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Contributors

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UGANDA PROTECTORATE.

ANNUAL

MEDICAL AND SANITARY REPORT

FOR THE

YEAR ENDED 31ST DECEMBER, 1932.

Published by Command of His Excellency the Governor.



ENTEBBE:

PRINTED BY THE GOVERNMENT PRINTER, UGANDA.

1933.

BOARD OF HEALTH

ANNUAL

MEDICAL AND SANITARY REPORT

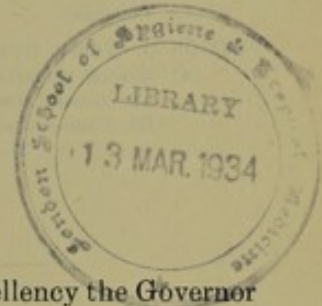
For the Year Ending June Thirtieth, 1901

Presented to the Board of Health at its regular meeting on the 10th day of July, 1901



Printed by the City of Boston, 1901

MEDICAL DEPARTMENT,
HEADQUARTERS OFFICE,
ENTEBBE, UGANDA.



SIR,

I have the honour to submit for the information of His Excellency the Governor and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Uganda Protectorate for the year 1932, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

W. H. KAUNTZE,

Director of Medical and Sanitary Services.

THE HONOURABLE

THE CHIEF SECRETARY TO THE GOVERNMENT,

ENTEBBE.

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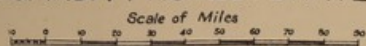
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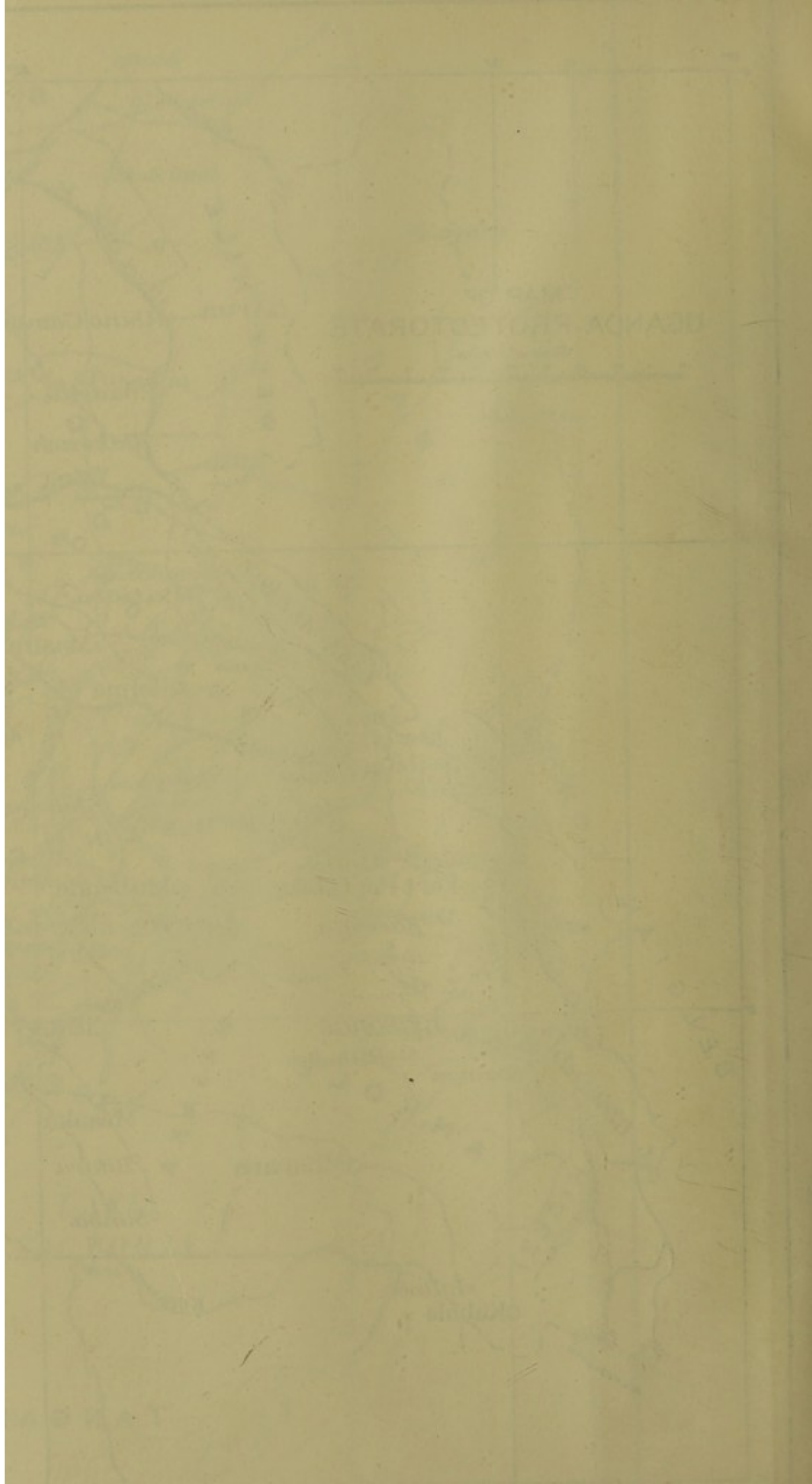
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MEDICAL AND SANITARY DEPARTMENT.

ANNUAL REPORT

FOR THE YEAR ENDED 31ST DECEMBER, 1932.

SECTION I.

ADMINISTRATION.

(A) Staff.

PRINCIPAL APPOINTMENTS, PROMOTIONS, CHANGES, ETC.

Appointments:—

					<i>Date.</i>
Dr. K. T. K. Wallington, to be Senior Medical Officer	...	...	...	...	1- 7-32
Miss K. Welch, to be Nursing Sister	...	...	...	...	16- 6-32
Miss M. D. Steel, to be Nursing Sister	...	...	...	...	18-11-32
Miss C. E. V. Clark, to be Nursing Sister	...	...	...	...	16-12-32
Mr. J. L. Parker, to be Assistant Superintendent and Dispenser	...	...	...	...	3-11-32
Mr. E. J. Hines, to be Sanitary Inspector	...	...	...	...	17- 5-32
Mr. J. Ferrier, to be Sanitary Inspector	...	...	...	...	17- 5-32

Acting Appointments:—

			<i>From.</i>		<i>To.</i>
Dr. S. Forrest, Medical Officer, to act as Senior Medical Officer, Jinja	...	...	1- 1-32	...	15-10-32
Dr. L. D. Dennard, Medical Officer, to act as Senior Medical Officer, Mbale	...	...	13- 4-32	...	8-12-32
Dr. J. P. Mitchell, O.B.E., Medical Officer, to act as Medical Superintendent and Principal, Medical School, Mulago	...	...	17- 4-32	...	15- 8-32
Dr. L. J. A. Loewenthal, Medical Officer, to act as Ophthalmic Specialist	...	...	17- 4-32	...	End of year
Dr. G. R. H. Chell, Deputy Director of Sanitary Service, to act as Director of Medical and Sanitary Services	...	...	11- 5-32	...	End of year
Dr. H. R. Neilson, Senior Health Officer, to act as Deputy Director of Sanitary Service	...	...	11- 5-32	...	End of year
Dr. R. S. McElroy, Health Officer, to act as Senior Health Officer, Kampala	...	...	4- 8-32	...	End of year
Dr. L. D. Dennard, Medical Officer, to act as Senior Medical Officer, Busoga	...	...	12-12-32	...	End of year
Mr. H. T. Bott, Office Superintendent, to act as Confidential Clerk	...	...	9- 5-32	...	End of year
Mr. J. S. Cashmore, Clerk, Public Works Department, to act as Office Superintendent, Medical Department	...	...	9- 5-32	...	End of year

Termination of Appointments:—

Dr. J. McDaniel, Medical Officer	...	...	...	...	22- 3-32
Dr. G. A. Talwrn-Jones, Medical Officer	...	...	...	...	30- 6-32
Dr. M. D. Macqueen, Medical Officer	...	...	...	...	15- 7-32
Miss Ena Berd, Nursing Sister	...	...	...	...	16- 2-32
Miss L. Smith, Nursing Sister	...	...	...	...	27-10-32
Miss G. E. Merriman, Nursing Sister	...	...	...	...	10-12-32
Mr. W. G. Addington, Laboratory Assistant	...	...	...	...	30- 6-32
Mr. W. O. Tindall, Assistant Superintendent and Dispenser	...	...	...	...	2- 7-32
Mr. J. Ferrier, Sanitary Inspector	...	...	...	...	30- 9-32
Mr. A. J. Rayney, Clerk	...	...	...	...	11-10-32

Promotions :—

Dr. J. P. Mitchell, O.B.E., Medical Officer, to be Principal, Medical School and Medical Superintendent, Mulago ...	16- 8-32
Miss I. Baillie, Nursing Sister, to be Senior Nursing Sister ...	20-10-31

Transfers :—

Mr. G. H. E. Hopkins, Medical Entomologist, to be Entomologist, Agricultural Department ...	1- 1-32
Mr. T. W. Chorley, Laboratory Apprentice, Medical Department, to be Apprentice, Agricultural Department ...	1- 1-32
Mr. S. G. Laws, Laboratory Assistant, Medical Department, to be Laboratory Assistant, Veterinary Department ...	1- 8-32
Mr. G. P. Lunn, Clerk, Veterinary Department, to be Clerk, Medical Department	21- 4-32

Retirements :—

Major G. J. Keane, C.M.G., D.S.O., Director of Medical and Sanitary Services ...	24-11-32
Dr. W. L. Peacock, Senior Medical Officer ...	14- 4-32
Major R. J. A. Macmillan, D.S.O., T.D., Senior Medical Officer ...	1- 7-32
Dr. N. Bligh-Peacock, Medical Officer ...	4- 7-32
Dr. H. B. Owen, O.B.E., D.S.O., Medical Superintendent and Principal, Medical School, Mulago ...	16- 8-32
Miss. D. M. Ivers, Nursing Sister ...	18- 9-32
Mr. A. M. de Souza, 1st grade clerk ...	19- 8-32

Deaths :—

Mr. A. E. Baker, Laboratory Assistant, who was invalided out of the service in 1931, died during 1932 in England.	
Mr. J. C. de Souza, 2nd grade clerk, died on 10th February, 1932.	

(B) List of Ordinances affecting Public Health, etc.ENACTED DURING THE YEAR.—*Nil.***REGISTRATION OF MEDICAL PRACTITIONERS AND DENTISTS.**

The Ordinance governing registration came into force on the 1st July, 1913, since when and up to the 31st December, 1932, the following have been placed on the Register :—

Registered Medical Practitioners ...	167
Registered Medical Practitioner and Dentist ...	1
Dentists ...	6
Licensed Medical Practitioners ...	81

The numbers actually on the Register on the 31st December, 1932, were as follows :—

Registered Medical Practitioners ...	90
Registered Medical Practitioner and Dentist ...	—
Dentists ...	6
Licensed Medical Practitioners ...	36

REGISTRATION OF MIDWIVES.

The Ordinance governing registration came into force on the 31st March, 1927, since when and up to the 31st December, 1932, the following have been placed on the Register :—

Europeans and Asiatics ...	55
Africans ...	152

(C) Financial.

Corrigendum.—The total expenditure in 1931 was £166,915 3s. 44cts., and not £162,956 18s. 33cts., as stated on page 7 of the 1931 report. This represented 11·9 per cent. of the total revenue of the Protectorate for that year.

The total expenditure in 1932 was £147,801 19s. 92cts., a decrease of £19,113 3s. 52cts. on the expenditure for 1931. The decrease is accounted for by reductions on establishment through voluntary retirements of senior officers and retrenchments. General economy and reductions were also effected in all branches of the service.

The total expenditure represents 10·5 per cent. of the total revenue of the Protectorate.

The total revenue of the department was £16,974 12s. 74cts., as compared with £16,612 15s. 45cts. in 1931. The increase was confined to sales of medicine and contributions from Native Administrations for the purchase of drugs. There was a slight decrease in hospital fees and a decrease of £394 10s. 50cts. in the reimbursements received from the Kenya and Uganda Railways and Harbours on account of medical and sanitary services.

SECTION II.

PUBLIC HEALTH.

(A) General Remarks.

The outstanding feature of the year 1932 was the reduction in Medical Officer personnel consequent upon the recommendations of the Finance Advisory Committee of 1931. During the year Senior Medical Officer posts were reduced from four to three, and the number of Medical Officers on establishment from 37 to 31.

During the year the following senior officers retired from the service on pension:—

Major G. J. Keane C.M.G., D.S.O., M.D., Director of Medical and Sanitary Services since January, 1928, after 25 years' service in the Protectorate.

Dr. H. B. Owen, O.B.E., D.S.O., M.B., Medical Superintendent and Principal Medical School, Mulago, after 25 years' service.

Major R. J. A. Macmillan, D.S.O., T.D., M.B., Senior Medical Officer, after 20 years' service.

Dr. W. L. Peacock, M.B., Senior Medical Officer, after 18 years' service.

The loss to the Protectorate of the services of these officers will be severely felt.

Returns for the Year.—The full returns for the year appear in Table F at page 58. The table given below compares the year under review with previous years:—

	1928.	1929.	1930.	1931.	1932.
New cases ...	548,163	613,489	642,349	661,349	684,835
Cases admitted as in-patients to hospital ...	18,293	20,383	22,250	22,939	22,165
Cases admitted as in-patients to sub-dispensaries ...	3,159	4,990	6,813	5,586	1,907
Total attendances ...	2,275,725	2,590,394	2,762,948	2,842,769	3,016,851
Surgical operations ...	2,707	2,563	2,799	3,850	3,514

The decrease in the number of patients admitted to sub-dispensaries as in-patients was due to the fact that returns were no longer called for from sub-dispensaries where the standard of in-patient accommodation and treatment was not comparable to that obtaining in hospitals.

The percentage of females to total cases attending for treatment in the last four years is set out below:—

1929.	1930.	1931.	1932.
31.8	33.6	37.5	38.3

The increase is believed to indicate a growth of confidence in European treatment amongst the natives.

Cases by races are set out below:—

	Total cases.	Admissions.
European ...	2,647	316
Asiatic ...	7,392	636
African ...	674,796	23,120

A comparison of the European and Asiatic officials and non-officials who sought treatment during the last four years is given below:—

	1929.	1930.	1931.	1932.
European officials ...	1,410	1,652	2,088	1,551
European non-officials ...	1,126	1,178	1,203	1,096
Asiatic officials ...	4,085	3,812	3,388	2,668
Asiatic non-officials ...	5,034	4,452	4,495	4,724
Total Europeans ...	2,536	2,830	3,291	2,647
Total Asiatics ...	9,119	8,264	7,883	7,392
Total officials ...	5,495	5,464	5,476	4,219
Total non-officials ...	6,160	5,630	5,698	5,820

"Officials" appearing in the table above include the wives and families of officials, and officials not included in the tables appearing at pages 36—38.

Sub-dispensaries.—The number of sub-dispensaries open at the end of the year was 85, compared with 78 last year. The increase was due to existing gland examination posts in sleeping sickness areas appearing this year as sub-dispensaries.

A comparison of the work undertaken at sub-dispensaries for the last four years is given below :—

	1929.	1930.	1931.	1932.
Total new cases ...	333,946	344,584	407,893	426,143
Total attendances ...	1,483,330	1,543,916	1,804,329	1,904,375
Admitted to wards ...	4,990	6,813	5,586	1,907
Average daily number in wards ...	253	300	230	88

An explanation of the considerable decrease in the number of cases admitted to wards is given above.

Deaths in Hospital.—The principal causes of deaths in hospital during the last four years were :—

	1929.	1930.	1931.	1932.
Total deaths in hospital ...	1,314	1,356	1,280	1,354
Pneumonia ...	294	313	274	279
Accidents ...	142	137	116	115
Plague ...	123	50	19	40
Syphilis ...	63	69	48	41
Dysentery ...	60	21	37	26
Malaria ...	50	80	81	50
Tuberculosis ...	34	44	56	66

Sleeping Sickness.—The situation with regard to this disease was satisfactory. The most important development of the year was the introduction into the Protectorate of several cases of trypanosomiasis due to *T. rhodesiense* from Tanganyika Territory. The situation was well in hand by the end of the year.

Typhus Fever.—An outbreak of typhus fever was reported for the first time in the Protectorate. The outbreak was restricted to the Kigezi District and the disease was louse-borne and analogous in type to the European *typhus exanthematicus*.

Form of the Report.—Appendices have been omitted this year and their subject matter included in the body of the Report.

Acknowledgments.—The department is under an obligation to Sir Albert Cook, C.M.G., O.B.E., Lady Cook, O.B.E., and the Reverend Mother Kevin, M.B.E., for their invaluable work in connection with Maternity and Child Welfare and the training of midwives; to Dr. R. Y. Stones for the assistance he has so willingly and efficiently given in connection with the final examination of medical students from Mulago Medical School; and to Dr. Sharp, Dr. Hunter and the Reverend Mother Kevin for the leprosy work carried on by them in Kigezi, Teso, and at Nyenga respectively.

I. GENERAL DISEASES.

Epidemic, Endemic and Infectious Diseases.—The number of cases and deaths recorded in this group of diseases for the last four years is given below :—

				<i>Epidemic, Endemic and Infectious Diseases.</i>		
				<i>Cases.</i>	<i>Cases.</i>	<i>Deaths.</i>
				<i>Total all groups.</i>		
1929	584,878	197,643	465
1930	621,920	181,981	426
1931	661,658	193,005	397
1932	684,835	201,062	348

In 1929, the deaths due to diseases of this group formed 35 per cent. of the total deaths recorded. In 1932, the percentage was below 26. The percentage case incidence was 34 in 1929 and has remained at 29 since then.

General Diseases.—There were 46,662 cases recorded, compared with 39,869 cases in 1931. The deaths numbered 27 and 30 for the two years respectively. The increase in the numbers of cases appearing in this group during recent years is explained almost entirely by the increase in cases of chronic rheumatism and myalgia.

Pellagra did not occur during the year and only one case has been reported since 1928, indicating that the measures then taken for the control of the outbreak were successful.

Eighty-one cases of cancer were recorded which shows no appreciable difference from previous years.

One case of beri-beri and one of rickets were recorded.

Affections of the Nervous System and Organs of Sense.—The number of cases in this group was slightly less than last year, 59,555 as compared with 60,269. The only outstanding variation to be observed under this section is the yearly increase of cases diagnosed as trachoma, the following being the figures for the last four years: 2,898, 3,903, 4,489 and 5,051. It is probable that this does not represent an increase in the incidence of the disease, which is greater than represented by these returns, but is due to improved diagnosis at sub-dispensaries by African attendants. There were 48 deaths recorded under this group, compared with 35 in 1931.

Affections of the Circulatory System.—3,532 new cases were recorded with 48 deaths in hospital, compared with 2,996 cases and 45 deaths in 1931.

Affections of the Respiratory System.—An increase in the number of cases recorded in this group occurred, probably the result of an epidemic of influenza which broke out in some districts in the early part of the year. There was a corresponding increase in the number of cases of pneumonia, no doubt due to the same cause.

		1931.		1932.	
		Cases.	Deaths.	Cases.	Deaths.
Total group	...	83,172	...	89,717	...
Pneumonia	...	2,802	...	3,482	...
			290		296
			274		279

Diseases of the Digestive System.—The figures show little difference from those of the previous year, 88,925 cases and 116 deaths in 1932, compared with 87,289 cases and 133 deaths in 1931.

Diseases of the Genito-Urinary System.—An increase in the number of cases from 2,473 in 1931 to 3,277 was recorded with 40 and 45 deaths respectively for the two years. The increase was particularly evident in diseases of women, 1,093 occurring in 1931 and 1,482 in the year under review.

Puerperal State, Diseases of Infancy, Maternity and Child Welfare.—In this and previous reports, the figures relating to Maternity and Child Welfare have been included under the two headings "Puerperal State" and "Diseases of Infancy." It is hoped that in future it will be found possible to record the Maternity and Child Welfare figures separately.

The table appearing below shows the variation in the number of new cases during the last four years:—

	1929.	1930.	1931.	1932.
Women who attended for ante-natal supervision	954	2,753	3,760	7,254
Women who attended for diseases connected with the puerperal state	874	997	993	1,356
Babies who attended child welfare clinics	278	544	640	1,264
Sick babies brought to hospital for out-patient treatment	323	340	289	223
Women admitted to hospitals for child-birth	318	472	620	786
Normal babies born in hospital	231	472	591	758

The figures reflect the growing popularity amongst native women of the facilities provided for the care and attention of themselves during pregnancy and labour, and of their babies during infancy.

Affections of the Skin and Cellular Tissue.—The number of new cases who presented themselves for treatment dropped from 109,522 in 1931 to 97,683 in 1932. 56 deaths occurred in 1932.

Diseases of the Bones and Organs of Locomotion.—There were 2,878 cases in 1932 and 2,195 in 1931.

Malformations.—Only ten cases are recorded.

Diseases of Old Age.—76 cases were recorded.

Affections Produced by External Causes.—76,312 cases attended for treatment, compared with 72,761 in 1931.

Ill-defined Diseases.—904 cases.

Not Diagnosed.—4,145 cases.

The percentage incidence of groups of diseases for the last seven years is given below:—

	1926.	1927.	1928.	1929.	1930.	1931.	1932.
Epidemic, Endemic and Infectious ...	29.5	30.9	33.2	33.6	29.3	29.2	29.4
General ...	4.9	4.2	4.0	5.3	5.5	6.0	6.8
Nervous System ...	8.6	9.6	9.1	8.4	8.6	9.2	8.7
Respiratory System ...	14.1	12.4	13.6	14.5	14.9	12.6	13.1
Digestive System ...	13.9	13.7	13.4	13.3	12.9	13.2	13.0
Skin and Cellular Tissue ...	12.8	14.5	11.0	10.7	14.0	16.5	14.3
External Causes ...	11.3	10.9	10.5	12.1	12.3	11.0	11.1
Others ...	4.3	3.8	5.2	2.1	2.5	2.3	3.6

II. COMMUNICABLE DISEASES.

(a) MOSQUITO OR INSECT-BORNE.

I. General.

Trypanosomiasis.—(1) The incidence and mortality from sleeping sickness from the whole of Uganda during the past 28 years is summarized in the following table.—

Year.	Reported Deaths.	Year.	Reported Deaths.	Year.	Reported Deaths.	New Cases.
1905 ...	8,003	1915 ...	352	1925 ...	209	153
1906 ...	6,522	1916 ...	209	1926 ...	123	372
1907 ...	4,175	1917 ...	229	1927 ...	79	283
1908 ...	3,662	1918 ...	235	1928 ...	67	656
1909 ...	7,782	1919 ...	109	1929 ...	78	1,572
1910 ...	1,546	1920 ...	69	1930 ...	51	638
1911 ...	1,487	1921 ...	32	1931 ...	117	471
1912 ...	932	1922 ...	31	1932 ...	85	536
1913 ...	708	1923 ...	16			
1914 ...	466	1924 ...	194			

The distribution of the cases in 1932 was as follows:—

West Nile Area ...	317	Victoria Nyanza Area ...	7
Gulu Area ...	35	Lake Edward-George Area ...	144
Chua Area ...	29	Tororo ...	4

(2) The total number of new cases of sleeping sickness rose during 1932. Two factors, apart from the usual yearly variation in the numbers reported from known infected areas, contributed to this result:—

(a) Twenty-four suspects (cases not microscopically confirmed) who received treatment were classed as new cases this year; and

(b) a number of cases of sleeping sickness were detected in parts of the Lake Edward-George sleeping sickness area hitherto believed to have been free from infection.

(3) The number of deaths reported due to sleeping sickness decreased and in only ten instances was it certain that this disease was the direct cause of death, for it is seldom that the latter can be ascertained with any accuracy in the case of persons dying in the district since records are maintained only by native chiefs.

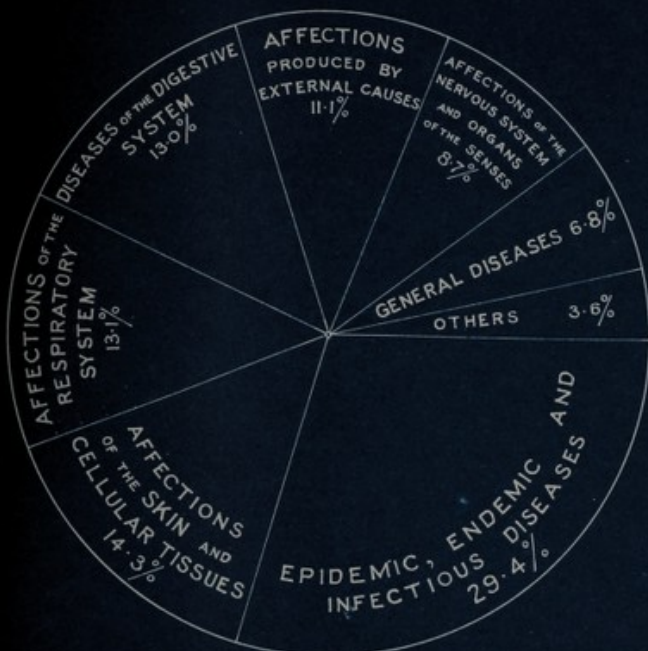
II. Sleeping Sickness Areas of Uganda.

A. WEST NILE SLEEPING SICKNESS AREA.

(i) *Staff.*—Economic circumstances compelled the reduction of the medical officer staff from three to two and to facilitate the district work both postings were made to Arua on the understanding that the areas previously dealt with by medical officers posted to Aringa and Pai-Ida should be toured from Arua as often and for as long a period as possible during the year.

The number of European Sleeping Sickness Inspectors was reduced from two to one and the remaining officer was posted by the District Officer, to oversee all new and old clearings.

THE PROPORTION OF EPIDEMIC, ENDEMIC, INFECTIOUS, SYSTEMIC AND OTHER DISEASES SHOWN AS PERCENTAGES OF TOTAL CASES.

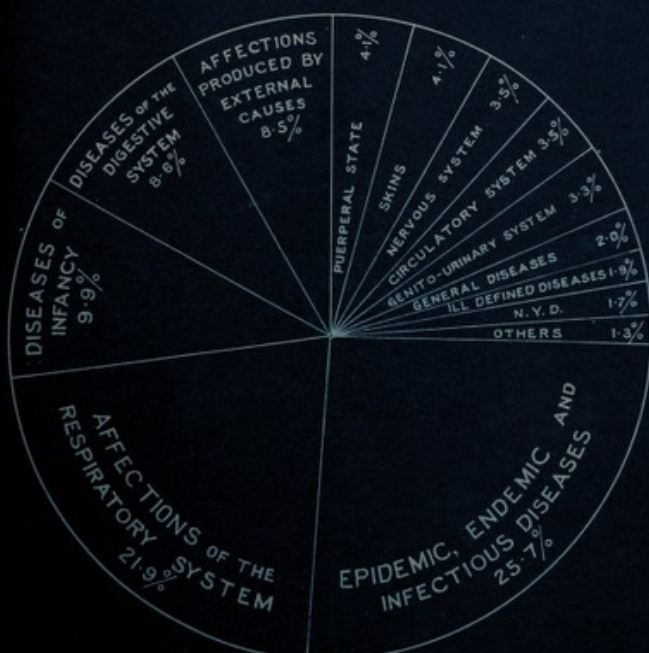


TOTAL INCIDENCE: — 684,835

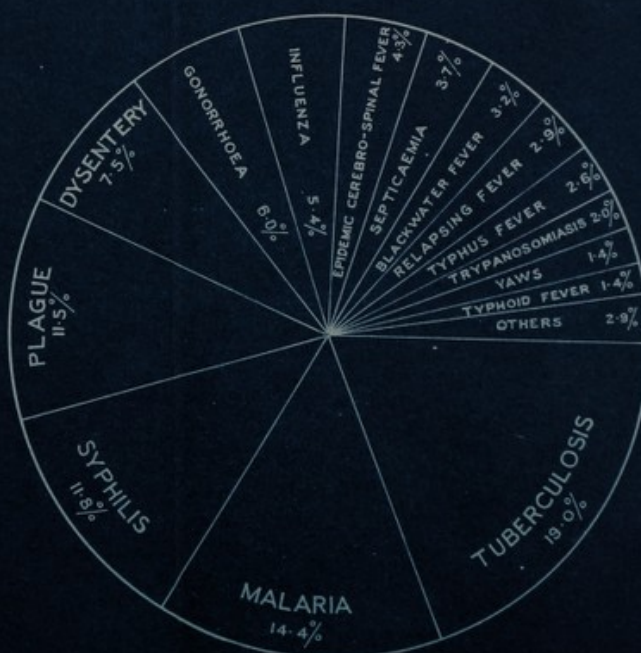
THE PROPORTION OF EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES.



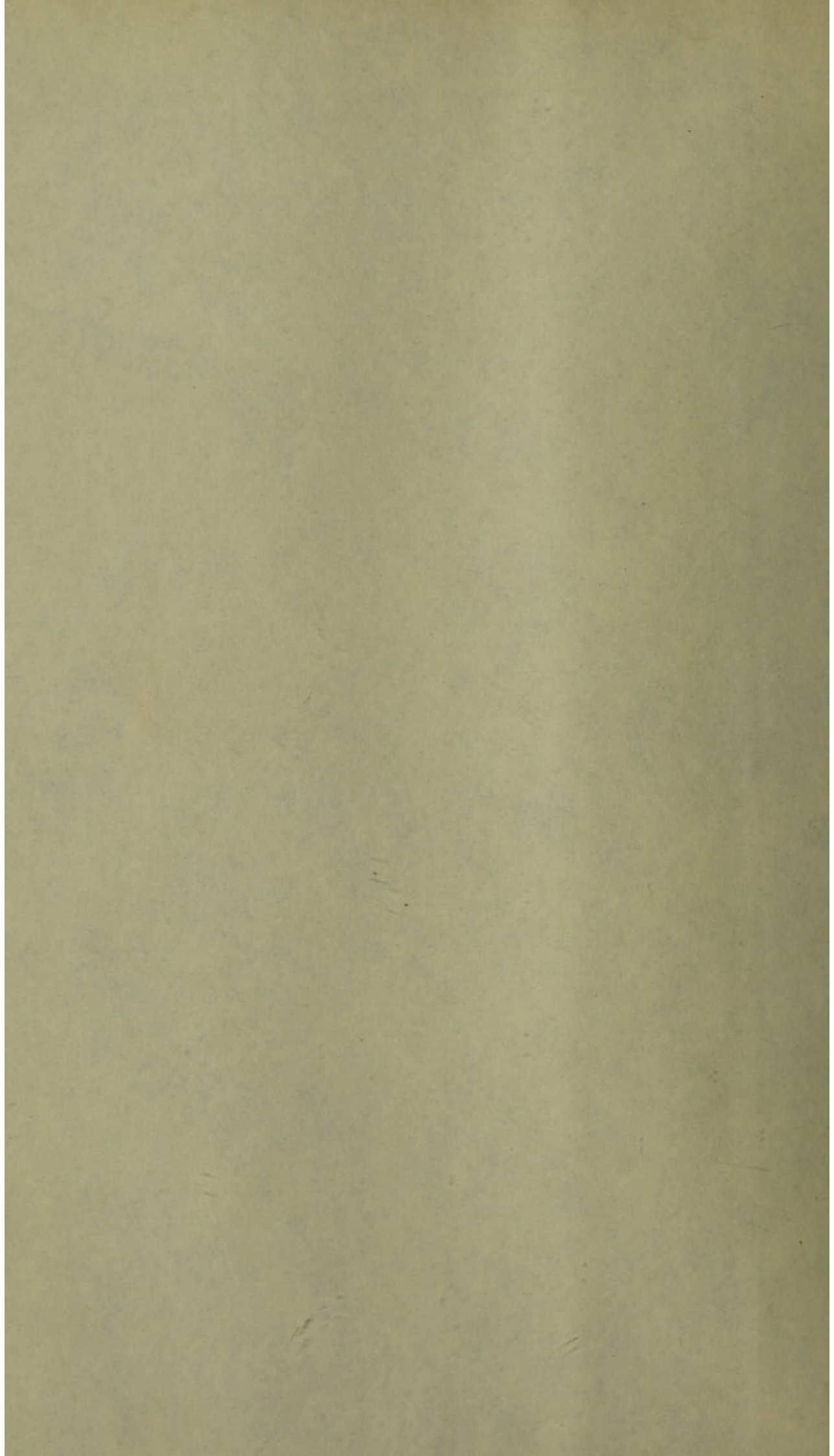
TOTAL INCIDENCE: — 201,062



TOTAL DEATHS: — 1,354



TOTAL DEATHS: — 348



The African staff of twelve gland examiners, six sleeping sickness inspectors and two registration clerks was reduced by three, but at nine centres and dispensaries in the West Nile district the staff gave treatment for sleeping sickness in addition to that for general diseases.

(ii) *Incidence of Infection.*—

	1928.	1929.	1930.		1931.		1932.	
	New.	New.	New.	Old.	New.	Old.	New.	Old.
Cases treated in Arua and sub-dispensaries	335	224	189 ...	32	59 ...	—	29 ...	14
Cases treated in Aringa and sub-dispensaries	411	943	349 ...	199	326 ...	63	264 ...	59
Cases treated at Junam and sub-dispensaries	53	379	39 ...	—	48 ...	108	24 ...	8
TOTAL	799	1,546	577 ...	231	433 ...	171	317 ...	81

No serious or widespread epidemic occurred. An incidence of less than 0·2 per cent. over the whole area when few districts are entirely free from the risk of infection, may be regarded as reasonably satisfactory, although it does not reflect the incidence in the more heavily infected areas such as Aringa where it was approximately 1·4 per cent. Almost all the population of the infected areas were examined once or more during the year and some of the people of the non-infected sleeping sickness areas.

(iii) *Mortality.*—Sixty-three deaths amongst old cases of sleeping sickness were reported during the year, but the District Medical Officer states that “probably the deaths are not due to sleeping sickness but are sleeping sickness cases who have died from some intercurrent disease.” In ordinary circumstances the duty of reporting deaths in the district devolves upon a native of limited education who at the best can only give an opinion as to the cause of death. During 1933, the District Medical Officer intends to review all old cases which have occurred since 1930 and perhaps then it will be possible to form a more accurate estimate of the mortality.

B. GULU SLEEPING SICKNESS AREA.

(i) *Staff.*—Throughout the year medical officers were posted both at Gulu and at Moyo, part of their duties being concerned with sleeping sickness. All the staff of the sub-dispensaries gave treatment for the disease and acted as gland examiners when required to do so.

(ii) *Incidence of Infection.*—

	1926.	1927.	1928.	1929.	1930.		1931.		1932.	
	New.	New.	New.	New.	New.	Old.	New.	Old.	New.	Old.
Cases seen at Gulu Hospital and sub-dispensaries (Acholi Area)	—	—	116	84	14 ...	25	12 ...	71	14 ...	25
Cases seen at Moyo Hospital and Sub-dispensaries (Madi Area)	239	167	36	36	32 ...	370	32 ...	94	21 ...	387
TOTALS	239	167	152	120	46 ...	395	44 ...	165	35 ...	412

The infected area of Madi and the Gulu sleeping sickness area were toured by medical officers on several occasions during the year and most of the people were examined in each area one or more times. Few new cases were discovered and it is apparent that no epidemic occurred anywhere.

(iii) *Mortality.*—Three deaths were reported from Gulu and fifteen from Moyo. Only six of these were known with certainty to have died from sleeping sickness.

C. CHUA SLEEPING SICKNESS AREA.

(i) *Staff.*—A medical officer was posted to Kitgum throughout the year and the staff of Kitgum hospital and Pader dispensary carried out sleeping sickness work as necessary; no special staff was employed on sleeping sickness duties except certain sleeping sickness inspectors employed by the Provincial Administration.

(ii) *Incidence of Infection.*—

	1928.	1929.	1930.		1931.		1932.	
	New.	New.	New.	Old.	New.	Old.	New.	Old.
Cases seen at Kitgum Hospital and Sub-dispensaries	19	39	3 ...	11	11 ...	3	29 ...	18

The sleeping sickness areas were toured on two occasions by the District Medical Officer and although only about half the population presented themselves for examination several new and old cases were seen. Most of the new cases came from the old endemic areas of Pader and Pajuli and a few from Palabek. The District Medical Officer considered that the establishment of a sub-dispensary at Pader had been the cause of the discovery of so many new cases. This confirmed the experience of other areas.

(iii) *Mortality*.—Only one death occurred amongst old cases of sleeping sickness, and it is not known if he died from the disease or some intercurrent condition.

D. VICTORIA NYANZA—NILE SLEEPING SICKNESS AREA.

(i) *Staff*.—In addition to the medical staff who were available for treating sleeping sickness cases and who were posted in the districts abutting on the area, that is, in Budama, Busoga, Mengo, Entebbe and Masaka, Health Officers were available in all districts and during the year they assumed most of the duties entailed in combating the invasion and spread of sleeping sickness.

A European sleeping sickness inspector, Mr. C. W. Chorley, was employed the whole of the year by the Provincial Administration to oversee the work of the African sleeping sickness inspectors working on the islands and lake shore. Though attached to the Provincial Commissioner, Buganda, Mr. Chorley was also available for duty in the portion of the Victoria Nyanza—Nile sleeping sickness area in the Eastern Province.

(ii) *Incidence*:—

				1930.			1931.			1932.		
				New.		Old.	New.		Old.	New.		Old.
Cases	...	...	...	5	...	2	5	...	2	7	...	—

All the cases diagnosed in this area were foreigners; two West Nile natives were infected with *T. gambiense*, and two Bazinja from Tanganyika Territory and one native from Belgian Ruanda were found to be infected with *T. rhodesiense*. One Muzinja and one Munyaruanda died before the infecting strains could be isolated.

During July, one Muzinja infected with *T. rhodesiense* and a Munyaruanda and a Muzinja who had trypanosomes in their blood but who died before they could be isolated, were admitted to Mulago hospital from Mpigi sub-dispensary in the Mengo district. The entry of three alien natives—one proved to be infected with *T. rhodesiense* and two presumably infected with it—constituted a grave danger to the Protectorate, both to *G. morsitans* belts north of the Kagera River and to the *G. palpalis* belts of the shores of Lake Victoria and the islands. The danger was greater to the latter area as the strain proved more readily transmissible by *G. palpalis* than by *G. morsitans* and the contact between man and fly in this area was sufficiently close to allow the disease to spread to epidemic proportions. The *G. morsitans* belts north of the Kagera river are sparse and separated from the northern fly belts by a fly-free area of approximately 50 miles depth. Moreover, immigrants from Tanganyika Territory are attracted rather to the east to the labour markets around Kampala and Jinja and there is no stream of labour passing north-west towards the Lake Edward fly belts which form the southern extension of a belt running north to the Sudan border. On this account, the threat to the *G. morsitans* belts was felt to be less dangerous than that to the *G. palpalis* belts. It is not, however, probable that an epidemic in the latter area would have rivalled the *T. gambiense* epidemic of the early years of this century because the population of the lake shore and islands is now so much less than formerly and is also under much closer observation.

The steps taken to deal with the situation are reported in Section III.

(iii) *Mortality*.—Two of the seven cases were in an advanced stage of the disease before they were admitted to hospital and both died. No deaths were reported amongst any of the old cases treated in previous years.

E. THE LAKE EDWARD-GEORGE SLEEPING SICKNESS AREA.

(i) *Staff*.—The District Medical Officer, Fort Portal, controlled the work in this area to the west and north of Lake Edward and Lake George; the eastern portions of the area lie in the Ankole and Kabale districts where medical officers were posted. In the Fort Portal area two sub-dispensaries, primarily for sleeping sickness work, were maintained at Mpondwe and at the Kanyampara River and were in the charge of an African sleeping sickness inspector and a hospital orderly.

