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COLONY AND PROTECTORATE OF KENYA



**ANNUAL
MEDICAL REPORT**

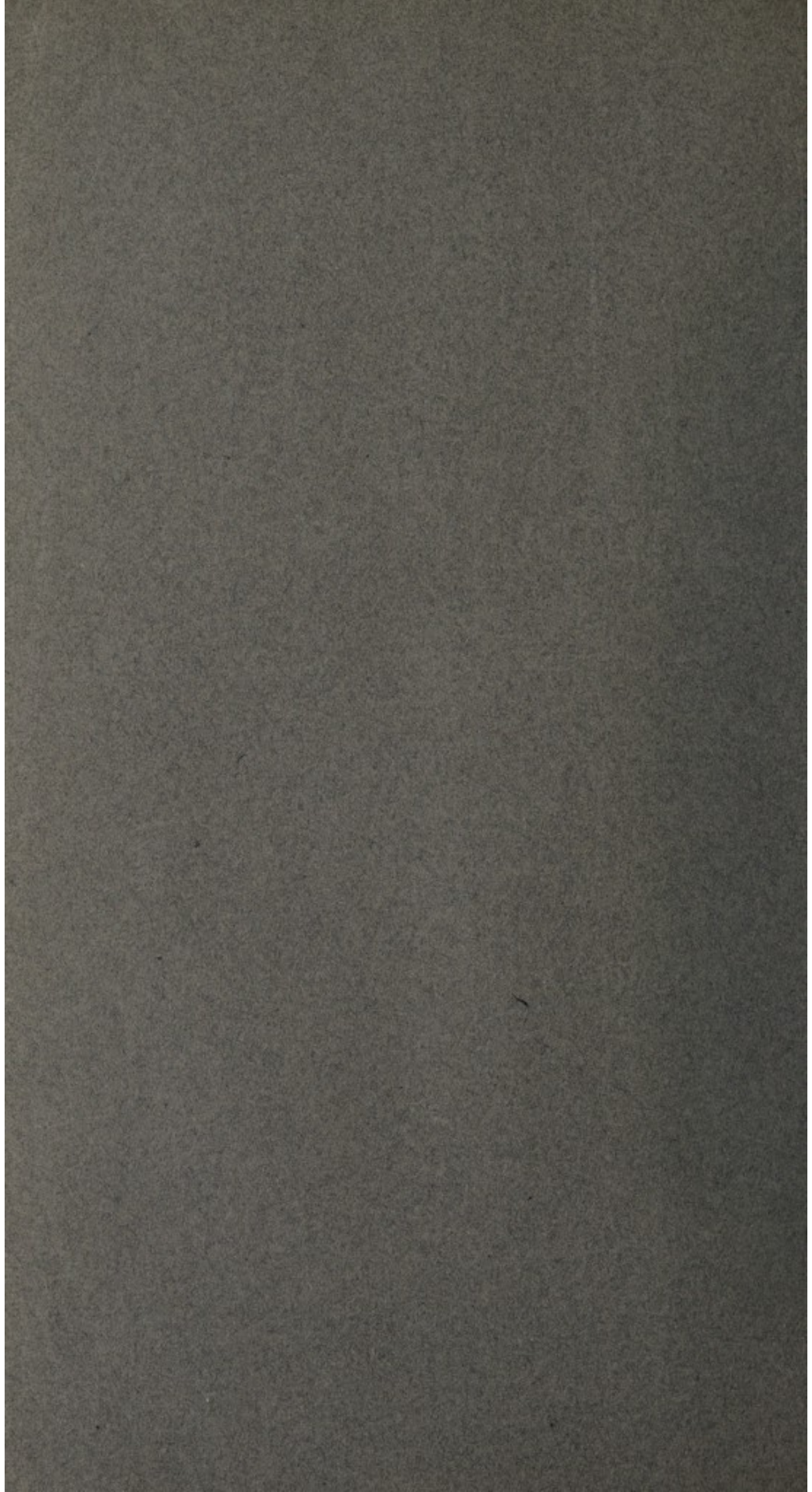
FOR THE
YEAR ENDING 31ST DECEMBER, 1925.

INCLUDING
THE ANNUAL REPORT
OF THE

Medical Research Laboratory

FOR THE YEAR 1925.

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NAIROBI.



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COLONY AND PROTECTORATE OF NANTU

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No. 16/695/44.

MEDICAL DEPARTMENT,
HEAD OFFICES,
NAIROBI, 30th June, 1926.

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 Colony and Protectorate of Kenya for the year 1925 together with the Returns, etc., appended thereto.

I have the honour to be,

Sir,

Your obedient servant,

JOHN L. GILKS,

Director of Medical and Sanitary Services

The Honourable,

The Colonial Secretary,
NAIROBI.



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1.—ADMINISTRATION.

SECTION 1.—DEPARTMENTAL.

1.—ESTABLISHMENT. -1925

Administration has not been an easy matter during 1925. The vacancies existing in the ranks of the medical staff at the beginning of the year were increasing owing to unexpected resignations and a death, but new appointments brought the medical personnel up to full strength by December. For a short time it was not possible to maintain a medical officer for the work in Central Kavirondo. By the end of the year two additional centres had been opened, the first at Narok where previously medical work had been carried on but could not be maintained and the second on the shores of the Lake in South Kavirondo for the purpose mainly of sleeping sickness and venereal disease work.

As in the case of medical officers, the staff of sanitary inspectors was below full strength for the greater part of the year. The death of the chief sanitary inspector and of a sanitary overseer engaged in duties at Mombasa in connection with conservancy increased the difficulties in this section.

The Sanctioned Estimates for the year 1925 allowed for an increase of three medical officers, and these new appointments were made during the year. The appointment of an Entomologist for which provision had been made in 1924, also became effective in 1925.

During 1924 the establishment had been increased by two medical officers, a chief sanitary inspector and two 2nd grade sanitary inspectors.

The establishment of the Department in 1925 was therefore but little different from that which it was permitted to retain after the serious retrenchment effected in 1922. The staff which then remained available was admittedly inadequate to meet the requirements of the Colony at that time; in the interval the Colony has been going through a stage of very active development. It follows that the few additional appointments referred to has not appreciably reduced the discrepancy which has always existed between the needs of the Colony and the capacity of the Department to provide essential service in an adequate fashion.

On the contrary the discrepancy between requirements and services rendered has increased concurrently with industrial and agricultural development. Fortunately at the same time there has, as the result of political, social and administrative development, been an increasing appreciation of the existence of the discrepancy by all sections of the community, which has resulted in an increasing demand for the extension of measures aimed at the advancement of the Public Health.

Fortunately also development during the past few years has been such as to render the possibility of carrying the expansion of medical services into effect a matter of practical politics and the medical estimates which were prepared in the year under review have been drafted accordingly.

The scheme which these estimates foreshadow and to a portion of which they will give effect in 1926 was drawn up as the result of a survey of the Colony from two aspects; firstly that of population, secondly of the medical facilities existing at the moment.

In the first place as large areas had never had any medical facilities whatsoever, provision has been inserted for the commencement of medical work in certain of those districts by the appointment of a medical officer.

With regard to the existing medical services it has long been evident that the work which presented itself was greatly in excess of that which the staff as at present constituted could be expected to cope with and this position obtained with regard to the whole staff.

In the Native Reserves the position was that to any one district one medical officer was usually posted and he would have under his care a very large stretch of country with a population in some cases of as many as 300,000. He was expected to manage a hospital sometimes of one hundred beds and to supervise or to carry out the treatment of the patients in that hospital, to be responsible for the inauguration and control of measures against outbreaks of epidemic diseases such as plague and small-pox, to undertake the training of dressers, to supervise out-dispensaries and to check and exercise control over the expenditure of stores. In addition he was responsible for the sanitary inspection of townships and trading centres and the district generally and expected to act as Medical Officer of Health and advisor to the Local Authority on all matters pertaining to the Public Health.

The work was naturally beyond the powers of a single officer and it was obvious that one of the most pressing needs if all essential work was to be efficiently carried out and if men were not to become disheartened was to provide relief where work was already going on.

Provision was therefore inserted for an increase of staff such as would allow of the posting of an additional medical officer to a number of the existing centres.

On the sanitation side it was also essential not only to provide relief to the existing staff in the larger townships but also to arrange for the initiation of preventive work in districts where no provision of staff to this end had hitherto existed. It was obvious that the time had arrived when officers definitely concerned with health work should be posted to the reserves and for this object also provision has been inserted in the estimates and at the same time a commensurate increase has been arranged for in the European sanitary inspectorate.

One of the most pressing problems of the country is that in connection with the care, housing and medical treatment of labourers employed on estates. One post of Senior Medical Officer has been provided in order that some of the attention which the subject demands may be given to it. This matter is one of the utmost importance in the development of the country.

In order to allow of adequate inspection of district medical and public health work and the correlation of the activities of district medical officers, medical officers of health and local authorities it is essential that one or more of the Headquarter's Staff should always be on tour. Hitherto it has been impossible to carry out this work to the extent that it is necessary. Provision has therefore been made for the appointment at Headquarters of one Senior Medical Officer and one Senior Sanitation Officer.

Contingent on the aforementioned expansion and in order to cope with the additional work which an increased staff will throw on the Laboratory, in order to allow of a certain amount of travelling being undertaken by the members of the Laboratory staff and in order to allow of essential researches being instituted, two additional Bacteriologists and an additional Entomologist have also been provided for.

In addition to the medical staff provision has been made for increases in all other grades of the Service—Nursing Sisters, clerical staff, etc.

Suitable provision has also been made for other charges in respect of medical and surgical stores, motor transport, etc.

The total estimates for the medical department for the year 1926 are £178,964, being an increase of £44,933 over the estimates for 1925 which amounted to £134,031.

Estimates have also been submitted to Government for the erection of a certain amount of additional hospital accommodation and for housing accommodation for new staff. The provision to meet the necessary building programme will be met from loan funds.

It has not been proposed that the complete expansion which has been adumbrated in the foregoing paragraphs should be completed during 1926. Provision for only such proportion of the ultimate staff as can readily be absorbed, housed and economically used has been made in the estimates for next year. In the table at the end of this section is set out the staff at present retained, the staff which in accordance with the estimates it is proposed should ultimately be retained, the increases which have been approved by Government and by Legislative Council for 1926 and the total staff approved for 1926.

Little more than was described in the Annual Report for 1924 has been attempted in the direction of the training of Africans. The results that are being obtained in connection with dispensers and laboratory assistants are most encouraging though the lack of discipline previously referred to has resulted in many disappointments and much waste of effort.

The whole matter of the training, pay and discipline of the native staff has been considered by a departmental committee. As a result a scheme was submitted to Government advocating the creation of an enlisted African Medical Corps on a basis somewhat similar to the Police. The proposals if accepted will require legislation prescribing the necessary conditions and powers. The scheme has been worked out to conform with the syllabus of education which had been, as mentioned in the 1924 Report, adopted for use in Government and non-Government Institutions. A system of examinations open to Government and non-Government trained candidates is included.

The necessity for the total reorganisation of the African staff of the Medical Department is set forth in the memorandum covering the scheme and is quoted as follows:—

“ The African staff at present employed is unquestionably far from satisfactory inasmuch as it is with very few exceptions but partially trained, indifferently efficient and almost undisciplined.

Taken as a whole its present personnel is unsatisfactory and affects adversely the efficiency of the Medical and Sanitary Services of this Colony.

Four chief factors are responsible for the present state of affairs:—

- (a) First, there is as yet no organised mechanism by which African staff may be trained in the highly technical duties which they are required to perform. Such training as is given depends almost entirely on the efforts of individual officers, who, however keen they may be, have but little time to devote to such energies, and upon the enthusiasm of the natives concerned.
- (b) Secondly, a large proportion of the African Staff does not remain in the employ of the department sufficiently long to acquire efficiency, even were the facilities for training adequate. Sooner or later, in the majority of cases the native becoming dissatisfied with his conditions or objecting to some of the duties he is called upon to perform thinks that he would prefer a change of employment and leaves the department.
- (c) Thirdly, for all practical purposes no control over native staff is vested in the hands of Officers. Breaches of discipline and neglect of duty can only be dealt with as offences under the Masters and Servants Ordinance by a Magistrate.

The system of departmental fines is cumbersome and unworkable. Punishment can in most cases be evaded by asking for discharge—which cannot be refused. In this way many good men are lost to the Department because they prefer to leave rather than submit even to minor punishments. Under such conditions discipline—the first principle of efficiency—is totally unattainable.

- (d) Fourthly, lack of uniformity of pay, absence of definite prescribed conditions of service as to increased emoluments in respect of efficiency, promotion, leave, pensions and gratuities, etc., and the generally unorganised state of the African staff has made it impossible for the department to attract a sufficiently good type of native from which an efficient and reliable service can be constituted.

It is not possible to obtain for the Medical Department an African staff of the calibre and attainments required without removing the disabilities mentioned above.

It is probable that the best if not the only way to accomplish this is by the formation of a properly constituted Native Medical Staff.”

The lack of properly trained dressers is being increasingly felt throughout the Department and the country generally.

TABLE.

Showing Medical, Sanitary and Nursing Staff, etc., sanctioned to be retained during 1925, the increases sanctioned for 1926 and the total staff sanctioned for 1926 and the full staff foreshadowed in the estimates.

Appointment.	Sanctioned Staff 1925.	Increases sanctioned for 1926.	Total staff sanctioned for 1926.	Full staff foreshadowed by the Estimates.
Administrative Division.				
Principal Medical Officer	1	—	1	1
Dy. Prin. Medical Officer	1	—	1	1
Chief Sanitation Officer	1	—	1	1
Senior Medical Officer	—	1	1	1
Senior Sanitation Officer	—	1	1	1
Chief Sanitary Inspector	1	—	1	1
Medical Storekeeper	1	—	1	1
Officer Superintendent	1	—	1	1
Accountant	1	—	1	1
Medical Division.				
Resident Surgical Officer	1	—	1	1
Senior Medical Officers	4	1	5	5
Medical Officers	20	10	30	45
District Surgeons	—	—	1	1
Assistant Surgeons	2	—	2	2
Matron	1	—	1	1
Nursing Sisters	21	6	27	28
Male Nursing Orderlies	1	3	3	3
Wardmaster	1	—	1	1
Supt. Mental Hospital	1	—	1	1
Matron Mental Hospital	1	—	1	1
Asst. Matron Mental Hospital	1	—	1	1
Warders Mental Hospital	2	—	1	1
Asst. Surgeons (non European)	3	—	3	3
Sub. Asst. Surgeons	22	—	22	22
Compounders	8	—	8	8
Sanitation Division.				
Senior Sanitation Officer	—	2	2	2
Sanitation Officer	4	3	7	18
Senior Sanitary Inspectors	2	1	3	3
Sanitary Inspectors	11	8	19	36
Sanitary Overseers	1	5	6	6
Supt. I.D.H.	1	—	1	1
Nursing Sisters (Health Visitors)	2	2	4	8
Laboratory Division.				
Bacteriologist	1	—	1	1
1st Assistant Bacteriologist	1	—	1	1
Assistant Bacteriologists	1	2	3	4
Government Analyst	1	—	1	1
Chemical Officer	1	—	1	1
Entomologists	1	1	2	2
Laboratory Assistants	1	3	4	4
Laboratory Assistants	1	3	4	4
(Learner Grade)				
Laboratory Assistants	2	2	4	4
(Non-European)				

ESTABLISHMENT.

