovered.

The disease assumed epidemic proportions in May, apparently commencing at Nakatiti, which is the centre of the infected area, and spreading rapidly westwards along the coast, reaching Mukyola in the Namasale peninsula in August, where, as far as I know, the disease stopped, the country beyond this being uninhabited.

During the last three months it appears to have spread eastwards again into the Kelle area, where it is at the present time causing a good many deaths.

The disease has undoubtedly spread during the year.

In 1912 one case only was reported in August from the Namasale peninsula, whilst this year the disease spread right along the coast from Kalwala to Mukyola during June, July and August, causing many deaths, a number of which to my knowledge have not been reported, no returns having been received from Namasale for the months of August to September inclusive.

KABIRAMAIDO AND KALAKI,

which are important cotton and trading centres, are almost certain to become infected in the near future (the former may be already so, eight deaths have occurred there during the year), unless very stringent precautions are taken to prevent the disease establishing itself in them.

Reported Deaths.—222 as compared with 160 in 1912, an increase of 62. This number is certainly considerably under the real total, which is probably not much if at all short of 300.

Previous to July no regular returns were sent in, and the estimated deaths up to June 30th were given as 216.

I visited the district with the Deputy P.M.O. in August and September, and toured the infected area after he had left me at Namasale.

I went carefully through the books in which the deaths were recorded at the different centres, and found the figures given in them did not agree at all with the total given above, which was much too big. The figures for those months have been altered accordingly.

During this tour I engaged two native plague Inspectors, one to be stationed at Nakatiti, the other at Kelle.

TESO DISTRICT.

Deaths recorded 261, as compared with 333 in 1912, a decrease of 72.

I think that one of the chief reasons for this decrease is to be found in the preventive inoculations performed in 1912 by Dr. Sells and the late Sub-Assistant Surgeon Vaswani in Serere County, as during this year there has been an increase in the number of deaths outside this county as compared with 1912, viz., 84 to 27, *i.e.*, an increase of 57.

In Serere County 6,203 inoculations were performed in 1912, and the deaths in this county for 1913 total 177 only, as against 306 in 1912.

There have also been a comparatively large proportion of recoveries amongst those infected in this area.

There may be said to be two main plague centres in the Teso district, which is divided up into five counties, viz., Kumi, Soroti, Serere, Usuka and Bukidea; these are:—

(1) The Serere peninsula, where it is confined chiefly to the villages bordering the Lake Kioga Coast, *e.g.*, Bugondo, Kagwara, Kadunguru, etc.

(2) In Usuka County, north of Lake Salisbury, where it seems to have definitely established itself, and appears yearly with the rains.

These two areas account for 236 deaths out of the 261.

A small outbreak, with six deaths and one recovery, occurred during April at Nyilo, about five miles from Kumi, and during October and November a few deaths have been reported from Soroti County; some of these cases are known to have been infected in the Serere centre.

Rats were reported to be dying in the Usuku County early in May, so Sub-Assistant Surgeon Vaswani was sent there to investigate and see preventive measures carried out. He most unfortunately infected himself whilst doing a P/M on a native, and died of plague at Usuku on June 25th.

A native plague Inspector from Mbale was sent to replace him in July. 59 deaths occurred during this outbreak, which was at its height during July, August and September, and appears now to have died out, there being no death reported from this area during December.

The two chief plague areas were visited by me, in company with the Deputy P.M.O., in August, and as a result of this tour two more plague Inspectors were engaged by me for the Teso district, one in September for Soroti County and one in October for Usuku County, making four Inspectors in all for this district, the two in Serere County having been posted there previous to my arrival in Mbale.

I notice that Dr. Sells in his report for 1912 states that plague occurred North of Lake Salisbury for the first time in June, 1911, but this is incorrect, as the A.D.C., Kumi, reported to the M.O., Mbale, an outbreak at Toroma (Usuka County) in May, 1909, with nine deaths.

BUKEDI DISTRICT.

This district is divided up into eight counties, viz., Budama, Bunyuli, Bugweri, Palisa, Mbale and the three divisions of the Bagishu Hills, viz., North East, Central and South East.

In all of these the disease has established a footing, but is most prevalent in the plain counties, *e.g.*, Budama, Bunyuli, etc.

Budama and Bunyuli are the most heavily infected, accounting for nearly half the total of 1,671 deaths, but Bugweri and Palisa run them very close, these being smaller counties.

The total deaths recorded, 1,671, as compared with 1,326 in 1912, an increase of 345. I don't think that this necessarily means an actual increase in the number of deaths

occurring, but is rather due to more accurate recording of these deaths, due to the employment of more Native Inspectors.

It will be noticed on looking at the table of deaths that the chief increase took place during the last three months of the year, and it was during these three months that the Inspectors were employed, three being engaged in October and five more in November.

The chief increase took place, too, in those counties in which the Inspectors were mainly employed, viz., the Bagishu Hills, with four Inspectors, and Bunyuli, with two.

The figures for Budama, which had no Inspector, show a tendency rather to fall during these three months.

It will be noticed that the figures for the Bagishu Hills have largely increased during the three months in which Inspectors have been working in them, which tends to prove that the disease is much commoner than was supposed among the Bagishu.

The most civilized areas, and, in general, those nearest Mbale, are the most affected.

MBALE COUNTY.

This consists of the Township (radius 2 miles) and the Kakungurus' Mairos, and all deaths occurring in this area are supposed to be reported to the Medical Officer, Mbale; but many, of course, are not so reported, as the Kakungurus' Mairos cover a large area.

Twenty-four deaths were reported for the year, of which 19 took place within the Township, but it was proved that some of these 19 had brought the infection with them into the Township of Mbale.

One case actually occurred in the Indian Bazaar, a native, who almost certainly brought the disease with him.

Sixteen cases were admitted to Hospital, of whom two recovered, one Indian and one Native, both of whom received Yersin's curative serum.

Two Asiatics died of the disease during the year, one being Sub-Assistant Surgeon Vaswani, in the Teso district, and the other a Goan, living at Butaleja.

The common form of the disease is the bubonic, which as a rule rapidly becomes septicæmic, but the pneumonic form is also found, though it is not, I think, common.

PREVENTIVE MEASURES.

(1) *Rat Destruction.*

(a) *Bukedi District.* On September 17th, the payment of two cents for each rat brought in was commenced, and up to the 12th of December, when the rate was reduced to one cent per rat, 21,492 rats had been brought in. From that date up to and including December 31st, 9,516 rats have been paid for, the total number paid for being 31,008.

No record was kept at the start, when the money was paid out from the D.C.'s office, as to the locality from which the rats came, but since October 20th, when the payment was taken over by this Department, a more or less accurate record has been kept.

Palisa County comes an easy first, with nearly 20,000, and the three Bagishu Counties account for about 9,000, so the other counties have added little to the total. Bunyuli accounted for 1,300.

Very few rats have been brought in, unfortunately, from Mbale Township—not more than 300 at the most.

(b) *Teso District* has, I believe, paid out no money for rat destruction, presumably because the Acting D.C. never applied for any money for the purpose. Why he did not do so I am unable to state. It would, in my opinion, be a most valuable measure in this district, where there are only two plague centres.

(c) *Lango District.* The Acting District Commissioner has been most energetic in this matter, and I believe the number of rats accounted for in the infected area has been enormous, but I have no figures. It should prove a most valuable measure in this district, where the disease is very local, and if persisted with I shall expect to see a much lower death rate in this area within the next few years.

(The number given by the A.D.C., Mr. E. L. Scott, is 153,606.)

(2) The employment of Native Inspectors to report outbreaks of and deaths from plague (and incidentally of small-pox also), and to see that the ordinary preventive measures,

e.g., burning of infected huts and clothing, isolation of the sick, segregation of contacts and rational burial of the dead, are properly carried out.

In many tribes, when a person dies all his relatives and friends collect together and lament for hours over the body, prostrating themselves frequently on the corpse and so infecting themselves. The chiefs have been told that they will be punished if they allow their people to continue this custom in the case of people dying of plague or small-pox.

I consider this the most important preventive measure at the present time, as in many cases the natives, if left to themselves, do not carry out these measures, and so help to spread the disease.

During the year, fifteen new Inspectors, including one Head Inspector for the Bukedi district, have been engaged, one of whom unfortunately contracted plague and died, and another of whom was discharged, as he was found to be useless.

The native plague Inspectors at the end of this year were sixteen in number, distributed as follows:—

Lango District	Kioga County	2
Teso District	Serere "	2
	Soroti "	1
	Usuka "	1
Bukedi District	Bagishu Hills	4
	Bunyuli	2
	Mbale	1
	Bugwere	1
	Palisa	1
	Head Inspector	1
	Budama	0

Of these Inspectors eight have bicycles of their own.

The Lango District requires 2 more Inspectors.

The Teso District " 2 " "

The Bukedi District " 6 " " at least, to be distributed as follows:—
Budama 2, Palisa 1, Bugwere 1, Mbale 1 and Bagishu Hills 1.

Head Inspectors are also needed for Lango and Teso.

BUKEDI DISTRICT.

(3) *Preventive Inoculation.*—During the year some 7,674 inoculations have been performed in this district. Of this number 7,079 were performed by the late Sub-Assistant Surgeon Vaswani during the months of January, February and March in Budama and Bunyuli Counties.

I believe that Dr. Sells included 1,040 of these inoculations in his figures for 1912, although they were performed early in this year.

These 7,674 inoculations are accounted for as follows:—

Budama County	7,130
Bunyuli County	317
Mbale Township	227
	<hr/>
	7,674

Since Sub-Assistant Surgeon Vaswani died in June, no inoculations on a large scale have been done, as no one was sent to replace him.

307 inoculations were performed by me at Torono, in Budama County, in August on account of plague appearing amongst the porters employed in making the Mbale-Mjanji Road; and 61 in Bunyuli, during a tour I made there in October.

The 227 inoculations performed at Mbale were contacts, members of the hospital staff, and a few others who asked for it.

TESO DISTRICT.

A few inoculations were performed in Usuka and Serere by the late Sub-Assistant Surgeon Vaswani before his unfortunate death, but no record of these can be found.

LANGO DISTRICT.

I have received the following figures from Nabieso:—

Inoculations performed by Dr. Clanchy during October in the infected area:

Nakatiti	...	...	...	...	...	...	...	363
Kibugo (part of Nakatiti)	...	...	...	...	...	...	...	252
Naraboyo	...	...	...	...	...	...	...	646
Namasale Peninsula:								
Namasale	...	...	...	...	...	...	...	48
Kabwala	...	...	...	...	...	...	...	123
								1,432

In all the inoculations performed by the late Sub-Assistant Surgeon Vaswani, serum from the Lister Institute, of which the dose for an adult male is 1 c.c., was used; but the later inoculations have been done with lymph from Bombay, of which the dose for an adult male is 4 c.c.