(ii) *Incidence*.—

		1931.		1932.	
		New.	Old.	New.	Old.
Cases seen at Fort Portal Hospital and Sub-dispensaries	...	31	...	143	...
Cases seen at Mbarara Hospital and Sub-dispensaries	...	—	...	1	...

As indicated in the Annual Report for 1931, cases of sleeping sickness were being discovered at the end of the year in the extreme south-western part of this sleeping sickness area, chiefly near the Mpondwe River. During 1932, thirty-eight more cases were discovered as a result of several examinations of the population. Rather more than one-half of those infected were Belgian Congo nationals who had immigrated to Uganda because of the endeavours of the Belgian authorities to deal with epidemics of sleeping sickness on the western shores of Lake Edward and on the Semliki River. Others immigrated because of the remunerative work available on the new road construction in Busongora, while a few were professional salt carriers proceeding to Katwe who spend their lives travelling between the salt lake and their retailing posts in the Congo. The Belgian methods necessitated moving a number of people from the infected and densely bushed foreshore and river banks. This move was resented by the people, who are of the same tribe as those living on the Uganda side of the border, and many of these people, consequently, moved across the border and settled with relatives and friends. It is impossible to control this undesirable immigration since the border is long and can be crossed almost anywhere. Approximately half of the remainder who were not Congolese, gave a history of having spent recently varying periods in the Belgian infected area, and there is little doubt but that they were infected there. The balance, eight or nine adult males, were probably infected in Uganda as a result of trespassing in the restricted areas in search of building poles or game. The fact that apparently no women were infected locally strengthened the supposition that the infection was acquired in the restricted area which is at a distance from most habitations and into which women and children do not have occasion to penetrate, and the same hypothesis was also favoured by fly distribution which is extremely scanty except in the restricted area and along a fairly heavily infested stream near Katojo village on which grew the nearest available firewood of the village. Despite this no women or children living at Katojo acquired infection there although in the village were two infected Congolese women and a male child. In Katojo village and its neighbour, Bwengo, several of the locally infected male cases lived, some of whom had herded cattle on the edge of the restricted area while others were hunters and collectors of building material. It is hoped that a complete fly survey of this area will be undertaken during 1933, but there is no indication that a widespread epidemic can occur in this part of the area. The epidemic of 1932 was more apparent than real since so many of the cases were not due to a spread of infection but were imported from the Congo.

Towards the middle of the year it was noticed that cases were seeking treatment at Mpondwe who came from ten to fifteen miles further north and east, chiefly from the neighbourhood of the Kanyampara and Lwempyo rivers. Investigation by the District Medical Officer and by the Acting Director of Medical and Sanitary Services proved that foci of infection existed on both rivers, although in no place was the concentration of *G. palpalis* very marked.

Again, about half of those infected were Congolese or persons who frequently visited and resided in the nearby infected regions of the Congo. Without doubt it was the sudden influx of these people who started the spread of infection in the area. The total number of cases for this part of the area was 98.

It is probable that, since sleeping sickness is now established in this portion of Busongora, sporadic cases will occur from time to time, as the reservoirs of infection are so close and the Uganda restricted areas are so inviting, while it is impracticable to control immigration in either the Mpondwe or Kanyampara districts.

(iii) *Mortality*.—Amongst the cases treated at Mpondwe two died, one a Congolese in an advanced stage of the disease, and the second, a native of Uganda, from intercurrent disease. At Kanyampara one case died of sleeping sickness after first becoming blind, the only one to suffer from any severe ocular disturbances as a result of treatment either at Mpondwe or Kanyampara. It was stated locally that other persons had died during the year from sleeping sickness. These were all recent immigrants into the Kanyampara area from the Congo and were all said to have been ill on arrival. The report could not be substantiated by any responsible person.

Plague.—The number of cases and deaths recorded, 1,045 and 990 respectively, were less than half those for 1931 and it is possible that the greater enforcement of general sanitation in Uganda by the augmented Health staff contributed to this result. Table I shows the numbers of reported deaths from plague in Uganda since 1910. In Table II the distribution of plague by districts is set out. As usual, all the Eastern Province districts were involved except Bubulu. Lango District, which is now included in the Northern Province, was also a centre of infection. A severe epidemic started in Mengo and Entebbe in April and continued until the end of the year. In Masaka, the epidemic prevailing at the end of 1931 died out in February and no more cases were reported with the exception of four sporadic cases in Buddu during November.

TABLE I.—DEATHS REPORTED FROM PLAGUE SINCE 1910.

Year.	Deaths.	Year.	Deaths.	Year.	Deaths.	Year.	Deaths.
1910	3,623	1916	4,384	1922	1,305	1928	1,174
1911	3,734	1917	4,031	1923	914	1929	5,118
1912	3,100	1918	2,493	1924	810	1930	2,370
1913	3,292	1919	1,022	1925	869	1931	2,299
1914	3,725	1920	1,732	1926	1,589	1932	990
1915	4,028	1921	5,871	1927	1,863		
							TOTAL ... 60,336

TABLE II.—DISTRIBUTION OF PLAGUE CASES BY DISTRICTS.

Eastern Province :—		Cases.		Deaths.	
Bugwere	...	108	...	89	(One case and one death occurred in Mbale township).
Budama	...	60	...	56	
Teso	...	41	...	38	
Busoga	...	1	...	1	
TOTAL		210	...	184	
Northern Province :—					
Lango	...	132	...	124	
TOTAL		132	...	124	
Buganda Province :—					
Mengo	...	612	...	604	(Five cases and four deaths occurred in Kampala township).
Mubende	...	2	...	1	
Entebbe	...	59	...	54	
Masaka	...	30	...	23	
TOTAL		703	...	682	

Relapsing Fever.—There was a considerable increase in the incidence of this disease, 1,336 cases with 19 deaths being recorded, compared with 871 cases and 12 deaths recorded in the previous year. The number of cases returned year by year since 1925 is set out below, together with the proportion per 10,000 cases of all diseases treated :—

	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.
Cases	659	1,507	2,000	2,494	1,879	884	871	1,336
Proportion	22	44	46	45	32	14	13	19

The figures give an indication of periodicity which is possibly associated with waves of immigration of alien natives from adjacent territories who pass through

infected areas on their way to the labour markets around Kampala and Jinja. The distribution of the disease by districts for the last two years is set out below :—

WESTERN PROVINCE.					1931.	1932.
Toro	...	...	...	...	30	17
Kigezi	...	...	...	...	78	101
Ankole	...	...	...	...	392	503
BUGANDA PROVINCE.						
Masaka	...	...	...	...	145	477
Mubende	...	...	...	...	174	120
Entebbe	...	...	...	...	11	7
Mengo	...	...	...	...	35	88
NORTHERN PROVINCE.						
Bunyoro	...	...	...	...	1	13
EASTERN PROVINCE.						
Busoga	...	...	...	...	5	10
TOTALS					871	1,336

The increase was greatest in the Masaka District and to a less extent in the Kigezi, Ankole and Mengo Districts.

One route taken by immigrant labour from the Congo passes through Kigezi, Ankole and Masaka, and another, of immigrants from the Congo and Tanganyika Territory, passes through Masaka on the way to Mengo, one of the main labour markets. The District Medical Officer, Masaka, divided the increase in his district into a real and an apparent increase. The real increase occurred in alien porters as a result of increased immigration during the year. The apparent increase was due to improvement in methods of diagnosis applied by the African attendants in charge of sub-dispensaries.

Malaria.—A decrease in the number of cases was observed this year, 47,950 cases and 50 deaths, compared with 50,180 cases and 81 deaths in 1931. The distribution by types of disease and provinces is set out below :—

	Buganda Province.	Eastern Province.	Western Province.	Northern Province.	Total for the Protectorate.
Tertian Malaria	495	123	374	105	1,097
Quartan Malaria	186	53	3	85	327
Aestivo-Autumnal Malaria	2,669	895	1,218	716	5,498
Clinical Malaria	15,702	9,583	7,388	7,684	40,357
Mixed Infections	207	8	124	25	364
Malarial Cachexia	4	11	62	230	307
TOTALS	19,263	10,673	9,169	8,845	47,950

The figures submitted for the last five years indicate an increase of malaria in the Western and Northern Provinces. The number of cases who attend for treatment is not, however, a reliable criterion of increased incidence as medical facilities vary in different districts. The same objection applies to rates of malaria incidence based upon populations. It would appear, with the facts at our disposal, that the truest indication of trend of incidence can be obtained by an expression of the number of cases of malaria who sought treatment at hospitals and sub-dispensaries in terms of the total number of cases of all diseases who sought treatment. The following table sets out the results of the application of this principle by Provinces :—

Year.	Buganda Province.		Eastern Province.		Western Province.		Northern Province.		Protectorate.	
	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.
1928	21,669	159	13,805	61	3,286	46	5,524	56	43,893	83
1929	21,558	141	13,009	55	5,365	64	4,851	42	44,783	77
1930	22,067	133	10,138	42	8,337	89	6,082	49	46,624	75
1931	23,002	139	12,230	45	8,394	88	6,554	50	50,180	75
1932	19,263	119	10,673	42	9,169	80	8,845	55	47,950	69

These figures indicate a general and satisfactory decrease in the incidence of the disease in Buganda and the Eastern Provinces which might be expected in districts where measures for the control and cure of malaria have been most actively carried out. The incidence of the diseases in the Northern Province appears to be stationary, as the rise of 55 in 1932 is accounted for by the inclusion in this Province for the first time of the malarious Lango district which previously formed part of the Eastern Province. This result is not unexpected as less medical effort was expended in this Province than on either Buganda or the Eastern Province. A definite and considerable increase in the incidence of the disease in the Western Province was revealed.

If the same principle is applied to the districts of the Western Province, the following result is obtained:—

Year.	Toro District.		Ankole District.		Kabale District.		Western Province.	
	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.	Cases of Malaria.	Rate per 1,000 cases all diseases.
1928	1,026	39	2,117	81	143	8	3,286	46
1929	611	22	4,109	117	645	32	5,365	64
1930	840	27	6,323	138	1,175	73	8,337	89
1931	1,396	44	6,002	128	995	62	8,394	88
1932	1,690	44	6,300	115	1,179	56	9,169	80

Although the results are irregular, the indication is that the main increase occurred in the Kabale district. Records of Kabale district for previous years give the following "Malaria" incidence per 1,000 total cases: 1924, 6; 1925, 2; 1926, 6; 1927, 4; and it is thus apparent that in 1929 there was a considerable increase in incidence which has been maintained in subsequent years.

It is suggested later in this report that this increase may be in fact due to the introduction of typhus fever into the district, which passed unrecognised for several years and was recorded as "clinical" malaria.

Another point of interest in the tables given above is the high incidence of malaria shown in Buganda Province and Ankole District, and there appears to be a possibility that this high incidence is associated, in much the same way as in the case of relapsing fever, with immigration of alien natives, whose resistance to a fever contracted at a great distance from their native country would not be expected to be high. Ankole district and all the districts in Buganda Province are either passed through or settled on by these immigrants, with the exception of Mubende district where the incidence is comparatively low, *i.e.*, 78 per thousand cases of all diseases.

Blackwater Fever.—The total number of cases of blackwater fever reported from all sources in 1932 was 125 with 40 deaths, compared with 162 cases and 43 deaths in 1931.

Case Incidence, Mortality Rates and Fatality Rates for this disease for the last 21 years are set out in Table I below in approximately quinquennial periods. The figures given in the table demonstrate a considerable decrease in the case incidence, particularly marked amongst Europeans, a very considerable improvement in the mortality rate amongst Europeans, but little variation amongst Asiatics and a marked improvement in the European fatality rate accompanied by an increase in the rate amongst Asiatics.

Cases of blackwater fever occurring in Africans have not been included in this table. In the period under review 29 cases of the disease in local Africans were reported with five deaths, six in natives of the Seychelles with one death, and one case in a West Indian. In 1932, there were five cases occurring amongst Africans, one of whom was a native of Seychelles. One case died.

TABLE I.—CASE INCIDENCE, MORTALITY AND FATALITY RATES OF BLACKWATER FEVER FROM 1912 TO 1932.

Period.	Yearly average Population.			Cases of Blackwater Fever during the period.			Deaths from Blackwater Fever during the period.			Case incidence per 1,000 population.			Mortality Rate per 1,000 population.			Percentage Fatality Rate.		
	European.	Asiatic.	Total.	European.	Asiatic.	Total.	European.	Asiatic.	Total.	European.	Asiatic.	Total.	European.	Asiatic.	Total.	European.	Asiatic.	Total.
1912-1917	859	3,257	4,116	69 <i>a</i>	211 <i>a</i>	345	24 <i>a</i>	42 <i>a</i>	84	16.23 <i>c</i>	13.20 <i>c</i>	13.97	5.64 <i>c</i>	2.63 <i>c</i>	3.40	34.78	19.91	24.35
1918-1922	1,357	4,716	6,073	63 <i>b</i>	214 <i>b</i>	317	17 <i>b</i>	40 <i>b</i>	64	13.53 <i>d</i>	10.64 <i>d</i>	10.93	3.65 <i>d</i>	1.99 <i>d</i>	2.21	26.98	18.69	20.20
1923-1927	1,614	9,921	10,435	72	421	493	15	120	136	8.92	9.13	9.10	1.98	2.60	2.51	22.22	28.50	27.59
1928-1932	1,990	13,337	15,327	70	612	682	14	159	173	7.04	9.18	8.90	1.41	2.38	2.26	20.00	25.98	25.37
TOTAL PERIOD	1,362	7,424	8,786	274 <i>a b</i>	1,468 <i>a b</i>	1,837	71 <i>a b</i>	361 <i>a b</i>	457	10.18 <i>cd</i>	9.86 <i>cd</i>	9.96	2.64 <i>cd</i>	2.42 <i>cd</i>	2.42	25.91	24.52	24.88

(a) Cases for 1915 not differentiated and omitted.

(b) Cases for 1918 not differentiated and omitted.

(c) Population and cases for 1915 omitted in calculation.

(d) Population and cases for 1918 omitted in calculation.

The Incidence of Blackwater Fever by Provinces and Stations is given in Table II below, which has been corrected to allow for the recent transfer of the Lango District from the Eastern to the Northern Province. The disease has been reported from time to time from every Government station in the Protectorate with the exception of Kabale, Bubulu and Moroto.

TABLE II.

BUGANDA PROVINCE :—		1928.	1929.	1930.	1931.	1932.
Kampala ...	...	52	39	29	35	34
Masaka ...	...	—	2	—	1	3
Entebbe ...	...	2	1	5	2	3
Bombo ...	...	7	—	—	—	—
Mulago ...	...	—	2	—	1	2
Lugazi ...	...	—	—	—	5	4
District ...	...	—	—	—	7	—
NORTHERN PROVINCE :—						
Arua ...	...	1	1	7	2	1
Hoima ...	...	2	—	2	—	2
Masindi ...	...	9	1	3	3	—
Gulu ...	...	2	1	1	7	2
Kitgum ...	...	—	1	1	1	2
Butiaba ...	...	3	1	—	—	1
Moyo ...	...	2	—	—	—	1
Lira ...	...	5	10	13	8	5
EASTERN PROVINCE :—						
Jinja ...	...	38	13	21	11	17
Mbale ...	...	17	12	11	13	10
Tororo ...	...	5	12	2	12	5
Soroti ...	...	9	14	8	8	9
Namasagali ...	...	—	6	6	5	5
Kaliro ...	...	—	—	6	—	2
Iganga ...	...	—	—	2	3	—
Ngora ...	...	—	—	2	5	9
Kamuli ...	...	—	—	—	—	5
Nagongera ...	...	—	—	—	—	2
District ...	...	—	—	6	16	—
WESTERN PROVINCE :—						
Mbarara ...	...	1	1	5	1	1
Fort Portal ...	...	2	—	—	3	—
District ...	...	—	—	5	1	—

The Case Incidence by Provinces for the last five years is shown in Table III, from which it will be noted that liability of contracting the disease was greatest in the Eastern and Northern Provinces.

TABLE III.

	1928		1929		1930		1931		1932		1928 to 1932
	Population—Asiatics and Europeans.	Incidence of B.W.F. per 1,000.	Population—Asiatics and Europeans.	Incidence of B.W.F. per 1,000.	Population—Asiatics and Europeans.	Incidence of B.W.F. per 1,000.	Population—Asiatics and Europeans.	Incidence of B.W.F. per 1,000.	Population—Asiatics and Europeans.	Incidence of B.W.F. per 1,000.	
Buganda Province ...	6,710	9.0	6,590	6.1	6,886	4.9	8,522	5.9	1931 Population figures.	5.3	6.2
Eastern Province ...	5,218	13.2	5,897	9.6	7,080	8.8	5,301	13.7		11.6	11.3
Northern Province ...	1,330	18.0	1,346	11.1	1,215	22.1	1,500	14.0		9.3	14.9
Western Province ...	566	5.3	704	1.4	804	12.3	827	4.7		1.2	4.7

A review of the *incidence of the disease by months* over a period of five years showed that the maximum incidence occurred from May to August when the rainfall was heaviest in Uganda.

Nineteen cases occurred in women, all of whom were Asiatics. Twenty-one of the patients were Government officials, and the remainder private individuals.

Typhus Fever.—In 1932, typhus fever was diagnosed for the first time in the Protectorate. The disease broke out in the Kigezi District which lies in the extreme south-west corner of the Protectorate and is bounded on the south by Ruanda-Urundi, the territory of old German East Africa mandated to Belgium, and on the west

by the Ruchuru District of the Belgian Congo. The two principal tribes living in the district are the Banyaruanda, a Bantu tribe with a strong Hamitic admixture derived from the ruling Batussi, who occupy the larval flats north of the Bufumbiro mountains, and the Bakiga, a pure Bantu race occupying the hilly country to the east. The Bakiga are the race concerned with the present outbreak, but there is some reason to think that the disease may have first made its appearance in the Protectorate amongst the Banyaruanda. Both tribes are primitive in their customs and habits.

The credit for the recognition of the disease is due to Dr. T. H. Nolan, the District Medical Officer of Kigezi at the time of the outbreak. He reported by telegram in June a serious outbreak of indefinable infectious disease at the Catholic Mission in Kabale, the headquarters station of Kigezi, and in early August submitted a report, of which extracts are given below:—

"The outbreak commenced in a female dormitory in which forty catechumens of all ages were housed. Thirty-five cases occurred in six weeks. An adjacent male dormitory housing fifty catechumens had only five cases. Two native sisters who lived in a convent about 1,000 yards south of the dormitories and who were in attendance on the cases developed the disease. Three Roman Catholic Fathers, three other Native Sisters and the doctor who visited the sick daily, escaped.

NOTE.—One of the Fathers subsequently contracted the disease after a period of nearly six months.

"The entire mission has a common water supply and the Fathers, Sisters and others use raw water for all purposes. The catechumens were housed in very insanitary conditions. There were no intervals between their beds and all were heavily infested with lice. The native sisters occupied cleanly cubicles and were free from lice.

The fever lasted on the average for ten days. The onset was sudden with high pyrexia, a relatively slow pulse, severe frontal headache and cough with, in some cases, rales in the chest. A constant feature was a scarlet flushing of the margins of the tongue with a white enamel-like fur on the dorsum. The eyes were "pink," and obstinate constipation persisted throughout. A fleeting macular rash was observed in some cases, most obvious on the flexor surfaces of the forearms. Its development was difficult to follow as it tended to blend with the native coloring. A marked feature was tenderness over the lumbar spine. Two cases developed severe lumbar bed sores. One case showed a slight retraction of the neck. The facies was uniformly heavy and dull. Delirium and insomnia were observed in those with high fever. Blood slides were negative in all cases and agglutination tests for bacilli of the Typhoid, Paratyphoid, Brucella and the Salmonella groups were negative in ten selected cases. The fever ran a uniform course of ten days uninfluenced by treatment and showed no tendency to relapse. Two deaths occurred with signs and symptoms of broncho-pneumonia."

Dr. Nolan was transferred from Kigezi in August, to take up the duties of a Health Officer elsewhere, and at this time he was convinced that he had been dealing with an outbreak of typhus and suggested that bloods should be sent by Dr. E. N. Cook, the Medical Officer who relieved him, to the Central Laboratory at Mulago, in order that a Weil-Felix test should be undertaken. This was done and the laboratory reported "The serum sent has been tested and gave the following result: Serum agglutinated *Proteus* X 19 up to a dilution of 1/640 (H) and 1/160 (O)."

Dr. Cook reported cases from villages in the vicinity of Kabale during September and in order to determine the extent of the disease the Acting Deputy Director of Sanitary Service, Dr. H. R. Neilson, visited the district in October and reported: "The original opinion that the disease was purely localized at the Rushoroza Catholic Mission had to be abandoned, as reports of several cases, some of which on investigation turned out to be typhus, were received from isolated villages several miles away from the infected mission. Suspected cases are now being brought in daily to Kabale hospital."

By November, 108 cases and six deaths had been reported. There was still no incontrovertible proof that the disease was typhus, and the vector was not known, although the louse was strongly suspected. In order to settle these two points definitely it was decided to send the travelling laboratory to Kabale so that investigations could be undertaken on the spot, and the Senior Bacteriologist placed the investigation in the hands of Dr. R. S. F. Hennessey, Assistant Bacteriologist, assisted by Mr. E. G. Gibbins, Laboratory Assistant.

Dr. Hennessey undertook a very complete enquiry into the disease in the time at his disposal and the preliminary report he submitted indicated the extent and nature of the work undertaken and the results obtained. His investigations were carried out

during the period from 26th November to 21st December. The following excerpts from his report indicate the scope and extent of his investigations:—

"*Ectoparasites.*—The common ectoparasite of the local natives was found to be the louse. Head and body lice were present on a large proportion of out-patients examined at the hospital, and *Phthirus* was also noted in a few instances. Fleas were rarely encountered, and were not seen on a single one of the fourteen cases personally examined which were afterwards proved serologically to have typhus. Bed-bugs were present in large numbers in many huts, but although this insect and the head-louse have been shown to be infectible by feeding, it was considered that the scanty evidence which has hitherto been brought forward in favour of the spread of typhus by these two insects did not justify concentration upon them until the question of the body-louse had been ruled out. The potentialities of the latter insect were investigated first, and, as events turned out, the decision proved to be a sound one."

"*The Weil-Felix Reaction.*—A total of 80 tests was made during the investigation. Of these, 57 were performed on sera from hospital patients, and 23 on sera from natives of various localities in the neighbourhood of Kabale; some of the latter sera were from sick or convalescent people who refused to come to hospital, and others were from apparently healthy people living in the vicinity of suspected cases.

Cultures used in the Test.—The standard cultures used were:—

- (i) *Proteus* X 19, No. 3138 of the
- (ii) *Proteus* X, Warsaw strain (kindly supplied by the Medical Research Laboratory, Nairobi).
- (iii) *Proteus* X, Kingsbury strain (kindly supplied by the Medical Research Laboratory, Nairobi).

In performing the test, H and O suspensions were put up in parallel with varying dilutions of the serum to be tested. These dilutions usually covered a range from 1/50 to 1/6,400, but in some cases which were late in giving a positive reaction a dilution of 1/25 was also included. The H suspensions were prepared from the saline washings of 18-hour agar cultures grown at 37°C, and the O suspensions from 18-hour agar cultures which were washed off with absolute alcohol, heated for 1½ hours at 55°C, centrifuged and the deposit re-suspended in about 1 c.c. of distilled water, to which saline was afterwards added to the required opacity. The uniformly higher titre given by the O suspensions, together with the granular type of agglutination obtained in all cases, led to a certain number of tests being made without a duplicate H suspension, taking into account the work of Felix on the specificity of the O agglutinins in the sera of cases of typhus."

"*Results Obtained in Hospital Cases of Typhus and Suspected Typhus.*—

Total number of tests on sera from hospital patients	...	57
Number positive (agglutination in dilution 1/100)	...	28
Number negative	...	29

Table I gives details of the positive reactions obtained. In all tests, the total volume of serum dilution plus suspension was 1 c.c. The tubes were left in the water-bath at 55°C for six hours, and readings made after a further twelve hours at room temperature. The titre was taken from the tube containing macroscopically visible particles with the highest dilution of serum.

The results are of considerable interest in view of the close agreement with the clinical findings in each case together with the low titres ranging from 1/1,000 to 1/10,000 which are the rule rather than the exception in cases of typhus. Why no titre as high as 1/1,600 was obtained in this series is difficult to explain. The cultures employed showed no sign of S R variation, as judged from their behaviour when suspensions were added to varying strengths of saline (Arkwright's technique). The method employed by Bien in the preparation of O suspensions was also tried, but as the end-titres obtained with the strongest sera encountered remained the same the standard method described above was not discarded. One can only conclude that either the strains of *Rickettsia* prevalent in the Kigezi District are of relatively feeble antigenic value, or that the antibody-forming capacity of the local population is decidedly below par. It would have been of interest to test this latter hypothesis by the administration of various antigenic substances with periodic estimation of the antibody-content of the serum, but the time-limit set for the investigation precluded any attempt of this kind.

In conformity with the European experience of louse-borne typhus, no agglutination occurred with the Kingsbury strain in dilution as low as 1/50.

The constant negative results with this culture led to it being omitted in a number of tests in order to save time. As one would expect, a close correlation between the titres obtained for both X19 and Warsaw strains was observed, but, on the whole, the X19 strain proved to be the more uniformly specific.

Some cases were encountered whose sera failed to give a positive Weil-Felix reaction in as low a dilution as 1/50 until a fairly late stage of the disease. The exigencies of time and the limited apparatus available rendered the preparation of complete antibody curves impossible, but a titre of over 1/100 was usually found towards the end of the first week of hospital pyrexia, and titre of from 1/400 to 1/800 occurred during the second week, during which a form of crisis often took place."

TABLE I.

Hospital No. or Name.	Date.	H × 19	O × 19	H × W	O × W	O × K H × K
8634	26-11	1/800	1/800	1/200	1/200	0
	3-12	1/200	1/400	1/50	1/50	0
8636	26-11	1/400	1/400	1/50	1/50	0
8566	26-11	1/100	1/200	0	0	0
8433	26-11	1/800	1/800	1/400	1/400	0
	3-12	1/100	1/400	1/100	1/200	0
8668	30-11	1/100	1/200	1/100	1/200	0
	3-12	1/200	1/400	1/100	1/200	0
	8-12	—	1/100	—	1/50	—
8741	30-11	1/200	1/200	1/400	1/400	0
	6-12	1/200	1/400	1/400	1/400	0
8753	30-11	1/100	1/100	1/50	1/50	0
	6-12	1/100	1/100	1/200	1/400	0
Byengenguru	2-12	1/100	1/100	1/200	1/200	0
9248	18-12	—	1/400	—	1/400	—
9013	9-12	0	0	0	0	—
	16-12	1/400	1/800	1/200	1/800	—
	19-12	—	1/800	—	1/800	—
9245	19-12	—	1/100	—	1/100	—
9009	13-12	0	1/100	0	0	—
	16-12	0	1/100	0	0	—
9008	9-12	1/50	1/400	0	1/50	—
	13-12	—	1/200	0	1/50	—
Kilumboile	19-12	—	1/200	—	1/100	—
9011	10-12	1/50	1/100	1/50	1/50	—
	16-12	1/100	1/800	1/100	1/800	—
9216	17-12	—	1/800	—	1/800	—
9218	18-12	—	1/400	—	1/400	—

In the table, 0 means "no agglutination in 1/50," and — means "not tested."

N.B.—The above results are from cases which were clinically suggestive of typhus fever; in no case giving a negative result was a picture yielded which was in accordance with the local experience of typhus, although on admission a tentative diagnosis was sometimes made.

"Non-specific Agglutination of *Bact. Typhosum*.—Sera from the first thirteen hospital cases of typhus were also tested against H and O suspensions of *Bact. typhosum*, but in no case did agglutination occur in a dilution of 1/25. One specimen of serum from a patient giving a history of fever before admission failed to agglutinate any of the *Proteus* strains, but agglutinated *Bact. typhosum* in a dilution of 1/50 (H suspension only). This was the only positive result in twenty-one tests of this kind."

"Tests Performed on Sera from the District.—Sera collected from sick and convalescent people in the district, together with specimens from some individuals who had previously passed through clinical attacks of typhus in hospital, reacted as follows when put up against *Proteus* strains:—

TABLE II.

No.	Date.	Village.	Name.	History.	H × 19	O × 19	H × W	O × W	H × K O × K
1	30-11	Muyumbu ...	Kabuche ...	10 d. fever: prostration ...	1/200	1/200	1/400	1/400	0
2	"	"	Luchunde ...	Healthy. Husband of 1 ...	0	0	0	0	0
3	"	"	Zegere ...	" Another wife of 2 ...	0	0	0	0	0
4	"	"	Namakuna ...	" " wife of 2 ...	0	0	0	0	0
5	"	"	Kamanga ...	" " wife of 2 ...	0	0	0	0	0
6	1-12	Kikato ...	Jibine ...	Old ty. case 1/10—16/10	0	0	0	0	0
7	"	"	Rufanako ...	" " " " ...	1/25	1/25	0	0	0
8	"	"	Bukingire ...	" " " " ...	1/25	1/25	1/25	1/25	0
9	"	"	Buyonga ...	" " " " ...	0	1/50	0	0	0
10	"	"	Keiteraza ...	" " 7/10—15/11	1/25	1/50	0	1/25	0
11	"	"	Bakinaza ...	" " " " ...	0	1/25	0	1/25	—
12	2-12	Bukinda ...	Nyamahuru ...	Convalescent (fever) ...	0	0	0	0	—
13	"	"	Bulolo ...	Healthy. Contact of 12 ...	0	0	0	0	—
14	"	"	Yowana ...	" " " " ...	0	0	0	0	—
15	"	Maziba ...	Nyinabazi ...	15 days' fever ...	1/200	1/400	1/100	1/100	—
16	"	"	Kachoncha ...	Healthy. Husband of 15 ...	1/200	1/200	1/100	1/100	—
17	"	"	Nyanjala ...	Wife of 16. Recent fever ...	1/50	1/400	0	1/200	—
18	"	"	Nyamato ...	16 days' fever ...	1/100	1/400	0	1/200	—
19	"	"	Bakunzi ...	Husband of 18. Healthy ...	0	1/50	0	1/50	—
20	"	"	Nyanaku ...	Convalescent. Wife of 19 ...	1/50	1/800	1/50	1/200	—
21	14-12	Kisolo ...	Gwawonge ...	Fever ...	0	0	0	0	—
22	"	"	Nigungo ...	" " " " ...	0	0	0	0	—
23	"	"	Kuhuru ...	" " " " ...	0	0	0	0	—

"It will be observed that Maziba, a small village about 13 miles from Kabale, which had not provided any clinical cases of typhus for the hospital, was found to contain six people of whom four had passed through attacks of fever, the sera of these latter giving positive Weil-Felix reactions at titres which would seem to indicate recent experience of the infection; moreover, the sera of the remaining two people, who were apparently healthy and who gave no history of illness, contained agglutinins for *Proteus* X19. It must be admitted that no exact knowledge exists regarding the presence of normal agglutinins for *Proteus* strains in the sera of healthy inhabitants of the district, as a survey of this kind was impracticable during the period of investigation. However, the fact that not a single sample of serum from the remaining 51 individuals investigated contained agglutinins which were active in a dilution of 1/50 in the absence of either clinical signs of typhus or a history of recent suspicious fever, militates considerably against the possibility of the two Maziba sera being examples of non-specific agglutinin formation. It is much more reasonable to assume that the two individuals concerned had passed through mild or latent infections which were not sufficiently embarrassing to leave any impression of disablement in the minds of the persons affected. It will be obvious that if this type of case is at all common, ample opportunity exists for the perpetuation of the disease among the louse-infested inhabitants of the district."

"*Guinea-pig Inoculation from Human Cases.*—Only one guinea-pig was inoculated with blood from a proved case of typhus, the latter being a woman (Kesia) who afterwards died. The guinea-pig (G.1) passed through a typical period of pyrexia, commencing on the ninth day after the intraperitoneal inoculation of 2 c.c. of blood, and lasting approximately nine days. 2 c.c. of blood from G.1 were injected intraperitoneally into G.18 on the third day of pyrexia, and the temperature of this animal reached abnormal heights after an incubation period of nine days. G.18 was then killed; half of its brain was emulsified in about 5 c.c. of saline, and 2 c.c. of this emulsion were injected intraperitoneally into G.20, which is still under observation. Examination of smears from the *tunica vaginalis* of G.18 showed numerous *Rickettsia*, and sections of the brain and testis showed the typical lesions of experimental typhus in the guinea-pig, i.e., perivascular infiltration with lymphocytes and endothelioid cells, together with the presence of numerous lymphocytes in the brain substance itself."

"*Study of Post-mortem Material.*—Only one death occurred during the period of investigation, this being a woman (Kesia) who apparently contracted the disease while living in Kabale Police Lines. She was admitted on 21st November, 1932, and the disease rapidly assumed a very severe form. Jaundice occurred early, and was very marked just before death, which took place on 28th November, 1932. A post-mortem examination was performed and the following notes made:—

External Appearance.—Body of a female, about 25 years. Conjunctivæ and mucosæ deeply jaundiced. No marked emaciation or external signs of disease.

Abdomen.—No free fluid. Viscera deeply bile-stained. Intestine apparently normal. Spleen enlarged; congested. Liver slightly enlarged; no microscopic abnormality except bile-staining. Gall-bladder normal. Kidneys enlarged and congested.

Lungs.—Irregular ecchymoses, chiefly around bases. One hæmorrhagic patch on right base which when incised showed a central yellowish nodule about 5 m.m. in diameter.

Heart.—Right ventricle distended with blood; myocardium thin and flabby. No other abnormality.

Brain.—Meninges congested. One yellowish patch resembling fibrin present on the upper surface of the left lobe. No other lesions.

The immediate cause of death would appear to have been myocardial failure. Sections were prepared from tissues removed at the post-mortem examination.

Liver.—Congestion; cloudy swelling and pyknosis present in a considerable number of liver cells but otherwise no marked departure from the normal existed.

Lung.—Section showed a patch of broncho-pneumonia, with a small pyogenic focus in relation to the wall of an inflamed bronchiole.

Kidney.—A marked degree of acute glomerulo-tubular nephritis was present.

Brain.—The cortex showed a conspicuous diffuse infiltration with lymphoid cells. Some of the smaller vessels manifested a minor degree of perivascular infiltration of this kind. Sections stained by Giemsa's method showed no intra-cellular bodies which could be identified as *Rickettsia*."

"The histopathology of the tissues examined is in accordance with the clinical and serological diagnosis of typhus fever. (It should be mentioned that a macular rash appeared three days after admission to hospital in this case, but before death it had faded to a degree rendering the location of maculæ practically impossible)."

"*The Vector.*—The high degree of infestation of the local population with the body-louse made it probable that this insect played an active part in the transmission of the disease. While the possible existence of an animal reservoir for the infection was kept in mind, it was decided to concentrate at first upon the human parasite, particularly as the prevailing type of Weil-Felix reaction corresponded to that usually obtained in

cases of European louse-borne typhus. The problem was attacked from two angles; attempts were made to show (a) that lice from typhus cases were infective for guinea-pigs; and (b) that lice found on healthy people who were immune as a result of recent infection were capable of harbouring the virus in an infective form. In addition, smears were made from the gut of lice from typhus and non-typhus cases, in order to ascertain whether *Rickettsia* existed in the lice obtained from individuals of the former category while being absent from those of the latter; it was not, of course, expected that any hard-and-fast difference would exist, but it was hoped that the frequency of intra-cellular forms which might be provisionally identified as *R. prowazeki* would be greater in lice from infected sources. The actual experiments performed along these lines were as follows:—

(i) On 28th November, 1932, a woman was encountered at Muyumbu (about four miles from Kabale) who was suffering from an illness which had lasted about three weeks; she gave a history of fever with severe headache, and appeared to be very weak when seen (by the Laboratory Assistant). No specimen of blood could be obtained. Three lice were collected from the patient, emulsified in about 3 c.c. of saline, and injected intraperitoneally into G.2. This animal developed pyrexia on the tenth day after inoculation, the temperature returning to normal on the twentieth day. 2 c.c. of blood from G.2 were injected intraperitoneally into G.15 on the third day of pyrexia, but no signs of infection occurred in this animal.

(ii) On 30th November, 1932, another woman (Kabuche) was seen at Muyumbu who had been ill for ten days with fever, headache, and general weakness. A specimen of blood was taken, and the serum agglutinated O×19 and O×W in dilutions of 1/200 and 1/400 respectively. Seven lice collected from this woman were emulsified and injected into G.3 and G.4. G.3 developed a mild pyrexia on the ninth day after inoculation, the temperature returning to normal on the seventeenth day. On the fourth day of pyrexia, 2 c.c. of blood from this animal were injected intraperitoneally into G.13. G.13 showed no definite signs of infection, although a spike of temperature to 103·8° and 104·0°F, was manifested on two occasions. In view of the more conspicuous nature of the infection which resulted in G.4, further investigation of G.3's case was not undertaken.

G.4 developed a form of pyrexia which remained fixed between 103·0° and 103·4°F, rising to 104°F on the eleventh day. On the twelfth day, five days after the onset of a definite pyrexia, the animal was killed. Half of the brain was emulsified in 5 c.c. of saline, and 2 c.c. of the emulsion were injected intraperitoneally into G.12. Smears taken from the *tunica vaginalis* of G.4 were stained and examined for *Rickettsia*; these were found to be present. The brain was sectioned but apart from a considerable degree of lymphocytic infiltrations no marked departure from the normal existed. The testis, however, showed very characteristic perivascular infiltrations with lymphoid and endothelioid cells. In view of the pyrexia, the *Rickettsia* in the *tunica vaginalis* and the typical lesions in the testis, there is little doubt that G.4 was a case of guinea-pig typhus. The fact that G.12, inoculated with emulsified brain from G.4, developed a marked pyrexia commencing on the sixth day after inoculation is additional proof of infection. This strain is still being maintained in guinea-pigs.

(iii) At the village of Kikato, about five miles from Kabale, a woman (Jibine) was seen on 1st December, 1932, who had passed through a clinical attack of typhus in Kabale hospital during the period 1st October, 1932—16th October, 1932. This woman appeared perfectly healthy, and her serum failed to agglutinate any of the *Proteus* strains in a dilution of 1/50. Four lice were collected from her, emulsified in saline, and injected intraperitoneally into G.5. G.5 developed pyrexia on the seventh day after inoculation. This subsided slightly on the following day, but remained persistently at or above 103°F; on the twelfth day the animal was killed, and half of its brain emulsified in about 5 c.c. of saline. 2 c.c. of this emulsion were injected into G.14, which developed pyrexia on the ninth day. Sections of the brain and testis of G.5 showed slight generalised lymphocytic infiltration with some perivascular infiltration in the former, and marked perivascular infiltration in the latter. Smears from the region of the *tunica vaginalis* of this animal were, unfortunately, destroyed by an oversight, but the transmissible pyrexia, in conjunction with the testicular lesions is strongly in favour of a diagnosis of typhus. The infection transferred from G.5 is still under observation.

(iv) Three children, two of whom had passed through clinical attacks of typhus at Kabale hospital during the period 1st October, 1932—16th October, 1932, were also seen at Kikato on 1st December, 1932. Specimens of blood from two of the children agglutinated O×19 in a dilution of 1/25. Four lice were collected from the three, were emulsified, and injected intraperitoneally into G.6; this animal developed pyrexia on the eighth day, the temperature remaining at or above 103°F for six days, after which it became more irregular, with two further spikes up to 104° on the sixteenth and nineteenth days. 2 c.c. of blood from G.6 were injected into G.16 on the fourth day after the onset of pyrexia. This animal developed pyrexia on the ninth day, and the apparent infection passed on from G.6 is still under observation.