* Principal Medical Officer	1
* Deputy Principal Medical Officer	1
* Chief Sanitation Officer	1
Chief Sanitary Inspector	1
Medical Storekeeper	1
Office Superintendent	1
Accountant	1
Clerks	3
Stenographer	1
1st Grade Clerks	2
2nd Grade Clerks	7
3rd Grade Clerks	8
4th Grade Clerks	3
Issuers of Medical Stores	2
African Clerks	3
Messengers and Packers	18

Medical Division.

* Resident Surgical Officer	1
Senior Medical Officer	4
Medical Officers	20
District Surgeons	3
European Dispensers	2
Matron	1
Nursing Sisters	21
Male Nursing Orderly	1
Wardmaster	1
Superintendent, Mental Hospital	1
Matron, Mental Hospital	1
Assistant Matron, Mental Hospital	1
Warders, Mental Hospital	2
Assistant Surgeons	5
Sub-Assistant Surgeons	22
Compounders	8
Native Hospital Attendants	As necessary
Mental Hospital Attendants	As necessary

Sanitation Division.

Medical Officers of Health	4
Senior Sanitary Inspectors	2
Sanitary Inspector, 1st Grade	6
Sanitary Inspectors, 2nd Grade	5
Sanitary Overseer	1
Superintendent, Infectious Diseases Hospital	1
Nursing Sisters	2
Mechanics and Greasers	3
Native Attendants for Infectious Diseases Hospitals, Leper Lazaretto and Quarantine Stations	As necessary

Laboratory Division.

* Bacteriologist	1
* 1st Assistant Bacteriologist	1
2nd Assistant Bacteriologist	1
Government Analyst	1
Chemical Officer	1
Entomologist	1
Laboratory Assistant (European)	1
Laboratory Assistant European (Learner Grade)	1
Laboratory Assistants (Asiatic)	2
3rd Grade Clerk	1
Native Laboratory Attendants, etc.	As necessary

The old designations have been retained in this report as there was no alteration until the latter part of the year.

2. LIBRARIES.

The medical library is continuously being added to by the purchase of books and periodicals. A system of indexing the contents of periodicals has been adopted, thus rendering information easily obtainable.

The Kenya Medical Journal has increased its circulation both in Kenya and the neighbouring countries. It is proving a valuable means of disseminating information and for providing an exchange of ideas between the various territories.

SECTION II.—EXTRA DEPARTMENTAL.

3. REGISTRATION OF MEDICAL PRACTITIONERS AND DENTISTS.

The Ordinance governing registration came into force on the 24th September, 1910.

Since that date and up to the end of the year the following have been placed on the Register:—

Registered Medical Practitioners	...	...	...	...	...	155
Licensed Medical Practitioners	...	...	...	...	...	6
Dentists	...	...	...	...	...	13

Eighty-seven medical practitioners were registered for Government service, and sixty-eight as private practitioners.

In 1925 twenty new entries were made in the register, one dentist, twelve private medical practitioners and seven members of the Government medical service. Of the new private practitioners three had gained their diplomas in India.

The Board nominated for the purposes of the Ordinance consisted of:—
Principal Medical Officer (Chairman).

Dr. A. R. Paterson,

Dr. C. J. Wilson, M.C.,

Dr. W. H. Kauntze, M.B.E.

Dr. A. J. Jex-Blake,

Dr. R. W. Burkitt,

with the Principal Medical Officer as Chairman and Registrar.

No meeting was held during the year.

4. THE DRUGS AND POISONS ORDINANCE, 1909.

This Ordinance controls the licensing of chemists and druggists as well as the sale of poisons throughout the country.

Thirty-four names have been placed on the Register since the introduction of the Ordinance to the end of 1925.

The Board appointed under the Ordinance consisted of the following:—
Principal Medical Officer (Chairman).

Dr. A. R. Paterson,

Dr. C. J. Wilson, M.C.,

Dr. W. H. Kauntze, M.B.E.

A. A. White, Esq., M.P.S.,

L. A. Howse, Esq., M.P.S.,

with the Principal Medical Officer as Chairman and Registrar.

No meeting was held during the year.

5. THE PUBLIC HEALTH ORDINANCE, 1913.

The Board established under this Ordinance dealt with proposals for the sub-division into building sites of land in the neighbourhood of townships. Three meetings were held during the year.

The Annual Report of the proceedings of the Board will be found in Appendix "A"

6. THE PUBLIC HEALTH ORDINANCE, 1921.

Under this Ordinance there is established a Board—the Central Board of Health—with the Principal Medical Officer as Chairman. The function of the Board is to advise the Governor on any matter affecting the public health.

Three meetings were held during the year.

The Annual Report of the proceedings of the Board will be found in Appendix "B".

SECTION III—FINANCIAL.

The total of the sanctioned estimates for the Medical Department for 1925 was £134,031 an increase of £7,438 over the previous year.

The total for personal emoluments was increased by £2,622 to allow for the appointment of three extra medical officers, two additional nursing sisters for work in native hospitals and increased African subordinate staff.

A new vote appeared under the heading of "Medical Grants to Missions" for which a sum of £1,000 was provided.

The comparative table of the sanctioned estimates and expenditure of the Medical Department for the past three years is as follows:—

Year	Sanctioned Recurrent Estimates.	Sanctioned Extraordinary Estimates.	Total Sanctioned.	Actual recurrent Expenditure.	Actual extraordinary Expenditure.
1923	£126,243	£3,934	£130,177	£115,557-13-92	£6,224-6-56
1924	£126,593	£350	£126,943	£118,688	£188
1925	£134,031	£375	£134,406	£132,637	£320

The actual expenditure in the year was £1,449 less than the sanctioned total. There were considerable savings on personal emoluments owing to shortage of staff but these were largely absorbed on the extra expenditure which had to be undertaken in connection with the outbreaks of small-pox which occurred.

The revenue collected amounted to £16,240 as against £13,256 in 1924.

Of the total estimated expenditure in 1925 of £2,117,225 for the Colony and Protectorate £134,406 represented expenditure on public health and medical relief, a ratio of 1 to 15.79 or 6.9 per cent.

Detailed returns of revenue and expenditure are given in Table II at the end of the report.

II.—PUBLIC HEALTH.

POPULATION.

The figures for the population of the Colony as determined by the census taken in February 1926 are given below. Figures for the estimated population in 1925 are not yet available.

	1921 Census.	1926 Census.
Europeans	9,651	12,529
Asiatics (excluding Arabs)	25,880	26,759
Arabs	10,102	10,557
Africans	2,483,500*	2,515,330*

* Estimated.

Figures for births, deaths and marriages among Europeans are not at the date of writing available for 1925. The figures for 1923 and 1924 were as follows:—

	Europeans.	
	1923.	1924.
Births	194	209
Deaths	64	81
Marriages	117	123

A certain amount of information with regard to the birth rates among Europeans and the death rates among the members of all three races in municipal and township areas is given later in this chapter. Even within these limited areas, however, the figures are none too reliable and radical alteration in the system of registration is urgently required.

The necessity for the institution of compulsory and effective registration of births, deaths and marriages in at least the larger townships has been referred to in these Reports on many previous occasions. It may be hoped that as the result of the recent appointment of a statistical officer for the Colony the matter will shortly receive that degree of attention which it merits and which is now long overdue.

Other important matters with regard to which information is required are the vital statistics with regard to employees and squatters on farms and estates and the vital statistics with regard to the population of the native reserves.

Such vital statistics as are available with regard to the three larger townships are given below and under the heading "The General Native African Population of the Colony and Protectorate" an attempt has been made to evaluate the conditions which pertain with regard to the native population as a whole.

NAIROBI.

HEALTH & MORTALITY—VITAL STATISTICS.

A. Population.

The non-native population of Nairobi was obtained by census in 1921, the African population being estimated at the same time.

Race.	Population of Nairobi in 1921.			Total.
	Males.	Females.	Children.	
Europeans	1,100	777	462	2,339
Goans	819	109	133	1,061
Indians	4,487	1,139	1,997	7,623
Arabs	57	14	15	86
Anglo-Indians, Seychelles, etc.	115	57	59	231
TOTAL ...	6,578	2,096	2,666	11,340
Africans (estimated population)				12,088
Total Population in 1921				23,428

As no statistics are available by means of which the population of the town can be estimated with even approximate accuracy at the close of 1925 no useful purpose would be served in attempting to do so. A non-native census is to be taken early in the present year, and it is most desirable that an attempt should be made to estimate the African population at the same time. When the Census figures are published it will probably be found that the population has increased considerably since 1921 and the information obtained will not only enable more accurate vital statistics to be compiled in 1926, but will also be extremely useful in the consideration of numerous public health problems.

B. Marriages.

Forty-eight European marriages were registered during the year as compared with 49 in 1924, 47 in 1923, 49 in 1922 and 57 in 1921.

C. Births.

One hundred and eight births were registered during the year as compared with 95 in 1924, 106 in 1923, 128 in 1922 and 142 in 1921. Of the total European births 58 were males and 50 were females.

Compulsory registration of births is applicable to Europeans only and the urgent necessity of making the Registration of Births and Deaths Ordinance applicable to all sections of the community must once more be emphasised.

The compilation of vital statistics with any degree of accuracy is quite impossible under present circumstances and in the absence of accurate statistics it is extremely difficult to estimate the success or otherwise of measures directed towards the improvement of the general health of the community.

Amongst others maternity and child welfare work and the vaccination of infants may be mentioned as activities, the success of which are largely dependent on the efficient notification and registration of births.

D. Deaths.

The number of deaths from all causes reported as having occurred in Nairobi during the year was 390 as compared with 536 in 1924, 575 in 1923, 504 in 1922 and 570 in 1921.

Although there has been a distinct decrease in the number of deaths recorded it must be pointed out that the decrease is more apparent than real, being largely due to more careful registration. In past years many deaths were reported to the Health Office as having occurred in Nairobi which really occurred outside the township, but for which burial permits were issued by the Police. In the year under review only deaths actually occurring in the township have been recorded. Of the total deaths 300 were males and 90 were females. European deaths number 24, Asiatic 145 and African 221.

Taking the population of Nairobi to be 23,428 the crude annual death rate for 1925 is therefore 16.6 per thousand living. The crude European death-rate is 10.3, the crude Asiatic death-rate 16.1, and the crude African death-rate 18.3. The corresponding figures for 1924 were: all races 22.9, European 18.4, Asiatic 16.0 and African 28.9.

The crude or general death-rate cannot be considered as reliable evidence of the health of a community and although the figures are lower than in 1924 they must be accepted with some reserve. At the same time, however, it must be remembered that the largest European and Native Hospitals in the Colony are situated in Nairobi to which institutions persons are admitted from all over the Colony. If the deaths of strangers dying in these institutions were excluded and if the assumption that there has been a considerable increase of population is correct a lower death-rate would be obtained.

In an endeavour to produce something in the nature of a recorded death-rate an attempt was made during the year to ascertain if the person dead were a normal inhabitant of the town or not.

Of the 390 persons who died it was found that 248 were normal residents of the town; 74 could definitely be described as strangers and in regard to the 68 remaining no reliable information could be obtained. If the 74 deaths of strangers are excluded and half the deaths in regard to which no information as to residence could be obtained are added to the deaths of residents and if in addition 17 deaths of residents which occurred outside the township are included the recorded death-rate would be 12.8 per thousand living. It must be clearly understood however, that this figure can only be accepted as approximate, but if it were possible to calculate a recorded death-rate for the town with greater accuracy the rate would probably be lower.

No attempt can be made under present conditions to correct death-rate for age and sex distribution, but if these factors were considered death rates would be raised.

Of the total deaths reported 192 or 49 per cent. occurred in Government Hospitals. It is again necessary to draw attention to the unsatisfactory system under which all information in regard to deaths has to be obtained from reports issued by the Police—a system quite incompatible with accuracy.

E. Infant Mortality.

In the absence of legislation requiring general registration of births it is impossible to calculate the Infant Mortality rate, a death rate that is generally accepted as being the most sensitive index of the health of a community. Of the total number of deaths reported 67 or 17.2 per cent. were infants under one year of age. The deaths were divided amongst the different races as follows:—

Deaths of Infants under one Year of Age.

Race	Total Deaths.	Infant Deaths.	Percentages.
European	24	2	8.3
Asiatic	145	58	40.0
African	221	7	3.2
Total	390	67	17.2

As no statistics are available in regard to births it is difficult to make any definite deductions from the foregoing figures, but it may be stated that the infantile mortality amongst Asiatics appears to be abnormally high, and that it compares unfavourably not only with the European, but also with the African. While the Asiatic birth rate is probably higher than the European or African, their lack of domestic and infant hygiene and the overcrowded and insanitary conditions under which they live produce a high infant mortality.

Pneumonia was the chief cause of death, being responsible for 21 out of the 67 infant deaths. Premature births and labour complications accounted for 11 deaths. Dysentery and Diarrhoea were given as the cause of death in 5 cases and general debility accounted for 7 deaths.

F. Analysis of General Mortality.

The number of deaths classified as being due to unspecified causes, i.e., persons dying who have not been seen by a medical practitioner before death, again shows a reduction, 19 deaths only being classified under this heading as compared with 28 in 1924, 40 in 1923 and 58 in 1922.

As in past years Pneumonia was once more the principal cause of death, being responsible for 121 or 31.0 per cent. of the total number of deaths.

In 1924 deaths from Pneumonia totalled 141 or 26.1 per cent., in 1923 164 or 28.5 per cent., and in 1922 170 or 31.5 per cent.

Although there has been a steady decline in the number of deaths attributable to this disease during the past few years, a decline that has been maintained during the period under review, Pneumonia is still responsible for an enormous wastage of life. Another disquieting feature is that the disease causes the death of a large number of young able-bodied adults in the prime of life.

The lessening of the dust nuisance, the prevention of overcrowding and the provision on a large scale of modern sanitary native housing are measures which would have a considerable effect in lowering the incidence of this disease.

Plague was responsible for 4 deaths during the year as compared with 61 in the township in 1924.

Tuberculosis accounted for 14 deaths as compared with 21 deaths in the previous year.

Malaria was given as the cause of death in 19 cases as compared with 32 in 1924.

Diseases of the Circulatory, Digestive and Nervous systems were responsible for 33, 27 and 27 deaths respectively, the figures for 1924 being 51, 19 and 27 respectively.

Dysentery was responsible for 16 deaths.

Diseases of the Respiratory system, excluding Pneumonia, caused only 6 deaths.

The notifiable infectious diseases other than Plague and Tuberculosis accounted for 15 deaths as compared with 26 deaths in 1924.

While the mortality statistics for Nairobi for the year show a considerable improvement in the health of the community in comparison with previous years, an analysis of the causes of death discloses the fact that many persons are dying from preventable diseases. The insanitary and overcrowded conditions under which the greater proportion of the Asiatic and African communities are compelled to live give rise to grave anxiety and a serious outbreak of epidemic disease might result in serious consequences.

MOMBASA.