Phials of the former contain 21 c.c., of the latter 20 c.c., so it will be seen that the Lister Institute lymph is the easier and quicker to work with, and is less painful to those inoculated than that from Bombay, while the latter is probably less wasteful, as when only a few contacts require inoculation half a phial of the former has frequently to be thrown away, the serum left not being required at the time.

As regards the value of preventive inoculation, very little can be said, as no records have been kept, except in Serere County.

TESO DISTRICT.

In this county 6,203 inoculations were performed in 1912, and there were 306 deaths, whilst in 1913 the deaths numbered 177 only. At the same time there was an increase of 57 deaths during 1913 in other parts of the district, chiefly in Usuka County, in places where no inoculations had been performed in 1912.

Notes had been made in 172 cases of the disease as to whether the person had been inoculated or not.

Of these 172 cases, 136 died and 36 recovered.

Of those who died 53 were inoculated and 83 were not.

Of those who recovered 28 were inoculated and 8 were not.

Again in the *Lango District*, where 1,818 inoculations were performed in 1912, there have been a comparatively large number of recoveries amongst those infected, but unfortunately there was no record kept as to whether these people were inoculated or not.

Seventy-three recoveries are reported from this area, the deaths being 333. Of 73 deaths reported at Nakatiti up to July 31st, 29 had been inoculated.

Native Chiefs and others believe in its efficacy, and say those who have been inoculated don't get the disease nearly as much as those uninoculated.

Personally I am of opinion that it is a most useful measure in checking the disease temporarily, where it has been thoroughly employed, and also in lessening the death rate, but I do not believe that universal inoculation, if it were possible, would stamp out the disease.

It needs to be tried very thoroughly in more or less confined plague areas, as in Lango and Teso, before any definite statement can be made as to its real utility, and I would here again recommend its universal employment in the Lango infected area, as an excellent test of its powers in checking the disease.

It should, too, I think, be pushed thoroughly in the two main Teso centres.

In Bukedi district, where the disease is so widely spread, I think it should, for the present at any rate, be used chiefly for contacts, and for any special outbreaks occurring in townships and administrative centres, or amongst large collections of natives living together, as in labour camps, etc.

Inoculations on a large scale might, I think, be practised with advantage in the Mbale Township during the present year.

In this district I think the most important measure is thorough inspection by native Inspectors, who will send accurate and regular reports of all cases occurring, and see that measures such as hut burning, segregation of contacts, etc., are properly carried out.

These simple measures have undoubtedly controlled the disease in Mbale Township, where every death from plague is enquired into most carefully, and all contacts segregated and inoculated.





PHOTO BY MR. E. L. SCOTT, DISTRICT COMMISSIONER, LANGO,
SHOWING RATS' TAILS BROUGHT IN ON STICKS.

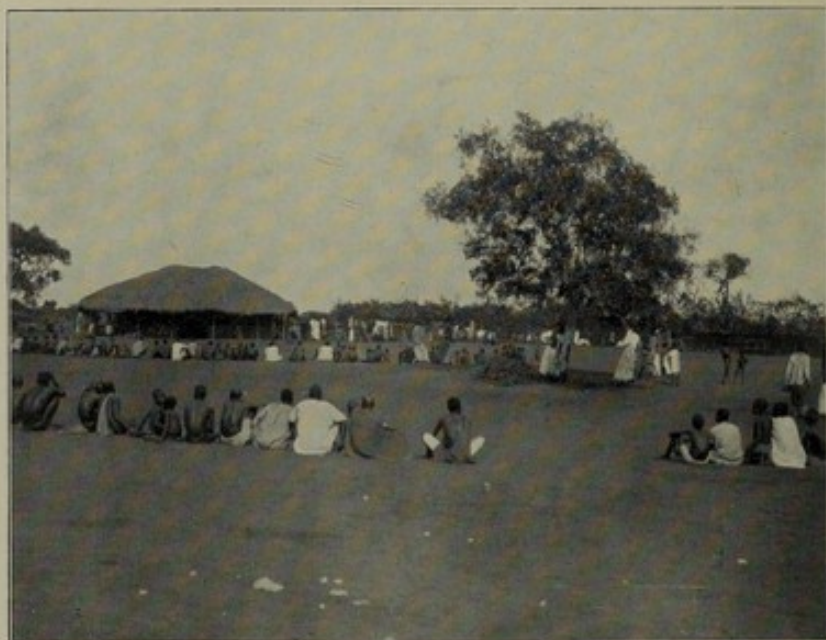


PHOTO BY DR. J. M. COLLYNS, MEDICAL OFFICER, BUKEDI.
THE HEAP UNDER THE TREE IS COMPRISED OF RATS' TAILS ON STICKS.

TABLES SHOWING THE NUMBER OF DEATHS PER MONTH FOR THE VARIOUS COUNTIES IN THE THREE DISTRICTS AND THE DEATHS PER COUNTY OR ADMINISTRATIVE CENTRE.

BUKEDI DISTRICT.

Month.	COUNTIES.								
	Budama.	Bunyuli.	Bugweri.	Palisa.	Mbale.	North East.	Bugishu Hills, Central.	South East.	Totals.
January	32	26	24	19	1	5	8	13	128
February	23	32	20	19	3	1	11	11	120
March	31	17	17	13	1	3	8	15	105
April	48	27	16	20	2	3	10	2	128
May	42	23	24	12	2	7	12	6	128
June	45	17	19	15	3	12	18	6	135
July	53	21	18	27	1	9	13	4	146
August	41	21	24	30	1	8	10	13	148
September	38	29	27	1	—	13	13	4	125
October	38	40	12	14	5	14	29	26	178
November	25	17	31	13	2	24	16	27	155
December	35	36	20	20	4	15	25	20	175
Total ...	451	306	252	203	25	114	173	147	1,671

TESO DISTRICT.

Month.	COUNTIES.				
	Serere.	Usuka.	Kumi.	Soroti.	Totals.
January	11	—	—	—	11
February	9	—	—	—	9
March	10	—	—	—	10
April	8	—	6	—	14
May	11	4	—	—	15
June	30	3	1	—	34
July	26	18	—	—	44
August	11	10	—	—	21
September	14	12	—	—	26
October	10	6	—	4	20
November	17	6	—	14	37
December	20	—	—	—	20
Total ...	177	59	7	18	261

LANGO DISTRICT (KIOGA COUNTY).

Month.	CENTRES.						
	Namasale.	Naraboyo.	Nakatiti.	Kelle.	Pititoke.	Lwala.	Kabiramaido.
January	—	—	3	3	—	—	—
February	—	1	1	—	—	—	—
March	—	3	1	2	—	—	—
April	—	—	2	6	—	—	—
May	—	—	24	14	—	1	—
June	13	—	35	3	2	—	7
July	15	6	7	2	—	—	1
August	(no ret.)	—	—	3	—	—	—
September	"	1	6	1	—	—	—
October	"	2	2	6	—	—	—
November	1	1	6	15	—	—	—
December	2	—	6	19	—	—	1
Total ...	31	13	93	73	2	1	9

APPENDIX No. III.

FROM THE M.O. I/C VENEREAL DISEASES MEASURES, TO THE
PRINCIPAL MEDICAL OFFICER, UGANDA PROTECTORATE, ENTEBBE.

MULAGO,

KAMPALA,

23rd February, 1914.

SIR,

I have the honour to submit the following report on this work for the year, 1913.

1. *Legislation.*—The main work that has been accomplished has consisted in the preparation and promulgation of the native law for ensuring compulsory attendance for treatment of contagious venereal disease, and of preparation of the forms, books, and registers for carrying into effect the scheme under the native law for the notification and detection of persons suffering from these diseases. Your re-draft of the native law and the English version of it were considered by the Lukiko in the earlier part of the year, and a communication was received from the Regents in March expressing their entire concurrence with this re-draft and the English translation.

2. It was agreed that it would be well before its final adoption to submit it to a full meeting of the Lukiko at which all the Saza Chiefs should be present. Printed copies of the law were circulated in the meantime by the Provincial Commissioner to all the Saza Chiefs. Advantage was taken of this interval also to circulate copies of the law to the various Missionary bodies. Suggestions from them as to modifications were invited. The law met with the general approval of all, and was eventually approved by the full Lukiko and delivered to us for publication in June.

3. *Concurrent Government Legislation.*—Rules under the Dangerous Diseases and Township Ordinance were drawn up, submitted to, revised and modified by you and the Attorney General. These rules dealt with such provisions of the native law as the legal limits of these ordinances would permit. They were published concurrently with the native law.

4. *Date of Application of Legislation.*—Owing to the very great and unanticipated delay in the completion of the buildings, publication of the laws had to be deferred until December. There is no doubt that the legislation that has been effected has provided us with an enormously powerful and searching machinery, and though it may seem premature to comment on it, it is already apparent that ceaseless and untiring efforts will be required on our part not only to ensure the just and proper carrying out of the provisions, but also to gain effective results. The good-will and good intention of the bigger Chiefs is undoubtedly present, but the conditions of life of the native of tropical Africa are adverse to the effort that is called for, and the leisureliness, indifference and perhaps opposition of the minor Chiefs are factors that will have to be vigorously contended against.

5. *Native Legislation in Bunyoro.*—A tour was undertaken in Bunyoro in July. The anxiety and interest in the subject of the native authorities there can only be described as remarkable. The ravages of venereal disease would appear to be more serious than in Buganda, and the Mukama and the leading Chiefs are evidently deeply concerned with regard to the future of their population. They seemed prepared to offer every inducement within their power to Government to commence an anti-venereal scheme. They were prepared to pass any native law, and to provide free buildings, and went so far as to discuss the offering of the half of all the Chiefs' land rents in order to provide a fund.

6. At the time, I was under the impression that it would be possible to open a treatment centre in November. It was with great regret that we were compelled, owing again to the delay in building here, to abandon all hope of commencing during this year.

7. A very full compulsory measure has since been drawn up on similar lines to that of the Buganda Lukiko, and has been submitted to you. A site has been arranged, but to send a Medical Officer there at present is impossible with our present staff. To do so would merely cripple our efforts in Buganda.

8. *Toro*.—I passed from Bunyoro to Toro, and met the District Commissioner with the Mukama and Chiefs there and discussed anti-venereal measures with them. The Provincial Commissioner, Mr. T. Grant, was of opinion that it would be wiser to defer measures in Toro until the scheme had been fully tested in the more favourable conditions of Buganda.

9. *Ankole. Opening of a treatment Centre*.—From Fort Portal I proceeded to Mbarara, where I met the District Commissioner, Mr. P. Cooper, and the Medical Officer, Dr. H. Neilson. Mr. Cooper was desirous of anti-venereal disease measures being instituted at Mbarara. The Chiefs expressed their willingness to co-operate, and offered to enact a law and to provide sites and free buildings, also free upkeep labour to initiate, and until Government funds could be forthcoming. Dr. Neilson was willing to carry out the treatment of the infected in addition to his ordinary duties.