(v) On 2nd December, 1932, a male native named Byengenguru was admitted to hospital with a history of four days' fever, headache, constipation and deafness. He ran no sustained pyrexia while in the ward, but his serum agglutinated O×19 and O×W in dilutions of 1/100 and 1/200 respectively. Ten lice from this case were emulsified and injected into G.7 and G.8. G.7 developed pyrexia on the fourth day, and as the temperature remained high, this animal was killed three days later. Its brain was emulsified in 5 c.c. of saline and 2 c.c. of this emulsion were injected into G.11, which showed pyrexia on the fifth day. Smears from the *tunica vaginalis* of G.7 showed *Rickettsia* and the testis showed lesions characteristic of guinea-pig typhus, the brain also displaying a diffuse lymphocytic

infiltration and some perivascular infiltration. G.11 was killed on the sixth day of pyrexia and a portion of its brain emulsified and injected into G.23. The presence of *Rickettsia* in the *tunica*, with the typical brain and testicular lesions, was confirmed in G.11. G.23 is still under observation, and a pyrexia has already appeared. G.8, inoculated with the same louse emulsion as G.7, also manifested a pyrexia, commencing on the fifth day and lasting for approximately twelve days. As a result of the clear-cut results obtained in the case of G.7, the study of the infection in G.8 was not carried further.

(vi) On 10th December, 1932, a female named Tibakoba was admitted to hospital suffering from an illness of seven days' duration, characterised by headache, cough, constipation and fever. A rash was visible on the abdomen and face, and deafness developed on the fourth day of her stay in hospital. Her serum agglutinated O x 19 in a dilution of 1/150 on admission and six days later, just before her temperature fell to normal, the titre had risen to 1/800 for both O x 19 and O x W suspensions. Approximately twelve lice from this patient were emulsified and injected into G.19, which developed pyrexia on the eighth day after the inoculation. Four days later, 4 c.c. of blood from this animal were injected into G.24, which is still under observation.

(vii) A woman named Nyamoto, who had passed through a prolonged attack of fever at Maziba, about thirteen miles from Kabale, and whose serum agglutinated O x 19 in a dilution of 1/400, was de-loused on 2nd December, 1932. Approximately twelve lice were emulsified and injected into G.10, but observation of this animal for twelve days showed no definite pyrexia, after which the study had to be discontinued.

The type of infection induced in these guinea-pigs presented several points of interest.

Incubation Period.—This varied from four to ten days in eleven animals presenting a definite form of pyrexia, the average being seven days. The severity of pyrexia varied inversely with the length of the incubation period, some of the highest figures recorded being observed in the three animals infected with the Byengenguru strain, in which only 4–5 days elapsed before the temperature reached abnormal figures.

Scrotal Lesions.—No external reddening or swelling of the scrotum was observed in any of the infected guinea-pigs. A gelatinous exudate was conspicuous on both layers of the *tunica vaginalis* in G.7 and G.8 (Byengenguru strain), G.4 (Kabuche strain) and doubtful in G.5 (Jibine strain). The perivascular infiltration noted in all four animals was very definite.

Cerebral Lesions.—The brain and meningeal lesions observed were of a relatively minor degree of severity, judging from the histological pictures usually recorded for infections of the European louse-borne type. Descriptions of the cerebral involvement found in guinea-pigs infected with Mexican strains of typhus are more closely in accordance with the histopathology of the disease in the animals studied during the investigation in Kigezi.

On the whole, although it has not yet been possible to study the infection in laboratory animals as fully as is desired, there is no reason to doubt that the disease which has been induced is a form of typhus. The transmissible pyrexia, with marked testicular lesions and the presence in smears from the *tunica vaginalis* of intracellular and extracellular forms bearing a close resemblance to *Rickettsiae* form practically conclusive evidence on this point.

The results obtained by injecting guinea-pigs with emulsions of lice may be summarised as follows:—

Source.	1st Guinea-pig.	2nd Guinea-pig.	3rd Guinea-pig.
(i) Convalescent case of ? typhus at Muyumbu.	G.2. Pyrexia 10th to 20th day.	G.15. 2 c.c. blood from G.2 on 13th day. No Pyrexia.	—
(ii) Typhus case at Muyumbu. Weil-Felix positive.	G.3. Pyrexia 9th to 17th day. G.4. Pyrexia 7th day. Killed 12th day. <i>Rickettsia</i> and typical lesions.	G.13. 2 cc. blood from G.3 on 13th day. Indefinite pyrexia. G.12. 2 cc. brain emulsion from G.4 on 12th day. Pyrexia 6th day.	—
(iii) Old typhus case at Kikato.	G.5. Pyrexia 7th day. Killed 12th day. Testicular lesions.	G.14. 2 cc. brain emulsions from G.5 on 11th day. Pyrexia on 9th day.	—
(iv) Three children, two old typhus cases, at Kikato.	G.6. Pyrexia on 8th day.	G.16. 2 cc. blood from G.6 on 12th day. Pyrexia on 9th day.	—
(v) Case of typhus. Weil-Felix positive.	G.7. Pyrexia 4th day. Killed 7th day. <i>Rickettsia</i> and typical lesions. G.8. Pyrexia 5th day.	G.11. 2 cc. brain emulsion from G.7 on 7th day. Pyrexia on 5th day. Killed 11th day. <i>Rickettsia</i> and typical lesions.	G.23. 2 cc. brain emulsion from G.11 on 11th day. Pyrexia.
(vi) Case of typhus. Weil-Felix positive.	G.19. Pyrexia 8th day.	—	—
(vii) Convalescent case of typhus at Maziba.	G.10. No definite pyrexia.	—	—

"Answers to the main questions under review were supplied by the guinea-pig inoculations. In the first place, the infection of G.3, G.4, G.7, G.8, and G.19 by the intraperitoneal injection of louse emulsions from known cases of typhus showed the potentialities of these insects as disease-carriers when in actual contact with infected people. In the second place, the infection of G.5 and G.6 by means of lice from people who had actually passed through attacks of typhus six weeks previously demonstrated what may be termed the endemicity of the infection in lice from healthy immunes, and the danger which such individuals are to the community at large. With regard to the infection of the lice in this latter group, it is difficult to say how it originated; the de-lousing of hospital patients is rigorously carried out and as such people would be no longer likely to infect lice after their recovery, one can only surmise that they re-acquired infected parasites after their return to their homes, Kikato being a locality from which a considerable number of typhus cases have emanated."

"*Rickettsia in Lice*.—A number of lice from typhus and non-typhus cases were dissected and smears from the gut stained for *Rickettsia*. The results obtained were as follows:—

No. of lice.	Case.	Rickettsia.	Remarks.	Guinea-pig inoculation.
2	... Luchunder, healthy male ...	Present	Intra- and extra-cellular forms ...	Not tried.
1	... Husband of Kezia, latter a typhus case.	Present	Intra- and extra-cellular forms ...	Not tried.
3	... Jibine, old typhus case ...	Very numerous	Intra- and extra-cellular forms ...	G.5 infected.
3	... Children, old typhus cases ...	Present	Mainly extra-cellular; a few doubtful intra-cellular.	G.6 infected.
1	... Sentama, non-typhus case ...	Present	Extra-cellular only	Not tried.
5	... Tibakoba, typhus case ...	Very numerous	Intra- and extra-cellular forms ...	G.19 infected.
1	... Ibulayimu, typhus case ...	Very numerous	Intra- and extra-cellular forms ...	Not tried.

"The presence of extra-cellular bodies resembling *Rickettsia* in all sixteen lice dissected rendered any clear-cut results impossible. The difficulty of raising a "clean" laboratory-bred stock of lice in the time available prevented a study of the louse infection from being carried out."

"*Question of an Animal Reservoir*.—In view of the American findings in endemic typhus, it was considered that the possibility of rats acting as a reservoir of typhus virus should be investigated. The infection in human beings might be explicable on a basis of "rat virus→rat flea (or mite)→man→louse→man" transmission. Accordingly, Muyumbu and Lusolosa, two foci at which numerous typhus cases have occurred, were systematically searched for rats, but with disappointing results. On five rats caught at Muyumbu not a single flea was found, and only one mite was seen. In the case of Lusolosa, two rats represented the morning's "bag"; from these, one flea and two mites were removed. The relatively scanty rodent population in highly infected areas strongly negatives such a mode of transmission as that suggested above, although it is, of course, conceivable that the bite of a single infected flea, or mite, could impress the virus upon the human population of a louse-ridden district. In any case, the proof of such an origin for the human infection would be extremely difficult to obtain, as wherever rats are present in large numbers a secondary infection of the rodent population with a primarily human virus easily occur."

A subsequent report received from Dr. Hennessey established his findings and is reproduced below:—

"*Experimental Infection of Rabbits with Typhus Virus*.—The Byengenguru strain of typhus was passaged through five guinea-pigs and the brain of the fifth animal was emulsified and injected intraperitoneally into a rabbit (R.1) and guinea-pig (G.32). G.32 developed a typical infection, while the serum of R.1 gave the following reactions when tested for O×19 agglutinins:—

Time in Weeks.		Titre.
0	... ..	0 = No agglutination in 1/5 dilution.
1	... ..	0
2	... ..	1/5
3	... ..	1/10
4	... ..	1/5
5	... ..	0
6	... ..	0

The Tibakoba strain, after four guinea-pig passages, was also inoculated into a rabbit (R.2). The serum of this animal reacted as follows with a suspension of O×19:—

Time in Weeks.		Titre.
0	... ..	0 = No agglutination in 1/5 dilution.
1	... ..	0
2	... ..	1/10
3	... ..	1/40
4	... ..	1/10
5	... ..	1/10
6	... ..	1/5

These results provided final conclusive evidence as to the nature of the infection which was passed through the guinea-pigs."

By the end of the year Dr. E. N. Cook had reported 120 cases treated in hospital with nine deaths. He stated "the disease reached epidemic proportions during October, November and December," and was widely distributed throughout the Kigezi District. Laboratory investigation had proved the disease to be typhus fever. The type of disease was similar to the European variety and differed materially in many respects from the disease termed "Tropical Typhus Fever."

It is not clear when the disease was introduced into Kigezi or from where, but the following circumstances indicate that its introduction is of comparatively recent date, and that it may have originated from Northern Ruanda in the Belgian Congo, where a disease similar to that described above is believed to exist.

In the Annual Report of the Provincial Commissioner, Western Province, for 1927, it was stated "I regret to report an increase of malaria and it would appear that labourers have returned with this infection from Buganda which has been transmitted to mosquitoes hitherto uninfected. This disease affects the Banyaruanda severely."

The Banyaruanda occupy the territory in the extreme south-west corner of the Protectorate adjacent to the Belgian Congo. In October, 1928, the District Commissioner, Kigezi, whilst on tour, addressed the District Medical Officer, Kigezi, in the following terms:—

"1. The wife, two children and three servants of the chief of Busanza have died of a disease locally known as Kapfura which, in symptom, may be akin to cerebral malaria.

2. Its incidence is principally along the shores of Lakes Chahafi and Mutanda and the River Kaku (Rutchuru).

3. There have been applications for relief from taxation this week from no less than 22 men whose wives have recently died, after a very short illness, from "Kapfura" and left them with young children to support.

The etymology of the word may, perhaps, signify the 'little death'."

Lake Mutanda and the River Kaku are near the Belgian border on the west opposite Rutchuru. Lake Chahafi is almost upon the southern border.

The Provincial Commissioner, in his Annual Report for 1928, stated "In Kigezi, malaria round the lakes and rivers in the south . . . has in recent times appeared in a very virulent and spasmodically epidemic form causing high and rapid mortality, presumably because of the newness of the impact."

These reports were the subject of medical enquiry by two independent medical officers in the early part of 1929 but no evidence of an increase of the incidence of malaria could be obtained, and no cases of "Kapfura" were seen, and the suggestion was made that the disease reported might be influenza. The incidence of malaria in the Kigezi District, as indicated by the ratio of the number of cases diagnosed clinically as malaria at sub-dispensaries and hospitals to each 1,000 cases of all diseases who sought treatment, shows a marked and sustained rise in 1929 and succeeding years.

Number of "Malaria" cases	1924	1925	1926	1927	1928	1929	1930	1931	1932
per 1,000 cases of all diseases	6	2	6	4	8	32	73	62	56

The diagnosis of malaria was made in the majority of cases at sub-dispensaries by partially-trained Africans without microscopic confirmation, and it may well be that the disease Kapfura noted by the Provincial Commissioner in 1927 and by the District Commissioner in 1928 and the sustained increase in the incidence of pyrexial diseases diagnosed as malaria since 1928 may, in fact, represent the advent and extension of typhus fever introduced in Kigezi from Belgian Ruanda in 1927. This suggestion receives some support from the fact that the native name for typhus fever in Kabale is "Kafura."

(b) INFECTIOUS DISEASES.

Epidemic Cerebro-spinal Fever.—235 cases were recorded this year, compared with 33 in 1931, 24 of the 25 cases admitted to hospital died. The increase in the number of cases was the result of an epidemic which broke out in January over an extended area in the Aringa County of the West Nile District, followed in February by small village epidemics at Aravu and Rigbo in the same district. A total of 191

cases and 121 deaths was reported from this district and all three outbreaks were under control by the end of April. A small outbreak of fifteen cases with three deaths occurred in the adjacent Madi sub-district, and probably had its source of origin in the Aringa epidemic.

Encephalitis Lethargica.—Thirteen cases were reported during the year, twelve from the Northern Province and one from the Western Province. Two cases occurred in 1931.

Dysentery.—There were 2,655 cases and 23 deaths reported during the year, compared with 2,545 cases and 37 deaths during the previous year.

Influenza.—A larger number of cases were recorded this year than ever before.

Year.	Cases.	Deaths.	Year.	Cases.	Deaths.
1924 ...	12,402	3	1929 ...	12,710	3
1925 ...	10,633	13	1930 ...	7,135	5
1926 ...	8,600	13	1931 ...	5,706	4
1927 ...	6,887	3	1932 ...	15,144	19
1928 ...	11,455	5			

The disease broke out in epidemic form in Kitgum in December, 1931, and January, 1932, and during January and February spread to the districts of Lango, Madi, Bunyoro and Gulu, all in the Northern Province. A small epidemic occurred at the same time in Entebbe. The disease was of a mild type.

Leprosy.—2,174 cases of leprosy were treated in Government hospitals and sub-dispensaries. Figures were not available of the number treated by the various religious bodies engaged in the work of combating this disease except in the case of Kabale where a total of 275 lepers were treated in a leper camp, 150 cases being admitted during the year and none discharged.

Treatment for leprosy was given at all Government district hospitals and dispensaries, but medical officers who dealt with any considerable number of cases were unanimous in reporting that the results of all forms of treatment had been very disappointing. In no case did medical officers recommend institutional treatment for lepers, and medical officers posted in the areas of heaviest incidence stated that they considered expenditure on leper settlements or camps could not be justified at present.

Typhoid Fever.—Forty-four cases of typhoid fever with eight deaths were reported, and of these, thirty-four African cases with six deaths were treated at Government hospitals. The distribution and type is shown in the following table:—

Cases.				Deaths.	Type.
<i>Europeans.</i> —					
Jinja ...	...	...	1	1	Undefined. Post-Mortem diagnosis only.
<i>Asiatics.</i> —					
Kampala ...	...	...	5	—	Undefined. Notified by private practitioners.
Mengo District (Kyagwe) ...	...	...	3	—	Undefined. Notified by private practitioners.
Masaka ...	...	...	1	1	Undefined. Case treated by private practitioner.
<i>Africans.</i> —					
Mulago Hospital, Kampala ...	...	...	30	5	28 typhoid, 1 Para B, 1 undefined.
Mbarara ...	...	...	1	—	Undefined.
Mubende ...	...	...	2	—	Undefined.
Masaka ...	...	...	1	1	Undefined. Sent from Mission hospital.
Total ...	...	...	44	8	

Only twelve of the cases reported from Kampala are known to have contracted the disease in Kampala, as fifteen cases were admitted to Mulago hospital from distant villages and no details of residence were furnished in eight cases.

The yearly incidence of typhoid in Kampala since 1917 was thus:—

1917 ...	0	1921 ...	6	1925 ...	28	1929 ...	85
1918 ...	2	1922 ...	6	1926 ...	37	1930 ...	39
1919 ...	18	1923 ...	16	1927 ...	60	1931 ...	66
1920 ...	13	1924 ...	6	1928 ...	56	1932 ...	12

The case mortality over the last ten years has been:—

1923	...	4.1	1927	...	21.7	1930	...	18.6
1924	...	27.3	1928	...	18.9	1931	...	20.0
1925	...	11.1	1929	...	16.4	1932	...	18.1
1926	...	17.6						

Tuberculosis.—

			1929.		1930.		1931.		1932.
Cases	...	...	379	...	324	...	363	...	687
Deaths	...	...	34	...	44	...	56	...	66

It is too early to say if the considerable increase in the number of cases represents an actual increase of the incidence of the disease, or whether it is due to improvement in diagnosis and to the native taking greater advantage of the facilities for treatment provided. Of the total cases, 588 were pulmonary and laryngeal. The increase was distributed generally throughout the Protectorate with the exception of the Eastern Province, where a slight decrease was recorded.

Syphilis and Yaws.—Since 1928, there has been little variation in the total number of cases of both diseases together, although differences are apparent in the numbers of each disease separately.

			1928.		1929.		1930.		1931.		1932.
Syphilis	...	...	69,015	...	74,722	...	65,979	...	64,591	...	68,432
Yaws	...	...	35,126	...	37,378	...	38,066	...	47,598	...	43,773
Both diseases	...	...	104,141	...	112,100	...	104,045	...	112,189	...	112,205

In the Buganda Province, where the inhabitants are almost pure Bantu, syphilis accounts for about 95 per cent. of the total incidence. In the Chua, Gulu, West Nile, Madi and Lango Districts of the Northern Province, where the inhabitants are mainly Nilotic, yaws accounts for a similar percentage of the total incidence. In the rest of the Protectorate, with some exceptions, where the tribes are made up of varying proportions of Bantu, Nilotic, and Hamitic elements, neither disease predominates to the same extent. In these districts there is no doubt that great confusion of diagnosis exists, particularly in the later stages of the two diseases, and it is on this account that both are considered together.

The incidence of the two diseases per hundred total cases for the five years under review shows a decrease:—

			1928.		1929.		1930.		1931.		1932.
19.4	...	...	19.1	...	16.7	...	16.9	...	16.4	...	...

Gonorrhoea.—A considerable increase in the number of cases treated for this disease was recorded. It is assumed that greater advantage was being taken of the facilities offered for treatment.

			1929.		1930.		1931.		1932.
8,609	...	...	8,619	...	8,931	...	10,591	...	...

Anthrax.—Only thirteen cases with no deaths were reported during the year from Masaka District. There was no spread of the outbreak which occurred near Leontonde.

(c) HELMINTHIC DISEASES.

Ancylostomiasis.—774 cases with seven deaths were reported. There were 836 cases in 1931 and 739 in 1930.

Cestoda.—2,621 cases in 1932, compared with 2,435 in 1931.

Ascaris.—A considerable increase, from 929 cases in 1931 to 1,765 in 1932, was recorded. 1,445 of these cases are from the Western Province, where the infection with tapeworm is also very high.

Dracunculus.—

			1930		1931		1932
1,482	...	...	1,711	...	1,478	...	...

Schistosomiasis.—Although only 93 cases are recorded in Tables V and VI at the end of this Report, 134 cases were recorded in the individual reports submitted by Medical Officers. Nineteen cases were recorded in 1931 and 166 in 1930.

S. Haematobium.—Two cases were recorded from Lango and one from Masaka; total, three.

S. Mansoni.—The distribution of cases of infestation with this parasite is given below:—

Butiaba, 40; Masindi, 10; Madi, 30; Kitgum, 17; Soroti, 10; Entebbe, 14; Arua, 3; Gulu, 3 (1 splenomegaly); Masaka, 1; Kampala, 3; Total, 131.

(B) Vital Statistics.

GENERAL NATIVE POPULATION.

The returns for the year are set out in Tables A, B and C.

In the light of the facts revealed by the 1931 census, it appears desirable to review the situation with regard to vital statistics before offering any comment on those now submitted.

The first census of the Protectorate was undertaken in 1911. At that time a large part of the Protectorate had hardly yet come under close administration, and the ethnological details published in the census of this year were in many cases inaccurate and incomplete. In consequence, when the results of a second census were published in 1921, no attempt was made to correlate the population figures for subsequent years by analysis of the 1911 and 1921 census figures, and owing to the shortcomings of the 1911 census, it is extremely doubtful if any good would have come from such an attempt.

The population figures of districts appearing in the 1921 census appeared to be generally acceptable as a basis for those of subsequent years. There was a tendency for these basic figures to be increasingly forgotten as the years went by, but if the 1911 census figures were rejected, there were no other means left of submitting figures after 1921 to any form of check.

From 1922 onwards, the district population figures (and their summation, the Protectorate population) published in the Blue Book and in this Report were obtained by a kind of annual unofficial census collected by minor chiefs and passed forward through Gombolola and Saza Chiefs to the District Officer, who, after having collected the figures so obtained, submitted them through the usual channels. The resulting figures did not appear unreasonable although annual variations occurred which could not be explained by a natural excess (or deficit) of births over deaths, but which could be readily understood if the migratory tendencies which have been displayed by the natives of this and surrounding territories since the Great War were borne in mind.

In 1921, a few districts were submitting a record of births and deaths, but it was not until 1926 that this was partially regularised and extended to the whole Protectorate (with the exception of Karamoja) by the introduction of a form for recording births and the deaths of infants under one year of age from which it was possible to calculate a crude birth rate and an infantile mortality rate for the whole Protectorate. This form was replaced in 1930 by a general vital statistics return form and it then became possible to calculate crude birth and death rates, infantile and maternal mortality rates and a still-birth rate for the Protectorate by districts. The rates so obtained were liable to variation as a result of the irregularly varying population figures, but not to such an extent as to invalidate them, and they were regarded with a certain amount of complacency as giving valuable indications of the trend of growth of populations. A third census was taken in May, 1931.

By the time it became necessary to prepare the annual reports for 1931, gross census figures by districts for this year were available and it then became evident that the estimated district population figures of inter-census years were in many cases inaccurate and in some cases very widely so. The census figures were accepted as a basis of calculation for birth and death rates for 1931, and their discrepancy with the district population figures for 1930 was reflected in corresponding discrepancies between the rates for the two years, which, although not apparent in the return by Provinces only was very obvious when rates by districts were under consideration.

No detailed census figures for 1931 were available during 1932, but a comparison of the gross 1931 figures with corresponding figures for 1921 gave rise to grave doubts as to the accuracy of one or the other. For example, the population of two districts to which no abnormal immigration had been noted, had increased during the decennium at a rate of over 50 per 1,000 per annum, which, in the absence of mass immigration, of necessity implied a birth rate of over 70 per 1,000 per annum. There were so many anomalies of this nature that it was provisionally decided not to use the census figures as a basis for the calculation of the rates for 1932, but to revert

to the old method previously adopted in inter-census years. This suggestion had to be abandoned when it was discovered that in some districts the figures for 1932 followed the 1921—1930 series; in other districts, a new series was commenced based on the 1931 census figures, whilst in a third group the figure submitted was a compromise between the two series which adapted itself happily to neither. At this time it appeared that it might become necessary to omit the publication of vital statistics for 1932.

In May, 1933, when this Report was in preparation, the detailed figures of the 1931 census were received. It was then too late to include in the Report the results of comparison of these figures with the 1921 census, or indeed to make any but a most cursory investigation of the two. A few facts were noted, however, which suggested that some at least of the apparent anomalies would disappear on further investigation. A comparison of the gross census figures for 1921 and 1931 of the native population of the Mengo District of the Buganda Province indicated that during the decennium the population had increased at the rate of 7·2 per thousand per annum whereas the number of recorded births and deaths for the three years 1930, 1931 and 1932 indicated that the population of this district was decreasing at the rate of 5·4 per thousand per annum. When, however, from the detailed census returns, consideration was given to the indigenous natives only of the Mengo District, i.e., the Baganda, the census figures for 1921—1931 showed that these people had actually decreased in the district at the rate of 7·4 per thousand per annum over the decennium. The increase in the gross population during this period was due to immigration of natives non-indigenous to the district. A further study of the returns of the non-indigenous population of the district in 1931 revealed the fact that 80 per cent. of them were males and the implication of this is that the majority of them were a floating population not settled in the district, and outside its tribal organisation. It is, therefore, clear that what appeared to be an inexplicable anomaly between birth and death returns and census figures when gross figures only were considered disappeared when detailed figures were considered. It remains to be seen if all the apparent anomalies can be similarly explained.

This single observation helped to restore confidence in the figures provided by the 1931 census, and it was decided to use them as the basic figures for the calculation of birth and death rates, the 1932 figures being obtained by adding the number of births recorded in each district during the year to the 1931 census population figures and subtracting the number of deaths. This method disregards any increase or decrease of population resulting from migration, but in the present state of our knowledge of populations and their movements, there is no way of estimating the effect of this factor. It is hoped that by a close study of the detailed census returns, and by the application of new additional checks upon the estimated district populations in inter-census years, in the course of time a satisfactory degree of accuracy may be achieved.

A further factor which depreciates the value of the vital returns is inaccuracy of registration of births and deaths. There is no short cut to improvement in this respect, and accuracy can only be obtained by years of constant and close supervision, particularly in the more backward parts of the Protectorate. Signs are not wanting that in the more enlightened districts the value of birth registration at least is appreciated, and it appears that it is only a matter of time before the returns will constitute a valuable record of trend of populations.

From what has been said above it is evident that it is unsafe to draw hard and fast conclusions from the figures now published. Nevertheless, it is felt that they do reflect some part of the truth and do deserve consideration.

Birth Rate and Death Rate.—The position appears to be satisfactory for the Protectorate, although the small excess of births over deaths in the Buganda Province is disquieting. The decrease in both rates for the Protectorate in 1932 is caused principally by the decrease recorded by the Western Province. This decrease is considered to be the result of faulty registration. The tendency to record births more accurately than deaths has been mentioned above, and it is probable that the considerable decrease in the death rate for 1932 recorded by the Eastern, Western and Northern Provinces is also due, in part at least, to neglect of registration.

Still-birth Rate.—These rates call for little comment. No explanation is at present available for the comparatively low rate recorded in the Western Province.

Infantile Mortality Rate.—The very satisfactory improvement in this rate recorded in the Buganda Province is believed to reflect the result of maternity and child welfare work undertaken in this province by Missions and Government.

Maternal Mortality Rate.—This rate shows some improvement but remains extremely high, due to the almost universal native habit of administering oxytocic drugs to women in labour. The extension of maternity and child welfare work should result in the course of time in a very considerable improvement in this rate.

TABLE A.—RETURN SHOWING BIRTH, DEATH, STILL BIRTH AND
FOR THE LAST

PROVINCE AND DISTRICT.	BIRTH RATE PER 1,000 POPULATION.							DEATH RATE PER 1,000 POPULATION.						
	1926	1927	1928	1929	1930	1931	1932	1926	1927	1928	1929	1930	1931	1932
RUGANDA :—														
MENGO	18'09	19'22	15'98	15'88	14'71	15'85	16'61	...	...	...	...	18'66	22'24	22'15
ENTEBBE	22'83	26'27	24'63	24'79	24'92	17'52	17'84	...	...	...	...	24'60	15'21	14'59
MASAKA	25'23	25'18	23'15	25'22	26'35	27'97	25'20	...	...	...	...	20'68	18'44	17'42
MUBENDE	18'71	19'12	18'78	18'26	19'22	21'81	20'18	...	...	...	...	22'58	19'28	17'99
TOTAL	20'52	21'73	19'50	19'78	19'70	19'70	19'25	19'35	17'18	18'98	18'47	20'77	19'46	18'84
EASTERN :—														
BUSOGA	35'16	39'38	35'80	35'48	37'39	31'84	31'38	24'52	20'68	20'19	18'91	26'38	23'69	22'68
BUDAMA	22'82	21'79	20'87	25'63	37'55	34'24	33'86	...	...	...	...	22'75	21'39	16'95
BUGISHU	32'42	36'09	36'86	35'12	31'64	43'31	37'82	...	...	...	...	21'88	23'75	20'10
BUGWERU	...	22'05	20'28	22'48	26'85	26'89	29'43	...	...	...	...	32'59	25'63	18'82
TESO	11'76	17'01	15'83	19'11	21'87	23'34	23'90	...	...	...	...	19'15	23'73	15'53
TOTAL	22'61	26'52	25'11	26'44	30'28	31'17	30'66	...	...	...	...	24'26	23'62	19'27
WESTERN :—														
TORO	48'37	52'25	48'77	42'92	34'35	24'26	21'12	23'78	20'75	25'06	20'30	24'26	21'70	17'30
ANKOLE	31'25	36'39	34'64	34'22	38'50	37'51	24'84	19'87	19'55	16'50	17'76	26'91	26'97	19'31
KIGEZI	...	...	43'85	40'37	29'69	37'86	37'37	...	...	...	...	13'42	15'74	15'20
TOTAL	37'29	41'97	40'97	38'28	34'55	33'95	27'92	...	...	...	...	21'69	21'87	17'41
NORTHERN :—														
LANGO	32'85	31'69	29'32	33'13	33'27	34'63	38'22	...	...	...	...	21'09	26'76	20'66
BUNYORO	17'54	18'25	21'63	23'77	23'26	18'03	19'17	22'57	20'03	26'98	28'76	32'56	21'59	21'33
GULU	27'95	37'08	34'66	39'60	45'28	40'83	44'90	...	...	...	...	27'41	27'57	24'33
CHUA	49'26	35'04	42'80	39'13	47'64	53'96	52'57	...	...	...	...	24'54	29'18	30'90
WEST Nile	37'49	44'03	35'88	28'20	28'28	27'80	28'41	...	...	...	...	10'79	11'61	11'42
TOTAL	32'15	34'60	32'64	32'12	33'97	32'73	34'58	...	...	...	...	20'49	21'37	19'32
UGANDA PROTECTORATE	27'40	29'94	28'14	28'13	29'19	29'18	28'11	...	...	...	...	22'06	21'75	18'30

INFANTILE MORTALITY RATES FOR THE UGANDA PROTECTORATE SEVEN YEARS.

STILL-BIRTH RATE PER 100 BIRTHS AND STILL-BIRTHS.							INFANTILE MORTALITY RATE PER 1,000 BIRTHS.							MATERNAL MORTALITY RATE PER 1,000 BIRTHS AND STILL-BIRTHS.		
1926	1927	1928	1929	1930	1931	1932	1926	1927	1928	1929	1930	1931	1932	1930	1931	1932
...	...	...	...	3.75	5.05	5.34	115.13	104.49	129.92	100.98	125.16	148.71	107.54	15.11	14.27	13.32
...	...	...	...	3.58	2.95	1.77	182.16	147.93	162.63	112.47	129.33	100.43	85.36	6.15	7.17	6.22
...	...	...	...	2.86	3.57	5.39	139.03	127.46	146.21	109.03	106.37	97.41	89.54	9.30	7.66	5.15
...	...	...	...	3.67	5.28	8.93	204.93	168.62	208.22	144.81	168.39	114.48	113.97	7.41	4.19	8.98
5.94	5.31	4.82	6.65	3.45	4.29	5.37	149.90	130.27	155.32	112.86	128.16	118.21	99.60	10.23	9.07	9.23
5.47	4.83	5.27	4.51	4.73	6.09	7.97	330.60	276.15	288.82	292.72	267.00	234.93	206.04	13.28	13.32	13.06
...	...	...	...	4.99	1.42	1.83	352.25	448.17	421.96	373.16	264.02	211.05	145.24	12.72	10.31	11.36
...	...	...	...	7.37	6.46	5.76	305.29	312.32	376.65	210.05	264.59	231.84	172.86	17.37	13.94	11.82
...	...	...	...	4.78	6.95	5.28	...	309.90	305.75	364.29	196.63	181.56	134.84	20.32	16.16	11.79
...	...	...	...	0.82	0.87	0.30	174.59	119.36	138.98	121.13	85.03	88.30	87.81	15.24	13.02	12.39
...	...	...	...	4.24	4.77	4.96	313.80	285.87	308.30	264.72	223.55	198.13	158.96	15.33	13.38	12.28
25.95	24.42	23.32	24.03	3.58	5.71	5.58	340.26	342.21	325.02	322.26	360.76	377.57	278.54	16.58	19.25	19.08
12.72	15.27	13.11	17.82	4.36	4.78	3.89	369.60	299.83	304.21	338.30	286.28	267.48	207.90	13.78	12.08	8.40
...	...	...	...	1.56	1.55	0.86	...	...	182.32	204.00	124.69	139.36	144.44	15.08	8.74	4.81
...	...	...	...	3.37	3.83	2.95	354.16	318.52	271.57	290.57	256.57	243.08	194.81	14.83	12.35	9.15
...	...	...	...	2.07	1.31	0.57	380.68	348.76	337.14	210.83	198.09	189.12	132.05	10.56	10.91	8.13
30.32	29.68	29.53	20.44	17.65	21.13	18.98	534.93	433.14	416.53	382.36	323.51	244.17	172.08	7.81	4.97	3.33
...	...	...	...	2.71	2.97	2.33	386.35	343.98	265.60	226.64	311.18	365.69	252.14	11.96	17.22	6.17
...	...	...	...	5.73	6.12	5.66	119.61	247.80	219.17	346.02	384.04	327.12	341.89	23.40	16.96	22.44
...	...	...	...	4.30	3.60	3.56	219.62	184.64	106.04	104.79	229.19	234.19	259.10	40.70	47.92	23.95
...	...	...	...	4.83	5.04	4.26	288.12	283.92	241.62	220.28	259.22	258.54	223.33	20.74	22.39	13.87
...	...	...	...	4.06	4.53	4.46	276.27	259.73	254.35	232.75	223.65	209.71	173.19	15.74	14.60	11.56

TABLE B.

TABLE SHOWING INCREASE OR DECREASE OF BIRTHS OVER DEATHS FOR FIVE
DISTRICTS FOR THE LAST 16 YEARS.

YEAR.			BUGANDA.	BUSOGA.	BUNYORO.	ANKOLE.	TORO.	TOTAL INCREMENT.
1917	...	...	- 4,385	+ 2,240	- 1,466	+ 857	+ 1,583	- 1,171
1918	...	...	- 3,873	+ 1,553	- 2,851	+ 776	+ 1,657	- 2,738
1919	...	...	- 5,709	- 3,135	- 2,061	- 1,870	- 176	- 12,951
1920	...	...	- 2,204	+ 2,025	- 1,012	+ 496	+ 907	+ 212
1921	...	...	- 711	- 1,483	- 997	+ 889	+ 1,896	- 406
1922	...	...	- 1,458	+ 2,953	- 891	+ 1,503	+ 1,872	+ 3,979
1923	...	...	- 624	+ 2,194	- 856	+ 1,611	+ 1,670	+ 3,995
1924	...	...	+ 37	+ 3,295	- 970	+ 2,329	+ 2,924	+ 7,615
1925	...	...	+ 1,059	+ 5,726	- 818	+ 3,727	+ 3,253	+ 12,947
1926	...	...	+ 1,179	+ 5,314	- 500	+ 2,891	+ 3,602	+ 12,486
1927	...	...	+ 3,475	+ 5,703	- 443	+ 4,446	+ 3,955	+ 17,136
1928	...	...	+ 1,091	+ 4,656	- 492	+ 4,848	+ 3,686	+ 13,789
1929	...	...	+ 1,357	+ 5,572	- 329	+ 4,238	+ 3,505	+ 14,343
1930	...	...	- 940	+ 3,799	- 801	+ 3,139	+ 1,571	+ 6,768
1931	...	...	+ 213	+ 3,084	- 406	+ 2,945	+ 497	+ 6,333
1932	...	...	+ 357	+ 3,322	- 246	+ 1,556	+ 743	+ 5,732

TABLE C

VITAL STATISTICS RETURN OF THE UGANDA PROTECTORATE FOR THE YEAR 1932 (NATIVE POPULATION ONLY)

EUROPEAN OFFICIALS.

The officials included in Table D below are those officials whose names appear in the Protectorate Staff List only. Wives and families are not included nor are officials of the Kenya and Uganda Railways and Harbours whose names do not appear in the Staff List. The reason for the latter omission is that these officials, often engine drivers and guards, are not stationed in Uganda, and enter and leave the Protectorate continually in the course of their duties. In their case it would not be possible to give either the total or the average number resident.

TABLE D.

Table showing the sick, invaliding and death rates of European officials during the last three years:—

	1930	1931	1932
Total number of officials resident	590	607	542
Average number resident	396	431	385
Total number on sick list	1,116	1,075	751
Total number of days on sick list	2,871	3,053	2,536
Average daily number on sick list	7.86	8.35	6.94
Percentage of sick to average number resident	1.98	1.93	1.79
Average number of days on sick list each person	2.57	2.84	3.37
Average sick time, each resident	7.22	7.08	6.58
Total number invalided	2	6	5
Percentage of invalidings to total residents	0.34	0.98	0.92
Total deaths	2	2	1
Percentage of deaths to total residents	0.34	0.33	0.18
Percentage of deaths to average number resident	0.50	0.46	0.28
Number of cases of sickness contracted away from station		No record.	
Number granted local sick leave	28	31	23
Average number of days sick leave for each resident granted local sick leave	18.32	16.35	14.73

The most common diseases suffered from were:—

Malaria	325	Diseases of respiratory system	43
Injuries	66	Neurasthenia	7
Diseases of digestive system	56	Dysentery	3
Influenza	52		

Medical Boards were held to enquire into the health of eleven sick European officials during the year and the following recommendations were made:—

(a) To be invalided out of the service	5
Nervous exhaustion	1
Insanity	1
Hyperpiesia	1
Epilepsy	1
* Carcinoma of stomach	1
* Died in England before being invalided out.	
(b) To proceed on home leave for treatment	3
Duodenal ulcer	1
Pulmonary tuberculosis	2
(c) To proceed on leave (Nervous debility and insomnia).	1
(d) Fit to complete tour of service	2
Tachycardia	1
Pyorrhœa and Vincent's Angina	1

Five officers were examined by Medical Boards with a view to ascertaining:—

(a) The extent of disability due to Government service	1 decision "Nil."
(b) Fitness to become Contributors to the Widows' and Orphans' Pension Fund	2 passed as fit.
(c) Fitness for further service	2 passed as fit.

Deaths.—Only one death of an European official was recorded. This occurred in England from carcinoma of the stomach after the officer had been invalided from Uganda.

EUROPEAN NON-OFFICIALS.

The number of European non-officials who attended Government hospitals during the year was 1,896, compared with 2,216 in the previous year. Of these, 800 were either officials not included in Table D above or were the wives and families of officials. The remaining 1,096 cases were patients unconnected with Government.

Twelve deaths were recorded, compared with twenty-six in the previous year, and the following list shows the cause in each case:—

Eclampsia	1	Septicæmia and peritonitis	1
Congenital debility	1	Blackwater fever	2
Heart failure following pernicious anæmia	1	Pneumonia	1
Exophthalmic goitre	1	Cancer	1
Broncho-pneumonia and septicæmia	1	Pneumonia (1) Cerebral malaria (2) ...	1
Suffocation	1		12

Principal causes of sickness:—

Malaria	315	Boils and skin diseases	19
Diseases of digestive system ...	103	Dysentery	5
Diseases of respiratory system ...	71	Asthma	3
Injuries	71	Asthenia	3
Influenza	45	Neurasthenia	2
Blackwater fever	2		

ASIATIC OFFICIALS.

In Table E below, the wives and families of officials and officials employed by the Kenya and Uganda Railways and Harbours are omitted in the same manner as in Table D. Artizans employed by the Public Works Department on temporary agreement are also omitted.

TABLE E.