HEALTH & MORTALITY—VITAL STATISTICS.

A. Population.

The population as obtained by census in 1921 is given below along with the estimated population for 1925:—

	1921.				1925			
	Males.	Fem.	Child.	Total.	Males.	Fem.	Child.	Total
Europeans ...	383	175	95	653	702	194	181	1,077
Indians ...	2,896	1,506	2,900	7,302	2,471	1,020	1,496	4,987
Goans ...	489	83	126	696	433	73	67	573
Arabs ...	2,152	1,610	1,938	5,700	3,305	2,065	2,176	7,546
Others ...	—	—	—	—	74	37	42	153
Natives ...				17,983				23,133
Total ...				32,334				37,469

In 1924 there was recorded an increase in the European, Indian and Native population and a decrease in the Goan and Arab Population as compared with 1921.

This year there is a further increase in the European population. The Indian population is much lower than last year and even much lower than in 1921. The Goan population shows a further decrease. The Arab population has reversed last year's decrease and is much higher than in 1921.

The estimated population for 1925 does not pretend to accuracy and it is doubtful whether it would be justifiable to draw conclusions from these figures.

A decrease of 4,499 from 1924 in the total population is remarkable in a developing town.

B. Births.

Number of births registered during the year:—

					Males.		Females.		Total.
Europeans	...	...	...	...	8	...	7	...	15
Asiatics	...	...	...	...	25	...	3	...	28
Africans	...	...	...	...	—	...	—	...	—
Other Races	...	...	...	...	1	...	3	...	4
Total	...	...	...	...	34	...	13	...	47

Compulsory registration of births applies only to Europeans. The number registered last year was 16 and in 1921 15.

C. Marriages.

Forty-three European marriages were recorded in 1925 as compared with 12 in 1924.

D. Deaths

The number of deaths reported during 1925 in the township is 795, Males 489, Females 306. The number of deaths from all causes during the previous 12 years were:—

1913	...	1,053	...	1917	...	676	...	1921	...	692
1914	...	645	...	1918	...	977	...	1922	...	680
1915	...	614	...	1919	...	723	...	1923	...	678
1916	...	633	...	1920	...	1,284	...	1924	...	563

The number of deaths for 1925 is higher than any since 1920. To a large extent this is due to the outbreak of small-pox in the early part of the year. The number of deaths from infectious diseases was 403 (66 due to small-pox) in 1925; whereas, in 1924, the number of deaths from infectious diseases was only 232. Calculated on an estimated population of 37,469 the crude death rate is 21.21 as compared with 13.40 in 1924 and 16.6 in 1923.

The crude death-rate is of little or no value as an indication of the healthiness of the town since it does not take into account the numbers of people who contract a disease in an out-district and come into the town and there die; nor does it allow for the people who contract a disease in the town and go back to the out-districts to die—as Mombasa is the only hospital centre for a very large area the former figures are probably much higher than the latter.

E. General Mortality.

The table of causes of death must necessarily be inaccurate. Even in England this table is of doubtful value owing to the difficulty of ascertaining the primary and secondary causes of death. Thus though the immediate cause of a death might be "heart disease" the primary cause could well have been an attack of rheumatic fever in childhood which originally damaged a heart valve. Confusion arises because, in some cases the true primary cause is known, while, in others, the secondary cause only is ascertainable. This type of inaccuracy is naturally much greater in a town such as Mombasa where an accurate medical history is obtainable in but few of the fatal cases, and, where, in fact, many are only diagnosed from information collected after death from witnesses or relatives.

General conclusions can, however, be drawn from the prevailing types of disease recorded as responsible for the deaths and may be of a certain value.

In 1924 there was a peculiarly low number of deaths in the period 4 weeks to 3 months which has not been repeated in 1925. This return apart from the large percentage of deaths under 4 weeks does not show any features of note.

Infantile Deaths according to Race.

Europeans	...	...	...	...	...	3
Goans	...	...	...	...	...	2
Indians	...	...	...	...	...	68
Arabs	...	...	...	...	...	33
Seychelles	...	...	...	...	...	2
Africans	...	...	...	...	...	39
						147

The number of infantile deaths among the Arabs and Natives is seen to be much lower than that in Indians. This may be due to a lower birth-rate or non-reporting of deaths—probably both. Comparative figures of value cannot be obtained until registration of births and of deaths are both made compulsory.

G. NOTIFICATION OF INFECTIOUS DISEASE.

Disease.	Cases notified.	
	1924	1925.
Small-pox	3	242
Tuberculosis	86	83
Cerebro-spinal fever	4	3
Whooping cough	—	3
Enteric Fever	23	14
Puerperal Fever	1	6
Plague	1	—
Measles	2	22
Leprosy	5	6
Malta Fever	—	—
Erysipelas	1	—

KISUMU.

VITAL STATISTICS.

Estimated Population.

	1923	1924	1925
Europeans	150	141	116
Asiatics	940	950	1,200
Africans	5,000	5,050	6,000
Total	6,090	6,141	7,316

Deaths.

	1923	1924	1925
Europeans	—	2	2
Asiatics	24	29	28
Africans	105	79	101
Total	129	110	131

Crude Death Rate per 1,000 Living.

1923	...	21.2
1924	...	17.9
1925	...	17.9

Causes of Death.

Respiratory Diseases	...	62
Intestinal Diseases	...	14
Malaria and Blackwater	...	7
Tuberculosis	...	4
All other causes	...	44

An attempt was made to arrive at the infantile mortality rates for the year among the various sections of the population of Kisumu by means of a house to house enquiry with the following results:—

Section of the Population.	Number of Births.	Deaths under one year.	Infantile mortality rate per 1,000.
Africans employed by the Uganda Railway ...	104	3	29
General African Population of the Town, excluding Uganda Railway employees ...	196	23	118
Indians employed by the Uganda Railway ...	16	1	63
General Indian population excluding Uganda Railway Indians ...	35	7	200
Goans ...	9	0	0
Europeans ...	4	0	0

The figures though small are of interest in that they appear to reflect the result of improved housing, as the housing provided by the Uganda Railway both for Asiatics and Africans though by no means ideal is far and away better than that occupied by the general native population of the township or the crowded dwellings in the Indian Bazaar.

THE GENERAL NATIVE AFRICAN POPULATION OF THE COLONY AND PROTECTORATE.

In the Annual Report for 1924 it was stated that no information was yet available, on which there could be based estimates of the public health which would allow of comparisons being made from year to year. The statement still holds good. It was also stated that "It is further of importance to remember that owing to unhygienic surroundings and improvidence it is probable that but a small percentage of those individuals who reach adult life are ever fully developed physically and that of the population as a whole there are few indeed who have not at one time or another suffered from some chronic infection." During the year under review no facts have come to light which would suggest that there is any reason to modify the opinion expressed in the preceding paragraph and it may not be without interest in this connection to quote the opinion of a distinguished investigator from Great Britain who visited Kenya during the year. The visitor in question who had spent many years in research connected with problems of animal nutrition, on being afforded an opportunity of observing large numbers of the inhabitants of one of the native reserves recorded it as his opinion that the general standard of physical fitness compared with the average of fitness of the population of Great Britain was not only low but that it was exceedingly low indeed and ventured the further opinion that it was for consideration whether in large part the unfitness of the population was not perhaps due to defective nutrition and therefore preventable.

If the opinions recorded above be correct and if, as is the case in Kenya, it is as yet impossible on account of the absence of any reliable data to make any comparison from year to year, in respect of the state of the public health it becomes a matter of importance to attempt to evaluate by some other means what may actually be happening in the matter of population and what in the light of experience elsewhere may be expected to happen in the future as the result of processes already in operation.

Even if no estimate can be formed with regard to the alterations which may be taking place in the general standard of fitness it is of importance for many reasons at least to be able to formulate some opinion as to whether the population is increasing, decreasing or stationary and in what directions and at what rate changes may be expected to take place; and the matter is none the less important if as in Kenya there is probably a very high infantile mortality rate and a population which either on account of physical unfitness or paucity of numbers or both is apparently at present inadequate to develop the resources of the Country.

Admittedly there are no exact figures available with regard to the present population of the Colony and with regard to the years previous to 1904 no data as to population are to be obtained but from 1904 to 1924 some figures are available.

For the first half of this period the official figures are admittedly mere guess work, but they are of interest in that they show no considerable variations: they are consistently in the neighbourhood of two and a half millions. From 1914 onwards the figures are more accurate, and they vary between 2,797,475 in 1914 and 2,495,065 in 1924. "The Chief Native Commissioner considers that when every allowance has been made for defects in the estimates it is difficult to avoid the conclusion that the population has lately shown a tendency to decline."*

*Report of the East African Commission, 1925, page 185.

There would therefore appear to be some grounds for the anxiety which is not infrequently expressed with regard to the future.

On the other hand it must not be forgotten that the period 1914 to 1924 was one during which a number of severe strains were being experienced by the native population. A sleeping sickness epidemic had during the previous decade swept through parts of the Nyanza Province, and its effects were probably still in evidence: in 1913 a severe epidemic of cerebrospinal meningitis had taken a large toll of lives in the Kikuyu Province: between 1914 and 1918 many thousands of natives died on active service, while many others were more or less incapacitated; in 1918 influenza was responsible for a great increase in the death rate; while in 1919-20 there was a serious famine in many parts of the country. Plague also was spreading during this period, and the long epidemic of yaws was probably at its maximum.

Other factors which were probably not without effect were tolls exacted by the necessity for Railway Construction, at a time when neither the experience nor the machinery essential for the proper care of large bodies of inexperienced labourers was available, and by the employment of bachelor labour in the development of farms and estates. Nor can the heavy toll which is always exacted as the result of the first urbanization of rural folk be left out of account.

Between 1904 and 1924 internal peace was given to the tribes of Kenya; but at the same time economic changes were taking place and development along new lines was in progress. Both peace and development were in relation to the conditions which had previously existed, more of the nature of shocks than of stimulants: the advent of external war in 1914 postponed for at least a decade the devising or application of methods whereby the results of these shocks could be controlled. Increase of population between the years 1904 and 1924 could under the circumstances hardly have been expected.

It is doubtful, however, whether due consideration is always given to the factors recounted above, and it is probable that general opinion in Kenya is to the effect that, without specific instruction in sanitation, in midwifery, and in the elementary principles of hygiene, increase in the native population, or even the maintenance of that population at its present level, is unlikely to be secured. In support of that contention there might not improbably be quoted the following quotation from the Annual Medical Report for the year 1922.

"Two facts favour the continued existence of the native populations of the Reserves: firstly, the high fertility rate of the women, secondly the fact that the population of the country is nowhere very dense and seldom collected into villages of any size. It might almost be said that a third condition is necessary, a continued large infantile mortality. Were the infant mortality rate to fall, while the fertility rate and the sanitary standard remained the same as at present no permanent increase of the population could reasonably be expected."

In considering this quotation however, it must be remembered that it refers only to the Native Reserves; and that, as some parts of these Reserves are more densely populated than others, we must take as the standard the figure of density which the experience of the last 20 years shows can be maintained.

In the Kikuyu, Fort Hall, and South Nyeri Districts the density is over 250 per square mile. In Kavirondo it is from 100 to 150, and in certain areas it is even as much as 600 per square mile.

The density of population for the Colony and Protectorate taken as a whole is about 11 persons per square mile. But the area estimated to be capable of development under existing conditions is only about 60,000 square miles, and if this figure be taken, the density of the population, were it to be evenly distributed, would be about 40 persons per square mile. There would appear to be room therefore for an immense increase of the population, without even reaching the degree of density at which we know from experience that a native population can maintain itself in certain parts of Kenya in spite of circumstances which are insanitary to a degree.

It is surely for consideration whether a considerable increase of population may not be expected as a result of certain changes which are taking place, even though sanitary conditions should for a while remain largely unaltered.

The propositions on which Malthus's Principle of Population is founded are of particular interest in this connection. These propositions are as follows:

1. "Population is necessarily limited by the means of subsistence."
2. "Population invariably increases where the means of subsistence increase unless prevented by some very powerful and obvious checks."
3. "These checks and the checks which repress the superior power of population and keep its effects on a level with the means of subsistence are all resolvable into moral restraint, vice, and misery."

Though however the ultimate check to population appears to be want of food, that is never the immediate check, except in the case of actual famines. "The immediate check may be stated to consist in all customs and all those diseases which seem to be generated by a scarcity of the means of subsistence."

By "vice and misery" Malthus meant "all unwholesome occupations, severe labour, exposure to the seasons, extreme poverty, bad nursing of children, and the whole train of common disease and epidemics, wars, plague, and famine."

Previous to the European occupation, population increase in Africa was limited by many factors; and when on occasion increase did take place, and the ground became exhausted by over-cultivation or over-grazing, expansion or migration was ever curtailed by the difficulties of transportation. War, famine, pestilence, the slave trade, wild animals, all played a part, either in directly keeping the population in check, or by preventing free movement to fresh land. And customs more or less dependent on war, such as female labour, and other customs, such as the circumcision of woman, the origin of which is more obscure, probably played their part in repressing the natural tendency towards increase.

Within the last twenty-five years, however, many of the conditions mentioned in the preceding paragraph have been radically altered. Tribal war no longer occurs, and the slave trade is a thing of the past. Certain epidemic diseases, such as smallpox and yaws, are coming under control. Wild animals and deserts are no longer a bar to expansion; insect pests are being dealt with; production of food crops is being encouraged; and famine can be dealt with not only by the transport of grain into the affected area, but by the transport of a part of the population at least out of the area. Lastly, bachelor labour has ceased to be a desideratum in industry; the dispersion of labourers accompanied by their wives is now definitely encouraged.

There is but little difference in quality between such processes as those which took place when the population of Europe began to colonise America, and those which are taking place to-day in Kenya, where the native population is commencing to occupy the large unoccupied areas of the neighbourhood which now are open to them, but which until the advent of the era of railway construction and motor transport were for all practicable purposes as distant as America. And in some of the tribes the fertility is such that there is an average of between seven and eight live births per married couple. What are the possibilities? If the above fertility rate were general, it would be possible for the native population of Kenya to double itself within the next twenty-five years, in the same manner as the European population of North America doubled itself each twenty-five years over the space of one and a half centuries.

That so great or rapid an increase will take place in Kenya may be improbable; but the experience of the only other part of Africa which has been for any length of time under the influence of changes similar to those now taking place in Kenya would suggest that at least a very large increase may be expected.

In Basutoland the population was 127,000 in 1875: in 1921 it was 500,000.

In the Union of South Africa the native population increased from 2,779,187 in 1891 to 5,409,092 in 1921; while in the Transkeian Territory it increased from 262,705 in 1879, to 962,814 in 1921.

The following extracts from the South African Census Report for 1921 are of interest:—

"Between 1891 and 1911 the non-European population increased 69 per cent., and, owing to a loss in 1918 estimated at 500,000 as a result of the influenza epidemic, the rate of increase for the last ten years was reduced to 15 per cent (16.9 per cent for the Bantu races, 8.9 per cent for Asiatics and 3.7 per cent for the Mixed races).

"The increase in the case of natives is due to natural causes, and there is no indication that these causes are likely to be of diminishing effect."