10. *Masaka*.—Dr. F. C. Doble arrived at Masaka during the month of August. The District Commissioner, Mr. D. Baines, has kindly arranged with the Pokino for the complete rebuilding of the hospital premises. It is not proposed to attempt notification in this district until the procedure has been thoroughly tested in the county of Kyadondo.

Meantime treatment of sick is being carried on, and the influence of the Chiefs is being relied on to ensure the attendance of sick. I feel confident that highly satisfactory results will be obtained in this district on the application of the notification scheme. The population is very dense there, and the influence of Government and Chiefs is very complete.

MULAGO, KAMPALA.

11. *Buildings*.—An ample hospital building has been erected, consisting of four rooms, each 20 by 16 feet. With the exception of cement floors, it has been built entirely in native fashion in reeds and with grass roof. Huts for two hundred sick persons have been built also thirty separate huts for female patients. Two wards have also been built for males and females of the better classes. A laboratory has been built and equipped, where the Wasserman blood tests for syphilis, and other pathological methods for the rapid diagnosis of venereal diseases, have been arranged, and where it is hoped to prepare vaccines on a large scale for the treatment of gonorrhoea. Two houses for Medical Officers have been built, also ample accommodation for native attendants, native pupils, interpreters, etc.

12. In connection with these buildings it is worthy of note that a supply of labour varying from 50 to 250 men per day was furnished by the Regents throughout the whole year, and that this labour was unpaid. It was labour given by the peasantry to the Chiefs in lieu of land rent, and was handed on to us by them as their contribution towards the cost of inaugurating these measures.

13. In addition to this free labour a sum of Rs. 310 per month was handed to us in cash by the Regents on the suggestion of the Provincial Commissioner, Mr. F. A. Knowles, in order to provide the men with food while labouring here. This arrangement was continued up to the beginning of the financial year, when these payments were continued out of Government funds.

14. *Land Sites*.—The site which was originally given to us by the Regents on being surveyed was found to be much too small for our needs, and considerable inroads on neighbouring private property were seen to be necessary. As land near Kampala has now considerable value, the difficulty at one time seemed very formidable. The Regents visited Mulago themselves on several occasions, in order to treat with the land owners concerned, negotiations with the owners apparently being of considerable difficulty. Eventually a lease was arranged between the Regents and the owners, giving us ample space for all our requirements. The acquirement of one tract of land involved the removal of several tenants and giving them sites in exchange. This was also arranged. The delay in the erection of these buildings has been very great, and has very seriously retarded the commencement and progress of this work.

15. *Application of Native and Government Laws*.—These laws were declared to be in force by publication in the Gazette of December 15th. The experiment of notification has been restricted entirely to Kyadondo, the county which embraces the native capital, Kampala. This county measures 7 miles by 10, approximately, and therefore every person is within reasonable walking distance of the hospital. The population density is the highest in the Protectorate. Hence it is felt that if a sweeping compulsory notification and compulsory treatment scheme proves practicable and successful here, the influence of the results will be

far reaching. It is probable, too, that many improvements will be found in the working of the system, and the fruits of our experience in Kyadondo can be turned to account in commencing in other counties. Further, as all the native county courts and centres of administration are within easy reach of here, all may be visited, and any abuse of the law on the part of the Chiefs will readily come to light.

16. All the leading Chiefs of Kyadondo have attended here, and have been instructed in the notification procedure, and have been provided with books, forms and registers appertaining to it.

17. *Instructions to Officers in charge of Venereal Treatment Centres.*—A series of general directions on the conduct of venereal treatment centres, embodying and explaining the legislative measures, have been submitted to you and approved. These have been printed and bound together with specimen copies or pages of all the forms and books in use.

18. *Native Assistants, training of.*—A syllabus was submitted to you in July of a suggested course of instruction of Native Assistants. The basis of the education was made as broad and general as possible, in order that, whether these persons should or should not eventually be found capable of assisting us satisfactorily in this special work, they might still be of great use to the medical service, and be capable of earning a wage that would recompense them for the time that they should pass here on nominal pay whilst being trained.

19. My own feeling is that if the Baganda can be entrusted with the direction of High Courts and County Courts and the collection of Tax, it should be possible to utilise them in some way in the extension of this work. I am aware that the procedure is open to some criticism, and I feel grateful to you for allowing the experiment of their education to proceed. The Revd. H. T. C. Weatherhead, of the King's School, Budo, was good enough to inform his pupils of the proposal and to send two pupils to us. The Revd. Fathers at Rubaga and Namiriango have also sent us pupils. Seven boys are now being instructed, and their progress at present must be regarded as satisfactory.

20. Statistics are not submitted, since treatment of sick was not attempted on any large scale during the year. Commencement of attendance of sick at Mulago has dated nominally from December 1st.

21. *Conclusion.*—The close of the year finds us completely prepared with buildings, equipment, and legislation for the carrying out of the experiment of compulsory notification and treatment in Buganda. I wish to acknowledge my indebtedness to the Doctors Cook, of the Church Missionary Society Hospital, Mengo, for their unfailing assistance and co-operation.

I have the honour to be,

Sir,

Your most obedient servant,

(Sgd.) G. J. KEANE,

Capt. R.A.M.C.
M.O. i/c.

APPENDIX No. IV.

BRONCHIAL SPIROCHAETOSIS IN UGANDA.

Several cases of Pneumonia of short duration and presenting some unusual features have come under my care in various parts of Uganda. As all the cases occurred among natives, it seemed probable that defective history might account for the apparent short duration, but the definite and constant symptoms, and the finding of a large number of spirochaetes in the sputum of two similar cases last April, make it probable that the condition was due to the extension of these parasites along the air passages. Films of sputum were sent to Dr. Fantham, who kindly gave me references to the somewhat scanty literature * on

* This was previous to the paper by Chalmers and O'Farrell published in the *Journal of Tropical Medicine and Hygiene*, November 1st, 1913, describing several cases found in the Soudan.

Bronchial Spirochaetosis, and within the past few months, thanks chiefly to Dr. Meade-King, Medical Officer, and Mr. Thadani, Sub-Assistant Surgeon, of the Civil Hospital, Entebbe, several cases have come under my observation. In addition to a third case of pneumonia of short duration, seven cases of acute and three cases of recurrent bronchitis have been met with in which the symptoms appeared to be due chiefly, if not solely, to bronchial spirochaetes, and the same parasite was also found in large numbers in one case of phthisis and two cases of ordinary pneumonic pneumonia. As all these cases have occurred in Entebbe alone, and during a part of the year when respiratory diseases are least common, it is possible that on systematic investigation during the colder rainy seasons bronchial spirochaetes will be found to be very prevalent and prove to be a common and important cause or complication of many of the numerous respiratory diseases in Uganda.

CASES WITH PNEUMONIC SYMPTOMS.

The history as obtained from patients or friends, and the course of the cases that have come under my care, have been as follows:—

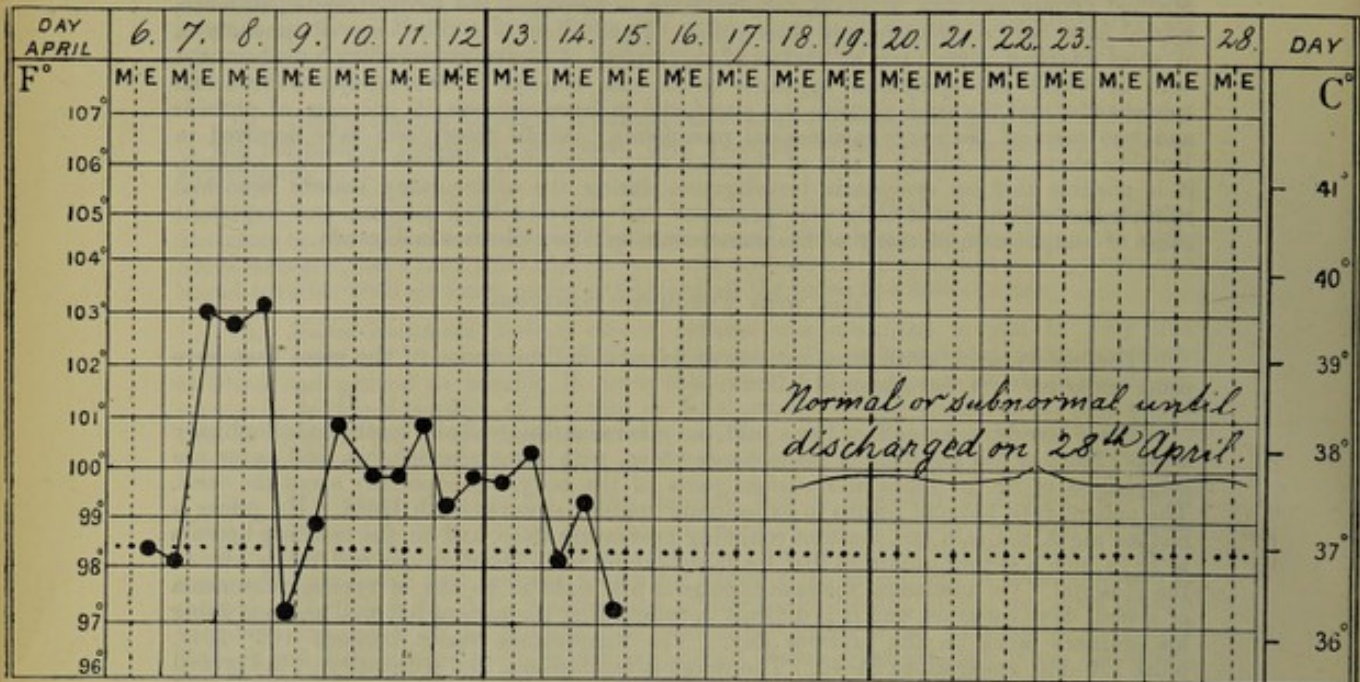
For a few days the patient has a cold, but otherwise feels well and continues his ordinary work. More or less suddenly a headache develops, with some photophobia, and pains are complained of in the limbs and various parts of the body, but especially about the chest. The patient feels hot and begins to expectorate sputum streaked with blood. He passes a restless night, the pain and constant coughing preventing sleep, and in the morning appears to be in such a serious condition that his friends think he is about to die and bring him to the Hospital. On admission, the case appears at first sight to be one of typical pneumonia of several days' duration, and it is difficult to believe that the patient felt well and was doing his ordinary work on the previous day. The temperature varies between 102° – 104° , pulse 120–140, respirations 25–40. The cough is troublesome, and a quantity of the typical tenacious rusty coloured sputum is expectorated. The patient complains of headache and pain in the chest, chiefly behind the sternum. On examination of the chest, sometimes nothing definite can be determined, but more often fine crepitations are heard posteriorly over a small and well defined area in the inferior lobe. In the cases I have seen, only one (the right) lung has shown any signs of being affected. Usually neither dullness nor bronchial breathing can be made out with certainty. The patient remains in the same condition for from 12–48 hours, when the temperature suddenly falls to sub-normal, and he feels comparatively well and makes an uninterrupted recovery without any relapse. The sputum remains rusty for perhaps 36 hours after the fall of temperature, then gradually becomes more like that of an ordinary cold, and continues for a week or ten days in diminishing quantities. Several Medical men in Uganda inform me that they have had almost exactly similar cases, but consider any peculiarities might be accounted for by the indefinite history, and the sputum has not been examined microscopically.