Table showing the sick, invaliding and death rates of Asiatic officials during the last three years:—

	1930	1931	1932
Total number of officials resident	403	384	352
Average number resident	359	335	305
Total number on sick list	1,108	871	1,184
Total number of days on sick list	3,673	2,551	3,197
Average daily number on sick list	10.06	6.98	8.75
Percentage of sick to average number resident	2.80	2.08	2.76
Average number of days on sick list for each patient	3.31	2.92	2.70
Average sick time each resident	10.23	7.61	10.48
Total number invalided	2	6	4
Percentage of invalidings to total residents	0.49	1.56	1.13
Total deaths	1	7	2
Percentage of deaths to total residents	0.24	1.82	0.56
Percentage of deaths to average number resident	0.27	2.00	0.65
Number of cases of sickness contracted away from station	No record.		
Number granted local sick leave	5	10	11
Average number of days on sick leave for each patient granted sick leave	24	18	14.90

The most common diseases were:—

Malaria	396	Boils and skin diseases	26
Diseases of digestive system ...	111	Nervous system	15
Diseases of respiratory system ...	78	Asthma	11
Influenza	62	Blackwater fever	5
Injuries	34		

Medical Boards were held upon four sick Asiatic officials with the following results:—

(a) To be invalided out of the service	3
Pyorrhœa, Gastroptosis Neurasthenia	1
Neurasthenia	2
(b) To proceed on leave to India for expert examination and diagnosis and treatment	1
(Suspected early mental case. Subsequently invalided by Board in Bombay—Involution Melancholia).	

Deaths.—Two deaths were recorded, the causes of death being—

Abscess of lung and heart failure ... 1	Pneumonia following blackwater fever ... 1
---	--

ASIATIC NON-OFFICIALS.

6,208 Asiatic non-officials sought treatment at Government hospitals during the year, of whom 1,484 were officials not included in Table E or were the wives and families of officials, compared with 104 in the previous year, and the cause is given below in each case:—

Pneumonia ...	...	40	Child-birth ...	...	5
Blackwater fever ...	...	30	Plague ...	...	5
Malaria fever ...	...	22	Burns ...	...	3
Pulmonary tuberculosis ...	...	7	Cause not stated ...	...	3
Heart failure ...	...	7			

There were two deaths from each of the following causes: cholecystitis, diabetes, heart disease, immaturity, typhoid fever; and one death attributable respectively to enteritis, injuries, anæmia, asthma, asphyxia, congenital debility, diarrhœa, dysentery, empyema, intestinal obstruction, meningocœle, cerebral abscess, purpura and senility.

SECTION III.

HYGIENE AND SANITATION.

A. GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

(I) Preventive Measures.

(a) MOSQUITO AND INSECT-BORNE DISEASES.

Malaria.—The Entomological Section of the Agricultural Department undertook mosquito surveys at Kabale, Mbarara, Masaka, Mbale, Bubulu, Sipi, Gulu, Masindi and Hoima, and their findings are printed at the end of this Report. Afforestation of swamp areas was undertaken by the Forest Department at Jinja, Tororo, Lira and Soroti, at a total cost of £1,560. An expenditure of £275 on anti-malarial measures other than afforestation was incurred at Arua and Jinja and oiling and paris green operations were carried out by anti-malarial gangs in the vicinity of stations throughout the Protectorate.

Trypanosomiasis.—Clearings were maintained by the Provincial Administration at all landings, river crossings and watering places in sleeping sickness areas throughout the Protectorate, and were inspected as circumstances permitted by the Medical Officers concerned. The population of sleeping sickness areas were subject to routine examination for signs of the disease. The establishment of sub-dispensaries in these areas was found to be the best way of effecting these routine examinations as where there were a sufficient number of them the population was kept under continued medical observation without the necessity of upsetting the countryside by mass examination of the population by a medical officer touring for this purpose alone.

Tse-tse fly trapping experiments were carried out during the year by Mr. C. W. Chorley, European Sleeping Sickness Inspector, and the results appeared to be very promising as he was able to free one island on Lake Victoria almost entirely from *G. palpalis*. Special circumstances arose in three of the sleeping sickness areas which call for separate comment.

A. The Gulu Sleeping Sickness Area.—Large tracts of the Gulu district are closed for occupation and the population is restricted to narrow fly-free belts on each side of the main roads. It became desirable to consider extending the populated area, and surveys of part of the closed areas were undertaken by Medical Officers and by the Assistant Entomologist of the Agricultural Department, whose comments on the matter are to be found in the Appendix I. to this Report. There appeared to be a hopeful prospect of opening up and re-settling parts of the closed areas without danger to the native population.

B. The Lake Edward-George Sleeping Sickness Area.—An outbreak of sleeping sickness occurred in the neighbourhood of the Kanyampara and Lwanpyo rivers and is reported upon in Section II. The area was proclaimed at once to be an infected area, huts were removed from the infested parts of the rivers, treatment centres were established, and arrangements were made for the regular examination of the people at frequent intervals. Protective clearings were made to separate the upper fly-free parts of the rivers from the lower densely bushed and infested waters. The position at the end of the year was satisfactory.

C. Victoria Nyanza-Nile Sleeping Sickness Area.—The discovery in this area of natives from Tanganyika Territory suffering from sleeping sickness caused by *T. rhodesiense*, reported upon in Section II, was the most important event of the year in regard to sleeping sickness. The cases occurred amongst porters of the Bazinja tribe who left Tanganyika Territory in search of temporary work in Uganda, two to three thousand having crossed the border monthly during the cotton season. The presence of cases of this disease amongst immigrant labour constituted a grave threat to the *G. morsitans* areas in the Ankole and Masaka districts north of the Kagera River, and an even graver one to the *G. palpalis* areas of the lake shores and islands, as it was demonstrated by the Director of the Human Trypanosomiasis Institute that *T. rhodesiense* was even more readily transmissible by *G. palpalis* than by *G. morsitans*. By arrangement with the Government of Tanganyika Territory, and pending the acceptance by both Governments of final measures for the control of the entry of immigrant labour to Uganda, all but four selected ferries over the Kagera River were closed, and medical observation posts were established by this department on the ferries which remained open whether situated in Tanganyika Territory or

Uganda. A survey was undertaken of the whole of the population of the Victoria Nyanza sleeping sickness area, as it was known that the immigrants were settling in those parts, but no cases were discovered. Measures were taken to ensure that no further immigrants entered the area, and restrictions were put upon canoe traffic. Negotiations with the Tanganyika Government with regard to fuller measures of control of immigrants were still in progress at the end of the year, and the position with regard to the temporary measures in force was satisfactory.

Typhus Fever.—Steps were taken locally to control the outbreak of typhus fever reported from Kigezi, but considerable difficulty was experienced in exercising control of the spread of the disease in rural areas. The disease is louse-borne and the inhabitants of the Kigezi district are very primitive. The universal costume is a skin with the hair side worn towards the body. It is on the hairs of this garment that the louse finds shelter and it appears at present that the only means of eradicating lice is by the gradual improvement of the general sanitary condition of the people, with particular reference to clothing.

(b) EPIDEMIC DISEASES.

Plague.—The methods detailed in the 1931 Report for dealing with outbreaks of plague were continued and elaborated during the year and more attention was paid to rural sanitation than in the past. It became obvious that the available European staff could not deal with each individual outbreak and a considerable amount of routine gassing of infected huts was delegated to trained African staff with excellent results. It is hoped that an extension of this delegation will result in the more efficient control of plague.

In some instances, native governments endeavoured to enforce regulations designed to prevent the invasion of huts by rodents, which provided that an area of 30 yards round each dwelling should be kept clear of crops and that seed cotton and other rat-attracting material should be stored in huts apart from dwellings. The apathy of the people concerned nullified these efforts to some extent, but it is hoped that propaganda in schools and the gradual appreciation of the benefits obtained from anti-plague measures may gradually lead to a change of attitude. The fear of theft of cotton stored outside huts is largely responsible for non-cooperation in the provision of separate store houses.

In the Eastern Province, several types of rat-resisting granaries have been devised and natives are encouraged to roof granaries with corrugated iron; this practice is spreading very slowly on account of the present economic depression, which has also necessitated delay in dealing with several undesirable practices in the cotton industry.

Smallpox.—No case of smallpox occurred during the year. The following table gives the number of vaccinations performed.

			Total.	Successful.	Modified.	Failed.	Unknown.
BUGANDA PROVINCE:—							
Entebbe District	...	...	5,184	1,128	341	952	2,763
Mengo	"	...	12,195	6,040	3,397	2,473	285
Mubende	"	...	4,215	1,663	501	831	1,220
Masaka	"	...	11,106	5,172	3,847	2,087	...
TOTAL	...	...	32,700	14,003	8,086	6,343	4,268
EASTERN PROVINCE:—							
Busoga District	...	...	12,222	5,680	951	1,433	4,158
Bugwere	"	...	8,000	4,680	1,862	1,430	28
Budama	"	...	6,090	2,174	1,717	1,300	829
Teso	"	...	5,380	1,895	1,453	1,203	829
TOTAL	...	...	31,692	14,429	5,983	5,366	5,914
WESTERN PROVINCE:—							
Ankole District	...	...	3,922	305	50	244	3,323
Toro	"	...	7,792	5,161	1	1,431	1,199
Kigezi	"	...	4,597	1,440	...	1,123	2,034
TOTAL	...	...	16,311	6,906	51	2,798	6,556
NORTHERN PROVINCE:—							
Masindi District	...	...	6,766	2,980	1,563	1,174	1,049
Hoima	"	...	1,566	689	317	267	293
Chua	"	...	5,462	2,793	699	1,329	641
Gulu	"	...	2,410	1,602	398	106	304
Lango	"	...	4,788	2,422	687	686	993
TOTAL	...	...	20,992	10,486	3,664	3,562	3,280
GRAND TOTAL	...	...	101,695	45,864	17,784	18,069	20,018

Dysentery.—Dysentery in Uganda has lost its epidemic characteristics and is now endemic. No special methods of control were in force.

(c) **HELMINTHIC DISEASES.**

Helminthic diseases were widespread amongst the African population of the Protectorate. It has not been possible so far to exercise control in the rural areas over conditions favouring the spread of diseases due to this cause.

(II) General Measures of Sanitation.

There is nothing new to record regarding sewage disposal, drainage, scavenging or refuse disposal in any of the townships of Uganda.

(III) School Hygiene.

No progress has been made towards the establishment of a school medical service, though Medical Officers have endeavoured to visit schools as they were able from time to time.

(IV) Labour Conditions.

Government controlled labour camps were regularly inspected and the health of all labourers in them was reported to be good. Several District Medical Officers commented on the poor housing conditions prevailing at certain ginneries but stated that notwithstanding this the health of the employees was good. This was accounted for by the fact that the demand for labour is mainly seasonal and most labourers provide their own fresh food.

(V) Housing and Town Planning.

In Government stations, the housing has been reasonably good and temporary buildings are used exclusively only in Kabale, Bubulu, Moroto and Moyo. In some stations, old and dilapidated quarters were condemned, but as few of them could be replaced most are still in use. Several new quarters were built in Arua but they are insufficient for the staff posted there and three of the old condemned and leaking houses are still in use. In certain stations, notably Mbarara and Gulu, the servants' quarters have been unsatisfactory for some years. In a tick-infested district, such as Mbarara, permanent servants' quarters are most desirable. Few servants' quarters in the Protectorate are screened against mosquitoes and their occupants provide a readily accessible reservoir from which householders can be infected.

Housing conditions in most of the township bazaars give rise periodically to unfavourable comment but again trade depression does not always allow of insistence on the minimum requirements prescribed by the Township Rules.

African housing is still, of course, unsatisfactory, and so long as dark and dirty mud and thatched huts are in use it is improbable that their occupants will escape plague, tick fever and typhus. The more advanced Africans avail themselves of permanent or semi-permanent iron-roofed buildings when funds permit, but generally even the cost of corrugated iron walls with grass roof is far beyond the means of the bulk of the population.

(VI) Food in Relation to Health and Disease.

Constant inspection makes possible the attainment by retailers of a reasonable standard of wholesomeness and cleanliness in townships, but large communities, both Asiatic and European, persist in purchasing foodstuffs, chiefly meat, from markets which are not controlled by Township Authorities. Milk is generally unsatisfactory and insistence on the minimum standards of cleanliness leads to the entire failure of the supply. So long as people, by purchasing, encourage the sale of polluted and adulterated milk, so long will the native retailers continue to supply it. The remedy appears to be the establishment of dairies run on hygienic lines and the subsequent enforcement of minimum standards of purity. In this connection it is thought by the Veterinary Department that a large proportion of human tuberculosis occurring in areas where cattle are kept in large numbers may be due to bovine strains of the tubercle bacillus transmitted by milk.

Water supplies in the two townships with a piped system are satisfactory, but elsewhere water is collected from iron roofs into storage tanks. Whilst no disease can be associated with this practice it cannot be upheld, since the rain water is polluted by bird droppings, decaying vegetation and the like. Where and when the tank supplies fail, recourse must be had to swamps, rivers, and lakes, none of them ideal sources of drinking water.

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

The establishment of sub-dispensaries throughout the rural districts of the Protectorate provided centres of confidence amongst the surrounding natives from which it is hoped that measures may be taken by propaganda and example to improve the sanitary and social amenities of the surrounding villages. The process must of necessity be slow.

C. TRAINING OF SANITARY PERSONNEL.

Some rather desultory training of African sanitary personnel was undertaken by Health Officers and Sanitary Inspectors in the course of their duties, but arrangements are under consideration whereby in the future such training should be organized and be made at least partly institutional.

SECTION IV.

PORT HEALTH WORK AND ADMINISTRATION.

Not applicable.

SECTION V.

MATERNITY TRAINING SCHOOLS AND MATERNITY CENTRES.

The training of midwives is undertaken at two schools under the control respectively of the Church Missionary Society and the Mill Hill Mission. A board appointed under the Midwives Ordinance, 1926, is invested with powers to determine the standard of training of midwives and control the practice of midwifery. The chairman of the board is the Director of Medical and Sanitary Services and the Secretary is the Deputy Director of Medical Service, whilst each mission is represented by two members. Maternity centres are mainly under the control of one or other of the Missions, but there is a growing tendency to employ mission-trained midwives at Government hospitals or sub-dispensaries.

Sir Albert Cook's report of the work of the Lady Coryndon Maternity Training School and its dependent maternity centres appears below:—

"The Annual Report of the Lady Coryndon Maternity Training School, Namirembe, 1932, by Sir Albert Cook."

The statistics given below show that a solid contribution to the health of the natives has been given by the certified midwives trained in the Institution. The material for training is still rather below par, though there are notable exceptions. Our practice is to take pupils who have reached Standard IV, E.V. This should ensure a good knowledge of the three R's.

The standard of examination has been steadily rising, a fact altogether to the good. It must be remembered that in the case of these young women, teaching is carried on entirely in the vernacular. A great step in advance will be taken when through the more general teaching of English in our girls' schools, instruction can be carried on in that language.

STAFF.

Consultant Superintendent	..	...	Lady Cook, O.B.E.
Superintendent of School and Inspector of Country Centres	...	...	Miss Maud Budd.
Nursing Sisters	...	...	Miss Renshaw (till March). Miss Milnes-Walker.
Lecturer and Senior Medical Officer	...	...	Sir Albert Cook, Kt., C.M.G., O.B.E.
Medical Officers	...	...	Dr. R. Y. Stones, M.C. Dr. A. T. Schofield. Dr. Margaret B. Cook.

Twenty-nine students have been in residence during the year, of whom eight passed the Government qualifying examination.

TABLE I.

OUT-PATIENTS, CENTRAL INSTITUTION, NAMIREMBE.

	1932.	1931.	1930.
Total out-patients attendances	5,083	5,609	9,076
New patients	1,475	1,595	2,340
Syphilitic patients (latent and active)	867	917	1,210
Babies	726	925	1,257
Syphilitic percentage of total cases	59%	57%	52%

TABLE II.

IN-PATIENTS IN THE CLINICAL WARDS ATTACHED TO THE TRAINING SCHOOL.

	1932.	1931.	1930.
Admissions during the year	656	739	627
B.B.A. cases admitted	31	42	56
Miscarriages	10	18	31
Babies deaths	25	37	37
Still births	33	54	67
Maternal deaths	12	22	32
Total confinements (including B.B.A.)	292	317	417
Living babies discharged	252	253	356

TABLE III.
OPERATIONS DURING 1931 IN THE CENTRAL INSTITUTION.

	1932.	1931.	1930.
Cæsarean section	5	5	17
Perforation and cranio-clasm	4	9	17
Forceps delivery	36	53	49
Internal version	0	1	0
Retained placenta	11	11	11

TABLE IV.
CAUSES OF MATERNAL DEATHS IN 1932.

Ruptured uterus	2	Both had had native medicine.
Retained placenta	3	Manual interference at home and native medicine.
Exhaustion	4	All brought in moribund after native medicine and prolonged labour at home.
Sepsis	1	Confinement in village after native medicine.
Obstructed labour	—	Transverse presentation, only brought in after prolonged labour.
Ante-natal anæmia	—	Died suddenly in seventh month. Ankylostome infection

TABLE V.
CAUSES OF INFANT DEATHS IN THE CENTRAL INSTITUTION, 1932.

Prematurity	12	
Congenital syphilis	8	(of these, five were born outside the hospital.)
Septic cord	3	All born outside.
Broncho-pneumonia	1	Admitted very ill.
Fits	1	Following on a prolonged labour.

TABLE VI.
COUNTRY CENTRES.

	Confinements.	B.B.A.	Living babies discharged.	Still births.	Maternal deaths.	Total out-patients.	Child welfare.	Veneral cases.
Bushenyi	42	...	38	4	...	696	97	189
Ibanda	23	10	31	2	...	1,939	536	213
Iganga	68	...	66	2	...	965	331	142
Jungo	46	5	48	3	...	1,536	177	156
Kalianda	43	14	57	2	...	2,124	317	220
Kabuwohio	32	10	41	2	...	591	127	79
Kako	39	10	46	3	...	2,757	227	391
Kapeka	25	5	26	4	1	1,975	389	248
Kasaka	23	13	35	3	...	1,825	198	313
Kiboga	53	31	84	1	...	1,827	272	147
Kikima	70	13	78	5	1	1,827	214	99
Kira	36	4	38	2	...	1,635	327	158
Lutete	38	2	35	6	...	2,870	440	352
Luwero	30	6	36	2	...	2,133	277	262
Mbarara	72	15	81	7	2	3,126	227	103
Mityana	33	2	33	2	...	1,747	328	263
Mukono	130	...	113	18	...	5,011	652	564
Nakifuma	110	2	105	7	...	4,881	553	578
Namulonge	64	6	64	6	1	2,523	420	270
Ndeje	94	27	102	21	6	8,781	1,001	604
Ngogwe	84	2	83	5	...	2,474	434	350
Toro Hospital	73	...	50	...	3	730	...	...
Rubona	7	...	7	...	...	2,811	...	...
Kahangi	2	...	2	...	...	1,915	...	...
Mengo Hospital	60	...	60	...	...	600	...	...
Ngara	}							
Gabini								
Nabumali								
TOTALS:—1932	1,297	...	1,359	107	14	58,799	7,544	5,703
1931	1,755	...	1,657	129	8	53,741	8,465	5,139
1930	1,827	...	1,676	137	6	64,230	8,983	6,279

Financial stringency prevented the opening of any new Centres during the year or, to speak more accurately, Maternity Centres in new places, for several new permanent centres have been built to replace temporary ones. Thus, a fine new centre at Mbarara was opened by Lady Cook in February, and a permanent centre by Miss Budd at Kiboga, mile 80 on the Hoima road. The late Mr. Maitland Warne was most helpful with regard to the building of the Mbarara Centre, and we owe him a deep debt of gratitude. The success of the maternity work in Ankole has been almost entirely due to the work and efforts of Miss Brewer, whose gentle personality and loving sympathy have been successful in overcoming the natural timidity of the Banyankole women, with the result that some hundreds of healthy infants have been born in that country.

Kiboga Centre has been rebuilt in permanent materials after an almost incredible series of vexatious delays, bad work by local native contractors which involved the building being pulled down once, and local apathy. "*Finis coronat opus*" and the local inhabitants are showing their appreciation in the best possible way by coming in for their confinements. The Centre, which had barely a dozen cases in during the whole twelve months, ten or eleven years ago, had 84 last year.

Kumi Centre, near Ngora, was in abeyance during the year owing to lack of staff, but it is hoped shortly to re-open it.

Nabumali Centre on the foothills of Elgon has been completely rebuilt, largely owing to help given by the District Commissioner and the local Chiefs and the efforts of Miss Ritson. Certified Midwives have been posted at Ngora and Gahini Hospitals, the last being situate in Belgian Ruanda, and very good reports have come to hand of their work.

Plans are ready for the erection of permanent centres at Hoima in Bunyoro and Lira in the Northern Province, among the Lango.

Owing to the crying need for new centres and the financial stringency obtaining, it looks as if we may have to return for a time to the older practice of putting up small temporary or semi-permanent buildings at a relatively small cost. We are trying to experiment at Kabwohe in north-west Ankole.

In conclusion, we have once more to thank most warmly the Administrative Officers of His Majesty's Government. While we mourn the retirement of old and honoured friends like Sir William Gowers, K.C.M.G., Mr. Postlethwaite, M.B.E., and Major Keane, C.M.G., D.S.O., who helped us for so many years, His Excellency Sir Bernard Bourdillon, K.B.E., C.M.G., and Lady Bourdillon have already shown their kind and sympathetic interest in the work. Major Scott, O.B.E., M.C., has gone out of his way to assist us, and Dr. Mitchell, O.B.E., in succeeding to the position of Chairman of our Committee and of the Board of Examiners has shown that he is carrying on the tradition left by Dr. Owen, O.B.E., D.S.O., to whom we are so indebted."

The Annual Report of the Reverend Mother Kevin, M.B.E., on the work of the Nsambya Maternity Training School and of the Maternity Centres attached to the School appears below:—

STATISTICS.

CENTRAL INSTITUTION.—

Number of students in training during the year	...	...	...	28
Number who passed the Government Examination	...	...	...	6
Number of patients in the Clinical Wards attached to the Junior and Senior Schools:—				
Confinements	...	...	...	134
Still births	...	...	...	12
Miscarriages	...	...	...	7
Maternal deaths	...	...	...	3
Living children discharged	...	...	...	115
Cesarean sections	...	...	...	4
Forceps	...	...	...	8
Total ante-natal attendances	...	...	...	9,288
Child Welfare	...	...	...	485

OUT-STATIONS.—

Centre.	Confinements.	Attendances, Ante-natal Clinic.	Attendances, Child-Welfare Clinic.
Villa Maria	190	3,280	1,000
Koki	36	2,800	85
Nkokonjeru	76	7,080	835
Nagalama	81	8,424	610
Nagongera	23	484	100
Rubaga	39	1,000	65
Nyondo	11	352	75
Budini	27	392	660
Budaka	36	5,480	125
Kamuli	80	728	370
Gayaza	45	1,384	560
Nyenga	64	8,386	710
Mitala Maria	174	8,328	420
Bikira	83	5,264	195
Butiti	19	2,304	45
Katende	66	1,200	125
Lwala	26	2,800	480
Kisubi	76	802	1,005
TOTALS	1,152	60,488	7,465

Training School.—There have been 28 students in training during the year. In December, eight entered for the qualifying examination and of these four satisfied the examiners, two have yet to be re-examined in pulses, and two having failed will take the whole again in March, 1933. Two students who failed last year in pulses and clinical midwifery also received their certificates when re-examined this year. There is still no lack of applications and even if the material is not always all that could be desired, the school is certainly benefiting by the progress of education in the country, and although the examinations are becoming each year more searching, the zeal and perseverance of the present day students goes a long way to make up for the lack of previous education and the deficiencies of the native intelligence.

Although in a less degree, the old difficulty still exists to get the students to apply the theoretical knowledge to the practical, continuous supervision with frequent questions on the teacher's part as to the why and wherefor of their actions is the only remedy. All teachers are endeavouring to make them understand not only what the treatment should be in certain cases, but *why* it is necessary. We have in mind a junior nurse who thoroughly sterilised her instruments for a surgical case, and then covered them with an unsterilised towel. But the anxiety they show to learn and their determination to master what must often be extremely difficult to their native intelligence, is sufficient guarantee of their success in the end.

Out-Centres.—All of the 18 out-centres in Uganda have been visited this year, and the reports have, on the whole, been gratifying. We see that the success and utility of these Centres depends greatly on the personal character and ability of the midwife, and also to a very great extent on the supervision and encouragement she receives, and on the attitude of the Chiefs towards the Centre. It is observed that where a good hard-working midwife finds herself in the midst of her own tribe, the results are generally excellent; whereas in one or two cases where the girl has had no one to help and encourage her in her own language, she has become unhappy and lost interest in her work to the great detriment of her Centre. There are, however, several distant Centres such as Lwala, Kamuli and Tanganyika where the midwife, although herself a Muganda, has succeeded in adapting herself to her surroundings and in winning the confidence and esteem of the people in high degree, exercising great influence for good in the district.

Continual supervision and encouragement are always most desirable and even necessary in all the Centres, and where this is lacking or given sparingly the result is usually a falling off in the numbers attending the Centre. Some of the out-centres have, for this reason, shown little or no progress lately, and it is necessary that the want of supervision be remedied as far as possible next year, by increasing the number of visits by fully qualified Sisters who will be able to enter into all the difficulties arising out of the various cases and to be of real assistance to the midwives.

This will be facilitated by the opening up of Convents by the Sisters in places where the Maternity Centre is already established. The arrival of the Sisters at Nyenga has resulted in a great revival of maternity work at that Centre, especially of the Ante-natal and Child Welfare Clinics. During the six months that the Sisters have been there not less than 629 individual women have attended the Ante-natal clinic. Next year the Sisters will open at Nagongera and Lwala where they will personally supervise the Maternity Hospitals and similar good results are anticipated.

The numbers available show that the confinements and especially the attendances at the Ante-natal and Child Welfare clinics are steadily increasing in spite of all difficulties. Great efforts are being made to counteract syphilis by persuading all cases to follow the course of mercury and N.A.B. injections, and also to encourage all pregnant women to submit themselves at an early stage for examination, in order that syphilis, contracted pelvis and malpresentations may be discovered and the necessary steps to remedy them taken.

Native Medicine.—Even in the civilized, but more especially in the uncivilized parts of the country, native medicine is much taken, especially by cases that try to manage by themselves. Native medicine is still accountable for a large number of still-births. The natives have very great faith in it, and often do not bring the women to the centres until they have first tried the native medicine for several days with obstructed labour, causing fatal delay in the birth. Most frequently the patient is not brought to the hospital until the death of the child has supervened, and, in some cases, the uterus already ruptured, causing the death of the mother also. In one case recently, one of our own ante-natal primiparae arrived in the first stage of labour with a stone-hard unrelaxing uterus; the os was not open and the membranes were intact. This case presented difficulty as to the mode of procedure until it was realised that the state of the child was critical. Caesarean section was performed with happy results both to mother and child. How fortunate that such a case was seen in the Central hospital; how helpless would the African midwife have been without such aid.

New Centres: Namilyango.—Consent was obtained this year to build a permanent Maternity Hospital at Namilyango where the Sisters have recently opened a convent. The grant has been given, but the building is not yet started owing to the difficulty in obtaining labour. However a midwife has been stationed at Namilyango already, giving medicine and advice to women and babies. Her work had been much appreciated by the people; the

attendances have been good, and we look for a very promising centre at this mission when the building is finished next year.

Ngora.—Since the Sisters are now established at Ngora, the women and children come in large numbers to the Convent seeking help and testifying to the desirability of re-opening the Maternity Centre. This centre was closed in 1930 owing to the very small attendances and the lack of suitable accommodation. Application is being made to re-open next year as soon as the grants are received.

Gulu.—At Gulu in the Northern Province, the Fathers of the Italian Mission applied for a Maternity Centre, and a visitation was made in 1929. The proposed centre was approved and the usual grant given, but when the building was in course of construction, the mission was obliged to remove to another site. Consequently the Centre is still unopened. The Superior is most anxious to have a Centre and assures us that there is much work in these parts, and that the Centre will be well supervised by fully qualified and experienced Sisters who have already won the confidence of the women.

Child Welfare.—Efforts are being made at all the Centres to encourage the mothers to bring their children at regular intervals to be examined, and not to wait until they are ill. Many mothers are really beginning to appreciate the advantages of the Welfare clinic and are showing a marked interest in the weight-records and general health of their little ones. Attendances are showing an increase at nearly all the Centres under our supervision, and at no distant future we may hope to see the Centres crowded. To-day we are all agreed as to the desirability and necessity of establishing Welfare clinics in all parts of the country, but there is the danger through our very familiarity with the fact that it becomes more theoretical to us, and so less potent in moving us to efforts. If any one is in this danger, a visit to some of the native centres will effect a speedy cure. Let us describe one. As we approach it we find many mothers and babies on the road with us, and when we reach it, a still larger gathering of early comers round the door. Inside also there are mothers with their infants from the month-old baby to the toddler, anxiously awaiting their turn, many little twinkling eyes watching the native nurse's and the Sister's movements, for all students of babies know at how early an age they begin to take interest and to recognise their friends. But amongst the group in sharp contrast, we see a mother hugging to her a bundle from which issues a pitiful little moan. We pull back the piece of bark-cloth and there behold a poor little scrap of humanity, with wasted limbs, shrivelled skin, very pale (for none can look paler than the black), a little old-man face with eyelids drooping over dull eyes, the sight of which is partly if not wholly destroyed, for this is a baby from the villages, born of syphilitic parents that have not come under the nurse's care either before or since birth till now, when the mother brings him, partly from fear as she realises that her efforts to cure him are fruitless, and that death is claiming him. And indeed this not unfrequently occurs, sometimes within the day. He is admitted to the hospital and all that is possible is done for him, but the nurse knows her work has come too late, and that medicines, blankets and hot bottles, though given, will fail to bring warmth to the little chilled body and emaciated limbs. All that remains for her to do is to influence the mother to receive treatment, and to bring her husband if available for examination on the doctor's visiting day; for her kind wise questions often elicit the fact of a history of previous miscarriages and dead babies. The mother leaves the Welfare clinic with a hope unknown to her before, for the sight of those other babies with their lusty cry, firm limbs, and general appearance of well-being has done its work with her, particularly as not infrequently there is a loquacious but kindly mother who does not fail to recount to her a similar past experience and to exhibit with pride her present offspring.

If the Welfare clinic has good effects physically, no less has it morally. Some of us have vivid recollections of the fighting with untrained and absolutely undisciplined children in serious illness, when their very resistance was a menace to their recovery. By the behaviour of the little ones in hospital, we can generally tell whether or not they are some of *our* babies. Countries have their own special difficulties, arising out of the diseases peculiar to them, but human nature is the same all the world over, and the difficulties that arise from it are the same. To mention only one point, there is the tendency to feed the child or pick it up every time it cries, and this brings about the same disorder in the African hut as it does in the modern English home. Teaching the native woman to form habits of regularity in feeding and to control her children, brings about a happy physical change and assists baby in his first efforts at self-control, sowing the first seeds of character. To teach one's baby self-control and that it cannot always have its own way is surely a greater feat than the erecting of many buildings. Every Welfare worker is a baby and character builder, and the work is eternal, for these babies are the future fathers and mothers who will continue the work of building when the Welfare worker has passed on.

Conclusion.—Finally, we may confidently assert that the maternity movement, begun and carried on under such great difficulties is in no small measure fulfilling its destiny and progressing in all its branches, keeping pace with the rapid progress of the country in the education and civilization of the natives. Prospects for the future are exceedingly bright, and we look for yet greater results from the successful and fruitful advancement of this great undertaking."

In Sir Albert Cook's report upon the work of the Lady Coryndon Maternity Training Centre, he included some valuable observations upon problems connected with child-birth and conditions affecting birth, death and maternal and infantile mortality rates. These are printed below :—

"Thanks to the tropical sunshine, so rich in ultra-violet rays, to the universal habit of breast feeding and to the national diet, so opulent in vitamins, rickets is excessively rare. One custom, however, seems to be productive of a flattened pelvis in adult life, *viz.*, the way in which young girls are taught to carry on their heads heavy pitchers of water from the well, or bunches of bananas from the garden. The weight transmitted down the vertebral column would tend to press the sacral promontory forward and narrow the true conjugate at the brim, and this probably accounts for the not inconsiderable number of flattened pelvis.

Pelvic Diameters.—Compared with the values obtaining in European women, nearly every Muganda woman has a contracted pelvis. The first thing is obviously to find out what are the actual pelvic diameters as measured in African women. The actual details deal with data collected from over 4,000 cases. Only averages are here given. The accepted English averages are appended for comparison.

<i>Pelvis.</i>		<i>Baganda.</i>	<i>English.</i>
Inter-spinous diameter	...	8 inches	10 inches.
Inter-cristal diameter	...	9 "	11 "
External conjugate	...	7 "	7½ "
Internal conjugate	...	3.56 "	4.25 "
Diagonal conjugate	...	4.4 "	4.9 "
<i>Foetal skull.</i>		<i>Baganda.</i>	<i>English.</i>
Sub-occipito bregmatic diameter	...	3.55 inches	3.8 inches.
Occipito-frontal	...	4.5 "	4.6 "
Maximum vertico-mental	...	5.3 "	5 "
Bi-parietal	...	3.5 "	3.7 "
Bi-temporal	...	2.8 "	3.4 "

As the best pelvimeter is the foetal head, it is interesting to note that the sub-occipito bregmatic measured *immediately* after birth in 19 cases was in one case 4 inches, seven cases 3½ inches, ten cases 3¼ inches, one case 3.2 inches.

Presentations.—

Vertex	...	93.2%	Breech	...	4.3%
of these, L.O.A.	...	54.9%	Shoulder	...	1.3%
R.O.A.	...	41.2%	Face	...	0.8%
R.O.P.	...	2%	Brow	...	0.4%
L.O.P.	...	1.9%	Sex: Male	...	51.5%
			Female	...	48.5%

The broad conclusions to be drawn from these figures are that though the average pelvic diameters are considerably less than in European women, the foetal skull measurements are diminished in the same proportion.

At the same time plenty of cases of pelvic contraction *are* met with, as the following figures show.

During the seven years 1925-1931, 3,578 women were confined in the clinical wards attached to our Maternity Training School. In this number, forceps were applied in 301 cases (8.4%), 86 perforations and cranioclasms were done (2.4%), and 72 caesarean sections performed (2%), making 12.8% of cases of difficult labour.

With regard to the vexed question as to the causation of the prolonged delay so frequently met with in the second stage of labour, a delay which so frequently issues in a dead baby and an exhausted mother, no one cause seems adequate to explain the phenomenon.

A certain number of cases can be put down to a narrowed transverse diameter at the outlet, the so-called funnel shaped pelvis, a condition rare in England, but certainly commoner out here, perhaps even predisposed to by the people sitting sideways from their infancy.

This diameter is always hard to measure with any pelvimeter and we find the best way is to teach the midwives to use the knuckles of the clenched fist as a pelvimeter. In a normal outlet the three knuckles of the first inter-phalangeal joints should be able to be pressed transversely between the ischial rami, *i.e.*, at a point immediately behind the vaginal outlet. A good deal of work is being done in this direction and we shall be in a better position to judge the results next year.

But of far greater importance as a factor in the delay is the all but universal habit of giving the woman in labour native medicine, especially a decoction of herbs known as "Nsamba," containing as it does a powerful oxytocic drug akin to ergot, and administered, as it often is, in large and unmeasured doses it disturbs the polarity of the uterus, brings on tonic contractions, and leaves the tired uterus in the second stage too exhausted to complete delivery. In many cases there is no question of contraction at the pelvic outlet for moderate traction by forceps at once completes delivery.

Miss Budd informs me that she can frequently tell by the tick-tack rhythm of the foetal heart in these cases when the need for delivery becomes urgent.

Turning to the diseases which menace the health of the mother and child, we find ourselves at once face to face with an unusual, a serious, and from a scientific point of view a most interesting problem.

In the Uganda Protectorate in dealing with the Baganda, the Banyoro, the Batoro, the Banyankole, the Basoga and the Teso, that is to say, with the great bulk of the 3½ million native inhabitants, we are dealing with a highly syphilized population. The influence of this on childbirth is obviously most important. First, as to the frequency of syphilis in pregnant women. In our Church Missionary Society Lady Coryndon Maternity Training School, the percentage of women whose husbands had suffered from syphilis or who had themselves suffered was as follows:—

1925	...	62%	1928	...	62%	1930	...	52%
1926	...	60%	1929	...	57%	1931	...	57%
1927	...	67%						

At Mulago Hospital, where serological tests are freely applied, in the last three Annual Reports, 1928-1930, we have the following analysis of ante-natal cases:—

		1928	1929	1930
Primary syphilis	...	nil	0.8%	1.3%
Secondary syphilis	...	7.8%	12.9%	15.0%
Tertiary syphilis	...	5.2%	8.3%	3.5%
Latent syphilis	...	48.9%	51.0%	46.6%
No syphilis	...	38.1%	27.0%	33.6%

With this large percentage of syphilis in the mothers, it is interesting to try and find out how often abortion or premature birth is due to the disease and how many children are born congenital syphilitics.

Had I been asked this question ten years ago, I should have replied with the utmost confidence that two out of every three Baganda mothers have had syphilis at one time or another in their lives and that the percentage of abortions or premature births in women showing active signs of syphilis is in the neighbourhood of 65 per cent.

Further experience has made one more cautious and especially the results of detailed observations elsewhere. To get at the exact results, clinical work must be checked by laboratory findings (serological tests, etc.) and it will be readily understood that with very limited staff and only partially trained assistants this may be difficult or impossible.

Fortunately, we can fall back on recent experience in more favoured localities. Holland examined 300 dead infants of viable age (167 of which died during labour and 133 before labour) and found only 24 due to certain syphilis and six to "probable" syphilis, i.e., 16 per cent. of the whole series. There were, in addition, a further 14 deaths possibly due to syphilis (positive maternal W. R. without histological evidence in foetus or placenta). Syphilis as a cause of foetal death acts mainly before labour. In Holland's series the macerated foetuses were 133, the fresh 167; there were 39 deaths due to syphilis among the former and only three among the latter.

In the 1,408 cases analysed by Holland and Lane Claypon, syphilis was found to be the cause of death in 8.7 per cent. of all cases; 26.2 of their macerated cases were syphilitic, and they add that "the careful examination, both clinical and pathological, to which all cases were subjected, hardly leaves room for any appreciable error on this point."

In Palmer's series, using only those cases very adequately examined for evidence of syphilis, there were 11.3 per cent. of all deaths, 35.9 per cent of macerated foetuses and 1 per cent. of the fresh, due to that cause.

In a report by Dr. G. G. Butler from the Gold Coast, out of 450 African pregnant women attending the Maternity Hospital at Accra, 32.5 per cent. gave a positive W. R. but there the problem is greatly complicated by the prevalence of yaws and the question whether there is a cross immunity between yaws and syphilis. It is significant, however, that he stated that still-births were nearly twice as frequent in the W. R. positive group as in the negative group.

Dr. Margaret Balfour in Bombay states that 372 unselected cases of labour were tested by Kahn's method and 13.6 per cent. were found to be markedly positive. In Madras, 1,000 similar cases were tested both by Kahn's and Wasserman's methods and 12.5 per cent. were found to be markedly positive.

As a comparison it may be mentioned that Cruickshank (1924) in his report to the Medical Research Council states that between 9 per cent. and 10 per cent. of the mothers of the hospital class in Glasgow gave a positive Wasserman reaction. Dr. Gladys Sanders stated that the incidence of congenital syphilitics in syphilitic mothers at the Lock Hospital is 17.8 per cent.

Turning now to other diseases affecting pregnant women and their new-born babies in Uganda and considering the prevalence of malaria in all its varieties, it is almost certain that a good many of the premature births and miscarriages are due to this cause. The only statistics at present available on this point come from Mulago hospital and are on too small a scale to give trustworthy results.

Quite recently my attention has been directed to the occurrence of tropical macrocytic anaemia among pregnant women in Uganda. I used to put down these cases, which are not very uncommon, to infestation by ankylostomes which are of course often met with, but in the worst cases there was often an entire absence of ankylostome eggs, and they failed to respond to the usual treatment for that disease. The mortality is unfortunately high. We are now trying liver diet and marmite, the latter substance derived from yeast, being rich in Vitamin B (both B1 and B2).