"To whatever school of thought may belong any persons speculating on this subject the figures quoted above will show that, if the rate of progress in the next fifty years is that of the thirty years 1891—1921, i.e., assuming on the one hand the terms most favourable for the European population not only a natural increase, but a progressive increase by immigration in addition to natural increase, and at a rate proportionate to that recorded in the previous period (in itself a most uncertain ground of expectation), and assuming for the non-European population the most unfavourable conditions such as a serious retardation of natural increase similar to that of the late decennium, in fifty years a population of 6,500,000 Europeans (2,500,000 of whom will be immigrants or the children of immigrants) will live side by side with a population of 16,500,000 non-Europeans.

"In order to point out, however, the importance of immigration it may be said that, allowing for Europeans a 2 per cent. per annum, i.e., a liberal rate of natural increase, but excluding immigration and its consequence the European population would increase to roughly 4,000,000 in fifty years; and the non-European population excluding eventualities of a type similar to the influenza epidemic of 1918, would increase to roughly 19,000,000. In other words, the one race would add 2,500,000 to its numbers, and the other races would add no less than 13,500,000.

"By calculating the progressions on a third basis, less favourable to Europeans, although it represents only a continuance of the actual experience of the last intercensal (1911—1921) period, it will be seen that the European population in 1971 would number only 3,650,000 and by calculating for non-Europeans a 3 per cent. annual increase—a rate far from impossible, if anything is done to check infantile mortality and to improve hygienic conditions—it will be seen that this race would increase to roughly 24,000,000."

Undoubtedly there is a shortage of population in Kenya to-day, and as a result active measures are being adopted to promote an increase. That such steps should be taken is essential; but it is essential also to ensure that the supply will not ultimately overtake the demand before adequate provision has been made to prevent the Malthusian checks of vice and misery from again coming into play.

The result of opening up communications and increasing production might well ultimately be vice and misery, if no radical alteration in the standard of living were to take place; perhaps different vices from those of the past but certainly the same misery, and in the long run the standard of living and of efficiency would go down.

We must reduce the present infantile mortality even if only because it represents a waste of labour; but unless the efforts of the local authority are generally effective in raising the standard of living the results in the long run must be disastrous. It is of little matter that no marked increases of population have yet taken place anywhere in Eastern Central Africa; it is only within the last few years that by the increase of railways and the introduction of motor transport the geographical checks are being removed.

The check of "misery" is still in operation in the Native Reserves of Kenya. If it is not too much to hope that in a few years from now the description "physically unfit" will no longer be accurate with regard to so large a proportion of the population, it is only because modern means of transportation and the methods of scientific industrial management have reached Africa while her population is still sparse, and have not been delayed till, as in the case of India, population had all but outrun the means of subsistence. But the abrogation of the check of misery will not be achieved by measures directed only towards the increase of population. What is required is that there may be brought about such an alteration in the general standard of living that measures specifically directed towards the prevention of infantile mortality may become unnecessary.

EUROPEAN OFFICIALS.

Study of the comparative table of statistics relating to European Officials shows that although there has been an increase during 1925 in the total and average numbers resident the figures relating to sickness, deaths and invalidings are increased out of all proportion. The bulk of the increased number of cases of duty comes under the headings of malaria (increase 63), influenza (increase 61) and local injuries (increase 37).

The figures relating to in-patients and out-patients are as follows:—

	In-patients.	Out-patients.
1925	875	504
1924	594	354
1923	596	275

Deaths among European officials totalled 6 as against 4 in the preceding year; these were due to:—

Cerebro-spinal Fever	1
Sub-tertian Malaria	1
Endocarditis	1
Pancreatitis	1
Duodenal Ulcer	1
Uraemia	1

Thirteen invalidings took place, the cause being:—

Malaria	3
Neuritis	1
Neurasthenia	1
Anaemia and Debility	3
Asthma	1
Nervous Disease	3
Epilepsy	1

In 1924 seven invalidings occurred.

The loan proposals which have been put forward include provision of money for housing of officials; it is to be hoped that work will not long be delayed. Housing at the present time is generally unsatisfactory and in some cases it is no exaggeration to say that it is unfit for human habitation. Kakamega is a case in point and the statistics from that station are disquieting. With an average number of 5.6 officials resident the total number of days sickness amount to 151 and one death occurred. With better housing it is likely that a drop in morbidity would occur.

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
AMONGST EUROPEAN OFFICIALS IN THE COLONY
AND PROTECTORATE OF KENYA.

	1923.	1924.	1925.
Total number of officials resident	1,190	1,280	1,433
Average number resident	846	898	1,001
Total number on sick list	595	594	875
Total number of days on sick list	3,884	4,346	6,667
Average daily number on sick list	10.64	11.90	18.26
Percentage of sick to average number resident	1.25	1.32	1.82
Avg. No. of days on sick list to each patient	6.50	7.31	7.61
Average sick time to each resident	4.59	4.83	4.62
Total number invalided	7	7	18
Percentage of invaliding to total residents ...	.59	.54	.90
Total deaths	4	4	6
Percentage of death to total residents ...	.34	.31	.34
Percentage of deaths to avge. number resident	.47	.45	.59
Number of cases of sickness contracted away from residence	—	—	—

NON-EUROPEAN OFFICIALS.

Co-incident with the increase already commented on in the figures relating to sickness and deaths among European officials a similar increase is to be observed where non-European officials are concerned. Influenza and malaria, as with European officials, provided the bulk of the increase of cases, the figures being 273 and 801 respectively in excess of the previous year.

The comparative figures for in-patients and out-patients are as follows:—

	In-patients.	Out-patients.
1924	2,554	1,050
1925	3,655	1,178

Deaths were eight in number as against five in the preceding year. The causes were:—

Blackwater	...	...	...	...	5
Pneumonia	...	...	...	...	1
Broncho-pneumonia	...	...	...	...	1
Paralysis	...	...	...	...	1

Invalidings totalled 11 as against 12 in 1924. The causes were:—

Debility	...	...	...	...	2
Asthma	...	...	...	...	1
Hernia	...	...	...	...	1
Haemorrhoids	...	...	...	...	2
Mental Diseases	...	...	...	...	2
Neurasthenia	...	...	...	...	1
Rheumatism	...	...	...	...	1
Anaemia	...	...	...	...	1

The general remarks with regard to housing apply to non-European Officials with perhaps even greater force than in the case of Europeans.

TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES
AMONGST NON-EUROPEAN OFFICIALS IN THE
COLONY AND PROTECTORATE OF KENYA.

	1923.	1924.	1925.
Total number of officials resident	2,035	3,064	2,427
Average number resident	1,649	1,653	1,820
Total number on sick list	2,603	2,554	3,655
Total number of days on sick list	13,585	14,729	21,467
Average daily number on sick list	37.22	40.03	58.81
Percentage of sick to average number resident	2.25	2.44	3.23
Avg. No. of days on sick list to each patient	5.22	6.53	5.90
Average sick time to each resident	8.24	8.91	11.89
Total number invalided	35	12	11
Percentage of invaliding to total residents	1.23	.58	.45
Total deaths	2	5	8
Percentage of deaths to total residents	.09	.24	.32
Percentage of deaths to avge. number resident	.12	.30	.44
Number of cases of sickness contracted away from residence	—	—	—

III. MAJOR ENDEMIC AND EPIDEMIC DISEASES.

I. YAWS.

The total number of cases treated in hospitals, at dispensaries, or by medical officers on tour, is 5,000 in excess of that of 1924. The actual figures are 50,584 as against 45,527.

The number of cases treated during the past five years are as follows:—

1921	...	...	...	7,401
1922	...	...	...	24,233
1923	...	...	...	64,344
1924	...	...	...	45,527
1925	...	...	...	50,584

The effects of the campaign which has been conducted are difficult to estimate. No figures of any kind are available and opinions differ in the different districts. In the Fort Hall area it is considered by missionaries and administrative officers who have been in the district for some time that the amount of obvious yaws has decreased very appreciably. In South Kavirondo on the other hand the impression is that little headway has been made.

The drug that has been used consistently during the year in combating the disease has been, as heretofore, sodium potassium bismutho tartrate. On account of the transfer of the chemical officer who worked out the method of manufacture in the Medical Laboratory the local supply has ceased and it will be necessary in future to obtain the salt from outside sources.

Information as to the results of treatment as judged by the effect on the Wasserman and Sigma reactions is being collected. Though it is too early to make a definite pronouncement there appears little doubt that the tendency under treatment by bismuth is for the reactions to tend to become negative, thus agreeing with the results known to occur in cases of syphilis.

The great difficulty which has previously been noted in inducing patients to attend regularly for treatment has again been experienced. The native is very difficult to convince that after the external lesions are healed it is still necessary to attend. The system of payment for treatment by N.A.B., which it is hoped to introduce in 1926 in certain districts and which is mentioned in connection with the remarks under " Syphilis " may be found to be an important factor in dealing with yaws also. In South Kavirondo a careful record was kept of patients and their attendances. It was found that of 1,000 patients who applied at Kisii for treatment only 55 returned for a second injection. Three received three injections and one received four. The factor of distance may play a considerable part in the causation of irregular or insufficient attendance. With the expected increase of staff it will be possible to devise a means of bringing treatment more nearly to the people.

A considerable number of " relapses " are met with after single injections or injections at irregular intervals. As pointed out by the Medical Officer, South Kavirondo, such relapses are not relapses at all but are cases which have never received, from their own default, enough treatment to prevent the recurrence of lesions or even to cause healing of the original lesions. At the same time something is gained by even one injection; this frequently causes secondary lesions to dry up and the patient to become presumably non-infective for periods of from three to six months.

II. SYPHILIS.

The total number of cases treated during the year shows an increase of 2,000 over 1924.

The figures for the past five years are as follows:—

1921	...	...	...	...	1,914
1922	...	...	...	...	2,896
1923	...	...	...	...	6,532
1924	...	...	...	...	11,492
1925	...	...	...	...	13,581

The large majority, nearly 70 per cent. of the cases is reported from Central and South Kavirondo, where Syphilis and Yaws coexist and where there is evidence that the disease is spreading, though how great is the increase there is little to show. The reports from the Kikuyu and Akamba countries are to the effect, as has previously been noted, that the disease is rare possibly, at any rate among the Kikuyu, on account of the wide-spread incidence of Yaws. From Fort Hall only 15 cases were reported for the year and these were traceable to a Swahili village in the district.

Among the Kavirondo elders there is a considerable and increasing feeling of uneasiness at the presence and extent of the disease in their midst. The local native councils in the district are taking serious interest in the problem and there is a healthy growth of public opinion on the matter, whether the growth of public opinion affects as yet any considerable section of the young men and girls is a doubtful point. Money has been voted by the Central Kavirondo Native Council which it is proposed shall be spent on the purchase of N.A.B. to be used in the campaign against the disease.

The difficulty of securing regular attendance and continuous treatment which was stressed in the section on yaws applies equally in the case of syphilis. A scheme has been worked out and will be put into operation in 1926 in Kavirondo which it is hoped will improve matters. This is based on the faith of the people in treatment by N.A.B. It is proposed to charge a fee of Shs. 10/- for a course of six injections of N.A.B. plus mercury or bismuth. The fee will be collected before treatment is begun. It is considered that large numbers will avail themselves of the opportunity afforded to obtain N.A.B. treatment and that the charging of a fee will ensure the regular attendance of those who have parted with their money at the outset. The difficulty will lie in securing identification of patients who have paid, but that can probably be overcome by means of the system of the issue of metal discs which was referred to in the previous Annual Report. Injections will require to be given by the medical officer who, in Central Kavirondo, will transfer his headquarters from Kisumu to Maseno, the site of the Church Missionary Society Hospital, where he will be able to attend once a week at dispensaries conveniently situated for the attendance of the population, where injections will be given. The co-operation suggested is welcomed by the Mission. The new arrangement, from the more central position of Maseno, will necessitate less travelling and a corresponding saving in the travelling vote. The difference between receipts and the cost of N.A.B. will be covered by the vote from the Local Native Council.

The free administration of injections of bismuth by trained dressers will be continued as before at the various sub-dispensaries. No attempt will be made to induce patients to part with their money for injections of N.A.B. if they are anxious to receive treatment free of cost. Every effort will continue to be made to obtain regular and continuous treatment; the new scheme is definitely designed towards this end.

The arrival of staff at the end of the year allowed, in Nairobi, a commencement to be made towards the establishment of definite venereal disease clinics in connection with the child welfare and ante-natal treatment centres under the direction of the medical officer of health. The new activities have been too short a time in existence to comment on their usefulness though there is little doubt as to their need.

The routine treatment in practice throughout the year was by injections of sodium potassium bismutho tartrate.

III.—LEPROSY.

A total of 375 cases have been treated during 1925 of which 202 remained from the previous year. There is no improvement to be reported in the accommodation provided for leper camps. Consideration has been given by the Central Kavirondo Local Native Council to the provision of a settlement where patients can reside and where treatment can be given.

Routine treatment has continued to be given at Mombasa, Nairobi, Kakamega and Kisii. At Kisii, where the treatment given had consisted in weekly injections of moogrol with potassium iodide by mouth, the results were so disappointing and there was so much complaint at the pain caused by the injections that a change was made to injections of sodium morrhuate and sodium hydnoearpate with tablets of sodium hydnoearpate A by mouth. It is too early to state results.

At Kakamega on the suggestion of the sub-assistant surgeon intravenous injection of pure chaulmoogra oil have been given. The effects are stated to be good but the violent reaction, viz., coughing and retching, which supervenes immediately after the injection is alarming; the patients however do not attempt to evade their weekly treatment. The dose used is from 5 to 20 minims. Favourable results are again reported from Nairobi from the administration of the ethyl esters of the fatty acids of chaulmoogra oil. A few patients apparently recovered have been employed at the infectious diseases hospital and have showed no sign of relapse or of becoming infective again.

The concensus of opinion as to the results of treatment is on the whole not very favourable but it must be remembered that the cases present themselves usually in an advanced stage of the disease when treatment is not very satisfactory.

IV.—TUBERCULOSIS.

The number of cases reported as treated at Hospitals and Dispensaries for the past three years are as follows:—

Year.	Cases	Deaths.
1923	380	68
1924	528	72
1925	435	84

The above figures representing as they do only cases which have been treated at Government Hospitals and Dispensaries give no indication of the degree to which Tuberculosis may be prevalent.

The disease is notifiable and in Nairobi and the surrounding Districts 99 cases in all were reported from various sources. Of these cases 44 occurred in Nairobi and 55 in the Kiambu and Nairobi Districts as compared with 34 cases from both areas in 1914 and 23 cases in 1923. Partly the larger numbers are due to improved notification but it is not improbable that to some extent they are the result of an increasing prevalence of the disease.

Of the total cases notified 7 were European, 3 Asiatic, and 89 African and 43 were known to have proved fatal.

In Mombasa 83 cases were notified and 67 deaths were recorded.

V.—PLAGUE.

1.—INCIDENCE OF THE DISEASE.

Nyanza Province.

SOUTH KAVIRONDO DISTRICT.—A number of small isolated outbreaks occurred during the year.

CENTRAL KAVIRONDO DISTRICT.—A few isolated cases were reported.