In the two cases referred to above that occurred last April, in which spirochaetes were found in the sputum, a trustworthy history was, however, obtainable. Both patients had been working for the same employer and sleeping in the same room. On April 6th some dead rats were found near their quarters, and as a suspected case of Plague had occurred at Entebbe a few days previously the two servants with other natives were kept under observation pending a thorough examination of the rats.* On April the 6th and the following morning, beyond some with colds, all the natives under observation appeared well, had no temperature and made no complaints of feeling ill. The further history of the two cases is as follows:—

Case I.—States he had a cold for a few days, but otherwise felt well until the afternoon of the 7th April. He then complained of headache and pain in the chest, and was removed to hospital and isolated. From normal in the morning, the temperature rose to 103° in the evening, and the cough became more painful and troublesome. The eyes were slightly congested and there was some photophobia. During the night the sputum, at first containing streaks of blood, became rusty coloured, and on microscopical examination it was found to contain a large number of spirochaetes, as many as five being in one field under $1/12$ O. I. Lens. Fine crepitations could be heard at a base of the right lung, and there appeared to be slight dullness of percussion over the same area. The temperature remained at 103° for, in all, 24 hours, and then during the night of the 8th fell to sub-normal. The sputum remained rusty until the morning of the 10th, and spirochaetes were found in it in decreasing numbers until the 12th. After the 12th, although expectoration continued for several days, no spirochaetes could be found.

* No evidence of Plague was found. The rats were probably poisoned, but the exact cause of their death was not determined.

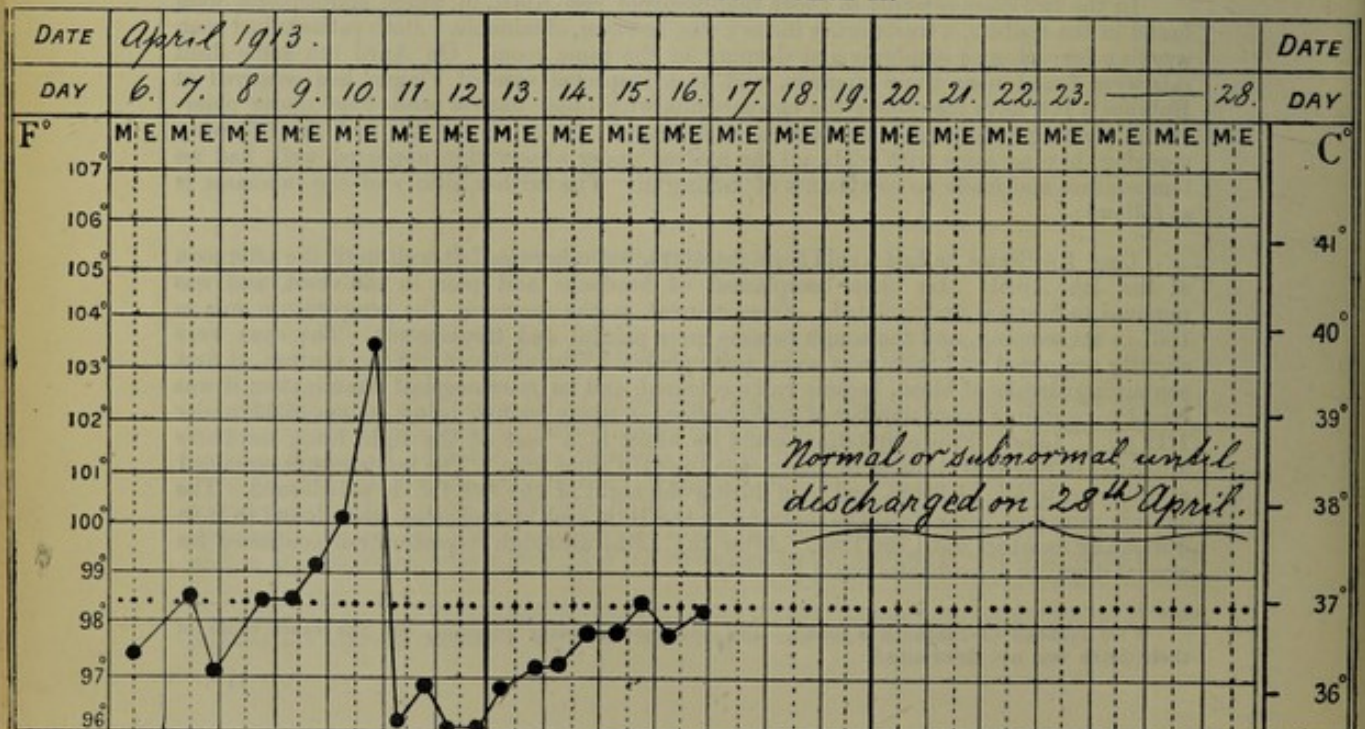
TEMPERATURE CHART—CASE I.



The second rise of temperature on the 9th and following day was probably chiefly due to the effects of a prophylactic plague injection.

Case II.—This patient slept in the same room as the previous one, and also stated that he had had a cold for some days. On April 7th and 8th he felt well and his temperature was normal. On the 9th the sputum contained streaks of blood, and the temperature began to rise, and reached 103.8 the following evening. Rusty coloured sputum was expectorated during the 10th, and spirochaetes were found on both the 9th and 10th, but in less numbers than in the previous case. Fine crepitations could be heard on the right side over a small area about the middle of the inferior lobe. Neither dulness nor bronchial breathing could be detected. During the night of the 10th the temperature fell to 96, and afterwards, although expectoration continued for several days, neither spirochaetes nor blood corpuscles were again found in the sputum.

TEMPERATURE CHART—CASE II.



In this case the patient received no prophylactic plague inoculation, and the temperature remained normal until his discharge from hospital.

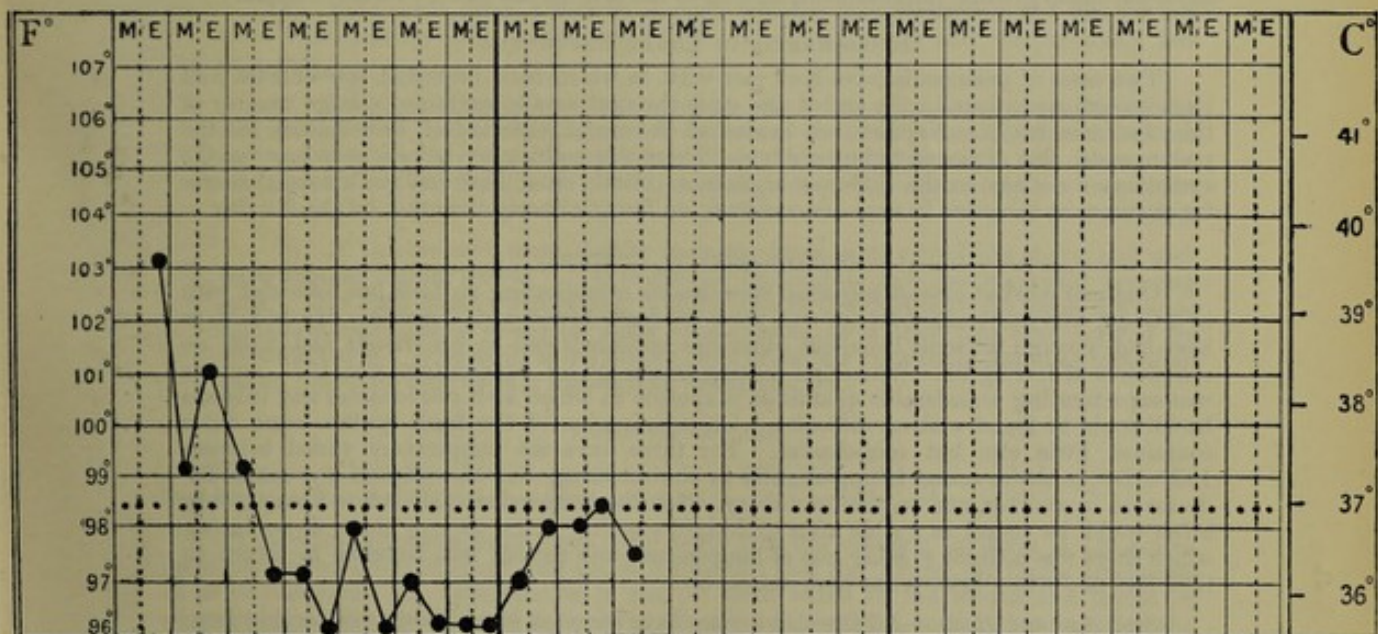
In both cases after the fall of temperature the patients stated they felt quite well and wished to leave the hospital. The possibility of a relapse, however, in any condition due to spirochaetes was entertained, and they were therefore detained in hospital until 28th April, but no relapse occurred.

Case III.—This occurred during October, with symptoms almost identical with those described above, and was diagnosed as due to the same cause before the sputum was examined and found to contain large numbers of spirochaetes. The temperature remained 103° – 104° for about forty-eight hours and then fell to normal. After remaining normal or sub-normal for four days, a second rise of temperature occurred, and was found to be due to the formation of a scrotal abscess. Immediately the abscess was opened and puss evacuated the temperature again fell to normal, and the patient made an uninterrupted recovery.

ACUTE BRONCHITIS CASES.

The seven cases of acute bronchitis have all been very similar. The onset, as far as history was obtainable, appears to have been very sudden, the patient feeling the first symptoms of an ordinary cold at night, and the next morning bringing up large quantities of sputum, sometimes streaked with blood and containing large numbers of spirochaetes. Pain or discomfort is complained of behind and usually to the right of the upper part of the sternum. By the evening the temperature has reached between 101° – 103° , falling next morning to about 99° , and rising again 1° or 2° towards evening. The following morning the temperature usually reaches and remains normal. The sputum, however, persists for several days, but few, if any, spirochaetes have been found after the temperature has reached normal.

TEMPERATURE CHART OF ACUTE BRONCHITIS CASE.



CASES OF RECURRENT BRONCHITIS.