BIRTH RATE, DEATH RATE, MATERNAL DEATH RATE AND INFANTILE MORTALITY.

The data for these very important subjects come from the vital statistics prepared annually by the Government in Uganda. It is the custom to question the value of vital statistics derived from native sources and to doubt their accuracy, but a very good case might be made out for both the value and the comparative accuracy of the Baganda statistics.

To begin with, they have been compiled now for many years (20 or more) and the chiefs are well accustomed to enumeration. Like all animistic peoples they set great store by the events of life and death and their old ritual has always emphasized the importance of these occurrences.

If we compare the vital statistics for 1913 and 1931 we shall see a very satisfactory growth in the population of the Protectorate:—

	1913.	1931.
Total Population ...	2,889,561	3,553,534
Births...	36,284	101,793
Deaths ...	32,612	75,701
Birth rate per 1,000 ...	24.9	29.18
Death rate per 1,000 ...	22.4	21.70

especially if it is remembered that since the earlier date the Rudolf Province and part of the Northern Province have been lopped off the Protectorate and added to Kenya and the Sudan respectively.

On examining the more detailed figures for 1931, however, it is evident that much more work requires to be done. If we take the infantile mortality or deaths under one year, we get the following figures for 1931 per thousand: Toro, 377; Gulu, 365; Chua, 327; Ankole, 267; Bunyoro, 244; while the Kingdom of Buganda shows the lowest, *viz.*, 118. It is at least suggestive that where our maternity and child welfare centres are most numerous the infantile mortality is lowest.

Similarly, the maternal mortality per 1,000 births varies from 27 in the West Nile Province to nine in the Kingdom of Buganda. As might be expected, the birth rate is highest among the most primitive people—Western Province, 34—and lowest in Buganda, 19.7. The death rate for the whole Protectorate was 21.75. (For comparison we may add that in England and Wales for 1931, the birth rate was 16.5, the death rate 11.5, maternal mortality 4, and infantile mortality 70).

HOW TO IMPROVE ADVERSE BIRTH CONDITIONS.

From the foregoing considerations it will be evident that we have three principal foes to attack. For long ages, entrenched behind the triple ramparts of ignorance, superstition and dirt, *i.e.*, unsanitary conditions, they have defied attack, but now their trusted defences are being rapidly breached and their ancient thrones are tottering. The three foes are harmful native customs, especially the almost universal habit of drinking unlimited quantities of native drugs with powerful oxytocic qualities during labour, the widespread occurrence of syphilis, and the absence of skilled help in abnormal cases.

The attacking force is divided into three columns and the closer the co-operation between them, the sooner will the position be won.

The first column consists of the forces of education, and by education I mean Christian education. Simple hygiene should be taught even in the bush schools and plain straightforward instruction given on sex matters to the boys and girls in the secondary schools, together with the dangers of promiscuous intercourse. The girls should be taught to place a higher value on themselves and not to surrender to the first plausible young man who flatters them. Parents and guardians need to place health of body above the largeness of dowry.

The second line of attack is intensive treatment of venereal diseases. Here the Uganda Government has an honourable record for, in its splendidly organized venereal diseases work, it has brought home to the people the possibility of cure and the enormous advantages of early notification and treatment.

The third assaulting column and in some respects the most important, is the provision of maternity and child welfare centres."

Information with regard to ante-natal and maternity work undertaken during the year at the Government Native Hospital at Mulago is included in the following extract from the Annual Report of Mulago Hospital:—

"Ante-natal and Maternity Work.

Miss Margaret Holliday, F.R.C.S. (1.), has been in charge throughout the year. The statistics shew a great increase in the numbers of attendances and of admissions. There were 785 new cases as compared with 526 in 1931, 139 were confined in hospital as compared with 110 in 1931. Fifty-eight non-ante-natal cases were confined in hospital as compared with 29 in 1931. The benefits of ante-natal supervision are well exemplified in the results:—

	Normal labour.	Still-birth.
Ante-natal cases ...	79%	4%
Non-ante-natal cases ...	55%	19%

In the Annual Report of 1931, a note was made on the suspected prevalence of the funnel-shaped pelvis among Baganda women. All primiparae attending during the year have been measured, with the results subjoined:—

			Solomons	Dublin.	Baganda.
Diameters, Inter-spinous	...	centimetres	26	...	24
" Inter-cristal	...	"	29	...	26
" External conjugate	...	"	20	...	19
" Inter-tuberosus	...	"	9	...	7
" Posterior sagical	...	"	10	...	8.5
" Posterior inter-spinous	...	"	9	...	9

The Baganda figures represent the average of 112 cases. The smallness of the inter-tuberosus measurement as compared with the posterior interspinous is very suggestive. Investigations are being continued into this subject, and a record of the diameters of the infant skull is being kept."

Dr. M. Holliday's Report.

STATISTICAL INFORMATION, ANTE-NATAL DEPARTMENT, 1932.

A. THE ANTE-NATAL CLINIC.

1. Total Cases Treated.

Remaining from 1931	...	59
New cases	...	785
Total	...	844

2. Attendances.

Traced to termination of pregnancy	196
Ceased attending	349
Found not to be pregnant	3
Still attending	296

3. Results.

Normal labours	155
Forceps	15
Caesarean section (classical)	3
Hydramnios	2
Twins	2
Triplets	1
Retained placenta	7
Abnormally short cord (six inches)	1
Haematoma valvae	1
Precipitate labour	1
Post partum haemorrhage	2
Concealed accidental haemorrhage	1
Abortion and miscarriage	19
Delayed labour due to native medicine	3
Breech	4
Post-maturity	2
Tubal pregnancy	1

Infants.

Normal infants (including syphilitic otherwise normal infants)	80
Premature	25
Still-births	8
Deaths within seven days	17

4. Where pregnancy terminated.

Mulago Hospital	139
Elsewhere	57

5. Maternal deaths.

- (i) Prolonged 2nd stage—full of native medicine, child dying on admission. Forceps, retained adherent placenta, puerperal sepsis.
- (ii) Contracted pelvis, refused Caesarean section. Child died in utero. Forceps, retained adherent placenta. P. P. H. Puerperal sepsis.
- (iii) Ruptured tubal pregnancy—haemorrhage.

6. Details of abnormal conditions.

Forceps (15).

Delayed labour	6
Outlet narrowing	3
Native medicine	1
Large post-mature child	1
Premature rupture of membranes, foetal distress	1

6. Details of abnormal conditions—contd.

Forceps—contd.

Prolonged 2nd stage, oedema of cervix	1
" " " cystocele and rectocele	1
" " " tonic contraction	1

Caesarean section (3).

Contracted pelvis (three living children)

Abnormally short cord (1).

Six-inch cord prevented delivery. Live child delivered with high forceps and section of cord.

Post-mature children (2).

One delivered alive, forceps.

One still-born. Post-mortem showed subtentorial haemorrhage and very advanced ossification of skull bones preventing moulding.

Concealed accidental haemorrhage (1).

Premature labour—woman shewed all signs of internal haemorrhage. Membranes ruptured with stylet when living child, placenta, membranes and a very profuse haemorrhage appeared at once.

Abortions and miscarriages (19).

Syphilis (secondary)	5
Exfoliative dermatitis	1
Cause unknown	13

Premature labour.

Twins	2
Triplets	1
Subtertian malaria	3
Ante-partum haemorrhage	1
Lobar pneumonia	2
Syphilis (secondary)	2
Toxic albuminuria	1
Unknown	13

Still-births (8).

Native medicine (macerated foetus)	1
Prematurity	1
" (macerated)	1
Post-maturity and sub-tentorial haemorrhage	1
Syphilis (<i>Tr-pallida</i>) found on section of placenta	1
One triplet	1
Cause unknown	2

Infant death within seven days (17).

Prematurity	7
Premature twins	4
Haemorrhage neonatorum. Mother toxic albuminuria	1
Haemorrhage from untied cord (B.B.A.)	1
Haemorrhage, internal abdominal	1
Cause unknown	1

DETAILS IN CASES OF SYPHILITIC INFANTS.

No.	Stage of Syphilis of Mother.	Paternal Syphilis.	Serum reaction Before and After treatment.	Duration of treatment in weeks.	Amount of Treatment			Condition of child.
					S.S. grams.	Bis c.c.	Hg. c.c.	
1	Primary Primip. ..	?	Kahn + Not done (developed Syphilis a few week before labour.)	1	0.3	2	—	Premature C.S. lived one hour only.
2	Tertiary 4th, 1st—living. 2nd—child died in infancy, 3rd—prem. macerated.	Nil	Kahn + ..	12	3.0	23	—	Stillborn. Cord and placenta pale, bulky and haemorrhagic S. Pall reported by Lab. in placenta.
3	Latent 2nd, 1st—healthy twins ..	Nil	Kahn + + ..	13	3.3	26	—	Healthy at birth, developed C.S. at 2 months.
4	Tertiary 2nd—1st healthy ..	(treated)	Kahn + ..	4	1.95	4	2	Healthy at birth. Reported at 2 months snuffles and epiphysitis for one week.
5	Latent 2nd—1st abortion, 3 attacks of Sy., treated Namirembe	Nil	Kahn + + ..	12	3.0	18	0.3	Healthy at birth. Anal condylomata and snuffles at 5th week.
6	Latent 3rd—Sy. II 1927, 1st prem. still-birth, 2nd prem still-birth.	Nil	Kahn + ..	8	Refused injections. Treated Hg. by month.			Report 4 weeks after birth with epiphysitis.
7	Latent 2nd—1st still-birth ..	?	Neg. twice .. Not done ..	5	No injections	..	..	Seen six months after birth, snuffles and epiphysitis.

DETAILS OF SYPHILITIC MOTHERS OF CHILDREN BORN WITHOUT EVIDENCE OF SYPHILIS.

No syphilis	....	....	98
Latent	....	....	61
Primary syphilis	....	....	—
Secondary syphilis	....	....	9
Tertiary syphilis	....	....	3

Before Treatment.	Serum Reaction	After Treatment.	Duration of treatment in weeks.	First attended in week.	Amount of Treatment. S.S. Bis Hg.			Remarks on previous pregnancies, etc.
Secondary Syphilis +	±	...	5	32nd	2'4	9	—	1 prem. still-birth.
+	±	...	10	26th	3	10	—	
+ ±	+	...	12	22nd	3	24	—	One prem. died in infancy.
+	±	...	13	22nd	3	16	5	
±	+	...	12	24th	5'4	17	2	
—	±	...	10	24th	3	17	—	
+ ±	Not done	...	4	24th	1'8	5	1	
+ ±	"	...	5	30th	2'4	10	—	
±	±	...	2	32nd	75	4	—	
Tertiary Syphilis + ±	Not done	...	12	18th	3	15	3	
+	±	...	13	20th	3	26	—	1 abortion.
—	—	...	4	27th	1'8	8	—	2 normal children.
Latent Syphilis +	—	...	6	16th	3	6	3	
+	±	...	9	25th	3	14	2	
+	—	...	12	25th	3	20	2	
+	—	...	12	20th	3	23	—	1 death in infancy.
±	±	...	5	26th	2'4	8	1	1 death in inf. misc.
+	±	...	12	22nd	3	24	—	3 still-birth.
+ +	±	...	7	24th	3	14	—	1 still-birth., 1 death in inf.
+ +	+	...	12	25th	3	24	—	1 misc. 4 death in inf.
+	±	...	10	17th	3	20	—	1 misc.
+ ±	±	...	12	18th	3	18	4	3 previous death inf.
+ +	±	...	7	27th	3	14	—	1 still-birth.
+ ±	±	...	5	24th	2'4	6	2	
+ +	±	...	21	16th	6	32	5	1 still-birth.
±	—	...	6	24th	3	8	2	
+	±	...	10	20th	3	11	4	3 still-birth.
+	+	...	5	24th	2'4	4	3	
±	±	...	5	22nd	2'4	7	1	1 still-birth.
+	±	...	7	16th	3	9	2	3 Misc.
±	—	...	12	16th	3	23	—	4 "
+ ±	—	...	7	30th	3	10	2	
+ ±	—	...	8	21th	3	16	—	1 death in inf.
+ ±	+	...	9	28th	3	18	—	1 Misc.
±	—	...	—	30th	75	4	—	
Neg.	Not done (Sy. II treated Mulago 1930)	...	9	24th	3	12	3	
+	Not done	...	4	22nd	1'8	8	—	
Neg.	(Had had ten injections at Wakiso when first attended)	...	12	2nd	3	24	—	
— +	—	...	5	26th	2'4	10	—	
+ +	Not done	...	4	32nd	1'8	8	—	
+	"	...	3	24th	1'2	6	—	1 died in inf.
±	"	...	8	26th	3	16	—	
±	"	...	5	24th	2'4	8	1	
+ ±	"	...	6	26th	3	8	2	2 miscs.
+	"	...	5	20th	2'4	8	1	1 misc.
+	"	...	3	28th	1'2	2	2	
±	"	...	9	16th	3	16	1	1 misc.
+ +	"	...	4	16th	1'8	8	—	
+	"	...	12	16th	3	20	2	
+ ±	"	...	3	22nd	1'2	5	—	
±	"	...	7	18th	3	14	—	1 still-birth.
+	"	...	3	29th	1'2	6	—	
+ ±	"	...	10	20th	3	19	—	1 still-birth.
+	"	...	12	24th	3	15	3	
+ ±	"	...	12	16th	3	23	—	1 misc., 6 prem., 1 died in inf.
+ +	"	...	7	16th	3	13	1	2 miscs. 1 died in inf.
±	"	...	8	26th	3	7	4	3 misc.
+ ±	"	...	12	22nd	3	17	3	1 misc.
Twice neg.	(Sy. 1928 12 injections, Bombo)	...	3	27th	1'2	6	—	1 died in inf.
±	Not done	...	2	24th	75	4	—	3 misc.
+ +	"	...	11	24th	3	16	3	
+ ±	"	...	2	32nd	75	2	1	2 misc.
±	"	...	—	24th	Hg.K.I. only	—	—	
±	"	...	5	23rd	2'4	6	2	2 died in inf.
Neg.	(Sy. treated Kasangati) 1924	...	5	26th	2'4	8	1	2 misc., 1 died in inf.
+ ±	Not done	...	2	36th	6	—	2	
+	"	...	2	26th	75	4	—	
±	"	...	4	26th	1'2	4	1	2 still-birth.
±	"	...	2	26th	75	4	—	
±	"	...	12	27th	3	24	—	
+ +	"	...	10	22nd	3	20	—	
+	"	...	5	25th	2'4	10	—	
+ ±	"	...	—	24th	75	4	—	

9. *Average weight of infants at birth :—*

Male	...	...	...	...	6.73 lbs.
Female	...	...	...	...	6.3 lbs.

10. *Paternal Syphilis :—*

A history of syphilis was obtained in	...	54% cases.
Syphilis denied	...	46% "

(These figures are not reliable as in many cases a history only was obtained and no serum reaction was done).

11. *Result of blood slides taken as a routine examination for malaria on the first attendance at the ante-natal clinic :—*

Negative to malaria	...	54%	Quartan parasites	...	6%
Subtertian parasites	...	38%	Benign tertian parasites	...	2%

NON-ANTE-NATAL CASES CONFINED AT MULAGO HOSPITAL.

(i) Total	...	58	(iv) Details of abnormal conditions— <i>contd.</i>	
(ii) Results :—			General contracted pelvis	2
<i>Labours.</i>			Cystocele	1
Normal labours	34		Persistent occipito-posterior	1
Twin labours	3		Ruptured uterus	1
Normal labours—prolapsed cord	1		Miscarriages—cause unknown	5
Premature	3		Caesarean section—contracted pelvis	2
Forceps	8		Contracted outlet (lower segment)	1
Miscarriage	5		Maternal deaths—	
Caesarean section (classical)	2		obstructed twin labour—putrid	
Caesarean section (lower segment)	1		dead child with arm prolapsed	
Carneous mole	1		on admission, shock	1
<i>Infants.</i>			Caesarean section—shock	1
Normal infants	36		Ruptured uterus (native medicine)	1
Premature (living)	1		" " " "	1
Still-births	11		Premature infants—twin (one child)	1
Deaths within 7 days	6		Still-births—ruptured uterus	2
(iii) Maternal deaths	4		Contracted pelvis	4
(iv) Details of abnormal conditions :—			Obstructed twin	1
Premature labour (twins)	1		Cerebral haemorrhage (post-maturity)	1
Premature labour (cause unknown)	2		Premature twin (one child)	1
Forceps—delayed 2nd stage due to			Prolapsed cord	1
abnormally large infants	2		Cause unknown	1
Outlet narrowing	1			

Ante-natal and maternity work is being undertaken to an increasing extent at government hospitals. The following report was received from Dr. C. E. Roberts, the District Medical Officer, Masaka :—

"I have the honour to forward a report on ante-natal work at Masaka. The report has been made up from the records of 278 women who attended the clinic. A comparison with the records kept by the Native Administration in the district is shewn below :—

	Figures from the Clinic.	Figures from the District.
Births over 7 months	270	1,048
Women dying in child-bed	1	7
Percentage mortality (maternal)	0.4	0.7
Still-births	11	67
Percentage mortality (infantile)	4	6.4
Miscarriages	8	No figures

The one maternal death in the series under consideration was due to placenta praevia; the infantile deaths and miscarriages were due to: (1) contracted pelvis and instrumental delivery, 2; (2) Severe maternal malaria, 6; (3) Syphilis, 11.

The history of the eleven cases in which foetal or infantile death was due to syphilis as also that of cases in which such death might have been reasonably expected and was presumably averted by treatment is given on the attached table. The anti-syphilitic agents used were Neotryparsenan, Biscam and a mixture containing a solution of mercury perchloride; the mercury content of the mixture was low and its therapeutic value apparently nil.

Primary Syphilis in the Mother.—One case of primary syphilis was seen at 8 months; the course of the pregnancy was not apparently affected.

Secondary Syphilis in the Mother.—Cases of generalised infection with condylomata, vulval sores and rashes were five; the children of these five cases were all born alive but one child died in two days (No. 21). Case No. 21 had received a small dosage (0.75 g.) of Neotryparsenan and 20 c.c. of Biscam, while the other four cases (Numbers 1, 2, 16 and 17) had all received a larger dose, *i.e.*, 1.35 g., 1.8 g., 1.95 g., and 1.95 g., of Neotryparsenan but the same dose of Biscam: the four children of these cases were treated with Sulpharsenol after birth. Two cases of late secondary syphilis were seen (Numbers 6 and 17) and received Neotryparsenan 4.74 gmms., Biscam 30 c.c., and Neotryparsenan 1.35 gmms., Biscam 30 c.c. respectively; both these cases went to full-term and produced apparently healthy children. In these cases of maternal secondary syphilis comparatively small doses of Neotryparsenan and Biscam sufficed to bring about the desired result—the birth of a child which while probably not free from a syphilitic taint was strong enough to survive and profit by anti-syphilitic treatment.

Tertiary Syphilis in the Mother.—In many of the cases investigated there was only a history of syphilis in or after early womanhood: in others signs could be seen. Case No. 26, however, shews that no work of this type can be really efficient unless a Wasserman reaction can be done. A history of syphilis in the parents of the mother was not regarded as being of any real import. In cases Nos. 5, 8, 10, 12, 13, 15 and 18 it is reasonable to suppose that a living child might have been born without anti-syphilitic treatment but Nos. 3, 9, 11, 14 and 19 would almost certainly not have been born living children; none of these cases received what would be regarded a sufficient dosage of arsenicals in an English clinic with the exception perhaps of No. 19 and No. 3. On the other hand, it is evident from consideration of cases Nos. 20, 22, 23, 24 and 25 that these smaller doses of Neotryparsenan cannot be relied on to ensure a successful termination to the pregnancy. It is also evident from a comparison of the various cases that the most active and effective factor was the Neotryparsenan and not the Biscam or the Mercury mixture used.

Conclusions.—Treatment with doses of Neotryparsenan in the neighbourhood of 2 grammes combined with 20 c.c. of Biscam may suffice to assist to a successful termination a pregnancy in a woman suffering from secondary or tertiary syphilis. Larger doses in the neighbourhood of 3 grammes combined with 20 c.c. of Biscam may not be sufficient and no reliance should be placed on anything less than 6 grammes of Neotryparsenan with a corresponding amount of Biscam (40 c.c.)."

Other Government hospitals are undertaking similar work. It is hoped to extend the policy in the future to all government hospitals and sub-dispensaries. There is no likelihood that by so doing Government and Mission interests would clash, as the united resources of both will be insufficient to meet the requirements of the Protectorate.

Natal No.	Serial No.	Prev. Preg.	Child Living.	D. Under 3 Months	Still-born.	Miscarriages.	Mat. Syph.	Pat. Sy.	N.T.P. Grammes.	Biscam c.c.	M. Hydrant. Ounces.	Complications.	Results.
8266	1	...	...	...	...	...	Sy. II	x	1.35	20	132	...	Live-birth.
8856	2	...	...	...	...	...	Sy. II	x	1.8	20	172	...	do
6448	3	1	...	...	...	1	x	x	6.6	...	...	Albuminuria	do
6920	4	...	...	...	...	...	Sy. I at 8 months.	x	1.2	4	...	...	do
9281	5	5	...	...	2	3	x	I	.3	4	60	...	do
8737	6	3	...	...	...	3	Late Sy. III	II	4.65	20	192	...	do
8548	7	...	...	...	...	...	"	x	1.95	18	120	...	do
9234	8	6	...	...	6	...	x	x	.3	6	24	...	Child born with stigmata, treated with sulpharsenol from 2nd day.
9522	9	6	...	...	...	6	x	...	1.95	...	72	...	Livebirth.
9611	10	5	...	...	3	2	x	...	1.35	4	72	...	do
8274	11	2	...	...	...	2	x	x	.75	12	...	...	do
9082	12	4	...	...	2	2	1	I	1.65	12	108	...	do
8686	13	6	...	...	6	...	x	x	2.88	20	60	...	do
8699	14	2	...	...	...	2	x	x	1.35	10	60	...	do
8366	15	4	...	...	2	2	x	x	1.35	20	60	...	do
7599	16	1	1	...	...	...	Sy. II Late	x	1.95	18	...	...	do
8397	17	1	...	...	1	...	Sy. II	...	1.35	20	...	...	do
6487	18	2	...	...	2	...	x	x	3.9	6	...	...	do
6377	19	10	...	...	...	10	x	x	6.6	24	...	...	do
4665	20	2	...	...	...	2	x	...	4.0	...	...	...	do
7609	21	...	...	...	...	...	Sy. II	x	.75	20	...	...	Twins born at 7½ months, treated with sulpharsenol from 2nd day.
9621	22	10	4	6	...	...	...	...	1.65	2	196	...	Syphilitic infant died in 2 days.
9524	23	1	...	...	...	...	x	...	1.35	...	84	...	Still-born.
9517	24	2	...	...	...	2	...	x	2.55	20	156	...	Miscarriage at 6½ months.
9984	25	2	1	...	...	1	...	...	2.88	16	...	...	Syphilitic fetus born, died.
9060	26	4	4	...	...	...	...	...	...	...	12	...	5 months abortion.
8673	27	2	...	...	1	1	...	...	.75	8	...	...	Syphilitic fetus at full time.
8783	28	...	...	...	...	...	x	...	1.95	20	6	...	8 months.
8850	29	...	...	...	...	...	x	x	1.95	20	132	...	full time.
9653	30	...	...	...	3	...	x	...	.75	...	24	...	7½ months.

* Denotes a positive history of syphilis or undoubted physical signs.

SECTION VI.

Hospitals and Dispensaries.

Very little was undertaken during the year in the way of improving or adding to existing medical buildings, and no new buildings were erected.

The Public Works Department expended the following sums on medical buildings:—

	£
Completion of existing units	718
Miscellaneous minor works	539
Temporary medical buildings	305
Improvements to buildings	240
Maintenance of buildings	1,243

Table F shows medical units, beds, attendances, etc., for the Protectorate by districts, and a list of sub-dispensaries open or under construction in 1932 appears at page 60.

Tables G and H set out the activities of the Medical Store and the Pharmaceutical section of the store for the last seven years.

TABLE F.—MEDICAL UNITS, BEDS

	BUGANDA PROVINCE.					WESTERN PROVINCE.			
	Entebbe District.	Mengo District.	Masaka District.	Mubende District.	Province.	Toro District.	Ankole District.	Kigezi District.	Province.
Medical Units.									
European Hospitals	1	1	...	...	2	...	...	...	...
Asiatic Hospitals	1	1	1	...	3	...	...	...	...
African Hospitals	1	2	1	1	5	1	1	1	3
Sub-Dispensaries	2	7	6	6	21	9	4	4	17
Other Units	4	6	23	8	41	8	4	10	22
In-Patients.									
BEDS AVAILABLE:									
European	5	15	...	...	20	...	...	...	...
Asiatic	4	30	4	...	38	...	...	...	...
African in Hospitals	51	334	73	14	472	40	38	39	117
African in Sub-Dispensaries	...	...	...	...	...	...	...	...	...
TOTAL	60	379	77	14	530	40	38	39	117
CASES ADMITTED:									
European	27	289	...	...	316	...	...	...	...
Asiatic	36	572	5	...	613	1	...	...	1
African in Hospitals	935	6,183	2,020	168	9,306	774	802	1,165	2,741
African in Sub-Dispensaries	...	...	...	...	...	...	...	...	...
TOTAL	998	7,044	2,025	168	10,235	775	802	1,165	2,742
TOTAL NUMBER OF IN-PATIENT DAYS	11,672	105,861	30,295	7,877	155,705	14,026	12,651	21,983	48,660
AVERAGE DAILY NUMBER IN WARDS.									
Hospitals	319	289.2	82.8	21.5	425.4	38.3	34.6	60.1	133.0
Sub-Dispensaries	...	...	...	...	...	...	...	...	...
TOTAL	319	289.2	82.8	21.5	425.4	38.3	34.6	60.1	133.0
Out-Patient Attendances.									
Hospitals	32,615	204,343	140,703	10,143	387,804	32,458	99,897	61,095	193,450
Sub-Dispensaries	42,294	118,851	112,248	130,590	403,983	78,498	174,271	148,774	401,543
TOTAL	74,909	323,194	252,951	140,733	791,787	110,956	274,168	209,869	594,993
Total New Cases.									
European	517	1,069	18	24	1,628	73	15	16	104
Asiatic	1,016	2,435	230	14	3,695	100	58	9	167
African in Hospitals	8,081	51,891	14,216	2,173	76,361	10,774	18,909	9,983	32,666
African in Sub-Dispensaries	7,755	32,174	21,057	18,226	79,212	26,706	35,977	10,993	73,676
TOTAL	17,369	87,569	35,521	20,437	160,896	37,653	54,959	21,001	113,613
MEDICAL EXAMINATIONS	5,788	6,614	7,167	699	20,268	2,445	3,878	607	6,930
GRAND TOTAL	23,157	94,183	42,688	21,136	181,164	40,098	58,837	21,608	120,543
Surgical Operations.									
General Anæsthesia	17	1,589	193	...	1,799	116	62	50	228
Spinal Anæsthesia	...	...	...	...	...	...	...	...	...
Other Anæsthesia	132	151	183	...	466	110	116	46	272
TOTAL	149	1,740	376	...	2,265	226	178	96	500

AND PATIENTS BY DISTRICTS.

EASTERN PROVINCE.							NORTHERN PROVINCE.							UGANDA PROTECTORATE.
Busoga District.	Budama District.	Busoga District.	Bugwere District.	Teso District.	Karamoja District.	Province.	Lango District.	Banyoro District.	Gulu District.	Chua District.	Madi Sub-District.	West Nile District.	Province.	
1	...	...	1	...	...	2	...	...	...	...	...	...	...	4
1	...	...	1	1	...	3	1	2	...	...	...	...	3	9
2	1	...	1	1	1	6	1	3	1	1	1	1	8	22
5	3	4	3	4	...	19	3	8	3	1	5	8	28	85
14	7	28	22	20	2	93	15	12	3	2	3	17	52	208
4	...	...	5	...	...	9	...	...	...	...	...	...	...	29
6	...	...	2	4	...	12	4	5	...	...	...	...	9	59
116	40	...	80	52	9	297	54	82	22	23	38	40	259	1,145
68	10	20	21	...	...	119	20	...	...	...	...	...	20	139
194	50	20	108	56	9	437	78	87	22	23	38	40	288	1,372
18	...	...	34	...	...	52	...	...	...	...	...	...	...	368
46	...	...	34	9	...	89	13	10	...	...	...	...	23	726
1,696	656	...	825	1,050	431	4,658	839	1,085	749	550	243	900	4,366	21,071
881	219	297	169	...	...	1,566	341	...	...	...	...	...	341	1,907
2,641	875	297	1,062	1,059	431	6,365	1,193	1,095	749	550	243	900	4,730	24,072
52,370	25,421	2,518	25,150	16,673	7,004	129,136	22,582	23,946	21,827	13,858	7,465	16,460	106,138	439,639
107'6	51'3	6'9	52'6	45'6	19'1	283'1	43'9	65'5	59'6	37'8	20'4	45'0	272'2	1113'7
35'5	18'1	...	16'1	...	...	69'7	17'8	...	...	...	...	...	17'8	87'5
143'1	69'4	6'9	68'7	45'6	19'1	352'8	61'7	65'5	59'6	37'8	20'4	45'0	290'0	1201'2
73,701	25,858	...	28,278	103,192	6,659	237,688	37,750	137,400	32,926	17,923	18,016	49,519	293,534	1,112,476
78,238	86,856	87,650	66,180	179,767	...	498,691	127,837	196,171	58,213	12,464	40,054	165,419	600,158	1,904,375
151,939	112,714	87,650	94,458	282,959	6,659	736,379	165,587	333,571	91,139	30,387	58,070	214,938	893,692	3,016,851
335	80	...	134	70	...	619	59	128	30	19	2	58	296	2,647
1,047	320	25	561	363	...	2,316	546	469	97	56	1	45	1,214	7,392
21,783	6,821	...	8,049	26,572	2,164	65,389	9,035	17,523	8,639	5,111	5,894	12,304	58,506	239,922
39,869	21,857	42,894	22,804	55,016	...	182,440	26,980	18,156	15,150	4,138	10,013	25,109	99,546	434,874
63,094	29,078	42,919	31,548	82,021	2,164	250,764	36,620	36,276	23,916	9,324	15,910	37,516	159,562	684,835
1,587	380	1,806	6,502	369	1,166	11,810	5,191	15,003	16,210	1,171	4,562	37,042	79,179	118,187
64,621	29,458	44,725	38,050	82,390	3,330	262,574	41,811	51,279	40,126	10,495	29,472	74,558	238,741	803,022
323	99	...	123	73	2	620	279	318	112	16	32	14	771	3,418
10	...	...	...	86	...	96	...	...	...	...	...	...	...	96
317	59	...	17	57	29	479	68	53	26	16	34	45	242	1,459
650	158	...	140	216	31	1,195	347	371	138	32	66	59	1,013	4,973

A LIST OF SUB-DISPENSARIES OPEN OR UNDER CONSTRUCTION IN 1932.

Name.	District.	New Cases 1932.	Attendances 1932.	Year opened.	Remarks.
Mukono	Mengo	3,064	23,799	1923	Permanent buildings. Ward not in use.
Kasangati	"	4,492	18,998	1923	" " " " " "
Bowa	"	6,275	26,660	1923	Permanent buildings. No ward.
Kalagala	"	5,901	25,941	1930	Permanent buildings. No ward.
Kome	"	No return	No return	1923	Island dispensary. Temporary buildings.
Buvuma	"	318	6,124	1923	" " " " " "
Nakasongola	"	3,027	17,329	1931	Temporary buildings.
Wakiso	Entebbe	4,146	17,577	1923	Permanent buildings. No ward.
Mpigi (Mbale)	"	3,609	24,717	1923	Permanent buildings. Ward opened this year.
Kasenya	Mubende	4,042	29,608	1926	Permanent buildings.
Mityana	"	5,724	26,265	1923	" " " " " "
Kibale	"	2,646	26,169	1926	Temporary buildings.
Kakumiro	"	2,497	16,759	1928	" " " " " "
Madudu	"	1,295	12,712	1928	" " " " " "
Kyanasoke	"	2,022	19,077	1931	" " " " " "
Kalungu	Masaka	5,215	34,283	1927	" " " " " "
Kalisizo	"	3,729	24,360	1923	" " " " " "
Katera	"	1,456	7,857	1926	Permanent buildings.
Kalangala	"	1,781	7,707	1923	Temporary buildings. Island sub-dispensary.
Rakai	"	3,469	15,485	1927	Temporary buildings.
Leontonde	"	5,404	22,556	1927	" " " " " "
Kaliro	Busoga	6,879	11,861	1927	Permanent buildings. Ward for 30 beds.
Namwendwa	"	8,762	14,520	1925	Permanent unit built 1932. Ward for 38 beds.
Kiyunga (Bugiri)	"	4,289	11,815	1925	Temporary buildings. Removed to Bugiri 1932.
Namungulwe	"	9,246	16,551	1925	Temporary buildings.
Nabitende (Nsinzi)	"	10,694	23,491	1927	Temporary buildings. Removed to Nsinze 1932.
Nagongera	Budama	5,721	28,917	1927	Temporary buildings.
Butaleja	"	6,713	25,860	1927	" " " " " "
Masafu	"	9,423	32,079	1926	Permanent buildings. Ward for 10 beds.
Bubulu	Bugishu	6,523	13,432	1922	District Headquarters. Permanent dispensary and temporary wards for 20 beds.
Budadiri	"	11,169	28,209	1922	Temporary buildings.
Butiru	"	9,654	19,070	1931	" " " " " "
Bulecheke	"	15,573	26,939	1931	" " " " " "
Budaka	Bugwere	5,967	14,418	1930	" " " " " "
Kamuge	"	6,820	18,592	1922	Permanent buildings. Ward for 21 beds.
Bukodia	"	10,077	33,170	1926	Permanent buildings.
Katakwe	Teso	13,405	36,116	1926	" " " " " "
Serere	"	22,213	61,614	1924	" " " " " "
Amuria	"	11,126	47,304	1924	Temporary buildings. Permanent buildings under construction in 1932.
Kamcd	"	8,272	34,733	1931	Temporary buildings.
Kakamari	Karamoja	No return	No return	1930	Closed 1932 when K.A.R. removed to Moroto.
Kakabara	Toro	2,245	6,304	1922	Semi-permanent buildings.
Kasule	"	3,213	10,829	1930	Temporary buildings.
Butiti	"	7,893	16,777	1925	" " " " " "
Bundibugyo	"	2,443	9,257	1926	" " " " " "
Kisomoro	"	5,035	15,555	1926	" " " " " "
Bugoye	"	686	3,986	1932	Temporary buildings. Replaced Kassesse.
Mpondwe	"	1,554	3,588	1932	Sleeping Sickness post.
Kanyampara	"	No return	No return	"	" " " " " "
Rwaitengya	"	3,637	12,202	1932	Temporary buildings.
Bushenyi	Ankole	9,479	35,331	1922	Permanent buildings.
Lwasamaire	"	5,971	33,195	1922	Permanent buildings. Previously known as Kugamba.
Bukoba	"	10,871	68,978	1922	Temporary building. Previously known as Ibanda.
Kinoni	"	9,656	36,767	1931	Permanent building.
Mpalo	Kigezi	3,100	36,635	1922	" " " " " "
Rukingiri	"	2,445	28,744	1922	" " " " " "
Kinkizi	"	3,237	42,519	1922	" " " " " "
Kisolo	"	2,211	40,876	1922	" " " " " "
Aduku	Lango	5,471	28,569	1922	Permanent buildings completed 1932.
Kaberaimaido	"	14,829	71,383	1931	Permanent buildings. Ward for 20 beds.
Aboki	"	6,938	27,885	1931	Temporary buildings.
Dwoli	Bunyoro	2,191	29,941	1925	Semi-permanent buildings.
Kizirinfumbi	"	2,573	22,022	1925	Semi-permanent buildings.
Kisaru	"	2,139	44,316	1931	Permanent buildings.
Masindi Port	"	1,809	12,775	1925	" " " " " "
Kiriandongo	"	2,849	25,128	1926	Permanent buildings erected 1932.
Kinyala	"	1,475	17,924	1925	Permanent building of private estate.
Busingiro	"	1,773	14,189	1924	" " " " " "
Bujenge	"	3,347	29,876	1932	Temporary. Replaces Buijanga burnt down.
Pader	Chua	4,138	12,464	1932	Semi-permanent buildings.
Minakulu	Gulu	5,094	21,280	1930	Permanent buildings.
Attiak	"	4,635	12,956	1931	" " " " " "
Awach	"	5,421	23,977	1932	" " " " " "
Ajumani	Madi	4,006	17,488	1927	Semi-permanent buildings.
Gimara	"	349	1,584	1931	Temporary buildings. Closed during year.
Zaipi	"	2,020	8,788	1931	Temporary buildings.
Ogubebbe	"	1,596	6,170	1931	Temporary buildings. Closed during year.
Laropi	"	2,042	6,024	1931	Temporary buildings.
Palarinya	"	No return	No return	1932	Temporary buildings. Opened end of year.
Terego	West Nile	4,265	66,038	1925	Permanent buildings.
Packwach	"	4,842	21,176	1930	Temporary buildings.
Pai Ida	"	3,939	19,177	1930	" " " " " "
Nebbi	"	3,428	14,965	1931	" " " " " "
Aringa	"	4,074	28,498	1928	" " " " " "
Udupe	"	1,389	5,580	1932	" " " " " "
Ladonga	"	1,769	6,228	1932	" " " " " "
Rumogi	"	1,415	3,757	1932	" " " " " "
Warr	"	No return	No return	—	Built 1931 but not opened.

TABLE G.

MEDICAL STORE, ENTEBBE.

The following table sets out the issue of certain drugs and dressings from the Medical Store, Entebbe, for the last seven years:—

			1926	1927	1928	1929	1930	1931	1932
Acid. Boric	...	lbs.	882	990	1,205	1,745	1,445	1,291	1,450
Acid. Carbolic	...	"	367	447	624	513	653	624	759
Ammon. Carb.	...	"	416	578	694	911	1,196	870	745
Hexamina	...	"	218	300	258	301	259	236	145
Chloroform	...	"	339	501	569	507	571	615	733
Glycerin	...	"	580	697	1,082	1,318	1,441	1,476	1,227
Mag. Sulph.	...	"	13,014	13,182	13,612	13,054	15,855	18,130	20,821
Ol. Ricini	...	"	2,414	2,501	2,761	3,000	3,419	3,932	3,764
Paraff. Molle Flav.	...	"	2,240	2,924	2,981	2,840	3,935	4,965	3,640
Potas. Iodid.	...	"	669	804	729	1,081	1,046	1,057	824
Quinin. Bisulph.	...	"	693	586	628	787	934	974	365
Quinin. Hcl.	...	"	195	112	145	153	109	69	61
Quinin. Bihcl.	...	ozs.	120	128	152	313	528	392	344
Quinin. Sulph.	...	lbs.	50	37	81	50	50	15	10
Quinin. Ethylcarb.	...	ozs.	162	260	370	368	364	168	104
Lint. Boric	...	lbs.	6,370	7,580	9,466	10,976	13,561	12,563	12,936
Lint. Plain	...	"	6,014	7,470	9,243	10,736	11,274	10,809	11,470
Wool. Plain	...	"	6,780	6,628	8,765	12,335	13,143	13,929	11,039
Wool. Grey	...	"	5,453	5,686	6,565	7,762	10,135	10,897	11,732
Tow. Plain	...	"	1,700	920	2,559	1,494	666	437	473
Tow. Carb.	...	"	700	1,224	1,343	1,637	1,327	3,014	1,683

TABLE H.