NORTH KAVIRONDO DISTRICT.—572 cases of plague were reported during the year. The reports are, however, not very reliable and probably include many cases which were not plague. The figures for 1924 and 1923 were 276 and 411 respectively.

KISUMU DISTRICT.—No cases were reported.

KISUMU TOWNSHIP.—No cases occurred within the township area. Two cases were brought in from the neighbouring district of Central Kavirondo and four cases were landed from one of the Lake steamers. Two infected rats were found during the year under circumstances which suggested that they had been imported by water. No epizootic resulted.

SUMMARY: NYANZA PROVINCE.—The incidence of plague throughout the province was low.

Ukamba Province and Kikuyu Province.

Nairobi Municipal Area and Nairobi District (Ukamba Province).

Kiambu District (Kikuyu Province).

49 cases of Plague were reported, of which 8 occurred in Nairobi and 41 in the Nairobi and Kiambu districts, as compared with 83 cases from both areas in 1924. Of the total cases 3 were Asiatic and 46 African. 37 of the cases proved fatal, which is equivalent to a case mortality of 75.5 per cent. In Nairobi the first case occurred in May, an adult male African, who had succumbed to the disease, being found dead near the Municipal depot. No information could be obtained as to how or where the infection had been acquired. In June a second case was recorded, a male African child, who had arrived from Kikuyu two days previously, being found dead in the Uganda Railway quarters. A post mortem examination recorded the fact that he had died of Plague. A third case was reported in August, a male African adult being found dead at the Railway Station in a train which had arrived from Kikuyu, his death proving to be due to Plague. A similar case occurred in September, another male African adult being discovered dead at the Railway Station in a train from Thika, death again being caused by Plague.

The usual precautions to prevent the spread of the disease were adopted in each instance and none of the four cases gave rise to an outbreak of the disease in the town. In November a small outbreak of Pneumonic Plague occurred. One Indian youth suffering from this form of the disease arrived in the town by road from Thika, spent a night in the Indian Bazaar and died the following morning. In spite of prompt notification and the measures which were adopted, two other Indians who had been in contact with the first case, but who were living in another house in the Bazaar got infected. They were immediately removed to the Infectious Diseases Hospital, together with all immediate contacts. The premises in which the cases occurred were thoroughly disinfected and closed for a week and persons dwelling in the neighbourhood were inoculated. Although the measures adopted caused considerable inconvenience to the persons concerned and resulted in some disorganisation of trade they were successful in stamping out the disease, as no further cases occurred in the Bazaar. Unfortunately an African dresser, who was in attendance on the Indian patients in hospital, also acquired the disease, and all three cases had a fatal termination. The outbreak gave rise to considerable anxiety and hospital accommodation was taxed to its full capacity.

In addition to the human cases recorded above, an outbreak of Plague amongst rodents also occurred, Plague infected rats being discovered in the Railway goods sheds in September. Intensive measures for the destruction of rats were immediately instituted in the area, the goods sheds were thoroughly disinfected and cleansed and no further trouble was experienced.

In the Kiambu and Nairobi districts sporadic cases and small outbreaks of the disease occurred throughout the year, both in the Native Reserves and on European Estates, but nothing in the nature of a serious epidemic was recorded, although many cases of the disease occurred in the adjoining Fort Hall district.

The outbreaks were investigated in each instance by a member of the Health Office staff and measures taken as facilities permitted to prevent the further spread of the disease.

In the great majority of cases the bubonic type of the disease was met with, but other forms of Plague were also seen. As in past years the origin of most outbreaks remained obscure. Inferior types of housing and insanitary conditions in general, which are found not only in the Native Reserves but on European Estates as well, provide almost ideal facilities for the spread of the disease, and until there is a marked improvement in general sanitation and better housing is provided outbreaks of the disease may be expected to recur.

Fort Hall (Kikuyu Province).

Plague was more or less epidemic in the Fort Hall Native Reserve practically throughout the year and exacted a large toll of deaths. It is impossible to arrive at even approximate figure of the numbers of deaths which may have occurred but it is unlikely that the number was less than a thousand and not improbable that it was considerably greater. The area involved was larger than that involved in the epidemic which occurred in this District in 1923. The district is very thickly populated and the sanitary standard of the native "villages" is low. The huts are of poor construction but are very thickly thatched and as a consequence the facilities afforded for the harbourage of rats are abundant and rat destruction is proportionately difficult. Preventive measures were confined to the inoculation of the inhabitants and in certain cases the evacuation of infected villages.

Naivasha Province.

In October cases of plague were reported from farms in the maize growing district of Nakuru. In all 9 cases occurred as compared with 53 in the previous year.

Seyidi (Coast) Province.

No cases occurred.

2—ANTI-PLAGUE MEASURES.

(a) Methods adopted in Townships.

Rat destruction was continued as usual in the larger townships of Nairobi, Mombasa and Nakuru. Barium carbonate was used for poisoning and "break-back" traps for trapping. The numbers of rats destroyed in the three towns mentioned were as follows:—

	1923.	1924.	1925.
Kisumu	7,911	5,591	4,087
Nairobi	12,485	17,738	19,908
Mombasa	14,536	10,957	19,291

Certain improvements were carried out at Kilindini with a view to rat-proofing the wharf frontage and two large railway goods sheds at Kisumu pier were provided with concrete floors.

(b) Methods adopted in Native Reserve.

Rat destruction campaign in the Central and North Kavirondo Districts.

This campaign was continued as usual, the totals for the past five years are given in the following table:—

Rats destroyed in Central and North Kavirondo.					
	1921. 6 months only.	1922. 12 months	1923. 12 months	1924. 12 months	1925. 12 months
Central Kavirondo ...	983,387	1,456,586	751,920	627,122	940,203
North Kavirondo ...	1,085,704	2,118,616	1,816,493	1,303,288	997,213

(c) **Inoculation with Anti-Plague Vaccine.**

61,417 doses of anti-plague vaccine were manufactured at the Laboratory in Nairobi during the year for use in various parts of the country. No figures are available with regard to the degree of immunity which inoculation may provide.

RAT-DESTRUCTION RETURN: NORTH KAVIRONDO AND NANDI RESERVES, 1925.

Location.	Chief.	Huts.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
			No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	No. of Rats.	
Wanga.	Mumia.	7,277	—	—	262	—	2,920	—	—	—	—	1,320	—	900	0.7
Marama.	Malama.	8,196	1,412	1,890	5,223	5,836	14,554	2,574	7,568	4,999	12,141	23,652	6,390	10,173	11.7
Kisa.	—	1,759	—	1,060	1,230	810	4,100	—	—	—	—	225	300	2,360	5.7
Bunyore.	—	9,393	13,820	9,022	5,557	12,440	—	8,390	—	5,300	3,710	—	15,405	21,620	10.1
E. Kakamega.	Osore.	2,735	4,304	5,824	9,036	4,530	—	3,136	—	5,341	3,432	—	11,294	3,123	18.2
Watsetse.	Mutsembe.	1,557	1,615	2,194	3,510	2,540	2,032	4,230	4,180	1,070	1,718	1,000	5,030	4,429	21.5
W. Kakamega.	Mulimo.	5,636	42,436	—	24,035	—	—	—	—	—	—	15,230	1,200	—	14.7
Mukulu.	Rapando.	1,688	1,000	—	4,300	1,005	1,060	1,290	1,007	1,230	—	1,480	—	—	7.3
Kakalelwa.	Ndombi.	1,653	2,240	1,200	1,225	1,107	1,613	3,330	—	910	3,000	1,710	—	2,290	11.2
Kabaras.	Mwanza.	2,912	3,476	—	—	3,315	—	—	—	7,000	1,800	—	—	—	2.3
N. Kitosh.	Murunga.	9,185	1,600	—	5,290	16,612	11,910	4,000	7,701	7,000	40,136	6,422	3,310	1,360	6.3
S. Kitosh.	Sudi.	6,922	6,325	—	8,504	2,574	—	—	—	—	5,426	1,330	4,060	—	3.8
Wania.	Lukoli.	6,000	4,910	287	—	5,965	—	—	—	—	—	—	—	—	2.1
Maraach.	Oduya.	4,581	1,400	2,600	1,700	2,000	—	1,100	805	—	—	—	—	1,200	9.2
Ohayo.	Makero.	4,815	2,300	9,855	—	4,430	2,200	6,793	2,140	—	5,539	1,600	—	9,800	9.2
Waholo.	Were.	2,596	1,232	—	2,065	1,900	4,057	—	3,407	1,163	2,054	1,680	—	4,500	8.4
Tiriki.	Amiani.	4,494	—	5,400	14,400	6,900	470	5,300	—	9,200	—	10,600	3,000	6,500	13.7
S. Maragoli.	M'nubi.	5,951	8,570	6,450	14,210	5,960	12,280	9,220	5,090	5,673	3,610	20,870	7,740	1,250	16.9
N. Maragoli	Shivachi & Odanga	9,371	16,463	18,054	38,860	17,652	6,620	22,158	9,684	17,610	10,147	12,900	12,517	12,271	20.8
Kakamega.	Town.	—	—	—	—	58	64	74	75	104	146	187	136	278	—
		96,721	113,103	63,836	139,407	95,634	63,880	71,595	41,657	59,600	92,859	10,0206	70,382	85,054	997,213

RAT-CATCHING RETURN: CENTRAL KAVIRONDO DISTRICT, 1925.

Location.	Chief.	Huts.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	October.	Nov.	Dec.	Total.			
			Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.	Number of rats.		Number of rats.		
Alego	...	16,158	...	11,550	—	—	—	6,735	—	—	3,150	—	2,580	6,570	...	30,585	1.8	
Asembo	...	5,407	...	3,170	—	3,960	—	—	—	—	—	250	—	420	...	9,530	1.7	
N. Gem	...	8,628	...	3,000	1,390	—	3,160	—	—	—	2,560	4,550	—	1,910	...	19,240	2.2	
S. Gem.	...	6,199	...	4,850	—	6,920	4,090	—	7,000	—	—	2,590	2,530	3,280	...	31,260	5.0	
Kadimu	...	2,201	...	—	1,050	1,630	340	—	—	—	—	960	—	2,600	...	6,580	2.9	
Kajulu	...	2,096	...	—	940	—	—	—	—	—	2,000	—	—	—	...	2,940	1.4	
W. Kano	...	7,474	...	1,420	—	—	—	—	—	—	—	—	—	—	...	1,420	0.1	
E. Kano	...	9,032	...	—	—	—	—	—	—	—	—	—	—	—	...	—	—	
Kisumu	...	5,643	...	4,900	11,200	8,470	4,620	—	—	—	—	—	—	—	...	29,190	5.1	
Nyakatch	...	7,741	...	—	—	—	—	—	—	—	—	—	—	—	...	—	—	
Nyangori	...	2,232	...	6,710	9,260	8,290	12,135	—	—	—	5,860	8,340	4,560	6,240	...	61,395	27.5	
Sagam	...	1,829	...	1,925	—	1,940	1,392	6,290	1,030	—	—	—	—	—	...	12,577	6.8	
Sakwa	...	4,981	...	—	—	—	—	1,383	—	—	900	—	—	338	...	2,621	0.5	
Samia	...	12,692	...	10,770	48,200	—	—	47,105	—	—	57,200	29,700	30,000	—	...	222,975	17.5	
Seme	...	10,145	...	—	157	—	—	—	—	—	—	—	—	—	...	157	0.0	
S. Ugenya	...	2,276	...	2,630	3,300	—	—	—	—	—	8,040	2,830	—	—	...	16,800	7.3	
N. Ugenya	...	8,783	...	7,680	3,040	6,110	—	10,250	—	—	6,890	2,230	—	—	...	36,200	4.1	
Uyoma	...	4,294	...	—	1,100	—	—	630	1,363	—	—	470	490	710	...	4,763	1.1	
		117,811	...	34,165	93,947	30,920	34,467	61,328	24,638	8,030	—	86,600	51,910	40,160	22,068	...	488,233	—

VI. SMALLPOX.

The history of smallpox in Kenya during the period 1915-1925 together with the number of vaccinations recorded as having been performed is summarised in the following table:—

SMALLPOX AND VACCINATION IN KENYA, 1915-1925.

Year.	No. of Vaccinations.	No. of cases of smallpox recorded.	Remarks.
1915	162,184	38	
1916	977,055	2,513	The number of cases which occurred during 1916-17-18 was probably greatly in excess of the numbers recorded.
1917	297,303	1,520	
1918	428,079	2,576	
1919	263,829	543	
1920	139,753	(about) 200	Localised outbreak in the coastal district of Vanga.
1921	58,909	200	Localised outbreak in the Tana Valley in the Coast Province.
1922	57,246	Nil	Smallpox present in the neighbouring territory of Tanganyika.
1923	56,345	(about) 100	Localised outbreak in the coastal district of Vanga.
1924	35,767	1	Diagnosis in this case doubtful.
1925	352,486	239	Fresh infection from Bombay.

The following points may be noted with regard to the figures given in the above table:—

- No case of smallpox is recorded as having occurred outside of the coastal districts since 1919.
- Though large numbers of vaccinations are recorded as having been performed during the years 1915 to 1924 the great majority of these vaccinations were carried out previous to 1919.
- The majority of the vaccinations recorded as having been performed previous to 1921 were carried out by native vaccinators working under but little supervision. It is known that in many instances the returns were unreliable and that much of the vaccination previous to 1921 was carried out under such circumstances as must have precluded a high success rate.
- The figures for vaccinations performed during the period 1921 to 1924 are much more reliable than those for previous years and they represent vaccinations carried out with a satisfactory lymph and under a fair degree of supervision. The percentage of successes was probably high. At least a third of the figures given, however, refer to revaccinations and probably at least two-thirds of the figures refer to adult males.

The native population of the Colony and Protectorate is entered at about two and a half millions. The vaccinal condition of the population at the beginning of 1925 was not therefore satisfactory, as it was improbable that more than about two hundred and fifty thousand persons had been actively immunised against smallpox during the previous five years. Further such vaccination as had been carried out had largely been confined to adult males in employment and to the wives and children of natives resident in townships. The general male population of the Native Reserves was protected only to a small extent while the female and child population of those Reserves was for all practical purposes unprotected.

That the vaccinal condition of the population has never been satisfactory has always been recognised by the Medical Department and the curtailment of vaccination in 1921 as the result of the discharge of considerable numbers of native vaccinators had been deliberately effected as part of a policy aimed at securing a generally well vaccinated population. That step had been taken because it was felt that to carry out vaccination in an inefficient manner not only served no useful purpose but was in fact not unlikely to render the execution of a general and effective campaign at a later date difficult, if not impossible. It was hoped, by ensuring that vaccination was never carried out unless with adequate precautions and under proper supervision that the fear with which the operation was not infrequently regarded by many tribes might be overcome and also that as a result of the confidence established by the widespread treatment of yaws it would not be impossible at a later date to carry out an extensive and effective vaccinations campaign when adequate European staff should be available.

The events of 1925 have more than justified the hope expressed in the preceding paragraph as it has been found that wherever arrangements could be made for the performance of vaccination under adequate supervision there was but little difficulty in securing the vaccination of a very large percentage of all the men, women, and children of any native area within a very short period. The rate at which vaccination could be performed was in fact so much greater than had been anticipated that considerable difficulty was experienced during the earlier months of the year in maintaining the necessary supply of vaccine lymph.