Probably some of the above cases were relapses, but no reliable information was obtainable. The following three cases, however, all give histories of previous attacks:

Case I.—A Muganda, who for some time had constantly suffered from colds, and whose employer suspected phthisis, when admitted into hospital was found to be suffering from bronchitis with temperature 102° , and spirochaetes were found in the sputum, but no tubercle bacilli. Towards evening on the day of admission the temperature fell to 99° , and remained down for three days, when it again went up and remained at 102° – 103° for a further three days, with an increased number of spirochaetes in the sputum. At the time of writing the temperature has been normal for five days, and the chest condition appears to have quite cleared up.

Case II.—An Indian visiting Entebbe, resident elsewhere in Uganda for some years, gave history of having had repeated attacks of bronchitis during the past six months, scarcely ever getting completely rid of one attack before another commenced. When first seen in Entebbe had temperature 102° , with the usual symptoms and a large number of spirochaetes in the sputum. Under treatment he made marked improvement, but left Entebbe after a few days and before complete recovery.

Case III.—An Englishman resident for nearly thirty years in East Africa and Uganda. Prior to 1909 he had for several years been subject to attacks of bronchitis at varying intervals, but averaging three or four a year. In 1909 he had an exceptionally severe attack, said to have been verging on pneumonia, which left him in a weak debilitated condition for more than a month. (At this time he had in his employ a native boy who was continually suffering from severe colds and bronchitis and was suspected of phthisis. Under medical advice he discharged the boy, who, however, when last seen four years later was apparently quite well.) Since the severe attack in 1909 the attacks of bronchitis have become more frequent and more difficult to shake off. The onset and symptoms of each attack are very similar in character. He first feels a kind of "snuffles" in the nose and perhaps slight headache; in about four hours there is a dryness in the throat, and a few hours later a large quantity of sputum begins to be expectorated. There is considerable discomfort behind the upper part of the sternum, and the temperature reaches from 100° – 101° in the evening for two or three days, but falls in the morning. On December 7th last an exactly similar attack commenced which kept him confined to bed for a week. The day after getting up, on December 15th, however, a relapse occurred, and he was then first seen by me. The temperature was slightly above normal, and an enormous amount of sputum was being expectorated containing a few spirochaetes. As usual, the temperature rose towards evening, and there was a considerable increase in the numbers of spirochaetes. On December 19th he was so far recovered that he again got up, but in a few hours returned to bed, and the following morning brought up an increased amount of sputum, in which, however, very few spirochaetes could be found. He was again confined to his room for four days, but made gradual improvement, and up to the present has had no further relapse.

SPIROCHAETES IN LOBAR PNEUMONIA.

Two cases of pneumonia have been met with, in which both bronchial spirochaetes and pneumococci were found. In one of the cases the sputum also contained a large number of thin fusiform bacilli. Neither case contained the usual numbers of spirochaetes, but the pneumococci also appeared to be very few. There was nothing to indicate as to how far the symptoms were due to the different organisms. Both cases, however, ran a normal course for pneumonia, the crisis in one case occurring on the 7th and in the other on the 9th day.

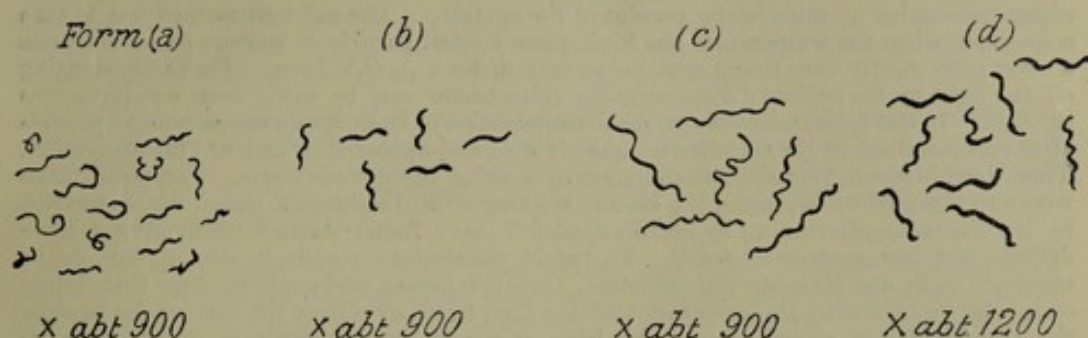
SPIROCHAETES IN PHTHISIS.

One well marked case of bronchial spirochaetes complicating phthisis has been met with in a Goan, who had resided for several years in East Africa and Uganda. He is said to have had a cough for some time, but otherwise appeared well to his friends and made no complaints of feeling ill. When first seeking treatment his temperature was 103° , and he was expectorating considerable quantities of sputum in which both spirochaetes and tubercle bacilli could be found without difficulty. On examination of the fresh sputum some fields contained little else but spirochaetes. For three days the temperature varied between 103° – 104° in the evening, falling slightly in the morning, but the spirochaetes markedly decreased in number, and on the fourth day, when the temperature fell below normal, only a few could be found in a slide after prolonged search. After two or three days, during which there was a slight evening rise of temperature, the patient left Entebbe to return to Goa, and no further history has been obtainable.

Sex, Age and Races.—All the above cases have occurred in males of ages varying from about 17 to over 50. Most of the patients were naturally African natives, chiefly Baganda, but the remainder included one Englishman, two Indians and one Goan.

Etiology.—Cases of acute and more chronic bronchitis due to spirochaetes have already been described from various parts of the world, and there seems no reason why by further extension into the lungs the parasite should not excite or cause a mild or even severe type of pneumonia. Spirochaetes are quite common in the mouth of healthy persons in Uganda, but so far as I have been able to determine in comparatively small numbers, and practically all are of the (d) type described below. Special precautions, however, were taken in most of the cases described to prevent mouth and throat contamination in specimens for examination. The patient was asked to rinse out his mouth and gargle with water before expectoration, and, if there was more than one mass of sputum, the specimen was taken from the last one. The increase of spirochaetes as the symptoms advanced, their disappearance from the sputum after a few days, and the fact that the decrease in numbers synchronised with the abatement of symptoms, all point to their being the chief cause of the condition.

VARIETIES OF SPIROCHAETES IN SPUTUM.



The above figures represent the different forms of spirochaetes met with in practically all the cases that have come under my observation.

(a) A thin light staining form varying in length with variable size curves, sometimes coiled into loops. Under about 1,000 magnification it appears to be much the same thickness the whole length. Occasionally there is a dot (basal—dot?) at one end. This form is often found in groups of from two to six on a field, and increases in number in direct proportion to the temperature and severity of symptoms. In the three cases with pneumonic symptoms, and in the more severe bronchitis cases, it appeared in large numbers when the temperature reached its highest point. The greatest number, however, I found in the phthisis case, and on one occasion when the temperature reached 104° , on immediate examination of fresh sputum several fields contained little else but writhing masses of spirochaetes of more than fifty in a mass. Some of these appeared to be joined end to end and broke apart while under examination.

(b) Very much rarer, a shorter, slightly broader, darker staining and less curved form with tapering ends. This form I have only found singly and comparatively few on a slide.

(c) Exactly similar in other respects but about twice the average length of the common (a) form, and is sometimes no doubt two of the little joined end to end. Often an unstained band is seen in the middle, probably where division will take place. In other cases, however, there is no indication of division. It is apparently too long to be a (b) form that has undergone longitudinal division and opened out prior to separation.

(d) A thicker and more darkly staining form than any of the above, and with more angular regular curves. It is thicker in the middle and has markedly tapering ends. This form usually occurs singly, and if two in one field they are generally wide apart, while the groups of the (a) form often looked as if they had been formed by recent division. It sometimes has one or more unstained vacuoles or granules, and often has an indefinite outline as if undergoing disintegration.

FUSIFORM BACILLI.

These have been found in the sputum in more than half of the cases. There appear to be two forms, a thin lighter staining form and a thicker darker staining one.

Of the above parasites there seems little doubt that the common (a) form is the active agent in the causation of symptoms, and it is probable that the (b) and (c) forms are stages in its development. A type similar to the (d) form exists in the mouth and throat of apparently healthy persons, and in the cases described it persisted in the sputum after the acute symptoms had subsided. The number present appears to have no relation to the temperature or severity of the symptoms, and at all times there seem comparatively too few for it to be the chief factor. Unless it is a potential development stage in the life history of the common (a) form, it is difficult to see in what way it can be of pathological importance. Fusiform bacilli although present in several cases, and very numerous in some, appear to exert no active influence upon the course of the disease, and I have seen nothing to support or disprove the theory that spirochaetes are only a stage in their development.

Diagnosis.—The diagnosis of bronchial spirochaetosis must necessarily depend chiefly on microscopical examination. A sudden onset of symptoms and early expectoration of large quantities of sputum, and especially recurrent attacks and relapses without obvious cause, appear to be of diagnostic importance in cases of acute bronchitis. In the cases with pneumonic symptoms, the sudden onset, early expectoration of rusty coloured sputum, and the as sudden abatement of fever and pneumonic symptoms on the second or third day, appear characteristic. These points are, however, probably of little value without microscopical

confirmation, and this was usually very easily obtained in the cases described, owing to the enormous number of spirochaetes present in the sputum. The quickest method was to take a specimen when the temperature was high, place a small particle of sputum on a slide, press a cover glass gently over it and examine at once under a $\frac{1}{2}$ O.I. Lens. On partly shutting off the light by the ordinary diaphragm the spirochaetes can be easily seen moving across the field. It was found necessary to make examination of fresh specimens as soon as possible after expectoration, as the spirochaetes quickly died and appeared to undergo disintegration. They were, however, kept alive much longer by keeping the sputum warm. Permanent films were also obtained by drying in the air and staining with Leishman's stain. Or, as advised by Dr. Fantham, after fixing by heat or alcohol I have found warm Giemsa give a more definite but less permanent result. To obtain satisfactory results it also appears to be necessary to fix and stain the films at once. Owing, however, perhaps to the time that elapses or to some cause during the preparation of the film, fixed specimens do not appear to show the same number of spirochaetes as the fresh ones, and some evidence of disintegration is often seen.

Treatment.—In the cases with pneumonic symptoms the only treatment carried out was a saline aperient on admission and a mild expectorant mixture every three hours. It has been possible to keep two of these cases under observation, and so far no further attack has occurred. Possibly the pneumonic condition or hyperaemia associated with it effects a natural cure in the same way that an attack of Blackwater Fever appears to stamp out the organism in an excessive malarial infection. Since reading Chalmer's and O'Farrell's paper, to which reference has already been made, in addition to saline and expectorants, I have prescribed arsenious acid by the mouth in increasing doses, and, so far as is possible to say from the short time that has elapsed, the results appear to have been very satisfactory.

Method of Infection.—In the case of recurrent attacks in the Englishman, it seems probable that he obtained the original or a fresh infection from his native servant about five years ago. Also one of the natives with pneumonic symptoms last April appears to have contracted the disease directly from the other. In other cases no evidence as to the mode of infection could be obtained.