PHARMACEUTICAL SECTION, 1932.

			1926	1927	1928	1929	1930	1931	1932
Tincture	...	pts.	2,293	2,768	2,533	4,420	5,236	4,954	4,323
Liniments	...	"	1,165	2,387	2,455	3,879	3,843	3,873	3,202
Ointments	...	lbs.	4,703	7,183	6,604	10,389	12,313	11,024	14,061
Dusting powders	...	"	527	810	303	602	700	800	813
Infusions, conc.	...	pts.	422	704	752	1,236	1,256	1,064	864
Hard Soap	...	lbs.	6,000	10,130	10,910	14,370	6,250	—	—
Sundries	...	"	1,905	2,113	3,933	5,108	5,187	3,905	1,773
Soft Soap	...	"	3,948	5,960	5,426	6,096	8,838	9,280	9,156
Bismuth sodium potass-tart.	...	"	—	20	40	24	5	17½	45

The following excerpts are abstracted from the Annual Report of Mulago Hospital submitted by Dr. J. P. Mitchell, O.B.E., Medical Superintendent, Mulago.

The Hospital.

Out-patients.—The number of new cases has increased in 1932, males number 14,467 as compared with 10,276 in 1931, females 7,390 as compared with 5,441. No explanation is offered for the unusual increases during the year; let us hope that it is an indication of confidence and of appreciation of the work of the staff, both European and African. The spacious and well equipped new Out-patients Department, the establishment of special clinics, the not unsuccessful attempt at specialisation among the medical officers and the all-round improved facilities for diagnostic and curative practice are factors commonly commented on by the more sophisticated natives and are unquestionably appreciated by the people in general.

In-patients.—Males admitted number 3,958 practically as in 1931, females have increased to 1,744 as compared with 1,577. The accommodation excluding the Isolation Hospital is 250 beds and 8 cots for babies. The daily average in hospital is 260. Certain sections, the prison, cubicle, tuberculosis and maternity wards, are specialised, and in all represent 70 beds which are not available for general cases. The pressure on the general wards has been very much felt. The annual fumigation and painting had again to be postponed. Walls have been cement-washed, there is little evidence of vermin, and the wards are clean.

Deaths.—There has been a considerable increase in the deaths, 433 as against 376. Pneumonia and plague account for the bulk of the increase. Dr. Williams refers in his report to the pneumonias, which numbered 298 as compared with 266 in 1931; the increase in plague deaths is accounted for by the transfer of the Isolation Hospital from Kampala to Mulago.

Post-Mortem Examinations.—Pressure of work has militated against the performance of as many post-mortem examinations as we should wish to do. The number performed was 106 as against 181 in 1931. Post-mortem examinations form an important part of the students' education and in future it has been arranged that a number will be demonstrated by the lecturer in pathology.

Anti-Venereal Department.

Dr. L. J. A. Loewenthal has been in charge of the Venereal Clinic and wards at Mulago Hospital, and his report follows:—

Staff.—A Senior African Medical Assistant helps with the work and is understudied by the newly-qualified assistants, who are thus taught the principles of anti-venereal treatment. A course of lectures on gonorrhoea in the male and female was also given. The assistants are taught the surgical operations which they will later be required to perform; these include circumcision and the operative treatment of acute retention and extravasation of urine.

Attendants in the male clinic are taught the technique of intravenous injection (for which they have a remarkable natural ability), learn to take specimens for laboratory examination, and to give the correct Janet irrigation. They are changed from time to time, so that each may become familiar with the various duties.

Therapy.—The work of the department is perforce directed more towards alleviating symptoms in the individual than diminishing the incidence of venereal disease among the population. Apart from African employees of Government departments (*e.g.*, Police and Prisons), I have not yet been able to treat either syphilis or gonorrhoea satisfactorily in any patient. The subjoined statistical survey explains why this should be so. The advisability of commencing an anti-syphilitic course of treatment with a single large "sterilising" injection might well be considered on the grounds of the public health.

Pyrotherapy, as described by Dr. Boase in last year's Annual Report, is still being used with good results in all forms of bubo and many of arthritis. Cases who cannot be admitted to hospital for this treatment respond more slowly to the milder measure of intra-muscular injections of sterilised skimmed milk (10 cc. twice weekly).

For chancroid in the male, and all venereal ulcerations in the female, the following local treatment has been introduced and is giving good results:—

At the first attendance, the ulcer is lightly cauterised with a crystal of copper sulphate, swabbed dry, and then painted with the Ziehl-Neelsen carbolfuchsin stain. The swabbing and painting are repeated twice weekly, and the treatment is found to be clean, rapid and economical. The composition of the stain is as follows:—

Saturated alcoholic solution of basic fuchsin	...	10 cc.
5% aqueous solution of carbolic acid	...	100 cc.

In acute extravasation of urine, efficient drainage of the bladder combined with injections of hydrogen peroxide into the affected tissues (Hamilton Bailey) promises well.

STATISTICAL SURVEY OF ATTENDANCES FOR VENEREAL DISEASE DURING THE
YEARS 1930, 1931 AND 1932.

There has been a steady diminution in the number of total attendances for venereal diseases at Mulago Hospital during the last three years. The number of new cases fluctuates from year to year, and the numbers for 1932 actually show a marked increase over those of previous years. Unfortunately, however, the number of new cases seen is no criterion of the utility of the anti-venereal work carried out; both syphilis and gonorrhoea are transmissible long after an apparent cure has been obtained and the number and regularity of re-attendances are the only true tests.

With the above facts in mind, after analysis of the returns, the following comments are made.

Owing to the impracticability of making an immediate diagnosis in the majority of cases, pending reports from the laboratory, it has been the practice to suspend diagnosis on the patient's card until the monthly survey of cards. In the meantime, patients who continue to attend undiagnosed are recorded by the native clerk on the daily attendance form as "Venereal Observation." As soon as they are classified, however, *i.e.*, in the following month, they are listed under the appropriate diagnosis as regards syphilis or gonorrhoea. There remains, nevertheless, a large number of cases—chancroid, yaws, etc., which is not provided for in Table I. For these reasons it is not possible accurately to analyse the figures given under "Venereal Observation," which certainly include many re-attendances of syphilitics previous to diagnosis. As the same statistical inaccuracy obtains for the three years under consideration, such cases have been excluded from the subjoined analysis, and first attendances have been subtracted, so that a comparative index of re-attendances has been arrived at.

Mulago Hospital.—The following tables show the changes obtaining in Mulago Hospital during the last three years:—

					New Cases.	Re-attendances.	Average Re-attendances.
Acquired Syphilis—Males	1930	...	...	...	1,589	10,634	6.1
"	1931	...	...	...	1,438	7,549	5.2
"	1932	...	...	...	1,805	4,941	2.7
Acquired Syphilis—Females	1930	...	...	...	1,433	5,886	4.1
"	1931	...	...	...	1,296	6,154	4.7
"	1932	...	...	...	1,533	4,091	2.6
Gonorrhoea—Males	1930	...	...	...	495	6,461	13.0
"	1931	...	...	...	348	3,858	11.1
"	1932	...	...	...	549	3,801	6.9

These tables show that, whereas fresh cases of venereal diseases are occurring at least as frequently as in previous years, the re-attendances are appallingly low. From the figures for acquired syphilis, male and female, it is obvious that the anti-venereal campaign is, momentarily, a failure.

In venereal clinics a total dosage of 12 grams of salvarsan-substitute is considered a moderate amount for the first year's treatment. Assuming each patient in our tables to have received the dosage customarily given at this hospital, the comparison is as follows:—

Average total dosage in grams:—	Desirable	1930	1931	1932.
Males	12.0	3.6	3.0	1.2
Females	12.0	2.4	3.0	1.5

proportionate figures are obtained for the metallic adjuvants, bismuth and mercury.

The significance of this fall lies not so much in the actual averages as in the conclusions to be drawn from them. Thus, the figure of 3.6 grams for 1930 is by no means a curative dose, but by comparison with that of 1.2 for 1932 it may be assumed that *more individuals completed a full course of treatment* in the former year.

Sub-dispensaries.—Here figures are much more encouraging; along with the usual fluctuation in new attendances, there has been a steady rise in re-attendances, the figures being:—

Acquired Syphilis:—					New Cases.	Re-attendances.	Average Re-attendances.
Males	1930	...	...	...	2,753	28,602	10.4
	1931	...	...	...	4,643	56,948	12.3
	1932	...	...	...	3,156	58,877	18.6
Females	1930	...	...	...	2,568	21,631	8.4
	1931	...	...	...	4,408	49,492	11.2
	1932	...	...	...	2,948	50,055	16.9

The reason for these changes in re-attendance can only be surmised. The increase in the country districts may well be due to increased vigilance and enthusiasm on the part of the chiefs and medical attendants. The corresponding decrease at Mulago may be ascribed to the "floating" nature of the population in and about Kampala and to the lack of personal touch between chiefs and the heterogeneous population, though this factor has not altered in the last few years. It is not known whether the sub-dispensaries are drawing their increase from those who would formerly have re-attended at Mulago. Some form of statistical research into this question would appear to be indicated.

To suggest a remedy without confirming these figures, and before some reason for them is discovered, would seem unwise.

Some temporary good, however, might be done by increasing the amount of salvarsan-substitute given to each patient at one injection. This can be done with safety if the drug is combined with a solution of sodium thiosulphate, the latter acting as a prophylactic against poisoning by organic arsenical compounds. If this were done a total of 3 grams of salvarsan substitute could be given in three weeks, *i.e.*, during the time at present taken to administer 1.2 grams."

Report on the Work of the Special Departments, Mulago Hospital.

Medical.—Dr. A. W. Williams succeeded Dr. A. McK. Fleming, who was invalided home, as officer in charge of the male medical wards, and his report follows:—

"Male cases treated in the medical wards during the year numbered about 750.

As usual, the highest mortality is from pneumonia, many of the patients walking into hospital a day or two before the crisis is due. Out of 143 cases of pneumonia of all kinds the mortality was 31.5 per cent. During January and February the influenza epidemic was responsible for a more virulent type, the statistics for these two months shewing a mortality of 50 per cent. Post-mortem examinations at this time by Dr. Fleming showed that most of the deaths were from lobar pneumonia. As a contrast, comparison may be made with the death rate from pneumonia in prisoners (mostly seen early) of only 12.8 per cent.

Pulmonary tuberculosis is a depressing problem. Out-patients attend with very advanced lesions, and those who are willing (mostly Banyarunda, having no homes) are admitted, though the accommodation for them leaves much to be desired. A few are able to be discharged afebrile, but few ever attend afterwards as out-patients, unless to return for admission, sometimes together with infected relatives. Most of the patients remain in hospital for weeks or months until they die. The patients can hardly be said to be benefitted therapeutically even by admission to hospital and of course take up the room of patients for whom more could be done. Nothing short of a resident colony, to attract early cases among the Baganda, and with opportunities for educative treatment, seems worth while. In the report from Tanganyika on tuberculosis, the common occurrence of pulmonary tuberculosis in young children is pointed out. Statistics are not yet available to support this with regard to Mulago, but several phthisical children have been seen.

Of the enteric group, out of 21 cases, all were typhoid; no case of paratyphoid was seen. There were four deaths. In a number of instances the Widal reaction remained negative until the third week or later, and in one particularly severe case, with high fever lasting five weeks, there were repeated negative Widal reactions until the twenty-fourth day of illness. Not until the patient was convalescent, and the diagnosis of typhoid had been given up was a positive reaction obtained, and thereafter in rising titre.

The presence of two cases of schistosomiasis (*S. mansoni*) in the ward in June led to the expectation of others, but examination of other suspicious cases since then has always met with a negative report. One of these patients had lived in Kyadondo all his life, and had never been outside Buganda. The other, serving in the Uganda Police, was an Acholi, from Kitgum, but said that he had been stationed at Kampala for three-and-a-half years.

Some cercaria-infected snails collected, by Mr. W. J. Eggeling of the Forest Department, in Namanvi swamp were seen. These were examined by Mr. Hancock at the Agricultural Laboratories, and specimens of cercariae sent home to the London School of Hygiene and Tropical Medicine. They were not identified. The work has since been handed over to the Medical Laboratories.

With regard to cinchona febrifuge in use during the second half of the year, a very definite impression was formed that it does not compare in efficiency with the quinine sulphate mixture though it is admittedly impossible to make an accurate trial under the circumstances. Certainly more frequent resort has had to be made to quinine bi-hydrochloride injections, since the replacement of quinine mixture by cinchona febrifuge.

Further to the case of rheumatic fever reported by Dr. Fleming in the report for 1931, another case was seen during the year—a boy aged 12. Apart from these occasional cases the gonococcus appears to be responsible for most of the cases of polyarthritis met with. These go to the venereal wards where good results have been obtained by pyrotherapy."

Surgical.—The major general surgical work of the hospital is shared by two officers, Miss Margaret Holliday, F.R.C.S. (1.), on the female, and Mr. A. H. Mowat, F.R.C.S. (EDIN.) on the male side. Miss Holliday has, in addition, charge of the maternity section and the female medical wards, and Mr. Mowat of the ear, nose and throat department. 1,663 operations were performed during the year as compared with 1,447 in 1931 and 1,425 in 1930. This department has the complete confidence of the people.

REPORT ON THE WORK OF THE MALE SURGICAL DEPARTMENT.

"A review of the surgical work for the year brings forward for consideration some of the following affections which impress by the disability arising out of them, by their unexpectedness, or by their variation from their European parallel.

Tropical Myositis.—Of these, the most important is that which has been termed *Tropical myositis*, of which three types have been observed.

TYPE I.—The onset in the typical case, as suggested by the name, is a sudden painful induration apparently in muscle substance accompanied by rise of temperature. This usually goes on to abscess formation. Similar swelling may arise simultaneously or in sequence in various parts of the body.

Experience gained in this hospital shows that the pus does not form in the muscle substance which is markedly oedematous, but in the fascial intramuscular planes, and under the muscle sheaths. The pus examined as a routine in the laboratory, by arrangement with the Senior Bacteriologist, has almost invariably contained staphylococci. Serum obtained from one case before pus formation showed pure staphylococcal cultures. Attempts to grow staphylococci from blood have always failed because of contamination. In a fair proportion of cases the skin of the patient showed a potential primary focus in a healing boil, cut or abrasion, but in many there was an apparently healthy skin and throat and no obvious focus. This type cleaned up rapidly when drained after pus formation.

TYPE II.—The majority of cases comprised the type where the patient was debilitated and had abscesses spreading along the fascial planes with a minimum of pain or inflammatory reaction. The muscle shewed very little oedema. The pus in these cases again produced staphylococci and, provided the patient's resistance had not been too long undermined, recovery was fairly rapid after adequate drainage and general treatment. Several developed one or more abscesses during convalescence.

The third group of cases forming the smallest and usually fatal type was that in which the patient had a severe systemic reaction, high temperature and even delirium and only after a day or two complained of localised pain or tenderness. Pus was slow in forming and then was markedly sanious and very imperfectly shut off, the intramuscular planes being very oedematous and easily separated. Films from the pus showed streptococci in short chains, with occasional staphylococci. The patients died of septicæmia. The condition would appear from its course to be due to blood invasion by staphylococci and in the severe cases by added streptococci.

The site of fixation of the abscesses is curious as one has not been confronted with an acute osteomyelitis during the whole year.

The factor causing the lowered resistance of infection is unknown. Cases have appeared where the skin and usual foci have been apparently healthy and diet has been well balanced. From the Prisons, where xerophthalmia is no rarity, only one case has come. If a vitamin A deficiency is postulated to account for the lowered resistance, then vitamin A will have to be subdivided. In none of the abscess cases was xerophthalmia present. Syphilis as a factor was excluded by the varying result of the routine blood test. The disease occurs throughout the year with no apparent seasonal peak.

Gastric and Duodenal Ulcer.—More interesting but possibly of less importance is the fact that the native of Uganda has sheltered gastric and duodenal ulcer from view under the cloak of *Kifuba* (pain in the chest). Attention was drawn to this subject by the admission of a case of perforated duodenal ulcer in June, 1931. Since then fourteen cases of *Kifuba* have undergone surgical treatment for gastric and duodenal ulcer, a clear and typical history being obtained by the exercise of patience. The patients were drawn from various tribes, the majority of them subsisting mainly on a carbohydrate diet with meat as an infrequent delicacy. Dyspepsia due to ankylostomes was in all cases eliminated as a preliminary to diagnosis. In the great majority of cases the patient preferred medical treatment.

Hernia.—Operation for hernia has shown that, as compared with European standards, a relatively high proportion have the bladder involved. Direct and sliding hernia of the bladder is met with frequently. An obvious cause for this would appear to be the high frequency of a greater or less degree of gonorrhœal stricture of the urethra in the Muganda male. Notable also is the age of the people coming for operation. Only one inguinal hernia in a male below the age of 16 has appeared this year. The

majority are of middle age and over. Urethral dilatation is performed when necessary before operation. Out of 120 cases, only one completely patent funicular process was found.

Intussusception.—Intussusception provides one of the main abdominal emergencies, and it is of interest because of its relative frequency in the adult. Only one child suffering from the condition was seen, and operation was refused by the parents. Against this five cases in adults underwent operation. In no case was a local exciting cause found at operation or deduced from the history. The frequency of worm infection suggests a possible cause.

Fractures.—With the growth of motor-bicycle traffic there has been an increasing number of accidents and these testify to the power of the native to sustain and recover from severe injuries. Six cases of compound fracture of the skull were operated on with recovery in each case.

Treatment of lower limb fracture by splints has not proved satisfactory owing to the intolerance of the skin to pressure, and the intolerance of the patient generally to the splint. Direct traction on the bone in fractured femur has been tolerated well, and with better results than by adhesion plaster and splint. A feature of the year has been the performance of minor operations by the Senior African Medical Assistants, while an occasional major operation has also been carried out by them under supervision."

The Ophthalmic Department has been conducted by Dr. L. J. A. Loewenthal since Dr. Owen's departure in April. New cases have again increased from 1,158 in 1931 to 1,237 in 1932.

"The disease-incidence shows no important variation from that of the previous year, except for the increase in cases of night-blindness and xerophthalmia. These were all inmates of H.M. Central Prison, and the question of avitaminosis is fully dealt with in the Prison Report. The large number of patients in group 17 is due to the practice of sending prisoners to the ophthalmic clinic to be treated for night-blindness—a necessary procedure at the time, as this symptom was frequently complained of by malingerers.

RETURN OF CASES ATTENDING THE OPHTHALMIC CLINIC.

NEW CASES:—

1. <i>Orbit.</i>				9. <i>Lens.</i>			
Dermoid cyst ...	...	2		Cataract, senile ...	...	16	
Cellulitis ...	...	2		" lamellar ...	...	4	
2. <i>Oculomotor apparatus.</i>				" capsular ...	...	1	
Ophthalmoplegia ...	...	2		" complicated ...	...	4	
Squint ...	...	4		10. <i>Chorioid and retina.</i>			
3. <i>Lacrymal apparatus.</i>				Chorioiditis ...	...	6	
Abscess ...	...	2		Chorio-retinitis ...	...	1	
4. <i>Lids.</i>				Neuro-retinitis ...	...	1	
Hordeolum ...	...	13		Albuminuria retinitis ...	...	1	
Chalazion ...	...	10		Quinine amblyopia ...	...	1	
Cellulitis ...	...	1		Detached retina ...	...	1	
Ectropion ...	...	1		11. <i>Optic nerve.</i>			
Herpes ...	...	1		Primary optic atrophy ...	...	4	
5. <i>Conjunctiva.</i>				12. <i>Errors of refraction.</i>			
Conjunctivitis gonococcal ...	...	14		Myopia ...	...	6	
" phlyctenular ...	...	4		Myopic astigmatism ...	...	2	
" follicular ...	...	2		Hypermetropia ...	...	2	
" angular ...	...	7		Hyperopic astigmatism ...	...	4	
" other varieties ...	...	235		Presbyopia ...	...	5	
Trachoma I ...	...	44		13. <i>Ocular manifestations of avitaminosis A.</i>			
" II ...	...	121		Keratomalacia ...	...	1	
" III ...	...	203		Xerophthalmia ...	...	126	
" IV ...	...	12		Night-blindness ...	...	74	
Pinguecula ...	...	1		14. <i>Manifestations of nematode migration.</i>			
Papilloma ...	...	1		Oedema with nodules ...	...	11	
Chemosis ...	...	1		Bung-eye ...	...	31	
Ecthymosis ...	...	1		Bulge-eye ...	...	13	
6. <i>Cornea.</i>				15. <i>Unclassified.</i>			
Corneal ulcer and results ...	...	44		Foreign bodies in eye ...	...	11	
Dendritic ulcer ...	...	1		Injuries of eye ...	...	10	
Interstitial keratitis ...	...	9		Glaucoma ...	...	6	
Keratococcus ...	...	3		Panophthalmitis ...	...	1	
Herpes of cornea ...	...	1		Tuberculosis ...	...	1	
Burn of cornea ...	...	1		Vitreous opacities ...	...	1	
7. <i>Sclera.</i>				Congenital ptosis ...	...	1	
Scleritis ...	...	1		Xanthelasma palpebrarum ...	...	1	
Sclero-keratitis ...	...	3		16. <i>Not diagnosed</i> ...	...	16	
8. <i>Iris and ciliary body.</i>				17. <i>No discoverable disease</i> ...	...	76	
Iritis and cyclitis ...	...	26		18. <i>No disease of the eye</i> ...	...	16	

Dermatological.—During the year a special clinic for skin diseases, conducted by Dr. L. J. A. Loewenthal, was inaugurated at Mulago Hospital at the end of June, and at first provided a convenient time during which cases referred by colleagues could be seen and demonstrated. Latterly, however, a regular out-patient attendance has been built up, and an average of thirty cases attends every Tuesday afternoon. Much valuable experience has been gained in this department, mainly due to the routine examination of skin sections by Dr. Willans of the Laboratory Service in doubtful and interesting cases.

The figures given below show only those cases who attended the clinic. Many more were seen in other departments and not entered in the register.

The number seen at the clinic was 169. In addition, 153 cases of skin disease, the result of vitamin A deficiency, were seen at Luzira Prison.

An analysis of cases on this, the first year's work, might be misleading, but the following generalisations are worthy of note:—

1. "Diseases of dirt," *i.e.*, scabies and tinea, head the list.
2. The toxic group, especially *urticaria* and *erythema multiforme*, are frequently seen, as is also *pityriasis rosea*.
3. The dermatosis described by Drs. Fleming and Hennessey is common and an attempt is being made to determine its cause. Non-specific protein therapy is of some value in its treatment.

A dermatosis occurring only in those suffering from avitaminosis A has been found. Its clinical and pathological features formed the subject of a paper read at the Centenary meeting of the British Medical Association in Nairobi. This paper is to be published in the "Archives of Dermatology and Syphilology."

Eighty-six skin sections have been examined during the year, and together with photographs of some of the cases, will be useful for reference. Among the rarer diseases encountered and verified histologically were:—*Scleroderma* (three cases), *dermatitis atrophicans* (Kaposi), *folliculitis decalvans* (Quinquand), *parapsoriasis*, *sarcoid* (Boeck) and a form of "mossy foot" secondary to oedema."

Report on the Uganda Medical School, Mulago, for the Year 1932.

A. RETIREMENT OF DR. H. B. OWEN.

The Principal of the Medical School, Dr. H. B. Owen, O.B.E., D.S.O., retired during the year. Appointed as Medical Tutor in 1923, it is still less than a decade since he was entrusted with the development of the higher medical education of the native and it is appropriate in view of his retirement to remark on the progress achieved in that period.

The general education of the Uganda native ten years ago was remarkably in advance of that of the neighbouring territories, but there had been little or no attempt at medical education beyond the practical training of dressers. Among these, however, there had been ample evidence of personality and intellect which indicated that given a fuller systematic training their attainments might be unlimited. The aim was to produce a class of African general practitioner with a sound, if simple, knowledge of the processes of life in health and in disease "capable of diagnosing and treating with understanding the commoner diseases of the country and of appreciating the possibilities of major medicine and surgery in more expert hands."

The scheme evolved was based on the European system of medical education, the curriculum being curtailed and adapted to the local status of learning, and was limited to four years. In the first year improvement in English and mathematics continued alongside the study of the preliminary sciences, botany, zoology, physics and chemistry. The time allotted to these indicates how elementary the teaching was. In the second year anatomy and physiology were studied from elementary works on these subjects aided by models and simple experiments. In the third year pharmacy, parasitology and laboratory methods were taught concomitantly with the theory of the practice of medicine and surgery. In the fourth and final year teaching concentrated on clinical medicine and surgery and pathology. The course was a very elementary one but the fundamentals were thoroughly taught and, as later experience of these students has proved, the principles were apparently grasped.

A nursing manual of the more advanced type embodying anatomy, physiology, medicine and surgery was the only text book. This was amplified by lectures and notes on local diseases and conditions. Theoretical teaching was limited by the standard of learning, but there was no limit to the teaching of clinical observation and practice, both of which were impressed on these students with great patience and thoroughness.

Students were selected from the better scholars at Makerere College. Three entered in 1924 and four in 1925. During 1926 a reorganisation of the educational system throughout the country took place. There were no entries in that year. In 1927 a second year was added to the period of the study of the preliminary sciences, for it was appreciated that a wider general education was essential to any improvement in medical teaching. Four students entered that year.

The first two groups had graduated by 1928, in which year midwifery and gynaecology were added to the final year subjects.

The teaching of that period bears little comparison with that of to-day, but it is gratifying to observe that with aid of occasional spells at Mulago Hospital between postings, combined with the more valuable aids, experience and practice, these first graduates hold their own with the more recent products.

With one exception, all have been confirmed in their appointments and hold responsible posts. They have justified the experiment, and are a credit to their tutor.

In 1928, Dr. R. Y. Stones, referring to the final examination, among other comments, made the following observation: "The examination has been a revelation to me both in the standard of English attained and in the extent of knowledge acquired. These students are educated men in the broad sense and are fitted to profit by experience in their profession." This was an interesting and accurate forecast in support of which I quote from a recent report on one of these: "Intelligent and efficient, steady, sober, fond of games and sociable. He speaks and writes English well, his handwriting is clear and his books and notes on cases are kept neatly. He has been in charge of . . . hospital for over a year and has given the utmost satisfaction. He is sound professionally and rarely makes a mistake in diagnosis. He is competent at anæsthetics, microscopical work and venereal diseases. He is interested particularly in midwifery and operations and he spends his free time in studying medical works."

Dr. Owen was transferred from Makerere College to Mulago Hospital in 1927 as Medical Superintendent and Principal of the Medical School. In 1928, the Medical School building was completed providing three spacious rooms, a physiology room and laboratory combined, a dissecting room and a general lecture room which was also the museum. Teaching which had in the meantime been carried out under difficulties, was greatly facilitated, and the school provided a secluded study for the student between lecture hours.

A staff of lecturers, eight in number, was selected from the hospital staff, and from the beginning of 1928 teaching on a broader but still limited basis was in full swing. With each new group of students reconstruction and re-writing of lectures in most subjects have been demanded by the advancing intelligence and educability of the students. The lecturer's task has been no sinecure; for the preparation of lectures and clinical demonstrations could be done only in his leisure hours when the routine work of the hospital was completed. To-day, although lectures form the basis of teaching, the standard student's text books in use at home are issued and, under direction, are read intelligently. In 1931, four students qualified, two with honours. One was referred but passed in June, 1932. Three qualified in December this year and Dr. R. Y. Stones, to whom we are again indebted for examining the final year students in all subjects, reports as follows:—

"In presenting my report on the final examination of your students this year I wish to thank you and the members of your staff for again according me the privilege of conducting this examination. I value highly this opportunity of keeping in touch with Native medical education in Uganda.

This year to test the standard of attainment for the first time many of the questions were selected from the easier ones set at the Conjoint Final Examinations of the Royal College of Physicians and Surgeons of England.

These questions, as will be seen from the examination papers, are not easy to answer without a good deal of independent thought and are not of the type which can be answered by mere book knowledge. As you know, the African is an adept at quoting pages of a text book from memory alone.

The answers to these questions were on the whole good and shewed a wide appreciation of the subject. Each of the candidates revealed the possession of trained mind, shewn by his ability to stick to the point and not wander off his subject, thus little was missed and what is more important to the examiner, very little extraneous and unasked-for matter was added as padding.

In Medicine and Midwifery the standard was satisfactory but the Surgery was weaker than in former years, both in the written work as well as in the practical examinations. Two of the three candidates succeeded in obtaining marks just sufficient for a pass in this subject and none of the three achieved an honours standard in the whole examination. In my opinion, the result of the surgery examination does not warrant the award of the special prize to any of the candidates.

All three candidates obtained a pass; their names and marks obtained are as follows:—

(1)	D. M. Kiremerwa	...	438 out of 600
(2)	Ndugwa	...	408 " " 600
(3)	B. Nvule	...	399 " " 600."

This report must be regarded as the final one of Dr. Owen's regime. It is not as good as the 1931 report but it is, in the opinion of their teachers, a very fair estimate of the capacity of the three candidates, average students with average brains, with good characters and good prospects. Dr. Owen's retirement is a great loss to students and staff alike; a born teacher, he was tireless and patient with the students and his stimulating influence and help will be long missed by his colleagues.

B. REMARKS ON THE TRAINING OF MEDICAL ASSISTANTS.

Previous reports have given in full detail the scheme of studies and there is little to add in the way of expansion this year. The course, already overcrowded, can now be improved by reconstruction rather than by expansion. The physiology classroom is now fully equipped as a laboratory.

Practical histology and bacteriology are now taught there thus relieving the congestion in the Protectorate laboratory. Periods have been added to the time-table for demonstrating the practical application of physiology in the wards and pathology in the post-mortem room. Pharmacology and therapeutics are now taught by a medical officer, time being found by beginning the day half-an-hour earlier. Pharmacy continues to be taught by the dispenser.

For the greater part of the year, on account of the financial position, the hospital staff has been reduced. This has placed a severe strain not only on the hospital but also on the school. Frequently lectures had to be cancelled or curtailed on account of pressure of work and emergencies; in cases of sickness, replacements not being available, the work just ceased.

The medical curriculum is generally referred to as a course of five years, but strictly speaking it is only three. Students spend two years at Makerere College in the study of the preliminary sciences, three years only are devoted to purely medical work. It is impossible to crowd more into the medical period, but with the steady improvement in education at the secondary schools, it may be possible in the near future to curtail the period of preliminary study at Makerere and to devote more time to medicine.

The present arrangement whereby graduates remain at hospital for further instruction is an excellent one and should be extended to not less than a year. This enables the newly qualified student to improve in clinical medicine and operative surgery and to hold clerkships in the special clinics for venereal diseases, for diseases of women and children, eyes, etc. Reference is made by Dr. Mowat in his report on the surgery of the year to the operative work undertaken by the recent graduates.

Eighteen students attended the school during the year. In the third year, nine were presented and seven satisfied the examiners; in the fourth year, four were presented and three passed; in the fifth year, three were presented and all passed.

There are three terms, each of three months' duration. Third-year students who are still resident at Makerere College spend their vacations at home, fourth- and fifth-year students who reside in the Medical School hostel remain at the hospital and are attached to members of the staff, whom they assist in the wards. They have fourteen days' holiday annually.

C. FOUNDATION MEDALS.

Three Foundation Medals were presented during the year: by Sir William Gowers, K.C.M.G., Major G. J. Keane, C.M.G., D.S.O., and Dr. H. B. Owen, O.B.E., D.S.O.

These medals are to be awarded annually at the discretion of the Principal and with the approval of the School Council in such subjects as he thinks fit to the most successful students of the year.

The medals were awarded as follows in 1932:—

Gowers Medal	...	K. N. Samba	...	{ Physiology	...	90%
				{ Anatomy	...	80%
Keane Medal	...	D. N. Kiremerwa	...	Medicine	...	74%
Owen Medal	...	D. N. Kiremerwa	...	Midwifery	...	75%

D. REMARKS ON THE TRAINING OF MEDICAL ATTENDANTS.

Male attendants are essentially nurses and are trained as such, but their education extends beyond the limits of pure nursing with a view to equipping them for district work. They are taught to recognise and treat by simple and standard methods the common diseases of the country and to recognise the more serious conditions which require transfer to their base hospitals. While the majority continue to be nurses in the true sense, numbers of the more intelligent become attendants in charge of sub-dispensaries where they deal with all minor sickness and treat by prescribed methods syphilis, gonorrhœa and other diseases. Attendants are recruited in their pre-final and final years at the Middle schools by which time they have acquired a fair working knowledge of English, in which language they are now taught from the outset of their training.

The curriculum extends over a period of three years and is as follows:—

From January to June in the first year, learners are posted to wards. They have the opportunity then of becoming acquainted, before embarking on classes, with the type of work which they will have to do, and the Sisters decide whether they are suitable types for training. From June to December, they pass through the junior course of instruction. The class is concentrated in the general medical and surgical wards, where there is an abundance of material for nursing teaching. The routine work of these wards is carried out by the class under the direction of the Sister and the senior attendants in charge. Lecture demonstrations are given daily by the Sister, the syllabus of training being subjoined. Concurrently, during the afternoons, the class is taught the elements of physiology and anatomy, of the nature, causation and prevention of diseases and of sanitation and hygiene.

At the end of the first year they are examined, character and suitability for training being taken into account. Successful candidates pass from the Learner Class VI to Medical Attendants Class B V. Increments in pay are granted in accordance with the regulations governing the employment of the native staff, the maximum in this case being Sh. 10 per month. The whole increment is granted only in cases where a high standard has been attained in the test. Recruited at Shs. 10 per mensem with Shs. 6 ration allowance, their pay thus rises to Shs. 20 per month plus the ration allowance.

In the first six months of the second year attendants are employed in general work and night duties. They pass through the special departments where they work under the direction of senior attendants and become familiar with intravenous and intramuscular medication, dispensing, the routine of the operating theatre and the system of records.

During the second six months of the second year they pass through the senior course of instruction. Demonstrations in more advanced nursing methods are given by a Nursing Sister, first aid in accidents and emergencies is taught by the Dispenser from the text book of the St. John Ambulance Association; lectures further extending their knowledge of physiology and anatomy, and in the simple and standard methods of recognising, and treating the common diseases of the country are given by a senior medical assistant.

At the end of the second year a practical and written examination is held. Increments are awarded to the successful candidates in the same manner as in the previous examination, the full increment being Shs. 20 per mensem.

This completes the systematic training of the medical attendant, but he is not released from Mulago Hospital for another year, during which he is passed through the special departments with a view to fitting him to take charge. Three months in the dispensary and three months in sub-charge of wards followed by six months in the theatre are regarded as essential, but the demands of the districts frequently forbid the completion of this training. A number of attendants, at the request of District Medical Officers, remain for special training in theatre work and dispensing. For such training not less than one year's experience is required.

Female Attendants.—The educational standard of the women bears no comparison to that of men, and it has not been possible in the past to produce a class of female nurse similar to the male attendant. A steady and noticable improvement is, however, taking place both educationally and morally among the better class women, and the influence of the mission schools from which they are now recruited was reflected in the examinations this year, when in the junior class two female attendants headed the list in the combined examination.

Text Books.—For the junior course, Dr. H. B. Owen, O.B.E., D.S.O., late Medical Superintendent, Mulago Hospital and Principal of the Medical School, wrote "An Introduction to Hygiene and Sanitation," an official publication of the Uganda Government. This book comprises a series of thirty-six lectures and twelve simple experiments illustrating how the body is built and performs its work, and discoursing on special diseases such as syphilis and gonorrhœa, ulcers, respiratory diseases, insect-borne and infectious diseases, and on hygiene generally.

Lectures on nursing, based on the syllabus of demonstrations in nursing methods, have been written by Miss R. A. Bagot, Senior Nursing Sister, Matron of Mulago Hospital. At present, this is issued in type but it is hoped to produce it in book form at an early date. For the senior class, cyclostyled notes are issued and retained by the attendants.

SYLLABUS OF DEMONSTRATIONS IN NURSING METHODS.

JUNIOR COURSE.

General management of the ward.—

Care of the ward.
Ventilation.
Equipment.
General ward routine.
Treatment.

How to admit a patient.—

Walking case.
Stretcher case.
Papers on admission.
Papers on discharge.

Beds and bed making.—

Clean bed.
Bed with patient.
Operation bed.
Fracture bed.
Labour bed.

Baths.—

Daily, reasons for.
Points to remember in giving a bath.
Things required.
How to give.

Cold sponging.

Bed-sorts.—

Cause.
Prevention.

Care of mouth.

To give a bed-pan.

Care of the seriously ill.

Observation.—

Of patient.
Stools.
Urine.
Sputum.
Vomit.

Clinical thermometer.—

Construction and use.
Taking of temperatures.
Keeping of charts.

Respiration.—

What to note.
How to count.

Pulse.—

What to note.
How to count.

Giving and taking of report.

Sterilisation.—

Methods of.
Points to be considered in sterilising.
Disinfectants.
Antiseptics.

Dressing of wounds.—

Asepsis.
Infection.
Sterilisation.
Healing of wounds.
Clean and septic wounds.
Infecting of wounds.

Materials used for dressings.

Routine for ward dressing.—

Things required for clean dressing.
Things required to dress a septic wound.
Care of instruments, etc., after use.

External local applications.—

Hot applications.—Hot water bottle.
Medical fomentations.
Turpentine stupe.
Surgical fomentations.
Antiphlogistine.
Cold applications.—Ice bag.
Cold compress.
Evaporating lotion.

Enemata.—

Various.
Points to be remembered in giving an enema.
Things required to give.
How to give.

Rectal irrigation.—

Things required for.
How to give.

Rectal saline.—

Things required for.
How to give.

Drugs and their administration.—

- By mouth.
- „ rectum.
- „ skin.
- „ lung.
- „ injection—subcutaneous, intra-muscular, intra-venous.

*Abbreviations used in writing prescriptions.**Fluid measures.**Lotions and their use.—*

- How to dilute.

Bandaging.—

- Purposes of.
- Varieties of.
- Rules for roller bandaging.

Splints.—

- Uses and how to pad.
- Care in application.
- Care after use.
- Sand bags.
- Names.

Plaster of paris splints.—

- Things required for.
- How to apply.
- How to remove.

Fractures.—

- First aid treatment.

Fractures.—

- Nursing.
- Chief points in nursing.
- Special fracture—Spine, pelvis, skull, ribs.

*Things required for putting up a fracture.**Weight and pulley extension.*

- Things required for.
- How to apply.

How to prepare a patient for operation.—

- Routine preparation day before and morning of operation.
- Preparation of skin.
- Things required.
- How to prepare.

After treatment of operation cases.—

- General routine treatment.
- Vomiting.
- Abdominal distension.
- How to give a report on an operation case.

Shock.—

- Symptoms.
- Treatment.

*Rigors.**Pneumonia.—*

- Special nursing points.

Typhoid.—

- Special nursing.
- Disinfection of bed-clothes, stools and urine.

Dysentery.—

- Special nursing points.
- Cleanliness of wards and surroundings.
- Flies.

Burns.—

- Nursing treatment.
- Shock.
- Dressings.

Catheterization.—

- Reasons for.
- Danger of infection.
- Male catheters—types and care of.
- Female catheters.
- Things necessary for catheterization.
- To pass catheter on a woman.
- Difficulty in passing urine, how to overcome.

Bladder wash-out.—

- Things necessary for.
- How to do.

*Irrigation of male urethra.**Vaginal douche.—*

- Reasons for.
- Lotions used.
- Things required.
- How to give.

Syringing of ears.—

- Cleansing a suppurating ear.
- Nasal douching.

Eyes.—

- Eversion of lids.
- Irrigation.
- Hot bathings.
- Fomentations.
- Painting the lids.
- Instillation of drops.
- Application of ointments—dressings and bandages.

Aspiration of the chest.—

- Things required.
- How to do.
- How to clean apparatus after use.

Exploration of the chest.—

- Things required.

Abdominal tapping.—

- Things required.
- How to do.