One further observation may be made with regard to the table at the beginning of this Section. There is no evidence to suggest that any of the localised outbreaks recorded in the coastal districts during the years 1920 to 1923 were occasioned as the result of new importations of smallpox into Eastern Africa; these outbreaks were in all probability the aftermath of the severe epidemic which had swept over Kenya and the adjacent countries during the period 1916-1919. An interesting fact in this connection is that though a case of confluent smallpox was found wandering at large in Mombasa in 1923 no further cases occurred in the town as a result. The source of the infection in this case was not traced but it is exceedingly unlikely that it had its origin further afield than one of the neighbouring districts.

During 1924 only one case of smallpox was reported for the whole of the Colony and Protectorate, the diagnosis was never confirmed and it is more than doubtful whether the case was smallpox. It is probable therefore that at the end of 1924 the Colony and Protectorate had been free from smallpox for over a year.

Under these circumstances the introduction of a fresh strain of smallpox into the Colony from overseas in 1925 gave rise to considerable anxiety and it was necessary from the outset to take active measures to secure the vaccination or revaccination of as many of the population as was possible and with a minimum of delay.

Small-pox in Mombasa.

The first case came to notice on the 23rd of January when an African Native was found to be suffering from small-pox in Mombasa. A second African case was found on the 27th and a third on the 29th January. On the 30th three Indian cases were discovered and a request for a death certificate on the same date for an Indian child which on inspection was found to have died of hæmorrhagic small-pox revealed the fact that the infection must have been established in the town for some weeks. No further cases were found till the 8th of February but from that time on cases were discovered almost daily, the total number admitted to the Infectious Diseases Hospital during February being fifty-seven Asiatic and African and one European.

Source of the Infection.

It was established later that the source of the infection was an Indian child which had developed small-pox within a few days after landing from the B.I.S.N. Coy's. S.S. "Karapara" on the 2nd January ex Bombay.

Vaccination.

On the discovery of the first case on the 23rd January the Medical Officer of Health, Mombasa, at once took active steps to secure the vaccination of the population of the Island. The vaccination campaign actually began by the protection of the people who were known to have been in contact with the first cases. This completed, the whole staff of the Health Office including European Sanitary Inspectors and Health Visitors and as many of the orderlies and dressers from the Infectious Diseases Hospital as could be spared was diverted from its ordinary duties and utilised for the purposes of the vaccination campaign. The population of Mombasa is mainly African and Asiatic and was officially estimated at 41,000 in 1921. It is probable however that the figure is now nearer 50,000.

The Heads of all the Asiatic and Arab Communities were interviewed by the Medical Officer of Health and vaccination was offered at any time or place where sufficient people could be gathered together. Missionaries were approached and arrangements were also made with Heads of Schools, Government Departments and Mercantile and Shipping Firms and the assistance of the Press was solicited. The response was in all cases excellent and some difficulty was experienced in vaccinating all those who presented themselves. All the port labour was inspected and vaccinated before going on board ships to unload cargo and in the town house to house visiting was instituted.

By the 19th of February, i.e., in less than three and a half weeks, over twenty-three thousand persons had been vaccinated without any compulsory measure being required. As, however, that number represented little more than half the population of the town and cases of small-pox were still continuing to occur it was felt that further action must be taken to secure the vaccination of the bulk of the remainder with as little delay as possible. Notices were therefore published in the local paper requiring that all persons who had not been vaccinated since the 23rd January should present themselves at the Health Office between the 21st and the 24th of February at the hours 8 a.m. to 12 noon and 2 p.m. to 4 p.m. The town crier was also sent round giving out the order in Kiswahili. The order was made under the powers conferred by the Public Health Ordinance, 1921. The response was remarkable; the number of persons vaccinated at the Health Office during the four days, February 21 to 24, being 9,468 while a further 2,767 were vaccinated in the morning of the 25th. It is interesting to note that on the 23rd alone 4,321 vaccinations were performed.

Results of Vaccination.

In a campaign conducted on a large scale and in an emergency it is not possible to collect figures with regard to the success rate. All that can be said is from general observation the rate appeared to be high.

It is satisfactory to be able to record that the vaccinations performed were in no cases associated with serious results. The Senior Medical Officer at the Native Hospital reports that only about twenty Africans and Asiatics attended as out-patients to have their arms dressed and that only one person was admitted to Hospital as an in-patient with a septic arm following vaccination; this latter case cleared up rapidly.

No case of general vaccinia was seen.

A study of the details of cases of small-pox admitted to Hospital shows that no case of small-pox occurred amongst persons protected by recent vaccination although a considerable number occurred in persons vaccinated during the incubation period.

The following figures of cases of small-pox occurring in people vaccinated during the incubation period are of interest:—

Estimated stage of incubation when vaccinated.	No. of cases occurring.	No. of cases very mild.	No. of cases severe.	No. of cases confluent.	Deaths.	Deaths to cases
2nd day	1	1	—	—	—	Nil.
3rd day	1	1	—	—	—	Nil.
4th day	3	1	—	2	—	Nil.
5th day	4	1	2	1	1	25%
6th day	5	1	2	2	—	Nil.
7th day	11	—	8	3	2	18%
8th day	6	—	5	1	—	Nil.
9th day	4	—	3	1	1	25%
10th day	—	—	—	—	—	—
11th day	2	—	1	1	—	Nil.
12th day	2	—	1	1	1	50%
	39	5	22	12	5	13%

During the period 23rd January to 21st March seventy two cases of small-pox in persons unprotected by recent vaccination were admitted to hospital and seventeen deaths occurred amongst these. The percentage of deaths to cases was therefore 24, as against 13 in cases vaccinated during the incubation period.

The course of the epidemic together with the numbers of vaccinations performed in the township and in the rural districts of the adjoining mainland are given in the following table. The vaccinations on the mainland were for the most part carried out by medical officers specially detailed to tour these districts for this purpose.

Period.		Vaccinations performed in Mombasa.	Vaccinations performed in Mainland districts.	Cases of small-pox admitted to Hospital in Mombasa (including 44 cases admitted from the Mainland).
Jan.	1st—23rd	...	22	1
"	24th—31st	...	5,564	5
Feb.	1st—7th	...	7,448	1
"	8th—14th	...	5,858	21
"	15th—20th	...	4,856	15
"	21st—25th	...	12,235	17
"	26th—4th Mar.	...	4,974	14
Mar.	5th—11th	...	2,212	14
"	12th—18th	...	1,041	4
"	19th—25th	...	1,031	7
"	26th—1st April	...	1,474	6
April	2nd—8th	...	910	4
"	9th—15th	...	671	4
"	16th—22nd	...	589	4
"	23rd—29th	...	3,358	8
"	30th—5th May	...	1,742	2
May	6th—11th	...	2,013	2
"	12th—18th	...	1,826	5
"	19th—25th	...	1,518	2
"	26th—30th	...	2,547	4
June	1st—6th	...	—	2
Total		...	61,889	29,319
				142

Note.—No further cases occurred in the Town of Mombasa after 6th June.

Hospital Accommodation and Treatment.

All cases were treated at the Infectious Diseases Hospital in Mombasa. Considerable difficulty was experienced at the beginning, owing to the fact that a sufficient number of trained African dressers was not available. As a result, however, of the energy and enthusiasm displayed by the two European Nursing Sisters who from early in February were in charge of the nursing arrangements and who from the 27th of February onwards were in residence at the hospital a very high standard of nursing was soon achieved and the confidence of the general public was obtained. The greatest credit is due to the two ladies in question for their work during the epidemic.

All cases were bathed twice daily with a lotion of permanganate of potash.

Only two cases developed corneal ulcers after admission to hospital.

Up to the end of April 127 cases were admitted to hospital and of these 30 died, giving a case mortality of 23.6%

Only one case occurred in a European. This was that of an unvaccinated male adult and ended fatally.

Outbreaks elsewhere than in Mombasa.

OUTBREAKS IN THE NEIGHBOURHOOD OF MOMBASA.

The infection was at an early date during the outbreak carried to the Mainland and cases occurred at numerous points in the districts in the immediate neighbourhood of Mombasa. As recorded above Medical Officers were specially detailed to carry out vaccination in these areas and between February 11th and May 25th 29,319 vaccinations were performed. The number of cases of small-pox which occurred in these neighbouring districts between January and June was limited to 44. These cases were transferred to Mombasa by motor ambulance and are included in the numbers recorded above as having been treated in the Hospital in that town.

In November and December two small outbreaks involving 9 and 5 cases respectively occurred on the Mainland immediately south of Mombasa Island.

OUTBREAK AT NJOLE.

Early in July cases of small-pox were reported from Njole, a village on the Mainland some 25 miles south of Mombasa. The outbreak lasted till the 22nd of August and seventy-two cases occurred. A European Sanitary Inspector was posted in the affected area and all the cases were removed to Mombasa by motor ambulance as soon as they came to notice. In connection with this outbreak 4,000 vaccinations were performed.

OUTBREAK AT SEYU.

A small outbreak comprising 19 cases in all occurred at Seyu on a small island on the coast, north of Mombasa, during April.

OUTBREAK IN THE TEITA DISTRICT.

On the 10th of March a case of small-pox was reported from Mwanda in the Teita District about 150 miles inland from Mombasa. A Medical Officer was despatched to the district on the 13th March and remained there till the 9th April. During that period he carried out 11,947 vaccinations. The outbreak was limited to 26 cases.

OUTBREAK IN THE KERUGUYA SUB-DISTRICT OF THE KIKUYU PROVINCE.

On the 13th April the Medical Officer, Fort Hall, was informed that a native woman had died of small-pox in a neighbouring district and that two women and two children were also said to be ill of the disease. Inspection of the cases confirmed the diagnosis and on a search being made in the neighbourhood 16 cases were found during the ensuing three days. The Keruguyu sub-district in which these cases had occurred is part of the very thickly populated Kikuyu Native Reserve and as the sub-district itself has a population of between 60,000 and 70,000 persons and a density of population of about 250 to the square mile while in the Kikuyu Province as a whole there is a population of about three quarters of a million, the possibilities of a very serious outbreak were considerable. The Medical Officer, Fort Hall, was therefore immediately transferred to Keruguya and in conjunction with the Assistant District Commissioner in charge of the district an intensive vaccination campaign was commenced and between the 19th of April and the 31st of May 66,284 persons were vaccinated. The total number of cases which occurred was 34 with 9 deaths and on the 31st of May the last cases were discharged from the temporary hospital in which they had been accommodated and the hospital was dismantled.

Considering the fact that some 18 cases of small-pox had remained unisolated for from ten days to two weeks before the discovery of the first cases on the 13th of April the district must be considered fortunate in that a serious epidemic did not result and the greatest credit is due to the Medical Officer responsible for the campaign and to the Assistant District Commissioner without whose active and whole time assistance it could not have been carried out.

VACCINATION IN AREAS NOT INFECTED WITH SMALL-POX.

Immediately on the occurrence of the first case of small-pox in January steps were taken to ensure the vaccination or revaccination of all persons living in townships on the Uganda Railway or at administrative centres. In Nairobi in particular an intensive campaign was carried out as it was hardly to be expected that the infection could be confined to Mombasa. It is of interest to note, however, that only one case of small-pox was introduced into Nairobi during the year and that this case did not come from Mombasa but from Keruguya. The previous movements of the native in question were carefully investigated by the Health Office Staff, as many contacts as could be discovered were vaccinated and no further cases resulted.

MOBILE VACCINATION TEAM.

An interesting and successful experiment which was made early in the year was the establishment of a Mobile Vaccination Team.

The team consists of an European Sanitary Overseer in charge, an ex native N.C.O. of the King's African Rifles in sub-charge and four native vaccinators. It is provided with a Ford box body car for transport. The equipment consists of the necessary table, basins and other articles necessary for carrying out vaccination. Tents and rations are also carried. A drill order has been laid down and the vaccinators have been taught exactly how to arrange themselves and their equipment so that very large numbers of

persons can be vaccinated without disorder or confusion. This team continued in commission throughout the remainder of the year. It was first employed in Nairobi for training and subsequently it was sent on tour through the farming districts in the neighbourhood and all employed natives on farms and estates were then vaccinated. On the completion of that work the team commenced a tour of the large neighbouring Native Reserve of Kiambu. The Reserve was mapped out into areas and no area was left until it was reasonably certain that practically all the inhabitants, men, women and children had been vaccinated. The population of the Kiambu Reserve is estimated at about 104,000 and the campaign lasted from May till December. During that time 82,941 vaccinations were performed giving an average rate of 460 vaccinations per working day. At the date of writing the team is engaged in vaccinating the population of the Ukamba Reserve and it is intended to proceed in this fashion during 1926 and until the whole population of the Colony and Protectorate has been vaccinated. It is hoped that in some districts at least it may be possible to follow up the work of the team and secure a continuing satisfactory vaccinal condition of the population by instituting measures for the vaccination of infants as a routine.

SUPPLY OF VACCINE LYMPH.

An account of the steps which were taken to increase the supply of vaccine lymph in order to meet the unexpected demands which were suddenly made at the beginning of the year is given in the Report of the Director of Laboratories.

As a result of the experience of the past year the stock of vaccine lymph held at the laboratory has been raised to 500,000 doses.

VII.—CEREBRO-SPINAL FEVER.

Thirty cases only with 22 deaths were reported during the year as against 41 cases and 22 deaths in the preceding year. The incidence was sporadic. Nothing approaching an epidemic occurred.

VIII.—ANTHRAX.

A total of 123 cases with 10 deaths was recorded of which 90 occurred in the Kyambu district.

With few exceptions the persons affected suffered from malignant pustules. The septicaemic type of the disease only rarely comes under observation though the Medical Officer, South Kavirondo, reports that it appeared to be common during the year among the Kisii.

IX.—INFLUENZA.

The returns show a total of 7,886 cases under the heading "influenza" with 6 deaths.

Kisii reported a sharp outbreak during November and December.

The heading is a convenient one under which to group cases with slight pyrexia and especially those with catarrhal symptoms.

X.—PNEUMONIA.

Comparative figures for all hospitals during the past three years are as follows:—

Year.	Cases.	Deaths.	Death rate per 100 cases.
1923	1,095	262	23.9
1924	1,036	178	17.1
1925	975	185	18.9

The slight reduction during 1925 in the total of admissions may be due to the very small rainfall which was recorded practically from all over the country, though a chart prepared at the Native Hospital, Nairobi, appears to show that the highest incidence of cases occurred during the dry and cold months of July, August and September.

Pneumonia as it affects the native population would appear to be the most killing disease met with in the country; its steady yearly toll of lives probably exceeds that of any other disease. Of the total deaths recorded in the Government Hospitals during 1925 20 per cent. were due to this one cause.

In Nairobi pneumonia again headed the list of the recorded causes of death being responsible for 31 per cent. of the total in Mombasa 13.2 per cent. was the figure. A serious aspect of the disease with an important bearing on the economics of the country is the large number of deaths which it causes among young able bodied adults in the prime of life.