In some of the cases described a chill was considered the exciting cause, but in most of the cases evidence of anything definite was wanting. In the pneumonic cases the patients have a history of a cold for some days previously.

As many of the cases under observation may have been relapses, possibly a less potent and, therefore, less apparent exciting cause was required than was necessary to bring about an original attack.

Stomatitis, pharyngitis, coryza and other respiratory diseases are very prevalent among the natives and others residing in Uganda, and more of these conditions may be found to be caused or complicated by spirochaetosis. Or, as is perhaps more probable, the lower resistance and suitable nidus provided by such conditions may allow parasites usually harmless to increase in numbers and virulence to such a degree that they extend down the air passages and become of pathological importance.

(Sd.) J. A. TAYLOR,

Medical Officer, Entebbe.

APPENDIX No. V.

A.—REPORT BY DR. R. E. McCONNEL ON BIHIMBO (MUHINYO), 1913.

Bihimbo is a name applied to a chronic, wasting, crippling and often fatal disease, very prevalent in the South-west of the Uganda Protectorate. The large chiefdom of Ankole, together with the contiguous parts of the Districts of Toro and Buddu, comprise roughly the area endemicity.

The Ankole Lukiko, or Native Parliament, state in their delightful way of mixing up animals and men that in 1887 the lung disease of cattle appeared among them followed in 1890 by rinderpest and smallpox, and a little later by jiggers and Bihimbo. These all seem to have come from the Koki side of Buddu. It spread slowly at first, more rapidly about 1898, and by 1900 or 1901 was found throughout the district up to Lake Edward on the West.

A patient was at first designated Omugalamu, i.e., one who always wants to rest, but when they knew the disease better they called it Bihimbo, a word implying a reference to the crouching attitude assumed and the sticks used as aids in progression. The term according

to van Someren is Lunyaruguru (*i.e.*, the language of the Banyaruguru, a tribe living on the hills south of the Kazinga channel) for the sticks used. The disease is also called Muhinyo, but van Someren says that this is reserved for those cases in which the lower extremities are so wasted and contracted that they cannot move about by themselves.

It is impossible to offer an exact estimate of the number of cases which exist at the present time, but when it is realised that there is no evidence to show that the number of cases is diminishing, its severity may be partially gauged from the tabulated returns of deaths from Ankole for 1911 and part of 1912 which are submitted. It is believed by the Lukiko that out of ten cases six would die.

It should be stated here that the diagnoses are made by the District Chiefs and their subordinates. They are supplied with forms showing columns each headed by the name of some disease which has been found in the chiefdom, and all deaths are apportioned under these headings. Generally speaking their returns are, as might be expected, most unreliable, but the chiefs state that they know definitely the disease under discussion, and I have no reason to doubt that the margin of error in the figures is not a large one. In examining a large number of men claiming exemption from the payment of poll-tax on the grounds of illness, one learned to foresee the statement of those subject to this disease, even in the earlier stages, in a considerable number of cases. The error has been greatest in the districts abutting on Lakes Edward and George and the Kazinga channel, when sleeping sickness has been rife among the relatively small population scattered along these shores, the casualties among whom have been very generally returned as being caused by Bihimbo. For the rest, odd cases of syphilis, rheumatism, heart disease and possibly undulant fever may be singled out as comprising elements to the native mind.

The disease attacks almost exclusively men. Some women do contract it, but apparently no children. Both old and young are affected. Its duration is from one to three or four years and in some cases longer, while death may supervene at any time from six months to two or three years, and occasionally later.

They seem seldom to recover thoroughly from its effects, some weakness and shortness of breath on exertion being apparently permanent. Eight chiefs in the Lukiko stated that they had had it and recovered, after long illnesses, except for these symptoms. Cases are cited where sudden death followed violent exertion after an apparent cure. They state that, generally speaking, those only recover who are comfortably off and can afford meat and good food.

It is not considered by the natives to be infective, and does not seem to spread among the males of any single household. The people have no suggestion to make as to how it arises or is spread. There would seem to be no seasonal prevalence. The area infected is peopled by a number of tribes of widely different customs, and I do not know of any distinctly male habit common to them all which could throw light on the almost exclusively male incidence of the disease. Goats are common throughout the district, but only a few Bakonjo near the great lakes drink their milk habitually, while the aristocratic Bahima or cattle owning people and most of their dependants would never touch it, though all are subject to the disease. The women of the Bahima subsist very largely on cow's milk. For the rest the people live on plantains, sweet potatoes, yams, peas and beans, with a little fish or meat when they can afford it. The women of some tribes with respect to animal food may only eat goat's meat, fish and game animals, although not game birds. No European has yet suffered from this disease.

No case has been observed continuously by a European, which is accounted for by the difficulty of securing early cases, the prolonged course of the disease and the native's aversion to leaving his home for more than a short period.

The observations I have to make on symptomatology are therefore necessarily incomplete, and have been synthesized from an interrogation of the Lukiko of Ankole, the observations of other medical officers of the Uganda Protectorate and my own experiences.

The earliest subjective symptoms of illness are not often at the time recognized as being due to this disease. It sometimes seems to begin with an attack of fever, which is described as at times lasting up to three weeks. Thirst may supervene, with often a loathing for ordinary food, but a craving for meat. Severe pains constitute an early symptom. They often begin in the legs and thighs, but may do so in the back or arms. In any case these parts are all affected in time as is usually also the chest. The joints too become painful and stiff. The stiffness and pain in the back and legs causes the patients to assume a crouching attitude in moving about, and soon—in about a month—they usually find it necessary to use one or two sticks as aids in moving the dragging feet forward. They may later become so helpless that they have to be carried, and so weak that they cannot put on their own clothes. The joints may become permanently distorted. Intense headache is

often one of the earliest symptoms, and is very general in the course of the disease. The skin, instead of the usual blackish brown hue, assumes a sickly yellowish brown tinge, and presents a greasy and swollen appearance; subjectively it may present an abnormal feeling. Progressive and rapid wasting sets in early, so that by the end of a month their appearance is very miserable. Attacks of fever not infrequently supervene, though whether there is any regularity in their appearance, or whether they may not be often due to other causes, are matters of uncertainty. Profuse sweating may be another feature. Vomiting may or may not be a symptom, but they generally complain of swelling of the abdomen and a feeling of fulness after taking food. The nature of their food may, however, to some extent account for this. Heart palpitation and shortness of breath are very general. Dizziness may be a prominent symptom, so that apart from other reasons they may have to use a stick in maintaining their balance. In certain cases at the end of some six or eight months the body swells. Rendle states that dropsy of the feet and scrotum is not uncommon.

A single examination of a few cases showed exaggerated kneejerks, some paresis, rapid pulse, diffuse apex beat, tremulousness of the tongue, general weakness and mental apathy. Nothing of interest was gathered from the examination of blood slides.

When recovery takes place the process is a slow one, and it is a question whether complete vigour is ever regained. Dr. J. H. Goodliffe, who examined a considerable number of muhinyo cases, reports that there is tenderness of the muscles on pressure (very marked in the calves), which persists throughout the disease, and that there is paraesthesia, anaesthesia, or sometimes hyperaesthesia, of the skin of the lower and upper extremities.

This disease has already been the subject of some enquiry. Sir David Bruce, having recovered what he considers to be the micrococcus melitensis from several cases, holds that it is undulant fever. The latter disease, however, has no age or sex limitations and the mortality is low, being roughly 2 per cent.—10 per cent. While we do not know the temperature chart of Bihimbo, there is little reason to believe that it will resemble that of undulant fever. With the exception of a few Bakonjo near Lake Edward the people do not drink goats' milk, though these animals are found throughout the Uganda Protectorate.

The disease has also been identified by others with beri-beri, with which it undoubtedly has some features in common. The general impression, however, of those who have seen much of it is that it is neither the one or the other, but a disease *sui generis*, though possibly cognate with beri-beri.

This rough description is being submitted in order to draw attention to an interesting disease, and one which through exemptions in the payment of poll-tax is the cause of an appreciable annual financial loss to the Uganda Government.

(Sd.) R. E. McCONNEL,

Medical Officer.

NATIVE RETURNS FOR EIGHT MONTHS, JANUARY TO AUGUST, 1912.

District.	Total Population.	Total Deaths.	Deaths from Bihimbo.
Sema	—	—	—
Kasali	59,807	410	50
Ngalama	—	—	—
Egaro	30,382	244	31
Isingiro	2,316	63	8
Buwezu	13,962	207	40
Bunyaruguru	6,600	81	37
Neara	6,528	86	10
Bukanga	5,402	102	7
Mitoma	11,605	114	10
Buzimba	10,227	153	34
Nyabosozi	7,669	86	19
Kazara	21,948	308	57
Zwampala	45,401	448	80
Totals	221,847	2,302	383

Therefore 16·63 per cent. of the deaths were credited to Bihimbo, and in eight months 1·75 of the total population died of it.

DEATHS IN ANKOLE DURING 1911, NATIVE RETURNS, 1911.

Districts.	General Causes.	Bihimbo.
Sema	—	—
Kasali	680	68
Ngalama	—	—
Egaro	168	7
Isingiro	70	13
Buwezu	112	8
Bunyaruguru	164	43
Neara	116	19
Bukanga	120	7
Mitoma	128	23
Buzimba	108	12
Nyabusozi	124	28
Kazara	—	—
Lwampala	677	82
Totals ...	2,467	310

Out of a total of 2,467 deaths, therefore, 310, or 12·48 per cent., were from Bihimbo.

B.—EXCERPTS FROM A REPORT OF DR. A. C. RENDLE ON CASES OF MUHINYO, IN TORO, IN 1909.

From every hut, natives in different stages of illness crawled out. They all stated they were suffering from the same disease, which they called Muhinyo. This disease attacked all ages and both sexes—who presented a miserable picture of pain and debility. Many were emaciated, though not in an extreme degree, and all were affected with itch.

The main feature in all the cases was the prominent swollen abdomen.

I was struck by observing that in one instance a family of eight people, living in two huts, were all affected with the disease.

On the following day, February 24th, I had a visit to Matayo Machacha's village. Matayo informed me that during the three months previous to my visit he had lost in his village only: males = 46 and females = 6. Total 52.

On questioning Matayo and his people concerning the illness, Muhinyo, they stated that the symptoms were as follows:—

1. Fever for about a month in a more or less acute degree, followed by fever in varying degree throughout the illness. The patient is subject to relapses and exacerbation of fever.

2. Pain in legs, especially knees and thighs, and back. This often extends to shoulders and other parts of the body. This pain is very acute at first and persists in a moderate degree throughout the illness.

3. Swelling of the abdomen. The spleen was said to be swollen in most cases and pain usually referred to that area. Dropsy of feet and scrotum was not uncommon, but not a constant feature. This frequently during the course of the illness.