Lumbar puncture.—

- Why performed.
- How to do.
- Things required.

To wash out a stomach (gastric lavage).—

- Things required.
- How to do.

*Test meal.**Urine testing.**How to collect specimens for the laboratory.—*

- General instructions.
- Urine.
- Fæces.
- Sputum.
- Blood slides—thick and thin.
- Blood test.
- Cerebro-spinal fluid.
- Pus.
- Smear.
- Swab.

Anaesthetics.—

- Local.
- Spinal.
- General.
- Things required.
- Position of patient.

Care of the dying and dead.

SENIOR COURSE.

1. *Ward management and discipline.*—
Surgical nursing.
2. *Sterilisation—necessity for.*—
Instrument, gloves, gowns, towels,
dressings and hands.
3. *Anaesthetics.*—
General preparation for and after care.
General, spinal, and local anaesthesia.
Chloroform poisoning.
4. *Surgical dressings.*—
Drainage—reasons for.
Kind of drains, Empyema tube.
Self-retaining tube.
Suction apparatus.
Paul's tube.
5. *Abdominal surgery.*—
Preparation of patient for operation
(laparotomy).
Definition of laparotomy.
After care—position, diet, thirst, pain,
flatulence, vomiting, aperients, urine,
dressing.
Chief complications—
Peritonitis.
Lung complications.
Intestinal obstruction.
Stitch suppuration.
6. *Operation on stomach and intestines.*—
Gastrostomy.
Gastro-enterostomy.
Colostomy.
Resection of gut.
Hernia, uncomplicated.
Hernia, strangulated.
7. *Operation on gall bladder.*—
Stones.
Drainage.
Removal.
8. *Rectal operations.*
Hæmorrhoids.
Anal fissure.
Carcinoma.
9. *Genito-urinary operations.*—
Operations on the kidneys.
Operations on the bladder—
suprapubic.
Operations on the bladder—perineal.
10. *Operations on the brain.*
11. *Operations on ear, nose, throat and
eyes.*—
Mastoid.
12. *T's and A's.*—
Nose.
Tracheotomy.
Eyes.
13. *Operations on the spine.*
14. *Amputations.*
15. *Fractures.*—
Care in handling a fracture.
Setting of a fracture.
Application of splints.
Plaster cases.
General nursing of simple and
compound.
Dressing and irrigation of compound
fractures.
Fixing of Carrel Dakins apparatus.
Care of same.
Medical nursing.
16. *General observation of patient.*
17. *Fevers.*—
Recognition and nursing of, clinical
resemblance and difference. Cerebro-
malaria, Meningitis.
Spirillum fever, typhoid fever,
pneumonia.
Dysentery.
18. *Heart cases.*—
Failing compensation.
Nursing.
Pulse.
19. *Renal cases.*
20. *Tuberculosis.*—
Infection.
Resistance to infection.
Treatment.
General hygiene.
21. *Coma.*—
Diseases in which occurs.
Treatment.
22. *Urine testing.*
23. *Taking of specimens.*
24. *Injections.*—
Hypodermic.
Intra-muscular.
Intra-venous.
Sub-cutaneous.
Rectal.
25. *Prescription reading.*

SECTION VII.

REPORT ON PRISONS AND ASYLUMS FOR 1932.

Health.—The morbidity rate for all prisons was 59 and details for each prison are shown in Table I.

TABLE I.

	Daily average in prison.	Daily average on sick list.	Deaths.	Morbidity rate.	Death rate.
Central Prison	633	16	8	25	12
Kampala	266	6	6	22	22
Entebbe	110	3	1	27	9
Masaka	29	9	1	...	...
Mubende	16	2	...	...	...
Jinja	97	9	2	...	...
Mbale	110	4	3	36	27
Soroti	81	11	2	...	...
Moroto	23	4	...	...	...
Masindi	45	4	1	...	...
Lira	53	5	...	...	...
Arua	68	6	2	...	...
Gulu	78	10	...	...	...
Kitgum	110	7	1	63	9
Fort Portal	29	3	...	...	...
Mbarara	50	6	2	...	...
Kabale	43	4	...	...	...
TOTAL	1,841	109	29	...	...

The rates for the smaller prisons have been omitted because an epidemic of minor diseases, or a few local injuries, can inflate them out of all proportion, and no real estimate of the health of the prisoners can be made from them. This inflation is appreciated when it is seen that in the five larger prisons, with a population of 100 or over, the morbidity rate was 29·2 and in the two largest, which contain half the total prison population, the rate was 24·4.

This satisfactory state of affairs is largely due to the attention given to the diet scale, yet the fact that 56 square feet of floor space was available for each prisoner in the Central Prison must have contributed.

Minor diseases and local injuries accounted for the greater part of the total sickness, but malaria, venereal diseases, yaws and guinea-worm were prevalent in several prisons; deficiency diseases which have featured so largely in the past were almost absent. No epidemic occurred in the prisons and less sickness was attributed to dysentery and digestive disturbances than in former years.

On the whole the prisoners were maintained in a good state of health all the year.

Deaths.—The death rate for all prisons was 15·75; the rates for the last five years were: 1927, 50·6; 1928, 70·5; 1929, 40·9; 1930, 26·5; 1931, 17·7. Most deaths in former years occurred in the Central Prison and at Kampala and the improved rates reflect the attention given to the health of the prisoners by the medical staff.

The causes of death were:—

Lobar pneumonia	9	Drowning	1
Pneumonia, unclassified	2	Cerebro-spinal meningitis	1
Tuberculosis, pulmonary	2	Pulmonary abscess	1
Dysentery, unclassified	2	Cerebral abscess	1
Dysentery, bacillary	1	Dementia	1
Plague	1	Periurethral abscess	1
Injury	1	Gunshot wound	1
Debility and old age	1	Pneumonia and meningitis	1
Malaria and heart failure	1	Epilepsy and lobar pneumonia	1

Sanitary Conditions.—Apart from the defects detailed in paragraph 6, the sanitary conditions of all prisons was satisfactory. Where minor alterations of building or routine were required the prison authorities complied with medical recommendations where circumstances permitted.

Major alterations, which are necessary in certain prisons, have received the attention of the Medical Department but on the grounds of economy little could be done. This is particularly the case where nothing short of the provision of a new gaol, as at Mbarara, could be expected to produce any marked improvement on present conditions.

Diet.—The diet scale for all prisoners was that specified in the 1926 Prisons (Amendment) Ordinance. In the case of African prisoners variations were authorised in district prisons where it was possible to issue fresh food in place of the maize ration, and in certain prisons maize was replaced by an equivalent amount of local grain. At Moroto, millet and fresh meat were issued, since this is the normal food of these desert people.

The question of the experimental dieting in the Central Prison is discussed in Dr. J. P. Mitchell's report, which appears later in this section.

Accommodation.—The average daily population of seventeen Protectorate prisons was 1,841, this included at various times three Europeans and fifty-nine Asiatics. They were distributed as follows:—

			Accommodation available.		Average daily number in prison.
Central Prison	...	...	1,247	...	633
Kampala	...	...	322	...	266
Entebbe	...	...	143	...	110
Masaka	...	...	65	...	29
Mubende	...	...	26	...	16
Jinja	...	...	83	...	97
Mbale	...	...	100	...	110
Soroti	...	...	160	...	81
Moroto	...	...	41	...	23
Masindi	...	...	35	...	45
Lira	...	...	120	...	53
Arua	...	...	63	...	68
Gulu	...	...	80	...	78
Kitgum	...	...	100	...	110
Fort Portal	...	...	30	...	29
Mbarara	...	...	30	...	50
Kabale	...	...	55	...	43
TOTAL			...	...	1,841

In addition, a few government prisoners were confined in the native government's prison at Moyo.

The general sanitary condition of district gaols including improvements made to them during the year is set out below:—

(I) BUGANDA PROVINCE.

Entebbe, Masaka, Mubende.—Apart from minor improvements there was no alteration in the accommodation, and conditions were reported to be satisfactory during the year.

(II) EASTERN PROVINCE.

Jinja.—Improvements to the kitchen were undertaken, but otherwise conditions were the same as last year when it was pointed out that it was an old building, generally insanitary, and there were no adequate bathing or washing facilities.

Mbale, Soroti, Moroto.—Except for the provision of a new female ward in temporary materials at Soroti, no additional accommodation was provided. The District Medical Officer reported that the Soroti temporary prison is too near a swampy area and when it is possible to erect a permanent building it should be sited elsewhere.

(III) NORTHERN PROVINCE.

Masindi.—The actual buildings are good, but the accommodation is insufficient and the prison has been overcrowded.

Lira.—The buildings are temporary, but they are adequate.

Arua.—Only temporary buildings are in use and the mud floor should be covered by cement. Some overcrowding took place.

Gulu.—The temporary buildings became infested with bugs on several occasions, and overcrowding took place as in previous years.

Kitgum.—The semi-permanent buildings erected in 1931 were too small, but overcrowding was avoided by the use of the old prison as an overflow.

(IV) WESTERN PROVINCE.

Mbarara.—The mud walls of this semi-permanent prison are infested with *O. moubata* which survive every effort to exterminate them. The prison was overcrowded as usual. The building has been condemned for some years but the shortage of funds has made it impossible to provide a new prison.

Kabale and Fort Portal.—No alteration in accommodation has been made this year. Both prisons are of a temporary nature and were well kept.

The comments on "overcrowding" are made in respect of prisons where normally 28 square feet of floor space is provided per prisoner. This area is insufficient, but financial conditions have rendered it impossible to provide either the desideratum of 50 square feet per prisoner or even the 40 square feet that has been accepted temporarily as the standard, at least for the Luzira Prison.

The following is a report received from Dr. J. P. Mitchell, O.B.E., Medical Superintendent, Mulago, on the Central Prison, Luzira, and the Kampala Prison, for which he is medically responsible:—

Luzira Prison.—

1. Number that can be accommodated	...	...	...	1,247
2. Daily average in prison	...	...	...	633
3. Total hospital admissions	...	...	...	721
4. Daily average on sick list	...	...	...	16.6
5. Number of deaths	...	...	...	8
6. Accommodation.—			<i>Permanent.</i>	<i>Temporary.</i>
Association wards	...	...	12	14
Cells	...	...	205	nil
Total accommodation at 28 sq. ft.	...	...	607	640

Hospital accommodation consists of a reception room, a dispensary, two wards, each containing ten beds, and three segregation wards, all in the permanent building and not included in the above accommodation. The increase in the accommodation as compared with last year is accounted for by the building of a new temporary prison to which the Kampala prisoners were transferred in the end of the year.

Kampala Prison.—

1. Total accommodation	...	...	...	322
2. Daily average in prison	...	...	...	266
3. Total hospital admissions	...	...	...	177
4. Daily average on the sick list	...	...	...	6
5. Number of deaths	...	...	...	6
6. Accommodation—Association wards	...	...	...	9
Cells	...	...	...	17

Causes of Deaths.—

Gunshot wound	...	...	...	1
Bacillary dysentery	...	...	...	1
Cerebro-spinal meningitis	...	...	...	1
Pneumonia	...	...	...	4
Pulmonary abscess (lunatic)	...	...	...	1
Cerebral abscess	...	...	...	1
Pneumonia and meningitis (lunatic)	1
Dementia (lunatic)	1
Peri-urethral abscess	1
Pulmonary tuberculosis	2

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PREVALENT DISEASES IN ORDER OF OCCURRENCE.

Luzira Prison.—Venereal diseases, malaria, dermatoses (septic sores, ulcers (non-tropical) scabies, etc.), eye diseases, diarrhoea and dysentery.

Kampala Prison.—Venereal diseases, malaria, dermatoses, eye diseases, bronchitis, diarrhoea and dysentery.

The death rate for both prisons is 15.57 per 1,000 as compared with 14.98 in 1931. In view of the large numbers of senile prisoners and lunatics this rate is very satisfactory and it will be observed, too, that deaths due to preventable diseases are in the minority.

The Prison Diet.—

Maize	...	...	...	...	20 ozs. per diem.
Beans	...	...	...	...	5 " " "
Meat	...	...	...	...	4 " (if dry, 2 ozs.)
Groundnuts	...	...	...	...	3 " per diem.
Salt	...	...	...	...	$\frac{1}{2}$ oz. " "
Fresh vegetables (cabbage, green beans, spinach)	...	...	...	...	6 ozs. " "
or Sweet potatoes	...	...	...	...	10 " " "

When the vegetable issue is potato it will be served on two days weekly for convenience of division. On these days the maize portion will be reduced by $1\frac{1}{2}$ ozs.

A study of the table of prevalent diseases shews that after the prevalent diseases of the country, venereal diseases and malaria, there comes a group of diseases which points suggestively to a deficiency in the vitamin A content of the ration. It has been known for some years that this deficiency existed and changes in the dietary have been made from time to time. The incidence of xerophthalmia, night blindness and dermatosis has increased this year out of all proportion to the occurrence in previous years. Cases of xerophthalmia number 126, as compared with 40 in 1931 and 50 in 1930.

It is very difficult to explain this gross increase. In the early part of the year, Dr. Loewenthal carried out an investigation into the skin lesions of vitamin A deficiency and in the search for cases of the dermatosis, perhaps more cases of xerophthalmia were discovered than would have been at the ordinary general inspections. It was found frequently that when the skin condition suggested the deficiency, on careful inspection of the conjunctiva with a lens, evidence of xerophthalmia existed which would not have been observed on a cursory examination. This would account partly for the increase but certainly not entirely.

It has been our experience that xerophthalmia occurs in waves of incidence but we have not been able to associate the peak periods with any month or part of the year in particular. It was thought at one time that the incidence increased at the time when the potato normally deteriorates (the native discards the potato in favour of the plantain at the end of the dry season and the beginning of the wet) but this was not found to be true. Peak periods, too, have actually occurred when the potato ration had been increased, but as has been explained in previous reports no accurate information on this subject is available on account of being unable to guarantee accurately that the ration as prescribed is issued or that the issue is consumed as prescribed. The wave of deficiency which has been higher during 1932 than formerly cannot be accounted for.

Further experiments with regard to the diet are withheld pending the provision of such facilities as will enable us to guarantee that each prisoner gets neither more nor less than his prescribed ration. In the meantime the health of the prison is maintained on a high standard by the issue of vitamin A in the form of codliver oil. During the year some sixty gallons (approximately £32 worth) have been issued—not a serious matter in relation to the total cost of the diet.

In the course of our investigations of this deficiency we sought to prove that vitamin A was alone responsible. A supply of Avoleum, a pure vitamin A preparation put up by the British drug houses, kindly sent to us by Dr. H. B. Owen, was tried out on two cases which exhibited xerophthalmia, night blindness and the dermatosis. These cases were placed in hospital where they were kept under the closest observation; the potato portion of the ration was withheld; the diet consisted of maize, groundnuts, lean meat, beans, and salt which are known to provide insufficient vitamin A for the maintenance of health; six drops of Avoleum were given daily with the mid-day meal and the results were as follows:—

Case 1.—Began treatment	...	...	...	3-8-32
No xerophthalmia	...	...	...	13-9-32
No dermatosis	...	...	...	28-9-32
Case 2.—Began treatment	...	...	...	11-8-32
No xerophthalmia	...	...	...	6-9-32
Dermatosis almost cured	...	...	...	28-9-32

The value of the seed of *Bixa Orellana* (Annatto), which grows profusely in this country, as vitamin A container was tried out. An alcoholic extract of the seed was prepared in the laboratory of the Agricultural Department and was put up in pills each containing gr. $\frac{1}{2}$. Two preparations were made—the first from the mature dried seed gathered from the opened pods, the second from the apparently mature but moist seed collected from the unopened pods. Cases exhibiting xerophthalmia and night blindness were selected, the diet was restricted as in the Avoleum experiment, one grain of the extract was given daily and the results were as follows:—

THE DRY SEEDS.

Case 1.—Began treatment	...	...	22-10-32	
No xerophthalmia	...	...	21-11-32	... 31 days.
Case 2.—Began treatment	...	...	22-10-32	
No xerophthalmia	...	...	8-11-32	... 81 days.

THE WET SEEDS.

Case 3.—Began treatment	...	...	...	24-12-32	
No change	...	...	...	21- 1-32	... 29 days.
Put on codliver oil daily	...	...	...	21- 1-33	
No change	...	...	...	11- 2-33	... 22 days.
No xerophthalmia	...	...	...	30- 2-33	... 31 days.
Case 4.—Began treatment	...	...	...	24-12-32	
No change	...	...	...	21- 1-33	... 29 days.
On codliver oil daily	...	...	...	21- 1-33	
No xerophthalmia	...	...	...	30- 1-33	... 10 days.

Case 1 recurred in January, 1933, but cleared quickly on codliver oil, suggestive rather than there was no surplus vitamin available for storage.

With regard to the capacity for storage it is interesting to note that at the time of writing (March, 1933) only 17 cases of xerophthalmia have so far been recorded in 1933. In the first six months of 1932 there were 88 cases. It is possible that, resulting from the large issues of codliver oil in 1932, the surplus vitamin stored accounts for the reduced incidence, or of course it may be the normal decline in the wave of incidence.

That the sweet potato is our best weapon of defence against vitamin A deficiency is undoubted. It is the natural food of the people and experience of the Mengo (Native Administration) Prison, where it is the sole item of the diet, shews that it contains ample quantities of this vitamin; no case of this deficiency has ever been found in Mengo Gaol.

What is required is a large increase in the potato portion of the diet. The diet as it stands is economically and punitively too generous. The addition of meat was a costly move, it costs in this prison about £1,000 yearly in a total food expenditure of about £3,662. Its diminution and substitution by the sweet potato in substantial amount would be both an economy and an improvement; large energy-providing food supplies are not required by the vast majority of the prisoners and the dietary would be in keeping with the normal diet of the people who are essentially vegetarian.

For the few who perform real hard labour, issues of meat would be desirable. From the punitive point of view I am assured by Mr. Robertson, Superintendent of the Prisons, that recidivism is on the increase and it is his opinion that less inducement should be offered to the criminal type to seek refuge in the prison where conditions are "not too bad" rather than seek an honest living in conditions which are in this country becoming increasingly competitive.

Prison Medical Staff.—A Senior African Medical Assistant is permanently attached to the Central Prison. He is assisted by two Medical Attendants. A weekly visit is paid by the Prison Medical Officer. Quarterly general inspections are conducted by the assembled staff of Mulago Hospital.

Native Administration Prisons.—Throughout most of Uganda, prisons are maintained at the district headquarters of the various native governments and short-term prisoners, up to one year, convicted in the native administration courts, are kept in them. A report on these prisons was submitted by Medical Officers during the year and the conditions revealed were not satisfactory in every case.

In some districts, notably Ankole and in certain areas in the Eastern Province, the Native Administration prisons were excellent, but in other districts it appeared that overcrowding was common and that accommodation was inferior and likely to be detrimental to the health of those confined.

No authorised dietary scale was issued to the prisoners, except in one or two instances, but no deficiency diseases or any other epidemics were reported.

Therefore, despite conditions which did not always attain a minimum standard of sanitation, the health of the prisoners was good and no doubt this was due to the fact that only fresh food was issued and little hard labour was performed. Most prisons were situated near hospitals or sub-dispensaries and arrangements were made at all of them for the medical treatment and hospitalization of the sick.

The following report was received from Dr. J. P. Mitchell, O.B.E., Medical Superintendent, Mulago, with regard to the Native Administration prison at Mengo.

"Mengo Prison.—This prison is conducted by the Native Administration and accommodates about 200 prisoners, the limit of incarceration being two years. There is no resident medical attendant; a Senior African Medical Assistant visits weekly. The daily

sick parade is taken at Mulago Hospital to which cases requiring regular treatment are admitted. During the year 175 cases were admitted out of an average daily population of 215. The diseases in order of prevalence were:—

Skin diseases (abscess, scabies, ulcers) ...	...	...	...	23
Chest diseases (pneumonia, pleurisy, bronchitis) ...	...	...	...	22
Relapsing fever ...	...	...	...	17
Venereal disease ...	...	...	...	15
Diarrhoea and dysentery ...	...	...	...	7
Malaria ...	...	...	...	7

The diet consisted exclusively of $4\frac{1}{2}$ lbs. sweet potato daily until recently, when an issue of 2—3 ozs. beans was made twice weekly. There was no evidence of food deficiency disease."

Mental Hospital, Hoima.

The old prison building at Hoima which serves as a mental hospital was renovated during the year. All doors of wards and cells have been replaced with doors of a heavier and stronger type which allow for freer ventilation. Wards and cells backing on to an outer wall have been equipped with ventilators, roofs, walls and floors of all rooms have been overhauled and repaired. The main gate and compound communicating doors have been replaced with a heavier and stronger type. These alterations have alleviated some of the unhygienic disabilities of the building, but the present building will never be satisfactory as a mental hospital.

ADMISSIONS, DEATHS, ETC., DURING THE YEAR.

	<i>Male.</i>	<i>Female.</i>	<i>Total.</i>
Inmates remaining 31st December, 1931 ...	46	18	64
Number admitted during the year ...	19	2	21
Number released ...	5	—	5
Number escaped ...	—	—	—
Number transferred ...	—	—	—
Number who died ...	14	2	16
Number remaining 31st December, 1932 ...	46	18	64

CAUSES OF DEATH.

Status epilepticus ...	1	—	1
Asthenia ...	11	—	11
Hepatic abscess ...	—	1	1
Toxæmia ...	—	1	1
Epilepsy ...	2	—	2
	14	2	16

SECTION VIII.

All available information under this head is printed in the Blue Book.

SECTION IX.

SCIENTIFIC.

Scientific papers published during the year 1932 by members of the Medical Staff:—

DRS. A. MCK. FLEMING AND R. S. F. HENNESSEY.—

“A Dermatitis occurring among East African Natives.”—*British Journal of Dermatology and Syphilis*, Vol. XLIV, April, 1932, pp. 173—181.

DRS. H. B. OWEN AND R. S. F. HENNESSEY.—

“Keratomalacia in Liver Diseases.”—*Transactions of the Royal Society of Tropical Medicine and Hygiene*, Vol. XXV, No. 5, pp. 367—375, March, 1932.

“A Note on some Ocular Manifestations of Helminthic origin occurring in East African Natives.”—*Transactions of the Royal Society of Tropical Medicine and Hygiene*, Vol. XXV, p. 267.

DR. R. S. F. HENNESSEY AND MR. S. G. LAWS.—

“A note upon the examination of Blood slides for Malarial Parasites.”—*Laboratory Journal* I, p. 80.

DR. L. J. A. LOEWENTHAL.—

“Calcium treatment in Tropical Ulcer.”—*East African Medical Journal*, August, 1932, p. 136.

DR. R. S. F. HENNESSEY.—

“A study of the Leucocytic Output of Man under varying conditions of Vitamin A Intake.”—*Transactions of the Royal Society of Tropical Medicine and Hygiene*, Vol. XXVI, No. 1, pp. 55-64, June, 1932.

MR. E. G. GIBBINS.—

“A note on the relative size of the Anal Gills of Mosquito Larvæ breeding in salt and fresh water.”—*Annals of Tropical Medicine and Parasitology*, Vol. XXVI, No. 4, p. 551, December, 1932.

“Natural Malaria Infection of House-frequenting Anopheles Mosquitoes in Uganda.”—*Annals of Tropical Medicine and Parasitology*, Vol. XXVI, No. 3, p. 239, October, 1932.

ANNUAL REPORT OF THE LABORATORY SECTION FOR THE YEAR 1932.

PART I.

(a) General Review of 1932.

This report covers the year ending 31st December, 1932.

The year has been a comparatively uneventful one, only slight changes having taken place.

The preparation of plague vaccine has been stopped, and the Department is now obtaining its supplies from the Medical Research Laboratory, Nairobi.

(b) Staff and their Duties.

The Senior Bacteriologist has been in charge throughout the year.

Dr. Willans combined with his ordinary duties that of lecturing on Bacteriology and Pathology to the African Medical Students up to the end of August, and at the examination in December one of the examiners remarked on the satisfactory standard reached by the students due to their thorough grounding in these subjects.

Dr. Hennessey returned from leave towards the end of August, having been successful in obtaining the Diploma in Bacteriology, London University, also the degree of M.D. of Dublin.

Mr. E. C. Haddon, A.I.C., went on leave in February and returned in September. During this time his work was carried on as far as possible by the Senior Bacteriologist.

In August, Mr. E. G. Gibbins, Laboratory Assistant, was re-transferred from the Medical Entomological Section of the Agricultural Department to the Laboratory, and Mr. Laws, Laboratory Assistant, was then transferred to the Veterinary Department.

In November, Dr. Hennessey, together with Mr. E. G. Gibbins, went to Kabale with the motor laboratory and carried out an investigation into an outbreak of typhus-like fever in that district. Extracts from Dr. Hennessey's report are included in the article on typhus fever appearing in Section II of the Medical and Sanitary report.

PART II.

The number of examinations carried out during the year compares favourably with that of previous years.

A. Blood Examinations:—			Europeans.	Asiatics.	Natives.	Total.
For parasites ...	...	...	1,083	522	11,225	12,830
Differential leucocyte counts ...	...	...	157	57	244	458
Total cell counts ...	...	...	12	8	117	137
Blood cultures ...	...	...	3	2	22	27
White cell counts ...	...	...	—	—	107	107
Red cell counts ...	...	...	—	—	72	72
Blood grouping ...	...	...	2	4	2	8
						13,639
B. Faeces Examinations:—			Europeans.	Asiatics.	Natives.	Total.
Microscopical for ova ...	...	...	137	73	4,054	4,264
Microscopical for protozoa ...	...	...	94	43	410	547
Microscopical for T.B. ...	...	...	14	9	—	23
For occult blood ...	...	...	35	5	39	79
Cultures ...	...	...	8	5	38	51
Vaccines ...	...	...	2	—	—	2
						4,966

	Europeans.	Asiatics.	Natives.	Total.
<i>C. Urine Examinations:—</i>				
General and microscopical	275	87	2,400	2,762
Quantitative for albumin	4	3	55	62
Quantitative for sugar	51	2	2	55
For Diazo Reaction	—	—	2	2
For Bile pigments	—	—	11	11
For Acetone	4	—	3	7
For Blood (Benzidine and spectroscopically)	35	—	4	39
For Bence-Jones protein	—	—	7	7
For Culture	5	3	3	11
For Tubercle Bacilli	12	—	—	12
For Gonococci	22	—	—	22
				2,990
<i>D. Serological Examinations:—</i>				
Wassermann tests	6	—	182	188
Sachs-Georgi tests	93	33	10,796	10,922
Kahn tests	31	17	4,542	4,590
Agglutination tests	19	22	282	323
Van-den-Bergh reaction	—	—	47	47
				16,070
<i>E. Pus and Exudates:—</i>				
For Gonococci	81	20	895	996
For P. pestis	—	7	255	262
For M. lepræ	—	—	59	59
For Organisms	46	13	509	568
For Culture	8	4	15	27
For Vaccines	17	6	13	36
				1,948
<i>F. Dark ground examinations</i>	—	12	750	762
<i>G. Sputa</i>	44	48	515	607
<i>H. Histological examinations</i>	17	34	247	298
<i>I. Stock Vaccines:—</i>				<i>Doses.</i>
Gonococcal	—	—	—	675
T.A.B.	—	—	—	700
Influenza	—	—	—	100
				<i>Total.</i>
<i>J. Miscellaneous</i>	44	12	112	168

A. Blood Parasites.

	<i>P. falciparum.</i>	<i>P. vivax.</i>	<i>P. malarie.</i>	Mixed infections.	Species unidentified.	<i>T. recurrentis.</i>	<i>M. persitans.</i>	Trypanosomes.	Negative.	Total.
European	63	14	10	4	28	2	1	..	961	1,083
Asiatic	73	6	7	4	45	..	7	..	380	522
Native	2,515	165	398	125	467	68	1,062	16	8,026	12,842
TOTAL	2,651	185	415	133	540	70	1,070	16	9,367	14,447
PER CENT	18.3	1.3	2.8	0.9	3.8	0.5	7.4	0.1	64.7	...

B. Faeces examinations.—Of the 137 European examinations for ova, 11 contained *Ancylostoma*, 1 *Taenia* and 1 *Trichuris*. The 94 examinations for protozoa showed 3 with *E. histolytica*. Of seventy-three specimens from Asiatics 7 contained *Ancylostoma*, 2 *Ascaris* and 2 *Trichuris*. One specimen of the 43 examinations proved positive for *E. histolytica*. A total of 4,054 examinations for ova in the case of natives showed 2,060 (50 per cent) with *Ancylostoma*, 525 (12.9 per cent) *Trichuris*, 160 (3.9 per cent) *Ascaris*, and 178 (4.4 per cent) *Taenia*. *S. mansoni* was found in 6 specimens, while *Strongyloides* were seen on 2 occasions. *E. histolytica* was present in 28 (6.8 per cent) of the 410 examinations for protozoa.

D. Serological examinations.—We have now given up the Sachs-Georgi test and substituted the Kahn test, which is working very reliably. It is periodically checked by the Wassermann and the results justify its use.

E. Pus and exudates.—Of the seven smears from Asiatics for *P. pestis* 6 were positive while 39 were positive in the case of Africans. *M. lepræ* was present in 19 out of the 59 nasal and skin smears examined, all from Africans. Of the 509 examinations for *B. fusiformis* and spirochaetes, these were found on 71 occasions. Of 140 eye smears 28 showed gonococci and 35 the Koch-Weeks bacillus.

H. Histological examinations.—Specimens received for histological examination numbered 298, of which 61 were neoplasms.

<i>Teratoblastoma</i> 1	<i>Carcinoma</i> 25
Kidney 1, with secondary deposits in liver.	Squamous celled... 16
<i>Fibro-myoma</i> 2	Penis ... 8
Uterus 2	Foot ... 3
<i>Fibroma</i> 5	Neck ... 2
Jaw 2	Lip ... 1
Biceps 1	Oesophagus... 1
Forearm 1	Vulva ... 1
Lat. dorsi 1	Columnar celled ... 7
<i>Osteo-fibroma</i> 1	Breast ... 1
Upper jaw 1	Stomach ... 2
<i>Polyp</i> 1	Colon ... 1
Uterus 1	Uterus ... 3
<i>Haemangioma</i> 3	Spheroidal celled ... 1
Front of leg 1	Breast ... 1
Elbow 1	Secondary ... 1
Liver 1	Liver ... 1
<i>Papilloma</i> 1	<i>Sarcoma.</i>
Bladder 1	Mixed celled ... 1
<i>Fibro-adenoma</i> 2	Femur ... 1
Breast 2	Small round celled ... 2
<i>Odontoma, epithelial</i> 1	Orbit ... 1
Lower jaw 1	Testis ... 1
<i>Exostosis</i> 1	Spindle celled ... 2
Mandible 1	Back ... 1
<i>Endothelioma</i> 1	Thigh ... 1
Upper lip 1	Melanotic ... 9
	Foot ... 5
	Lip ... 1
	Scapula ... 1
	Anus ... 1
	Glands ... 1
	Myeloid ... 1
	Humerus ... 1
	Fibrous ... 2
	Thigh ... 1
	Palm ... 1

PART III.—CHEMICAL SECTION.

During the year the number of specimens, samples, and exhibits received for chemical examination was 316, made up as follows:—

Water for general chemical and bacteriological examination	75
Water for special examination	23
Sweet aerated waters	1
Septic tank fluid	1
Blood samples for cholesterol, calcium, phosphorus, etc.	81
Human milk	2
Gastric test meals	4
Fæces for fat estimations	5
Material from stomach ("enterolith")	1
Cows' milk	47
Cream	1
Specimens for toxicological investigation	30
Exhibits for presence of human blood	35
Exhibits for presence of seminal stain	2
Miscellaneous examinations including vinegar, lubricating oil and boiler incrustations	8

In addition to routine and other chemical work an investigation is being carried out on the influence of certain factors on the bacterial content of drinking waters. Also experimental work in connection with problems of a chemico-legal nature is undertaken as opportunity permits.

**Report of the Government Entomologist, of the Laboratories
Division of the Agricultural Department, upon Investigations of Medical
Interest undertaken during the year 1932.**

MOSQUITO SURVEYS.

Surveys of the following townships were undertaken:—Kabale, Mbarara, Masaka, Mbale, Bubulu, Sipi, Gulu, Masindi and Hoima.

Kampala was re-examined. Reports were made weekly on the mosquitos submitted by the Senior Health Officer during the first six months, after which no further specimens were received. Arua was re-examined and the survey was discontinued in August. A survey of the Luzira Gaol and its environs was commenced.

Brief summaries of results of the surveys are given below.

KABALE.

The station is situated at an altitude of 6,000 feet and has a cool climate. The only common *Anopheles* larva was *A. chrisyi*. Other species found were *A. mauritanus*, *A. transvaalensis*, and the form of *A. marshalli* previously recorded from Fort Portal. No *Anopheles* were found in houses and the position did not justify any expenditure on control measures; the only malaria-vector, *A. marshalli*, appeared to be uncommon. Collection of larvae is being continued.

MBARARA.

The station is considered to be a healthy one; it is situated at an altitude of 4,800 feet. No *Anopheles* were found in houses except in the neighbourhood of the river Ruisi which is at some distance from the main part of town and which is the chief source of the *Anopheles* found. The species included *A. mauritanus*, *A. gambiae* and *A. funestus*, of which the last two are well-known carriers of malaria. A few pits occur in dangerous places and these can easily be filled in, but the control of the *Anopheles* breeding among the vegetation along the banks of the Ruisi is not justifiable, because the mosquitos do not appear to reach the houses in the main residential area and the cost of canalising the river would be very great.

MASAKA AND NABUGABO.

Masaka station is situated at 4,200 feet and is also comparatively healthy. It is surrounded by swamps in which the dominant vegetation is *Miscanthidium flavescentis* with comparatively little papyrus. It was not possible to find any anophelines in houses, but *Mansonia fuscipennis* which breeds in the swamps above-mentioned was not uncommon, and is at times a pest in Masaka. Larvae were found of *Anopheles gambiae*, *A. funestus*, *A. scutosus*, *A. mauritanus*, *A. implexus* and of *A. sp.* near *marshalli*. Of these the first two are malaria-carriers and they occurred in pools and ditches but not in the swamps. The last-named, which may be a malaria-carrier, was found along a track through the swamp.

The swamps near this station do not call for immediate attention, but in view of the prevalence of *M. fuscipennis* their afforestation for other reasons would increase the amenities of the station. Control measures should be directed towards filling or oiling of pools and improvement of ditches; the large concrete-walled wells supplying water for the township contained no mosquitos.

At Nabugabo anophelines were rare. In native huts one specimen each of *A. funestus* and of *A. sp.* near *marshalli* were found. The only larvae found were those of *A. mauritanus*. The two first species are probably both able to carry malaria, but the last, which has been occasionally found to bite man at Nabugabo, is not a proved carrier of the disease.

These three surveys were carried out during the dry weather; other species of *Anopheles* and more extensive breeding may be found to occur during the rains.

MBALE.

The station is situated at an altitude of 3,700 feet to the west of, and sheltered by, Mount Elgon and its foothills, and it has a warmer climate than any of the three stations mentioned above. The *anopheles* fauna is dominated by *gambiae* and *funestus*; a solitary larva of *A. mauritanus* was found. These mosquitos were breeding in an extensive marsh formed by one of the streams, in other marshy places, and in ditches; *A. gambiae* was also found in human footprints, temporary holes at the sides of the streams, rock-holes, borrow-pits and in wells. The draining of the marshy land is of immediate importance; the number of wells should be reduced, bridges formed by tree-trunks would help to reduce the footprints in the mud, and concrete watering places should be provided to eliminate temporary holes along the margins of the streams. To prevent collapse of the banks of the streams and to reduce cost of maintenance, clean weeding should be abandoned and the banks planted with a lawn grass.

BUBULU.

The station is situated close to the foot hills of Mount Elgon at an altitude of 4,000 feet. The only species of *anopheles* found were *gambiae* and *funestus*; both were present in small numbers in the houses. *A. gambiae* occurred in considerable numbers in the gaol. Larvæ of *A. gambiae* and *A. funestus* occurred in pools and streams but the river Manafwa appeared practically free from larvæ. Larvæ of *A. gambiae* were found in immense numbers in two concrete basins.

The two last-mentioned surveys were carried out during the rains. It is suggested that breeding may take place at Bubulu in the river Manafwa during the dry weather.

SIPI.

In view of a proposal for a sanatorium in this area a survey of anophelines was undertaken. The present camp is situated at an altitude of 6,500 feet and the climate is cool. No *anopheles* were found in native huts; larvæ of only one species (*A. garnhami*) were found, these being collected in a small eddy at the side of one of the streams and quite close to the native huts which were under observation for adult mosquitos during a period of ten days. It is therefore unlikely that *A. garnhami* is a domestic species in Bugishu. Small holes in rocks contained larvæ of Culicines only: *Aedes vittatu* and *Culex vansomereni*.

GULU.

This station is situated in the Northern Province at an altitude of 3,900 feet. *Anopheles* mosquitos caught in houses comprised *funestus*, *gambiae* and one *rufipes*; no species was very common. Larvæ of *A. gambiae*, *A. funestus* and *A. maculipalpis* were found. By draining and planting the swampy areas and by filling in a few pits and holes, the station could be rendered free from dangerous anophelines without any large expenditure.

MASINDI.

A brief preliminary survey of this township, which is situated at an altitude of 3,700 feet, was carried out during the wet season. No *anopheles* or other mosquitos were found in houses or in the police huts. The following *anopheles* species were found breeding in the swampy valleys which form an almost complete circle of about a thousand yards radius with centre at the house on the golf course:—*Gambiae*, *funestus*, *theileri* var. *hancocki*, *maculipalpis*, *marshalli*, *implexus*, *mauritanus*, *squamosus* and (?) species *marshalli* group.

Collection of larvæ at Butiaba (altitude 2,030 feet) comprised *Anopheles gambiae*, *A. pharonsis* and *A. mauritanus*.

HOIMA.

A similar survey of breeding-places in this township (altitude 3,800 feet) resulted in the following species of *Anopheles*: *funestus*, *gambiae*, *marshalli* var., *mauritanus* and *implexus*. The main breeding-places comprised abandoned clay-pits below the Protestant Mission, scattered wells, and areas of open water at crossings over the swamps, particularly the Mukama's Lubiri near to which *gambiae* and *funestus* adult females were collected in huts. No *anopheles* were found in the European houses, the only mosquitos present being a few *Tæniorhynchus fuscopennatus*.

It was interesting to observe that Tabanid flies were fairly common in the lower-lying areas of Hoima, whereas at Masindi these flies were conspicuous by their absence under similar weather conditions.

GENERAL MOSQUITO INVESTIGATIONS.

The results of this and of previous years have been included in a monograph on mosquitos which is being prepared by the British Museum (Natural History). Work has included the study of life-histories of the common species in order to ascertain the approximate optimum intervals between the application of oil and other larvicides.

Experiments were commenced to test the possibility of temporarily controlling Anophelines in excavations such as clay-pits by the addition of large quantities of cut grass to the water. The method was used some years ago by an Indian in the Kampala district but no information was available as to its success; it was believed likely to prove effective owing to the observed dislike of the African species of Anopheles for water rich in decaying organic matter. Bundles of elephant-grass sufficient to cover the surface of two clay-pits completely inhibited the breeding of Anopheles for at least three months while breeding continued freely in the two neighbouring pits which were left untreated. The observations are being continued in order to ascertain the duration of control. A disadvantage of the method is that it encourages the breeding of very large numbers of *Culex pipiens*, a domestic species.