No figures exist as regards the incidence of the disease in the Reserves as compared with towns but the mortality which occurred during the early part of the Uasin Gishu Railway Construction would appear to indicate that exposure to urban conditions has but little influence on the yearly total throughout the country of which hospital returns can give but small indications. The susceptibility of the native to pneumonia is probably but one indication of a general lack of resistance to disease of which the prevalence of ulcers may be quoted as another example. The reason may be due to any or every one of a number of causes among which food deficiency may play a large part.

The railway constructions going on in the country during the year have fortunately not been attended by a large incidence of pneumonia among the labour employed in comparison with previous experience probably owing to the fairly reasonable sanitary conditions which it has been possible to effect and the type of country in which work has been carried on.

It has not been possible to carry out any work at the Laboratory during the year with regard to a classification of the types of pneumococcus met with in the Colony.

XI.—THE ENTERIC GROUP.

The total for this group of diseases in 1925 was 40 only as compared with 90 in the preceding year. The non-European population provided 34 of the cases, 8 deaths occurred.

The comparatively small rainfall of the year may have a bearing on the smaller number of cases which came under observation.

In Nairobi and District 26 cases of the enteric group were notified, a large proportion of these was probably attended by private practitioners and so does not appear in the hospital returns. The results of agglutination tests made at the Laboratory show that 23 positive reactions were obtained with *B. Typhosus* and none with either *Paratyphosus A.*, *B.* or *C.*

XII.—TYPHUS.

In the hospital returns only two cases of the typhus like disease of the Country are recorded. Both cases occurred among Europeans and both came under observation at Kisumu. At Nairobi 10 cases, all among Europeans, were notified by practitioners to the Health Office. No deaths were reported.

Information received from out-districts in the settled areas would appear to indicate that considerably more cases occur than ever come to official notice.

The etiology and means of spread of the disease remains obscure.

XIII.—DYSENTERY.

A total of 1,091 cases with 56 deaths occurred during the year.

The doubt which was expressed last year in the Laboratory section of the Report as to the correctness of previous observations with regard to the frequency of *Entamoeba histolytica* as a cause of dysentery has been proved to be warranted. In past years the majority of cases were reported as being amoebic in origin, in 1925 the entire opposite is the case. In only 6 cases was the *Entamoeba histolytica* detected at the Laboratory during the year.

The responsible organism in the majority of cases of non-amoebic dysentery has not yet been worked out. Out of 66 specimens examined at the Laboratory *B. dysenteriae* was isolated in 6 cases only. Organisms corresponding culturally with one or other of the Flexner strains have been isolated on several occasions but these have failed to agglutinate with Flexner Sera. A suggestion has been made that in the majority of cases dysentery is a symptom of a general lack of resistance due to food deficiency rather than a manifestation of a particular disease. The frequency with which dysentery manifests itself among labour freshly arrived at the place of employment from Reserves where they had been passed fit might be held to support the view.

No epidemic of dysentery occurred during the year and railway construction was fortunately not accompanied by a high incidence of the disease.

XIV.—UNDULANT FEVER.

The hospital returns showed 10 cases of undulant fever as having been under treatment during the year. No deaths occurred.

The Laboratory figures show positive agglutinations as follows:—

Micrococcus Melitensis and B. Abortus (Bang)	...	11
M. paramelitensis		2

Cases were reported from:—

Fort Hall		1
Machakos		1
Nairobi		7
Voi		1

XV.—MALARIA.

The number of cases returned as having received treatment for Malaria at Government Hospitals and dispensaries in 1925 totalled 23,250 as compared with 18,905 in 1924. The number of deaths among these cases was 48 and 40 respectively.

The appointment of an Entomologist to the staff of the Medical Department for the first time has enabled a beginning to be made in the systematic investigation of the mosquitoes of certain parts of the Colony.

The ordinary routine anti-malarial work has been continued at Kisumu, Mombasa and Nairobi. A comprehensive Report on the Mosquito Breeding Grounds of Nairobi by van Someren and de Boer was completed during the year and action will be taken during 1926 to deal with as many of these breeding places as possible in a permanent manner.

In October and November an outbreak of malaria occurred on a number of farms in the Nakuru District of the Highlands. It was stated that on certain of these farms malaria had hitherto been unknown. A Medical Officer was posted to the area for a short time to assist in the treatment of the sick and to advise farmers and others as to the precautionary measures which should be adopted. As the Entomologist was at the time of this occurrence engaged on work in connection with the tse tse fly on the Victoria Nyanza it was not possible to carry out any full investigation of the outbreak.

XVI.—BLACKWATER FEVER.

The returns for the past four years are as follows:—

Year.	Cases.	Deaths.
1925	50	11
1924	20	9
1923	27	6
1922	39	10

Fifteen of the above cases occurred in Europeans with 1 death.

XVII.—TRYPANOSOMIASIS.

Early in the year the arrival of an Entomologist made it possible for the Department to commence the long promised campaign against trypanosomiasis in South Kavirondo. Various investigators, Beven (1921), and Duke (1923) had shown that the disease still persisted in certain areas, viz., the Miriu River, the Oloach River, Homa Point and the Kuja River, from the time of the great epidemic in 1905.

The information obtained appeared sufficient for a Government Sleeping Sickness policy to be formulated by the Department and presented to Government. The recommendations were as follows:—

- (a) The ultimate object to be aimed at in the campaign against human trypanosomiasis is the total destruction of the tse tse fly in Kenya; this will usually be effected by the clearing of the fly infested bush.

- (b) The immediate steps to be taken are to provide safe watering places for the population living in infected areas where total clearing cannot yet be carried out and safe through routes and to provide cleared areas into which the population can move in order to make shambas.
- (c) The guiding factor in the priority of schemes of bush clearing will be
 1. the degree of contact of fly and population.
 2. the area which can be kept clean.
- (d) The point which will require investigation before a scheme for bush clearing can be drawn up for a particular area are:
 - (a) a fly survey, (b) a human population survey.
- (e) Infected persons will be afforded treatment on lines aimed at a cure or in order to prevent the spread of infection.
- (f) The voluntary movement of population requires control in order to prevent migration of persons infected with trypanosomiasis into clean areas and vice versa. It will also be necessary to restrict traffic to safe routes.

During the year tse tse fly surveys were conducted in the following areas:—

1. **MIRIU RIVER.**—*Glossina palpalis* was the only species found, the average densities 1.25 to 9 p.b.h. The maximum densities recorded were 4, 19 and 30 p.b.h.
2. **HOMA POINT.** Two species were present *G. palpalis* predominant and *G. brevipalpis* in small numbers. Densities were recorded as 32, 40, 47, 58 and 70. At one spot a density of 116 p.b.h. was recorded, the female percentage was high.
3. **OLOACH RIVER.**—*G. palpalis* was the only species found, the percentage of females averaged 38.3 at the centre of infestation and on either side rose to 56 and 60 and to 82 and 90.

No fly dissections were performed.

A special Medical Officer was appointed to take charge of the Sleeping Sickness Area.

Bush clearing operations, with an European Overseer in charge were started on the Miriu in March and by the end of May the infested areas on the lower reaches of the river were cleared and stumped and an area of some one and a half square miles was made available for cultivation.

Consolidation of this area was assisted by inviting the local natives to cultivate in the area and by the end of the year a considerable portion of the land was taken up and planted.

A selection of trees for experimental planting was ordered from the Forest Department.

A scheme of bush clearing has been worked out for the Homa Point and Oloach River areas on the data obtained from fly surveys.

Beven had, in March, found about 100 cases clinically suggestive of trypanosomiasis and it was considered that for purposes of investigation and treatment a hospital in the Sleeping Sickness Area was necessary as the main hospital at Kisii was difficult of access and some considerable distance away. The site chosen was at Homa Point and actual building was commenced in December.

The numbers of Sleeping Sickness patients treated in Hospital in South Kavirondo for the last three years were:—

1923	...	...	...	...	98
1924	...	...	...	...	67
1925	...	...	...	...	60

These figures cannot be considered in any way as a guide to the incidence of the disease, as later in the year, about September, during a population survey in the Miriu area Beven reported that out of 764 persons examined 407 presented clinical signs of Sleeping Sickness. Diagnosis was made chiefly on a positive Formol-gel test and on the finding of large axillary glands, a feature which Duke considers to be practically diagnostic of the disease.

The findings were not checked by microscopical examination.

The Entomologist was sent to Uganda to study methods of control in that Protectorate. Later on a meeting between administrative officers and others from Uganda and Kenya took place at Mjanji at which problems connected with the disease, particularly as it affects the districts adjoining the Kenya-Uganda border were discussed.

The results of treatment with drugs such as Bayer 205 and Tryparsomide were carefully tested and recorded and much valuable information should be forthcoming in 1926.

It is interesting to note that Duke in 1923 traced 50 cases out of 55 reported by Beven in 1921 and found that 26 were alive and well, some of these had never had any treatment. It would appear that the infesting trypanosome possesses a comparatively low virulence towards man.

The possibility of a recrudescence of the disease in an epidemic form cannot however be ignored. All the factors responsible for such an outbreak are as yet unknown, but in Kavirondo there is a human population living in close contact with fly.

The experience of bush clearing in 1925 has definitely shown that an anti-trypanosomiasis campaign cannot be conducted by the Medical Department alone. The Administration must take a very large part in operations and assistance from other Departments is necessary if the work is to proceed uninterruptedly and the area cleared to be consolidated. The main activities of the Medical Department apart from the treatment of individuals should consist in formulating a plan of campaign.

Valuable advice with regard to the Sleeping Sickness policy of the Country may be looked for from the visit of the International Sleeping Sickness Commission in 1926.

XVIII.—RELAPSING FEVER.

Another increase in the number of cases of relapsing fever which have come under observation is reported. The figures for the past three years are 121, 91 and 65 respectively.

The distribution, as follows, is somewhat more wide than in previous years but this does not necessarily indicate an area of extension of the tick.

					1923	1924	1925
Eldoret	...	...	...	...	—	2	—
Fort Hall	...	...	...	...	38	23	35
Maehakos	...	...	...	...	1	—	—
Nairobi	...	...	...	...	4	40	51
Kilindini	...	...	...	...	1	—	—
Kismayu	...	...	...	...	4	—	—
Kisumu	...	...	...	...	—	9	30
Kakamega	...	...	...	...	—	4	2
Chuka	...	...	...	...	17	13	—
Meru	...	...	...	...	—	—	1
Kisii	...	...	...	...	—	—	1
Mandera	...	...	...	...	—	—	1
			Total	...	65	91	121

The Embu-Meru-Fort Hall Districts and Kavirondo still appear to be the centres where infection is acquired, cases appearing among the labour in various areas. At Kisumu a considerable number of cases developed. A careful search for ornithodoros was made throughout the Township but only the Government Rest House for labour was found infested. Several cases had occurred in the Sailors' lines but ornithodoros infestation could never be demonstrated. Numerous specimens of Argas were found both in the Sailors lines and elsewhere. The Government Rest House was provided with a cement floor after the discovery of ornithodoros but later on it was found that the walls also harboured the parasite. It is anticipated that the whole building will be rendered tick proof during 1926. A careful watch was kept on the labour camps as a result of the findings in 1924.

Reports vary very much with regard to the efficacy of N. A. B. in the treatment of relapsing fever.

The Sub-Assistant Surgeon, Fort Hall, is making a trial of intravenous injections of iodine and the results to date are stated to be promising though it is too early to draw definite conclusions.

XIX.—WHOOPIING COUGH.

Forty-four cases were reported from five stations.

XX.—ENCEPHALITIS LETHARGICA.

No cases came under observation during the year.

XXI.—HELMINTHIASIS.

No special work was carried out during the year. The Laboratory findings are tabulated in the Laboratory Report.

XXII.—DIPHTHERIA.

This disease, which was recorded in Kenya for the first time in 1924, so far has shown little tendency to become prevalent. During the year only two cases were reported as compared with 11 in the previous year. One case occurred in Nairobi and the other in the Kiambu district. The Nairobi case, which was notified in January, was a European nurse who had been attending one of the cases of Diphtheria which occurred towards the end of 1924. The other case, a European child, developed the disease on a farm in August, and the source of infection could not be traced. The disease was of a mild type and both patients made an uninterrupted recovery.

XXIII.—DENGUE.

Forty cases of dengue were reported during the year from Mombasa (16 cases), Malindi (18 cases) and Voi (2 cases). The prevalence of the disease was probably a good deal greater than is indicated by the number of admissions.

Dengue has not been reported in the Country for a good many years past; it was probably imported from Zanzibar where an outbreak had occurred.

The cases all came under observation during the early part of the year; none were heard of in the last few months.

IV.—LABOUR CONDITIONS.**(a) Contract Labour.**

RECRUITING and INSPECTION OF RECRUITS.—All African labourers recruited by an agent on behalf of an employer must be medically examined before a contract is entered into. The following are the figures for the past four years of the number examined and rejected at Kisumu where the largest numbers of labourers are examined:—

	1922.	1923.	1924.	1925.
Total number examined	17,874	15,949	13,268	11,179
Number passed	13,619	14,442	12,056	10,263
Number rejected	4,255	1,507	1,212	916
Percentage of rejected	23.8	9.4	9.1	8.19

The contracts entered into are as a rule for a period of six months. As will be noticed there has been a steady decline in the number of labourers examined for the past four years; this decline reflects a process which is in operation throughout the country where to an ever increasing extent service is being undertaken on a monthly basis, no contracts being entered into. As a general rule the sick and death rates among monthly labourers are lower than the rates among those engaged on long contracts.

(b) Casual Labour.

LABOUR EMPLOYED IN TOWNSHIPS.—Some progress was made in Nairobi with regard to the housing scheme of the Nairobi Municipal Council and at the end of the year a number of dormitories of permanent construction were nearing completion. A certain number of blocks of cubicles, of single roomed dwellings and of two roomed dwellings are also to be constructed.

The scheme as it stands at present has only been designed to provide accommodation for approximately some 600 persons and does not therefore represent a complete solution of the African Housing Problem in Nairobi. It is however a very important experiment and will provide data which should be of greatest service not only to the Nairobi Council but also to Government and to other local authorities.

The necessity for a similar scheme in Mombasa is particularly urgent and was referred to at considerable length by Government's Town Planning advisor Mr. Walton Jameson in the Report which he rendered with regard to the town planning of the Island of Mombasa. In the smaller townships the housing accommodation available for casual African labour is for the most part unsatisfactory. Legally the responsibility for housing African labourers rests on the employer but except in the case of domestic servants it is not as a rule either practicable or convenient to require employers to provide such accommodation in townships and as the labourers themselves are not in a position to put up buildings for themselves of a satisfactory type it would appear that a practicable solution can only be provided by comprehensive Municipal or Government Building schemes.

LABOURERS EMPLOYED BY THE KENYA AND UGANDA RAILWAY.—Great progress can be recorded with regard to the housing schemes which have been undertaken by the Railway Administration for the accommodation of its African employees.

In Nairobi a large number of blocks of rooms have been constructed which provide excellent accommodation. Construction has for the most part been carried out in concrete. The rooms of which the blocks are composed are 10 feet square with a mean height of 10 feet a veranda 10 feet by 5 feet, glazed windows and ample ventilation. Outside kitchens, bathing places and washing places have been provided and a water borne sewage system has been installed. The standard of accommodation to which the Railway Administration is working is one room 10 feet square per married man or one room between two single men.