4. Death nearly always occurred after a period varying from a few months to a few years (usually about three years). It was usually preceded by epistaxis and hæmorrhage from the bowels with frequent stools resembling dysentery. Occasionally pneumonia carried them off. A few cases are said to recover, but I did not see them myself.

5. The foregoing symptoms are always accompanied by progressive loss of strength. Wasting is not usually caused to an extreme degree, and the digestive system does not appear to be affected in an extreme degree until the last stages of the disease. The appetite remains unaffected during the greater part of the illness and is said to be abnormally increased in certain cases.

Drowsiness is reported to be a symptom in some cases, but I did not notice it myself. Mental activity and intelligence seemed unaffected, and one patient in an advanced stage of the disease showed marked vivacity and sense of humour.

Insanity is said to occur in some cases. The sexual functions appear to be affected as in trypanosomiasis, but I failed to find any other point of resemblance to this disease.

A glance at the table of recorded cases will show that the enlargement of the spleen is perhaps the most prominent feature of the disease. In the 22 cases recorded, the enlargement may be tabulated as follows:—

Extreme enlargement	...	...	...	...	...	10
Moderate enlargement	...	...	...	...	...	5
Slight enlargement	...	...	...	...	...	5
Tenderness only	...	...	...	...	...	1
No enlargement or tenderness	...	...	...	...	...	1

Itch was present in nearly every case. The red corpuscles are apparently normal. The white corpuscles present several abnormal features.

1. Leucopænia to a very marked degree.
2. Small mononuclear corpuscles appear to be quite absent.

3. Large polymorphonuclear corpuscles appear in a completely transformed condition. The granules stained bright red (Leishman stain) are congregated round the periphery, occasionally protruding thin bands of granular matter towards the centre. The granular matter surrounds vacuolated oval spaces which appear to have taken the place of the nuclei of the polymorphonuclear corpuscles. These vacuoles present a characteristic loculated appearance.

Diagnosis.—This disease appears to be a form of splenomegaly resembling, though probably not identical with, Kala-Azar by the above-mentioned symptoms, cannot possibly be confused with sleeping sickness, beri-beri, dengue, malaria or spirillum fever.

Etiology.—The carrying agent is probably the tick, as the bed-bug is the factor carrying Kala-Azar in India.

C.—EXCERPTS FROM A REPORT BY DR. F. C. DOBLE ON MUHINYO IN THE MASAKA DISTRICT, 1913.

1. A disease characterised by long continued fever, pain, especially in the joints, usually unilateral, two attacks separated by a long or a short interval, and certain cerebral and spinal manifestations, including insomnia. It is spread by either insects, such as fleas, flies or bugs, or by the air. It seems to have first appeared in 1903 and increased rapidly until 1907.

2. The disease occurs at all ages and in both sexes; it is commoner in men.

3. The disease spreads rapidly through the household, the husband being the first to get it, and then he gives it to his wife and children.

4. It seems as if infection is conveyed by contact, in some instances, but in others is contracted by a casual visit without touching or approaching the patient.

5. The attack usually starts with fever and headache, often frontal and unilateral; there is commonly pain in the neck in the line of the Sterno-Mastoid and also in the cervical vertebrae. The pain very commonly attacks the dorsal and lumbar vertebrae, especially later in the attack. Intercostal neuralgia is a fairly constant symptom. The temperature is a very uncertain symptom, and may be normal throughout the attack: usually it runs up at night, often starting at 4 p.m., and reaches 100° F. or 101° F. The pain appears to be worse at night.

The joints are always affected, and become painful early, in most cases within the first few days, especially the large joints, and sometimes on one side of the body only. The commonest joint to be attacked is the knee, then the hip, shoulder and elbow in the order named. In a very acute attack all the joints may become involved, even the metacarpal and metatarsal. The joints rarely swell, and are only slightly tender to the touch, but cause acute pain on movement. If the knee is affected there may be a slight puffiness above and on either side of the patella. The patient may be only able to turn his head with the greatest agony. Cases occur in which the whole skin becomes hypersensitive, and the patient cannot bear a hand to touch him.

The pain in the joints usually lasts for months in the same joint; occasionally after a week other joints are affected. Insomnia is a very constant symptom throughout the whole disease, as is thirst, also great hunger, especially for meat. If the patient owns sheep, oxen, goats, etc., he will eat them up at an alarming rate. The pain is described as being like that of an abscess.

6. Tendon reflexes are increased after the disease has lasted some months; rarely they are normal or absent.

7. High steppage gait is sometimes present, and the ankle may drop so much that the patient drags his toes as he walks, reminding one of peripheral neuritis.

Babinski's sign was present in a few cases; usually it is difficult to get on account of the thickness of the patient's sole. Romberg's sign was present in a few cases, sometimes to a marked degree. Slight hemiplegia is present in a few cases, usually for a short period only, and squints occur in about 10 per cent. of cases. Nystagmus is a very common feature in old cases. The weakness continues throughout the whole course of the disease and for the rest of the patient's life, unless the disease is acquired very young; the weakness is really a paresis. There seems to be no doubt that there is some spinal lesion.

8. Constipation is present to a major or minor degree; bleeding from the bowels may occur in an especially sharp attack.

9. The spleen is often enlarged, in rare cases very markedly; and occasionally the patient says he noticed a lump and perhaps pain during the attack of Munyinye; but usually there is no doubt that the enlargement of the spleen is the result of old malaria. The liver is occasionally enlarged, but rarely to any marked degree.

10. There are four diseases that bear some resemblance to Munyinye—undulant fever, sleeping sickness, chronic malaria and rheumatic fever; but none of these have the nervous symptoms which are so characteristic of Munyinye.

11. The symptoms, as I have found them, certainly do not fit in with those of any hitherto described disease.

NOTES BY THE PRINCIPAL MEDICAL OFFICER ON MUHINYO.

The term Muhinyo, according to Dr. R. A. L. van Someren, means "one who is bent or contracted." He says "the natives distinguish Muhinyo from Bihimbo by the fact that a Muhinyo has contracted limbs and cannot move about himself, while in Bihimbo the person also emaciates but can move about with the aid of two sticks." Both terms are applied to the physical condition of the patient rather than to the disease.

2. Muhinye or Munyinye, according to Mr. D. L. Baines, District Commissioner, means "one who is curable." It was probably therefore intended to describe a curable form of sleeping sickness, with which disease Muhinyo was confused.

3. Muhinyo, Munyinye or Bihimbo is found in the southern part of the Protectorate and the chief centres of endemicity appear to be in Ankole and Toro in the south-west, and in Koki and the western part of Buddu. It is curious that natives of Buddu state that the disease originally came from the west, while those of Toro and Ankole assert that it came from the east. Bagshawe, van Someren and Lowsley all thought that the terms Muhinyo and Bihimbo might represent different forms or types of disease.

4. The symptomatology as gathered from the various reports is complex, but the following may be taken as applying to the majority of cases:—

(a) Very protracted fever, associated with headache, joint affection, progressive wasting and debility, the patient becoming incapacitated for long periods either from joint-affection, debility, some form of paresis or a combination of these.

(b) Pyrexia low or moderate, usually intermittent, with irregular intervals of normal or subnormal temperature.

(c) The appetite, unless in an initial acute febrile stage, unimpaired or even increased, especially for meat.

(d) Duration from six months to two or three years.

(e) Mortality 10 to 15 per cent. or higher.

5. There appear to be several groups of symptoms which may represent either distinct diseases or different types of the same disease, e.g.:—

(a) Cases seen by Sir David Bruce and myself bearing a clinical resemblance to undulant fever. Conclusive evidence was obtained by Bruce, both by agglutination tests and by cultivation, of the presence of *Micrococcus Melitensis*. See Royal Society's Report of the Sleeping Sickness Commission No. XI., page 190 *et seq.* The symptoms described by Lowsley may be taken to apply to this type. See Appendix A of Report quoted above.

(b) Cases described by Bagshawe and also noted by van Someren, Goodliffe and McConnell as bearing a clinical resemblance to beri-beri. See report by Dr. A. G. Bagshawe in Appendix A of first half-yearly report of Sleeping Sickness Extended Investigations, 1906.

(c) Cases with extreme splenic enlargement as described by Rendle and which bear a clinical resemblance to kala-azar.

(d) Finally there appear to be cases which show definite skin-changes, as reported by McConnell. Rendle also recorded in some of his cases, apart from the presence of itch in many instances, an extreme dryness of the skin.

6. Bagshawe saw only cases of the beri-beri type, but suggested that the term "Bihimbo" represented a different disease. Rendle thought that the kala-azar type, which he described in the extreme west, differed from the disease found in the more easterly parts of the Protectorate. The consensus of opinion seems to be that we have to deal with one or more new diseases and that undulant fever will not account for the majority of the cases observed. The diversity of the observations on the subjects of symptomatology, race and sex incidence and infectivity renders this probable.

7. McConnell thinks Muhinyo is especially a disease of males, Doble says it affects men chiefly but also women and children, while Bagshawe, Lowsley and Rendle state that it attacks all ages and both sexes.

8. Rendle and Doble both note the highly infectious nature of the disease, Bagshawe and Rendle adduce some evidence of place or house infection, while McConnell states that the natives do not recognise it as infectious and that it does not seem to spread among the males of any single household.

9. Rendle, McConnell and Doble advance the opinion that the infection is insect borne.

10. Doble states that the incubation period is a month, but gives no data to show how this conclusion could be arrived at. He further states that the disease is commoner among men because they are more exposed to infection; but this is inconsistent with his theory that the infection is carried either by a domestic insect or in the air. His account of the manner in which the disease spreads appears to be based entirely on native report. Indeed he must have relied on this chiefly throughout his enquiry, as he had been less than six months in the Protectorate when his report was written.

11. With regard to beri-beri it should be stated that rice does not form an article of diet in the endemic area.

12. The micro-organism of kala-azar has not yet been found in this Protectorate, though it has been searched for by means of spleen puncture by Sir David Bruce, E. Greig, Rendle, myself and others.

13. With regard to undulant fever, it is the fact that the great majority of the natives attacked do not drink goat's milk; but goats are stalled in the native huts at night, except in the case of chiefs, and the floors of huts and their immediate neighbourhood are freely contaminated with excreta. Also the flesh of goats or cattle that die is freely eaten. The *Micrococcus Melitensis* was recovered by Bruce from material received both from the eastern and western parts of the endemic area. See Royal Society's Report quoted above.

14. In future investigations the possibility of the simultaneous presence in the endemic area of diseases of the type of undulant fever, beri-beri, kala-azar and pellagra will have to be borne in mind, as well as the presence of intercurrent or concurrent diseases such as dengue, malaria, rheumatism, syphilitic, or gonorrhoeal arthritis, etc.