Observations were made on a number of pools in Namanve swamp which was being afforested. The conclusion reached is, that with the exception of the lake-shore the only Anopheles species breeding in the untouched swamp is *mauritanus* which is not known to transmit malaria. *A. implexus* has also occurred in small numbers under deep shade. Where surface water runs into the ditches cut to drain the surplus water from the swamp *A. gambiæ* has been found. At the lake-edge, where the clean water mixes with the swamp water, *A. moucheti*, a malaria-carrier, occurs. Examination by the Assistant Agricultural Chemist of water from the ditch where *A. gambiæ* was breeding indicated that this contains less organic matter in solution (estimated as carbon by a special method) than the pools where *A. mauritanus* only was found. These observations therefore agree with the experiments of adding elephant-grass and indicate that the important factor is the increase of the organic matter in the water. A detailed study of the vegetation of the swamp was made by the Forestry Officer in charge of the afforestation and when his results are complete a full account of the mosquito ecology can be compiled. Observations are being continued to find out whether *A. gambiæ* or *A. funestus* breeds in the swamp during progress of planting operations.

Experiments have been conducted to determine the effects of various chemicals in solution on the hatching of mosquito eggs, and an attempt is being made to ascertain under artificial conditions whether waters with a high organic content are suitable for the larvæ of malaria-carriers. Larvæ of *A. gambiæ* did not survive in water from pools at Namanve with a high organic content unless dried yeast was placed on the surface. As, however, the pH did not remain constant the experiment requires modifications before reliable conclusions can be drawn.

Examination was made of the acid sphagnum-bog at Nabugabo to determine whether a low pH is an inhibitory factor for the larvæ of Anopheles. *A. mauritanus* was found in this bog and it is therefore probable that a low pH alone is not a sure indicator of the unsuitability of water for the breeding of Anophelines in Africa.

An experiment was carried out with water in a length of roof-gutter to find out which (if any) mosquitos will breed in such a situation. The gutter was fully exposed for many weeks but no larvæ were found. The maximum temperature reached 100° F.

The following species of Anopheles have been recorded during the year under review from Uganda for the first time:—*Ardensis*, *theileri* (typical form) *squamosus* var. *cidippes* and *A. gibbinsi*, Evans (MS) sp. nov. Mr. Gibbins has done a considerable amount of work on the *marshalli* group of anopheles in co-operation with Miss Evans, of the Liverpool School of Tropical Medicine.

The complete data collected in connection with mosquitos and their predators during the past few years has been sent to Mr. Omer Cooper at Armstrong College, Newcastle, for examination and statistical treatment if the figures so warrant.

TSETSE FLIES.

Field work in connection with Glossina has only recently been taken up by the Entomological Section. The time spent on this subject has been devoted largely to ascertaining the established facts concerning the habits of various species occurring in Uganda.

During his visit to Uganda, Dr. Jackson, of the Department of the Tsetse Research in Tanganyika, explained his work on *G. morsitans*. The reclamation work in connection with this species is being conducted by the Director of Veterinary Services, who kindly explained the methods adopted in Ankole; these were studied in the light of Dr. Jackson's hypotheses. Dr. Jackson, with the assistance of Mr. C. W. Chorley, also spent some time investigating the habits of *G. palpalis* and he explained the work being done on Maboko Island in Kavirondo Gulf. The Assistant Entomologist visited Ankole and Maboko at the same time as Dr. Jackson, and he was thus enabled to discuss the various aspects of tsetse problems.

The chief point of importance arising from these discussions is that further investigation is required regarding the sites selected by *G. palpalis* for deposition of pupæ. While sandy fly-beaches have been known to be of great importance in Uganda along the shores of Lake Victoria, the existence of other types of breeding-grounds such as are so commonly utilised on Maboko Island indicates the importance of further study of breeding-grounds on the margins of Lake Victoria and along the infested river-systems. A fuller knowledge of these should lead to a reduction in expenses of reclamation.

A preliminary tsetse-survey of two areas of Gulu District shewed that much of the best agricultural land is at present closed to occupation and that there are indications that many places could be occupied without the population coming into close contact with fly. A small extension of the population southward from Pakelli towards Boroli has been sanctioned by the administration; this area was examined a second time after the only stream was cleared and it was again found entirely free from any species of *Glossina*. As this country is not mapped in detail it is not yet possible to decide where intensive tsetse-surveys could be made with the greatest probability of cheap reclamation. The presence of *G. pallidipes* in Gulu District, in addition to areas of *G. morsitans* and the streams infested with *G. palpalis*, necessitates very careful surveys before decisions can be made.

The invention by Mr. C. W. Chorley of a trap to catch *G. palpalis* may entirely alter the methods of reclamation to be adopted. The catches recorded for these traps when favourably sited are most encouraging. Mr. Chorley has also obtained good results with a modification of Dr. G. D. H. Carpenter's pupa-shelter for trapping the early stages of the fly on sandy beaches.

The map of distribution of tsetse flies has been kept up to date and a number of identifications sent out to Medical and Administrative officers.

SIMULIUM FLIES.

The "embwa" fly, *Simulium damnosum*, was studied by the Laboratory Assistant in the vicinity of Jinja and a full description of all stages of this insect and of its breeding places was prepared for publication. This investigation of the immature stages enabled the breeding-places of *S. damnosum* in the Nyamugasani River, on the south of the Ruwenzori range, to be found without difficulty.

After Mr. Gibbins had left the section his attention was drawn to other species recorded by Dr. Carpenter from the Sese Islands, and Mr. Gibbins was able to spend a week-end on Nsadzi Island which led to his discovery of the early stages of one species (possibly *S. adersi*) which Prof. Carpenter states is probably the *Simulium* he caught biting during the early morning. This species is covered with a golden pubescence and is distinct from a second (black) species the activities of which are not confined to the mornings. The breeding-places of this latter species remain unknown. The discovery of the larvae of *S. (?) adersi* on rocks beaten by the waves is the first record of a *Simulium* breeding in a lake, rivers and streams being the usual breeding-places of *Simulium* flies.

A large collection of *Simulium*, comprising about thirty species, has been made by Mr. Gibbins and many of them are undescribed. Larvae of these are often associated with the more important species which suck human blood, and great care must be exercised in separating the early stages of harmless species from those which bite man.

HOUSE-FLIES AND SAND-FLIES.

A survey of the house-frequenting species of flies was undertaken but identifications have not yet been received. Mr. Gibbins commenced work on life-histories and breeding-places of flies and on the study of the sand-flies *Culicoides* and *Phlebotomus*.

RATS AND FLEAS.

Species of rats have been sent in by the Senior Health Officer, Kampala, and examined for fleas. Interesting collections have also been received from Lira indicating results which are different from those obtained in Kampala.

Specimens of lice were submitted from Kabale in connection with an outbreak of typhus and were all found to be *Pediculus humanus*.

TICKS.

Experiments with various fumigants against the spirillum tick *Ornithodoros moubata* indicated that fumigation as a means of disinfection is not applicable to the temporary type of building used in the districts as hospitals and gaols. Hydrocyanic acid gas, generated both from calcium cyanide dust and from potassium cyanide, and sulphur dioxide had no apparent effects even on ticks exposed to view.

Even if it were effective, fumigation at short intervals would be necessary to deal with the re-infestation caused by new patients or prisoners, and it would seem more hopeful to disinfest persons before admission to such buildings.

TABLE I.

Sanctioned Establishment, 1932.

The establishment for 1932, as sanctioned in the Estimates, was as follows:—

ADMINISTRATIVE DIVISION.

Director of Medical and Sanitary Services.	European Storekeeper.
Deputy Director of Medical Service.	Asiatic Assistant Storekeeper.
Confidential Clerk.	15 Asiatic Clerks.
Office Superintendent.	3 African Clerks (African Civil Service).
European Clerk.	

SPECIAL APPOINTMENTS.

1 Resident Surgical Officer.	1 Dental Surgeon.
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MEDICAL DIVISION—GENERAL.

3 Senior Medical Officer.	1 Asiatic Civil Surgeon.
24 Medical Officers.	2 Senior Sub-Assistant Surgeons.
1 Pharmacist.	23 Sub-Assistant Surgeons.
2 European Hospital Superintendents.	2 Asiatic Cooks for European Hospitals.
2 European Assistant Superintendents and Dispensers.	1 Asiatic Cook for Asiatic Hospital.

NURSING STAFF.

2 Senior Nursing Sisters.	2 Asiatic Nurses.
1 Lady Steward.	1 Asiatic Probationer.
18 Nursing Sisters.	

SANITATION DIVISION.

1 Deputy Director of Sanitary Service.	1 Malaria Officer.
2 Senior Health Officers.	7 European Sanitary Inspectors.
4 Health Officers.	2 Asiatic Sanitary Inspectors.

LABORATORIES DIVISION.

1 Senior Bacteriologist.	1 Analytical Chemist.
2 Assistant Bacteriologists.	2 European Laboratory Assistants.

MEDICAL SCHOOL, MULAGO.

1 Medical Superintendent and Principal, Medical School.	1 Medical Officer.
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AFRICAN STAFF.

There is a varying number of African staff, including an African teacher at Mulago School, senior medical assistants, medical assistant attendants, learners, plague inspectors, vaccinators, gland examiners for sleeping sickness, clerks, interpreters, headmen, cooks, native nurses and learners, and also menial staff at all hospitals.

TABLE II.

Actual Expenditure for the Year.

	£	shs.	cts.
PERSONAL EMOLUMENTS	84,508	14	24
OTHER CHARGES:—			
Medical, surgical and dental stores	14,518	2	40
Renewals of furniture and equipment of hospitals	3,519	7	11
Upkeep of European and Asiatic hospitals	1,576	5	05
Upkeep of Native hospitals	5,883	1	69
Upkeep of Lunatic Asylum	595	4	63
Sanitation Division	255	8	43
Miscellaneous services (including motor and bicycle allowances, internal transport, water charges, courses of instruction to medical staff, telephone rentals, etc.)	17,397	16	46
	<u>£131,913</u>	<u>16</u>	<u>84</u>
MEDICAL EDUCATION—MEDICAL SCHOOL, MULAGO.—	£	shs.	cts.
Personal emoluments	2,572	0	29
Other charges	269	4	12
	<u>£2,842</u>	<u>4</u>	<u>41</u>
SPECIAL EXPENDITURE.—	£	shs.	cts.
Motor vans for sanitary inspectors	£404	13	50
GRANTS TO MISSIONS:—			
Contribution to Lady Coryndon Maternity School and grants to Missions for maintenance of midwifery centres and midwives	2,000	0	00
Medical grants to Mission hospitals	100	0	00
Grants to Church Missionary Society for native training	250	0	00
Leprosy relief measures	750	0	00
	<u>£3,100</u>	<u>0</u>	<u>00</u>
SUPERNUMERARY STAFF.	£	shs.	cts.
Personal emoluments	7,694	0	57
Other charges	1,847	4	80
	<u>£9,541</u>	<u>5</u>	<u>37</u>

Revenue.

The total amount of revenue collected as hospital fees, sales of medicines and surgical stores, registration fees and re-imbursements on account of medical services was as follows:—

	£	shs.	cts.
Hospital fees, sales of medicines and surgical stores, registration fees ...	10,462	8	24
Reimbursements from Kenya and Uganda Railways and Harbours on account of medical and sanitary services	1,081	4	50
Contributions from Lukikos towards cost of medical stores for sub-dispensaries	5,431	0	00
	<u>£16,974</u>	<u>12</u>	<u>00</u>

TABLE III.

Return of Statistics of Population.

The only statistics available are embodied in the Blue Book.

TABLE IV.

Meteorological Return.

All available information under this head is embodied in the Blue Book.

TABLES V AND VI.

Return of Diseases and Deaths for the Year 1932.

DISEASES.	TABLE V.					TABLE VI.
	Remaining in Hospital at end of 1931.	Yearly Admissions.	Total Cases Treated.	Total Deaths.	Remaining in Hospital at end of 1932.	All Cases including both In- and Out-Patients.
I. EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.						
1. Enteric Group—						
(a) Typhoid Fever	2	28	30	5	2	28
(b) Paratyphoid A ... ..	...	...	...	...	...	...
(c) Paratyphoid B ... ..	...	1	1	...	...	1
(d) Type not defined ... ..	...	2	2	...	1	4
2. Typhus ... ..	...	120	120	9	12	120
3. Relapsing Fever	11	338	349	10	10	1,336
4. Undulant Fever ... ..	...	...	...	...	...	...
5. Malaria—						
(a) Tertian	3	169	172	4	3	1,097
(b) Quartan	4	67	71	...	1	327
(c) Aëstivo-autumnal	29	1,268	1,297	36	20	5,498
(d) Clinical	18	907	925	6	13	40,357
(e) Mixed Infections	2	70	72	4	1	364
(f) Cachexia	1	8	9	...	...	307
(g) Blackwater ... ..	...	28	28	11	...	82
6. Smallpox ... ..	...	...	...	...	...	...
Alastrim ... ..	...	...	...	...	...	...
7. Measles ... ..	...	79	79	...	1	1,435
8. Scarlet Fever ... ..	...	...	...	...	...	...
9. Whooping Cough	1	19	20	1	2	1,837
10. Diphtheria ... ..	...	...	...	...	...	...
11. Influenza	45	715	766	19	3	15,144
12. Miliary Fever ... ..	...	2	2	...	...	2
13. Mumps ... ..	...	18	18	...	...	210
14. Cholera ... ..	...	...	...	...	...	...
15. Epidemic Diarrhoea ... ..	...	...	...	...	...	...
16. Dysentery—						
(a) Amœbic	4	90	94	8	6	206
(b) Bacillary	1	102	103	6	5	261
(c) Undefined or due to other causes	2	127	129	12	2	2,188
17. Plague—						
(a) Bubonic ... ..	...	17	17	14	...	19
(b) Pneumonic ... ..	...	2	2	1	...	2
(c) Septicæmic ... ..	...	1	1	1	...	1
(d) Undefined ... ..	...	27	27	24	...	38
18. Yellow Fever ... ..	...	...	...	...	...	...
19. Spirochetosis ictero-hæmorrhagica ... ..	...	...	...	...	...	5
20. Leprosy	13	45	58	2	7	2,174
21. Erysipelas ... ..	...	8	8	1	...	13
22. Acute Poliomyelitis ... ..	...	2	2	...	...	3
23. Encephalitis Lethargica ... ..	...	8	8	...	1	13
24. Epidemic Cerebro-Spinal Fever ... ..	...	25	25	15	2	235
25. Other Epidemic Diseases—						
(a) Rubella (German Measles) ... ..	...	24	24	...	...	198
(b) Varicella (Chicken-pox)	4	185	189	...	5	495
(c) Kala-azar ... ..	...	...	...	...	...	...
(d) Phlebotomus Fever ... ..	...	...	...	...	...	...
(e) Dengue ... ..	...	...	...	...	...	...
(f) Epidemic Dropsy ... ..	...	...	...	...	...	...
(g) Yaws	154	1,506	1,660	5	70	43,773
(h) Trypanosomiasis	34	130	164	7	30	536
(i) P.U.O.	1	83	84	4	7	1,785
26. Glanders ... ..	...	...	...	...	...	...
27. Anthrax	1	2	3	...	...	13
28. Rabies ... ..	...	...	...	...	...	...
29. Tetanus ... ..	...	1	1	1	...	1
30. Mycosis ... ..	...	1	1	...	...	1
31. Tuberculosis, Pulmonary and Laryngeal	9	201	210	58	12	588
32. Tuberculosis of the Meninges or Central Nervous System ... ..	...	...	...	...	...	...
33. Tuberculosis of the Intestines or Peritoneum ... ..	...	5	5	2	1	7
34. Tuberculosis of the Vertebral Column ... ..	...	4	4	1	...	9
35. Tuberculosis of Bones and Joints	1	15	16	2	1	38
36. Tuberculosis of other organs—						
(a) Skin or Subcutaneous Tissue (Lupus) ... ..	...	10	10	2	1	27
(b) Bones ... ..	...	1	1	...	...	1
(c) Lymphatic System ... ..	...	1	1	...	1	8
(d) Genito-urinary	1	...	1	...	...	2
(e) Other organs ... ..	...	3	3	...	...	4
37. Tuberculosis disseminated—						
(a) Acute ... ..	...	1	1	1	...	1
(b) Chronic ... ..	...	...	...	...	...	2
38. Syphilis—						
(a) Primary	28	544	572	...	28	7,982
(b) Secondary	21	586	607	1	27	15,053
(c) Tertiary	63	614	677	11	35	31,544
(d) Hereditary	10	189	199	29	7	12,528
(e) Period not indicated ... ..	...	5	5	...	...	829
(f) Latent ... ..	...	7	7	...	...	496
39. Soft Chancre	10	148	158	...	2	1,178

TABLES V AND VI.—*contd.*

DISEASES.	TABLE V.					TABLE VI.
	Remaining in Hospital at end of 1931.	Yearly Admissions	Total Cases Treated.	Total Deaths.	Remaining in Hospital at end of 1932.	All Cases including both In- and Out-Patients
I. EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES.—<i>contd.</i>						
40. A.—Gonorrhoea and its complications	32	653	685	7	45	2,583
B.—Stricture	11	137	148	6	6	790
C.—Stricture and Extravasation	8	30	28	8	1	43
D.—Gonorrhoeal Ophthalmia ... ..	...	14	14	...	...	79
E.—Gonorrhoeal Arthritis	1	27	28	...	1	53
F.—Salpingitis, etc. ... ..	...	21	21	...	2	43
G.—Granuloma Venereum	1	8	9	1	1	27
41. Septicæmia ... ..	...	15	15	13	...	21
42. Other Infectious Diseases ... ..	...	12	12	...	...	17
II. GENERAL DISEASES NOT MENTIONED ABOVE.						
43. Cancer or other malignant Tumours of the Buccal Cavity ... ..	...	2	2	...	...	2
44. Cancer or other malignant Tumours of the Stomach or Liver ... ..	...	8	8	3	...	15
45. Cancer or other malignant Tumours of the Peritoneum Intestines, Rectum ... ..	...	2	2	...	...	3
46. Cancer or other malignant Tumours of the Female Genital Organs ... ..	...	6	6	...	...	9
47. Cancer or other malignant Tumours of the Breast ... ..	...	5	5	...	1	7
48. Cancer or other malignant Tumours of the Skin ... ..	...	6	6	1	...	17
49. Cancer or other malignant Tumours of organs not specified ... ..	...	25	28	7	...	28
50. Tumours non-malignant	7	97	104	2	7	291
51. Acute Rheumatism	1	17	18	2	2	30
52. Chronic Rheumatism	3	45	48	...	...	5,271
52a. Myalgia	3	119	122	...	3	38,467
53. Scurvy (including Barlow's Disease) ... ..	...	...	...	...	...	...
54. Pellagra ... ..	...	...	...	...	...	...
55. Beri-Beri ... ..	...	...	...	...	...	1
56. Rickets ... ..	...	...	...	...	...	1
57. Diabetes (not including Insipidus) ... ..	...	1	1	...	...	10
58. Anæmia—	...	...	...	...	...	...
(a) Pernicious ... ..	...	13	13	3	3	30
(b) Other Anæmias and Chlorosis ... ..	...	43	43	6	3	568
59. Diseases of the Pituitary Body ... ..	...	...	...	...	...	...
60. Diseases of the Thyroid Gland—	...	...	...	...	...	...
(a) Exophthalmic Goitre ... ..	...	1	1	...	...	7
(b) Other diseases of the Thyroid gland, Myxoedema ... ..	...	...	...	1	...	...
(c) Others ... ..	...	4	4	...	...	8
61. Diseases of the Para-Thyroid Glands ... ..	...	...	...	...	...	...
62. Diseases of the Thymus ... ..	...	...	...	...	...	...
63. Diseases of the Supra-Renal Glands ... ..	...	...	...	...	...	...
64. Diseases of the Spleen	1	49	50	2	1	1,858
65. Leukæmia—	...	...	...	...	...	...
(a) Leukæmia ... ..	...	1	1	...	...	1
(b) Hodgkin's Disease ... ..	...	2	2	...	...	2
66. Alcoholism	1	3	4	...	...	7
67. Chronic poisoning by mineral substances (leads, mercury, etc.) ... ..	...	...	...	...	...	...
68. Chronic poisoning by organic substances (morphia, cocaine, etc.) ... ..	...	...	...	...	...	...
69. Other general diseases—	...	...	...	...	...	...
Auto-intoxication	1	1	2	...	...	2
Purpura Hæmorrhagica ... ..	...	1	1	...	...	2
Hæmophilia ... ..	...	1	1	...	...	1
Diabetes Insipidus ... ..	...	...	...	...	...	4
Others ... ..	...	1	1	...	...	20
III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES.						
70. Encephalitis (not including Encephalitis Lethargica)	2	8	10	2	1	13
71. Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	1	17	18	13	...	19
72. Loconotor Ataxia ... ..	...	...	...	...	...	...
73. Other affections of the Spinal Cord ... ..	...	4	4	1	2	6
74. Apoplexy—	...	...	...	...	...	...
(a) Hæmorrhage ... ..	...	15	15	6	1	18
(b) Embolism ... ..	...	...	...	...	...	...
(c) Thrombosis ... ..	...	11	11	3	...	11
75. Paralysis—	...	...	...	...	...	...
(a) Hemiplegia	2	26	28	4	1	58
(b) Other Paralysis	2	23	25	2	2	101
76. General Paralysis of the Insane ... ..	...	3	3	...	...	5
77. Other forms of Mental Alienation	1	50	51	5	4	76
78. Epilepsy	1	32	33	3	1	182
79. Eclampsia Convulsions (non-puerperal) 5 years or over ... ..	...	...	...	...	...	...
80. Infantile Convulsions ... ..	...	2	2	1	...	5

TABLES V AND VI.—*contd.*

DISEASES.	TABLE V.					TABLE VI.
	Remaining in Hospital at end of 1931.	Yearly Admissions	Total Cases Treated.	Total Deaths.	Remaining in Hospital at end of 1932.	All Cases including both In- and Out-Patients
III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—<i>continued.</i>						
81. Chorea ... ..	...	...	...	...	...	1
82. A.—Hysteria ... ..	...	15	15	...	...	29
B.—Neuritis ... ..	...	7	7	...	...	114
C.—Neurasthenia ... ..	...	7	7	...	...	27
83. Cerebral Softening ... ..	...	...	...	...	...	...
84. Other affections of the Nervous System, such as Paralysis Agitans, Headache, Neuralgia, Insomnia, etc. ... ..	...	79	79	2	3	13,491
85. Affections of the Organs of Vision—						
(a) Conjunctivitis	6	94	100	...	3	26,334
(b) Trachoma	5	104	109	...	4	5,051
(c) Tumours of the Eye ... ..	...	3	3	...	...	36
(d) Iritis ... ..	...	20	20	...	...	747
(e) Other affections of the Eye	1	120	121	...	3	2,100
86. Affections of the Ear or Mastoid Sinus ... ..	...	...	...	...	...	...
(a) Otitis Media	3	69	72	3	2	7,401
(b) Others	1	33	34	3	1	3,730
IV. AFFECTIONS OF THE CIRCULATORY SYSTEM.						
87. Pericarditis ... ..	...	4	4	1	...	8
88. Acute Endocarditis ... ..	...	2	2	1	...	5
89. Angina Pectoris ... ..	...	1	1	...	...	6
90. Other Diseases of the Heart—						
(a) Valvular—						
Mitral	2	49	51	11	4	98
Aortic ... ..	...	14	14	4	1	29
Tricuspid ... ..	...	...	...	...	...	1
Pulmonary ... ..	...	1	1	1	...	2
Mixed or unspecified ... ..	...	9	9	3	...	151
(b) Myocarditis ... ..	...	15	15	7	...	57
D.A.H.	2	6	8	...	...	439
Others ... ..	...	21	21	7	...	260
91. Diseases of the Arteries—						
(a) Aneurism	1	3	4	1	...	24
(b) Arterio-Sclerosis	1	2	3	...	...	2
(c) Other diseases ... ..	...	6	6	...	...	9
92. Embolism or Thrombosis (non-cerebral) ... ..	...	2	2	1	...	4
93. Diseases of the Veins—						
Hæmorrhoids	1	16	17	...	1	171
Varicose Veins ... ..	...	3	3	...	...	14
Phlebitis ... ..	...	2	2	...	...	4
94. Diseases of the Lymphatic System—						
Lymphangitis	3	7	10	...	...	103
Lymphadenitis, Bubo (non-specific)	3	152	155	...	6	2,014
Others	1	17	18	2	...	75
95. Hæmorrhage of undetermined cause ... ..	...	3	3	2	...	27
96. Other affections of the Circulatory System	2	9	11	7	2	29
V. AFFECTIONS OF THE RESPIRATORY SYSTEM.						
97. Diseases of the Nasal Passages and accessory sinuses—						
Adenoids ... ..	...	23	23	...	...	211
Polypus ... ..	...	4	4	...	1	18
Rhinitis ... ..	...	4	4	...	1	213
Coryza	1	29	30	...	...	21,135
Others	1	14	15	...	1	947
98. Affections of the Larynx—						
Laryngitis ... ..	...	7	7	1	1	1,993
Tracheitis ... ..	...	5	5	...	1	11,900
99. Bronchitis—						
(a) Acute	8	244	252	6	7	20,825
(b) Chronic	11	155	166	2	6	27,102
100. Broncho-Pneumonia	10	243	253	61	5	542
101. Pneumonia—						
(a) Lobar	15	720	735	182	33	1,115
(b) Unclassified	15	85	100	36	2	1,825
102. Pleurisy	2	85	87	2	2	572
102a. Empyema ... ..	...	14	14	6	2	16
103. Congestion of the Lungs ... ..	...	1	1	...	...	1
104. Gangrene of the Lungs ... ..	...	...	...	...	...	...
105. Asthma	1	19	20	...	2	628
106. Pulmonary Emphysema ... ..	...	...	...	...	...	5
107. Other affections of the Lungs—						
Pulmonary Spirochaetosis ... ..	...	...	...	...	...	...
Others ... ..	...	9	9	...	1	669
VI. DISEASES OF THE DIGESTIVE SYSTEM.						
108. A.—Diseases of the Teeth or Gums—						
Caries ... ..	...	17	17	...	...	4,583
Pyorrhœa ... ..	...	9	9	...	...	537
Others	1	11	12	...	...	482

TABLES V AND VI.--contd.

DISEASES.	TABLE V.					TABLE VI.
	Remaining in Hospital at end of 1931.	Yearly Admissions.	Total Cases Treated.	Total Deaths.	Remaining in Hospital at end of 1932.	All Cases including both In- and Out-Patients.
VI. DISEASES OF THE DIGESTIVE SYSTEM--continued.						
B.—Other affections of the Mouth—						
Stomatitis	2	34	36	3	1	7,135
Glossitis ... ..	...	4	4	1	...	52
Others ... ..	...	8	8	1	1	142
109. Affections of the Pharynx or Tonsils—						
Tonsillitis	2	80	82	1	2	2,309
Pharyngitis ... ..	...	15	15	...	...	2,300
Others	3	13	16	...	...	623
110. Affections of the Oesophagus ... ..	...	2	2	2	...	2
111. A.—Ulcer of the Stomach ... ..	...	1	1	...	...	10
B.—Ulcer of the Duodenum	2	1	3	...	...	7
112. Other affections of the Stomach—						
Gastritis	1	34	35	...	2	727
Dyspepsia ... ..	...	61	61	...	...	10,913
Others ... ..	...	15	15	2	1	1,438
113. Diarrhoea and Enteritis—						
Under two years of age ... ..	...	29	29	3	1	4,365
114. Diarrhoea and Enteritis—						
Two years of age and over ... ..	...	203	203	10	3	10,718
Colitis ... ..	...	13	13	1	...	1,220
Ulceration ... ..	...	1	1	1	...	7
114A. Sprue ... ..	...	...	...	...	...	1
115. Ankylostomiasis	9	221	230	7	8	774
116. Diseases due to Intestinal Parasites—						
(a) Cestoda (Taenia) ... ..	...	94	94	...	...	2,621
(b) Trematoda (Flukes) ... ..	...	...	...	...	...	...
(c) Bilharzia	3	26	29	4	...	90
(d) Nematoda (other than Ankylostoma)—						
Ascaris	1	70	71	2	...	1,765
Trichocephalus dispar. ... ..	...	...	...	...	...	...
Trichina ... ..	...	3	3	...	...	6
Dracunculus	7	111	118	...	6	1,478
Strongylus ... ..	...	1	1	...	...	1
Oxyuris ... ..	...	2	2	...	...	4
(e) Coccidia ... ..	...	...	...	...	...	...
(f) Other parasites ... ..	...	7	7	...	...	17
(g) Unclassified ... ..	...	4	4	1	1	10
117. Appendicitis ... ..	...	20	20	1	...	43
118. Hernia	23	274	297	36	12	726
119. A.—Affections of the Anus and Rectum—						
Fistula	1	21	22	...	4	31
Others ... ..	...	23	23	1	...	69
B.—Other affections of the Intestines—						
Enteroptosis ... ..	...	2	2	...	...	3
Constipation ... ..	...	108	108	1	...	26,350
Others ... ..	...	5	5	2	...	15
120. Acute Yellow Atrophy of the Liver ... ..	...	...	...	...	...	...
121. Hydatid of the Liver ... ..	...	...	...	...	...	...
122. Cirrhosis of the Liver—						
(a) Alcoholic	1	...	1	...	...	3
(b) Other forms ... ..	...	29	29	9	4	34
123. Biliary Calculus ... ..	...	...	...	...	...	1
124. Other affections of the Liver—						
Abscess ... ..	...	1	1	...	...	3
Hepatitis	1	14	15	1	...	58
Cholecystitis ... ..	...	4	4	...	...	11
Jaundice	2	49	51	8	...	435
Others ... ..	...	3	3	1	...	25
125. Diseases of the Pancreas ... ..	...	...	...	...	...	...
126. Peritonitis (of unknown cause) ... ..	...	5	5	5	...	6
127. Other affections of the Digestive System	1	42	43	12	1	6,775
VII. DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL).						
128. Acute Nephritis	3	74	77	16	6	104
129. Chronic Nephritis ... ..	...	16	16	5	2	32
130. A.—Chyluria ... ..	...	...	...	...	...	...
B.—Schistosomiasis ... ..	...	2	2	...	...	3
131. Other affections of the Kidneys and Ureters—						
Pyelitis ... ..	...	3	3	...	...	16
Others	2	17	19	1	...	39
132. Urinary Calculus ... ..	...	...	...	...	...	1
133. Diseases of the Bladder—						
Cystitis	2	54	56	2	4	205
Others ... ..	...	10	10	4	...	31
134. Diseases of the Urethra—						
(a) Stricture ... ..	...	3	3	...	...	19
(b) Other	1	11	12	2	...	38
135. Diseases of the Prostate—						
Hypertrophy ... ..	...	7	7	...	...	8
Prostatitis ... ..	...	4	4	...	...	11

TABLES V AND VI—contd.

DISEASES.	TABLE V.					TABLE VI.
	Remaining in Hospital at end of 1931.	Yearly Admissions	Total Cases Treated.	Total Deaths.	Remaining in Hospital at end of 1932.	All Cases including both In- and Out-Patients.
VII. DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)— <i>continued</i> .						
136. Diseases (non-Venerel) of the Genital Organs of Man—						
Epididymitis	1	34	35	...	...	60
Orchitis ... ..	...	31	31	...	1	504
Hydrocele	4	130	134	1	5	225
Ulcer of Penis ... ..	...	26	26	...	2	80
Varicocele ... ..	...	...	...	...	...	7
Others	7	250	257	3	9	412
137. Cysts or other non-malignant Tumours of the Ovaries ... ..	...	15	15	2	...	34
138. Salpingitis:—						
Abscess of the Pelvis	1	26	27	2	...	63
139. Uterine Tumours (non-malignant) ... ..	...	18	18	3	...	49
140. Uterine Hemorrhage (non-puerperal) ... ..	...	1	1	...	...	28
141. A.—Metritis	1	10	11	...	...	53
B.—Other affections of the Female Genital Organs—						
Displacement of Uterus ... ..	...	9	9	...	...	41
Amenorrhoea ... ..	...	2	2	...	...	112
Dysmenorrhoea ... ..	...	18	18	...	...	268
Leucorrhoea	1	5	6	...	...	183
Others	1	32	33	5	1	63
142. Diseases of the Breast (non-puerperal)—						
Mastitis	2	29	31	...	3	463
Abscess of Breast	1	18	19	...	2	108
Others ... ..	...	2	2	...	1	17
VIII. PUERPERAL STATE.						
143. A.—Normal Labour	3	786	989	14	15	931
B.—Accidents of Pregnancy—						
(a) Abortion or Miscarriage	2	138	140	2	5	247
(b) Ectopic Gestation ... ..	...	1	1	...	...	2
(c) Other accidents of Pregnancy ... ..	...	39	39	12	2	56
C.—Ante-natal supervision	4	73	77	1	5	7,254
144. Puerperal Hemorrhage ... ..	...	2	2	1	...	6
145. Other accidents of Parturition ... ..	...	67	67	14	1	74
146. Puerperal Septicæmia ... ..	...	13	13	6	...	18
147. Phlegmasia Dolens ... ..	...	...	...	...	...	...
148. Puerperal Eclampsia ... ..	...	2	2	2	...	2
149. Sequelæ of Labour ... ..	...	14	14	4	...	15
150. Puerperal affections of the Breast ... ..	...	2	2	...	...	5
IX. AFFECTIONS OF THE SKIN AND CELLULAR TISSUES.						
151. Gangrene ... ..	...	23	23	6	1	28
152. Boil	2	46	48	1	...	4,332
Carbuncle	1	8	9	...	1	43
153. Abscess	34	642	676	8	29	7,253
Whitlow and Onychia	2	75	77	...	7	2,020
Cellulitis	8	316	324	11	11	6,479
154. A.—Tinea ... ..	...	1	1	...	...	1,946
B.—Scabies	8	92	100	...	4	27,734
155. Other Diseases of the Skin—						
Erythema	1	1	2	...	...	115
Urticaria ... ..	...	7	7	...	...	466
Eczema	1	17	18	...	1	1,352
Herpes ... ..	...	5	5	...	...	290
Psoriasis ... ..	...	1	1	...	...	79
Elephantiasis	9	77	86	...	4	548
Myiasis ... ..	...	3	3	...	...	7
Chigoes	9	37	46	1	...	755
Cutaneous Leishmaniasis ... ..	...	...	...	...	...	...
Ulcers	303	1,801	2,104	26	185	41,801
Others	11	131	142	3	7	2,435
X. DISEASES OF THE BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS)—						
156. Diseases of the Bones—						
Osteitis	2	17	19	1	3	110
Periostitis ... ..	...	7	7	...	...	50
Others	1	23	24	1	3	76
157. Diseases of Joints—						
Arthritis	3	69	72	3	5	993
Synovitis	3	56	59	...	3	1,121
Others ... ..	...	10	10	2	...	97
158. Other diseases of Bones or Organs of Locomotion—						
(a) Teno-synovitis ... ..	...	...	...	...	...	17
(b) Ganglion	4	13	17	...	...	263
(c) Others	1	29	30	1	2	151

TABLES V AND VI.—*contd.*

DISEASES.	TABLE V.					TABLE VI.
	Remaining in Hospital at end of 1931.	Yearly Admissions.	Total Cases Treated.	Total Deaths.	Remaining in Hospital at end of 1932.	All Cases including both In- and Out-Patients.
XI. MALFORMATIONS.						
159. Malformations—						
Hydrocephalus ...	...	1	1	1	...	2
Hypospadias ...	...	1	1	...	...	1
Spina Bifida ...	...	...	...	...	...	...
Others ...	...	6	6	1	...	7
XII. DISEASES OF INFANCY.						
160. Normal living babies ...	8	758	766	18	22	1,264
160A. Congenital Debility ...	...	3	3	3	...	54
161. Premature Birth ...	...	28	28	18	...	43
162. Other affections of Infancy ...	...	8	8	4	...	25
162A. Babies still-born ...	...	90	90	90	...	97
163. Infant neglect (infants of three months or over) ...	...	3	3	1	...	4
XIII. AFFECTIONS OF OLD AGE.						
164. Senility—						
Senile Dementia ...	...	16	16	7	1	76
XIV. AFFECTIONS PRODUCED BY EXTERNAL CAUSES.						
165. Suicide by Poisoning ...	...	...	...	...	...	1
166. Corrosive Poisoning (intentional) ...	...	...	...	...	...	1
167. Suicide by Gas Poisoning ...	...	...	...	...	...	...
168. Suicide by Hanging or Strangulation ...	...	...	...	...	...	2
169. Suicide by Drowning ...	...	...	...	...	...	1
170. Suicide by Firearms ...	...	...	...	...	...	...
171. Suicide by cutting or stabbing instruments ...	...	...	...	...	...	...
172. Suicide by jumping from a height ...	...	...	...	...	...	...
173. Suicide by crushing ...	...	...	...	...	...	...
174. Other suicides ...	...	2	2	2	...	4
175. Food Poisoning—						
Botulism ...	1	2	3	...	...	5
176. Attacks of poisonous animals—						
Snake Bite ...	2	54	56	1	...	322
Insect Bite ...	...	10	10	1	...	485
177. Other accidental Poisonings ...	...	3	3	2	...	6
178. Burns (by fire) ...	23	290	313	32	22	4,659
179. Burns (other than by fire) ...	1	40	41	1	...	665
180. Suffocation (accidental) ...	...	...	...	...	...	...
181. Poisoning by Gas (accidental) ...	...	...	...	...	...	...
182. Drowning (accidental) ...	...	2	2	2	...	3
183. Wounds (by Firearms, war excepted) ...	...	3	3	...	...	4
184. Wounds (by cutting or stabbing instruments) ...	32	658	690	25	25	19,923
185. Wounds (by fall) ...	7	168	175	2	3	9,337
186. Wounds (in Mines or Quarries) ...	...	6	6	...	...	21
187. Wounds (by Machinery) ...	...	10	10	1	1	23
188. Wounds (crushing, e.g., railway accidents, etc.) ...	...	10	10	2	...	15
189. Injuries inflicted by Animals, Bites, Kicks, etc. ...	7	92	99	14	10	2,404
190. Wounds inflicted on Active Service ...	...	...	...	...	...	...
191. Executions of civilians by belligerents ...	...	...	...	...	...	...
192. A.—Over fatigue ...	...	...	...	...	...	...
B.—Hunger or Thirst ...	...	5	5	...	...	5
193. Exposure to Cold, Frost bite, etc. ...	...	...	...	...	...	...
194. Exposure to Heat—						
Heatstroke ...	...	...	...	...	...	12
Sunstroke ...	...	...	...	...	...	...
195. Lightning Stroke ...	1	5	6	...	...	10
196. Electric Shock ...	...	...	...	...	...	3
197. Murder by Firearms ...	...	...	...	...	...	...
198. Murder by cutting or stabbing instruments ...	...	1	1	1	...	2
199. Murder by other means ...	...	...	...	...	...	...
200. Infanticide (murder of an infant under one year) ...	...	...	...	...	...	...
201. A.—Dislocation ...	...	17	17	...	1	143
B.—Sprain ...	1	39	40	...	1	1,975
C.—Fracture ...	22	369	331	23	31	767
202. Other external Injuries ...	64	1,146	1,210	6	58	35,514
203. Deaths by Violence of unknown case ...	...	...	...	...	...	...
XV. ILL-DEFINED DISEASES.						
204. Sudden Death (cause unknown) ...	...	...	...	...	...	4
205. A.—Diseases not already specified or ill-defined—						
Ascites ...	4	68	72	6	2	131
Edema ...	1	15	16	...	2	159
Asthenia ...	4	44	48	12	2	442
Shock ...	...	15	15	6	...	16
Hyperpyrexia ...	...	3	3	1	...	9
B.—Malingering ...	...	9	9	...	...	143
XVI. DISEASES, THE TOTAL OF WHICH HAVE NOT CAUSED 10 DEATHS, INCLUDING N.A.D. AND N.Y.D.						
Total, Sections I to XVI ...	4	265	269	23	11	4,145
Examinations ...	...	...	...	...	...	684,835
Examinations ...	...	...	...	...	...	118,187
GRAND TOTAL ...	1,332	24,072	25,404	1,354	1,071	803,022