15. Muhinyo, being met with chiefly among the people of outlying parts of the Protectorate, has hitherto seldom been seen in hospital or dispensary practice, and study of it could only be made on tour. Every year, however, these people come more under medical observation, so that it is hoped that the difficulties in the way of obtaining complete records of cases, with charts, and especially of studying the early stages of the disease and the mode of infection, may shortly be overcome. Also, with the establishment of a Protectorate laboratory, bacteriological tests will become available for diagnosis.

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INDEX.

	PAGE.
Ankole—	
Deaths from Plague	14
Deaths from Smallpox	15
Deaths from Syphilis	15
Anti-malarial—	
Major Measures	22
Petty Measures	22
Asiatic Officials, Health of	18
Beri-Beri, No cases observed	13
Bihimbo (<i>see also</i> Muhinyo)	86
Blackwater Fever—	
Death Rate	12
Increase due to Rapid Increase of Susceptible Population	11
No Increase in Government Employees	11
Number of Cases and Deaths	12
Bombo—	
Cases of Malaria, Blackwater Fever, Tick Fever, Dysentery, Dengue, Enteric, Plague, Smallpox	33
Rainfall	59
Bronchial Spirochaetosis... ..	80
Budu, Rainfall	57
Bugalla Island, Rainfall... ..	59
Buganda—	
Deaths from Plague... ..	14
Deaths from Smallpox	15
Deaths from Syphilis	15
Bukeddi, Deaths from Plague	14
Bukona, Rainfall... ..	58
Bukumi, Rainfall	58
Bunyaraguru, Rainfall	59
Busoga—	
Deaths from Plague	14
Deaths from Smallpox	15
Deaths from Syphilis	15
Butiaba—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	57
Butiti, Rainfall	58
Bwavu, Rainfall	59
Cerebro-Spinal Meningitis, Number of Cases	13
Child-birth Mortality	10
Clearing of Grass and Bush	27
Communicable Diseases	33
Convict Labour used on Swamp	29
Cotton Industry, Recommendations <i>re</i>	28
Dangerous Diseases Ordinance, Rules under	21
Dengue, Number of Cases	13
Dentist's Report, Appendix I.	71

INDEX—continued.

	PAGE.
Digestive Illnesses in Europeans	16
Drainage—	
Need for Establishment of, on Permanent Basis...	27
Recommendations <i>re</i>	30
Dustbins, Metal, recommended	30
Dysentery—	
Increase at Masindi	13
Number of Cases	13
Elephantiasis, Number of Cases...	13
Entebbe—	
Blackwater Fever at	13
Botanical Gardens, Swamp...	22
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Meteorological	56
Pipe-borne Water Supply required	29
Rainfall	57
Table IV.	38
Enteric Fever, one case at Entebbe	14
Entomological Collections	36
Erysipelas	14
European Officials—	
Cases of Illness	16
Digestive Troubles in	16
Health of	16
Invaliding of	16
Invaliding, Table of	16
Table of Malaria, Blackwater Fever	16
Table of Sick, Invaliding and Death Rates by Stations...	17
Europeans—	
Principal Causes of Deaths, Table for Six Years	19
Principal Causes of Sickness, Table for Five Years	19
Fort Portal (Toro), Rainfall	57
Gauze-wire Protection	23
Gondokoro—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	57
Gonorrhœa—	
Native Returns of Deaths from	14
Number of Cases	14
Gulu—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	57
Helminthic Diseases, Number of Cases	15
Hoima—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	58
Hygiene, Lectures on	28
Iganga, Rainfall	58
Incinerators, Not successful	26
Increase of Medical Staff recommended	29
Infectious Diseases Ordinance requiring Revision	28
Influenza—	
Number of Cases	14
Possibly Dengue	14
Query if it exists in Protectorate	14

INDEX—continued.

	PAGE.
Invalidings—	
Of European Officials	16
Table for Eight Years	16
Table for 1913, by Stations	17
Isolation Hospitals, Recommendations re	28
Jinja—	
Blackwater Fever at	13
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Pipe-borne Water Supply required	29
Rainfall	57
Table IV.	50
Kabyaza, Rainfall	60
Kadoma, Rainfall	60
Kakindu, Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Kakumiro, Rainfall	59
Kampala—	
Blackwater Fever	13
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Pipe-borne Water Supply required... ..	29
Rainfall	57
Serious Sanitary Condition at	27
Swamp, Reclamation of	29
Table IV.	44
Katigondo, Rainfall	60
Kawalongojo, Rainfall	59
Keritia, Rainfall	59
Kisubi, Rainfall	58
Kitalya, Rainfall	60
Kitgum, Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Kitumbuzi, Rainfall	60
Kivuvu, Rainfall... ..	58
Kumba, Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Kumi—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	58
Lango, Deaths from Plague	14
Laws passed re Sanitation	21
Lepers—	
In Gaols	11
Segregation by Natives not successful	11
Segregation in Villages to be tried	11
Leprosy—	
More Prevalent than would appear from Returns	14
Native Death Returns	14
Number of Cases	14
Lugombe, Rainfall	60
Magigye, Rainfall	59
Malaria—	
Number of Cases treated	12
Percentage of Admissions	12
Seasonal Influence marked	12
Masaka—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	57

INDEX—continued.

	PAGE.
Masindi—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	57
Masindi Port—	
Increase of Dysentery at	13
Rainfall	60
Mbale—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Gaol too close to European Quarters	28
Rainfall	57
Mbarara—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall	57
Measles—	
Native Death Return	14
Number of cases	14
Meat Inspection in hands of Veterinary Department ...	27
Medical Officer of Health for Kampala recommended...	28
Meteorology	56
Moniko, Rainfall...	59
Motor Launch	29
Mubendi, Rainfall	57
Muhinyo—	
Native Death Returns of	88
Notes on above by Principal Medical Officers	91
Report by Dr. McConnell	86
Report by Dr. Rendle	88
Report by Dr. Doble	90
Munyinye...	91
Mvuba, Rainfall ...	59
Mycetoma, one case ...	14
Nabieso—	
Cases of Malaria, Blackwater Fever, &c.	33
Rainfall	58
Nabumali, Rainfall	58
Nambeya, Rainfall	60
Naminage, Rainfall	58
Namukekera, Rainfall	58
Nandere, Rainfall	59
Native Assistants, Training of ...	8
Native Officials, including Asiatics—	
Health of ...	18
Number Invalided ...	18
Table showing Sick, Invaliding and Death Rates ...	18
Native Population—	
Births ...	20
Death Returns ...	20
Ngora, Rainfall ...	58
Nile—	
Deaths from Plague...	14
Deaths from Smallpox ...	15
Deaths from Syphilis ...	15
Nimule—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Rainfall ...	57

INDEX—continued.

	PAGE.
Northern Garrison, Cases of Malaria, Blackwater Fever, Tick Fever, &c. ...	33
Plague—	
Acting P.M.O.'s Report on, Action <i>re</i> ...	2
Acting P.M.O.'s Report on, Recommendations in ...	24
Admissions of ...	14
Danger of Cotton Industry ...	20
Death of Sub-Assistant Surgeon from ...	8
Inoculation against... ...	10
Measures being extended ...	10
Native Death Returns ...	14
No Infection of Lake Ports ...	10
Plague Prevention in Towns ...	25
Professor Simpson's Report on, Reference to ...	24
Rat Destruction ...	25
Recommendations <i>re</i> ...	24
Special Report on, in Bukeddi, Teso and Lango ...	72
Want of Staff ...	10
Plot—	
Half Area only to be Built on ...	21
Standard size of ...	21
Pneumonia, Cases of and Deaths from... ...	14
Prisons—	
Recommendations on ...	30
Sanitary Report ...	27
Public Health, General Remarks ...	9
Quinine—	
Amount consumed in Protectorate ...	23
Distribution of ...	23
Racial Segregation ...	23
Rats—	
Destruction of ...	25
Recommends Systematic Examination of, in Towns ...	28
Refuse—	
Collection of ...	26
Disposal of ...	26
Recommendation <i>re</i> ...	30
Relapsing Fever—	
Cases of ...	13
Decrease of ...	13
Increase of Mechanical Transport affects ...	11
In Prisons ...	23
Sanitation <i>re</i> ...	23
Seasonal Prevalence of ...	13
Rubaga, Rainfall... ...	58
Sango Bay, Rainfall ...	59
Sanitation—	
Boards, very satisfactory ...	20
Engineer, recommended ...	28
General ...	20
Laws <i>re</i> ...	21
Of Townships, improved ...	11
Scientific Reports ...	35
Sewage Disposal ...	26
Recommendations <i>re</i> ...	29

INDEX—continued.

	PAGE.
Simpson, Professor W. J., Visit of	20
Slaughter Houses	27
Sleeping Sickness (<i>see also</i> Trypanosomiasis)	29
Camp, Admissions to	13
Law Recodified	21
Smallpox	
Alarming Outbreaks	15
Cases of and Deaths from... ..	15
Native Death Returns of	15
Recommendations <i>re</i>	28
Spirillum Fever, <i>see</i> Relapsing Fever.	
Spirochaetosis, Bronchial	80
Subletting of Plots condemned	21
Swamp, Reclamation of	22
Syphilis—	
Cases treated	15
Native Returns of Deaths from	15
Teso, Deaths from Plague	14
Tick Fever, <i>see</i> Relapsing Fever.	
Toro—	
Cases of Malaria, Blackwater Fever, Tick Fever, &c.	33
Deaths from Plague... ..	14
Deaths from Smallpox	15
Deaths from Syphilis	15
Town—	
Anti-Plague Zone	20
Committee	21
Planning	20
Township Rules—	
(New) Powers under	22
Removal of Pineapples, Bananas and other water-holding Plants at Entebbe	21
Training of Native Assistants	8
Trypanosomes	11
Trypanosomiasis—	
Admissions	13
Admissions to Kyetume Camp	31
Ceased to be a Major Cause of Mortality	11
Deaths due to	13
Discovery of a Trypanosome by Miss Robertson in Masindi-Buruli Districts	11
General Decrease continues satisfactory	13
Necessity of Launch for Control of Islands	29
Regulations not to be Relaxed	11
Tuberculosis, Number of Cases and Deaths	15
Undulant Fever, Number of Cases returned	14
Undulant Fever (<i>see</i> Muhinyo)	91
Unyoro—	
Deaths from Plague	14
Deaths from Smallpox	15
Deaths from Syphilis	15
Vaccinations—	
Number of	26
Table, Lymph Returns	26

INDEX—continued.

	PAGE
Veneral Diseases—	
Compulsory Legislation by Native Lukiko (Parliament)	22
Prevalence of	14, 15
Rules for Control of Prostitutes, &c., in Towns	21
Special Hospital	15
Special Report	78
Water Supplies	27
Recommendations re	29
Yaws, Number of Cases... ..	15
Yellow Fever	13