It is of interest to record that as a result of the Railway being in a position to provide good accommodation a much larger proportion of its African employees are now married or accompanied by their wives than was formerly the case and it is also a matter of interest that the birth rate among these people is high and the infant mortality presumably on account of improved sanitary conditions almost negligible.

The accommodation provided by a single room, a veranda, an outside kitchen and other conveniences is, when the climate and the present cultural standard of the labourers are taken into consideration, adequate for two single men or a married man and one infant but as time goes on and families increase in size the question of accommodation which should be provided will require to be further considered.

(c) **LABOUR EMPLOYED ON RAILWAY CONSTRUCTION.**—During the year construction was being carried on with regard to a number of extensions and branch lines as follows:—

1. The Uasin Gishu Railway, Nakuru and Turbo.

The construction of this section continued in the hands of Messrs. Griffiths and Co., and was completed by the end of September. The Contractors maintained a medical officer and the health of the labourers was fair except for an outbreak of influenza which occurred in March. The average number of labourers employed per month was 2,590 and the average monthly death rate per 1,000 employed was 1.9. The figures for the previous three years are given below:—

Year.	Average number of labourers employed per month.			Death rate per 1,000 per month.		
1924	...	...	5,836	...	...	1.19
1923	...	...	14,440	...	...	2.77
1922	...	...	11,214	...	...	4.01

2. Uganda Extension, Turbo-Tororo.

Activities on this Section commenced during April and continued throughout the remainder of the year. The work was carried out by Government Contractors under Departmental control. A Government Medical Officer was in charge of the medical arrangements.

The average number of labourers employed per month was 3,211 and the death rate per 1,000 per mensem was .16.

3. The Kitale Branch.

This work was also carried out by Government Contractors under Departmental control and the medical arrangements were under the charge of a Government Medical Officer. The average number of labourers employed monthly was 1,958 and the death rate per 1,000 per month was .28.

4. The Solai Branch, Nakuru to Rongai.

The works were under Departmental control and medical arrangements were supervised by a Government District Surgeon.

The average number employed per month was 893 and the monthly death rate per 1,000 was .41.

5. Thika Nyeri Branch.

Construction was carried out Departmentally and medical arrangements were supervised by the Government Medical Officer at Fort Hall, the Church of Scotland Missionary Society's doctor at Tumu-Tumu was also employed.

The average number employed per month was 1,730 and the monthly death rate was 3.10. For the first half of the year the construction was being carried on through unhealthy country.

Rations.

Throughout the year the official ration was as follows:—

Maize Meal	...	...	...	2 lbs. daily,
Beans	...	...	...	2 lbs. per week,
Ground Nuts	...	...	...	$\frac{1}{2}$ lb. per week,
Potatoes or fresh vegetables	...	...	...	1 lb. per week,
Salt	...	...	...	2 oz. per week.

NOTE.—In lieu of beans $1\frac{1}{2}$ lbs. of meat may be issued.

The majority of contractors provided a meat ration for their labourers.

In December the following improved ration was made compulsory by Government in the case of all labour employed on Railway Construction:—

(a) Maize Meal	...	...	...	2 lbs. per diem.
(b) Meat	...	...	...	$\frac{1}{2}$ lb. per diem.
(c) Chiroko beans	...	...	...	$\frac{1}{4}$ lb. per diem.
(d) Grounds nuts or Ghee	...	...	...	1 oz. per diem.
(e) Fresh Vegetables	...	...	...	1 lb. per diem.
(f) Salt	...	...	...	3 oz. per week.

Note in lieu of (b) 4 oz. of Chiroko beans per diem, or
2 oz. of jaggery, per diem, or
3 oz. of ground nuts.

Note in lieu of (c) 6 oz. of beans per diem, or
2 oz. of jaggery per diem.

Note in lieu of (e) 2 Lemons per week.

(d). LABOURERS EMPLOYED ON FARMS AND ESTATES.—Type plans for the housing of labourers on farms and estates were prepared by the Department during the year and issued in considerable numbers. Considerable interest is being taken by employers especially on the larger estates in the question of housing and in a number of cases certain improvements have been carried out.

Arrangements have been made in the Estimates for 1926 to enable one Senior Medical Officer to devote the whole of his time to questions concerned with the feeding, care and housing of labour. An Officer of the Medical Department is at present visiting compounds and estates in South Africa and the Katanga Province of the Belgian Congo with the object of acquiring information which it is hoped may be of value to employers of African labour in Kenya.

V.—FOOD IN RELATION TO HEALTH AND DISEASE INSPECTION AND CONTROL, ETC.

The General Population.

Though shortage of foodstuffs were experienced in a number of districts during the year, no severe famines occurred, and the food supplies of the general native population of the Reserves were as adequate in 1925 as in any average year. Whether these food supplies provide an adequate dietary is a matter which is open to doubt, and one which merits early investigation. That the native population of the Colony living under so called "natural" conditions is not generally speaking a healthy one, and that the ill-health from which they suffer is in part at least the result of malnutrition, is an impression widely prevalent among Medical Officers. The opinion has also been expressed that the malnutrition from which many natives would appear to suffer may not improbably be due to certain deficiencies in the mineral

content of the usual dietaries. In support of these impressions a certain amount of evidence is available and it becomes a matter of the first importance that they should either be confirmed or disproved: if they are confirmed and it can be ascertained in exactly what directions the natural dietaries of the various tribes are deficient, facts which should be of the greatest social and economic importance will have been established. It is hoped that during the ensuing year some preliminary investigation into this matter may be instituted.

The Dietary of Employed Labourers.

Up till a few years ago the usual ration issued to African labourers employed on farms and estates, Railway construction, etc., was 2 lbs. of maize meal daily, plus a weekly issue of salt, gradually it has come to be recognised by employers that maize meal alone does not provide an adequate dietary, and that if labourers are to be kept in health and in a condition to perform a reasonable amount of work the meal ration must be supplemented by the addition of other foodstuffs.

The additional articles most usually given are beans and meat, and in certain cases lemons. The issue of meat is becoming increasingly common and in the case of the larger estates is now almost universal. Even however where the issue of meat is made daily, instead of weekly as is more usual, a ration consisting of maize meal and meat is still unsatisfactory, not only because the various elements are not properly balanced, but also because the accessory factors largely found only in green vegetables are for the most part wanting. On many estates some of the deficiencies in the ration issued are frequently made up to a certain extent by the employee who purchases or grows for himself various green stuffs. On other estates, however, the facilities for labourers to obtain green vegetables or other additional articles of diet do not exist, while even for the employer the difficulties which stand in the way of placing contracts for bulk supplies of green vegetables are still considerable.

As a definite instance of the faultiness of a ration issued to native labourers, it may here be recorded that on one large estate there occurred a series of cases of food-deficiency disease indistinguishable from scurvy. On this estate, though meat was issued as part of the ration, green vegetables were entirely lacking. The cases of disease, some of them fatal, occurred only in natives who had worked on the estate for six months or more.

It is, however, satisfactory to be able to report that the necessity for issuing a ration which is not only adequate in quality but is also physiologically correct in constitution is gradually being appreciated. The research and investigation which has been referred to above as necessary with regard to the dietary of the African living in the Native Reserves would if it were carried out not improbably be found to have considerable bearing on the question of the correct dietary for the employed labourer. Manual labour under the African sun means in all cases the daily loss of excessive quantities of various salts through perspiration. It appears unlikely that any of the dietaries at present in use are so constituted as to allow of the replacement of these salts.

INSPECTION AND CONTROL.

In the Native Reserve.

In the Native reserves systematic meat and food inspection and control has not so far been attempted and under existing circumstances no considerable degree of control is likely to be possible for many years to come though it is not improbable that if the new Native Councils can be induced to expend funds on the erection of suitable buildings and slaughter houses at the large native markets in the Reserves and if European Sanitary Inspectors are appointed to these Reserves, a considerable amount of inspection might be carried out and control effected within limited areas. Such inspection if combined with a tapeworm campaign (including both curative and sanitary measures) and accompanied by the necessary propaganda might probably have considerable effect in certain districts.

In Townships.

During the year comprehensive Milk and Dairy Regulations were approved by Government and published and it is expected that during the ensuing year these Regulations will be adopted in their entirety by the Council of the Nairobi Municipality, which will then be in a position to regulate the milk supply of the capital in an effective manner.

A record of certain observations which have been made with regard to the chemical constitution of milk derived from native stock and from imported pure bred stock respectively which is of considerable practical interest will be found in the Report of the Laboratory.

A summary of the work carried out in Nairobi is given below. Similar work is carried out also in Mombasa and Kisumu.

FOOD CONTROL—NAIROBI.

(a) Milk.

A large quantity of the milk consumed in Nairobi is still produced under the most insanitary and disgusting conditions and while some improvement in this state of affairs took place during the year an enormous amount of work still remains to be done. The removal of milch cattle from the Municipal area and the demolition of dilapidated cattle sheds was continued and very few milch cattle now remain within the township limits.

While the milk trade is gradually passing into the hands of the European dairy farmer, a large section of the community still purchases milk from Asiatic and African cow-keepers, to whom the elementary principles of hygiene and cleanliness are quite unknown. The public in general does not appear to appreciate the dangers arising from an impure milk supply and consumers seldom take the trouble to enquire as to the source of their supply or the conditions under which it is produced. European dairy farmers in general have invested a considerable amount of capital in modern buildings, equipment and utensils and are taking a real interest in the production of clean milk.

The Milk and Dairies Regulations under the Public Health Ordinance were gazetted towards the end of the year and it is gratifying to be able to report that the Municipal Council has already requested Government to apply the regulations to the area under its control. These regulations will eventually enable proper control of the dairy industry to be exercised and their enforcement will gradually provide the town with a pure and wholesome milk supply.

Adulteration of milk, which takes place chiefly in the course of transit and distribution, is still extremely common. During the year 282 samples of milk were taken and of these 85 or 30.1 per cent. contained added water.

The increase in the percentage of samples found to be adulterated as compared with 1924 was probably largely accounted for by the serious drought which occurred, scarcity of milk being marked throughout the year and the price accordingly high.

The percentage of water added ranged between 3 and 61 with an average of 21.2 per cent.

The following table shows the results of analysis of milk samples during the past four years.

Year.	No. of Samples.	No. adulterated.	Percentage adulterated.	Percentage of added water.
1922 ...	345	151	43.7	18.0
1923 ...	243	51	21.0	16.7
1924 ...	366	75	20.5	18.0
1925 ...	282	85	30.1	21.2

In 62 cases of adulteration prosecutions were undertaken and 62 convictions were obtained. Sixty of the offenders were African and two were Indian. Fines totalling Shs. 2,490/- were imposed and in addition six juvenile delinquents received a caning. In the other cases of adulteration, the percentage of added water was so small that no proceedings were instituted, but the offenders received a warning, and in a few cases the offenders were not prosecuted as they could not be found.

(b) Meat.

The supervision and control of the Nairobi meat supply still remains in a most unsatisfactory state, and while some minor improvements were carried out at the slaughterhouse during the year the construction of a modern abattoir on a convenient site is an urgent necessity. The Mbagathi slaughterhouse was closed early in the year and since that date all slaughtering and meat inspection has taken place in Nairobi. This has resulted in some congestion and inconvenience, but by improved organisation and

administration, the arrangement on the whole has worked satisfactorily and few complaints have been received. Meat inspection is now undertaken by the Health Office staff, sanitary inspectors holding special qualifications in this work being employed. While this duty absorbed practically the whole time of one sanitary inspector throughout the greater part of the year, meat inspection may now be stated to be on as satisfactory a footing as present circumstances permit and no further improvement can be expected until the new abattoir is built.

As in past years meat was chiefly seized on account of being infected with "measles" or the larval stage of the human tapeworm. This infection is extremely common in the Colony, and although the necessity for condemning diseased meat of this nature is not always appreciated by the butchers, to whom it entails considerable financial loss, the use of such meat for human consumption must be prohibited.

"Measles" is a preventable disease and cattle breeders must be encouraged to take adequate precautions to prevent their animals from becoming infected.

(c) Other Foods.

Fish, fruit, vegetables, canned goods and provisions in general have received attention during the year and numerous seizures have been made. While increasing control is being exercised, the need for specific legislation to regulate the manufacture, storage and sale of foodstuffs in general is becoming more apparent.

(d) Markets.

Of these there are two in the town; the Jeevanjee Market and the Native Market.

JEEVANJEE MARKET. This market was inspected daily, but owing to its dilapidated and insanitary condition a reasonable standard of cleanliness was difficult to maintain. Fortunately the dispute as to ownership was settled towards the end of the year, the market being purchased by the Municipal Corporation. Cleansing and minor repairs were immediately undertaken and some improvement in sanitation resulted. The market building cannot be described as ideal for the purpose for which it is designed and its replacement by a more modern type of structure should receive consideration in the future.

NATIVE MARKET. This market was also visited daily and has been kept in a clean and sanitary condition.

Food Inspections and Analysis.

Milk samples	...	...	...	...	289
Aerated water	...	...	...	...	4
Pipe water supply	...	...	...	...	2
Nairobi river	...	...	...	...	24
Pangani well water	...	...	...	...	1
Native market inspections	...	...	...	...	153
Municipal slaughterhouse inspections	...	...	...	...	487
Jeevanjee market inspections	...	...	...	...	233

Food Condemned.

Milk	...	...	...	...	...	gallons	37
Meat (number of carcasses condemned at slaughterhouse)	...	...	...	...	...		669
Meat (condemned at trade premises)	...	...	...	...	...	lbs.	1,647
Fish	...	...	...	...	...	"	255
Canned foods	...	...	...	...	...	cans	2,462
Fruit	...	...	...	...	...	lbs.	145

VI.—SANITATION.

- Section 1. General Review of Sanitary Conditions, work done and progress made.
- Section 2. Review of Sanitary Administration—authorities concerned, functions and duties of authorities, work of the Medical Department—Legislation.
- Section 3. Housing and Town Planning.
- Section 4. Sanitary conditions, sanitary administration and Housing and Town Planning in:—
 - (a) Native Reserves.
 - (b) The Settled Areas (Rural),
 - (c) The Settled Areas (Smaller Townships).
 - (d) The Larger Townships—Nairobi and Mombasa.
- Section 5. Maternity and Child Welfare.
- Section 6. School Medical Inspection.
- Section 7. Measures taken to spread the knowledge of Hygiene and Sanitation.
- Section 8. Training of Sanitary Personnel.
- Section 9. Recommendations for future work.

Section 1. General Review of Sanitary Conditions, Work done and Progress made.

In the Annual Medical Report for 1924 it was stated with regard to that year that "No definite progress with regard to the improvement of sanitation in Native Reserves can be recorded" and also, that "Improvement in the sanitation of the settled areas and of the townships which are growing up in these areas is largely dependent on the provision of staff and funds and as no increase of staff became available and but little increase of funds no marked improvement can be recorded. The condition of the smaller towns is in many respects far from satisfactory. The position is appreciated by Government but it remains to establish some more satisfactory machinery for promoting local development and ensuring central control than exists at present. The establishment of this machinery is a matter which will require careful attention in the immediate future."

The record of 1925 in certain respects is but little different from that of 1924. As regards the sanitary conditions of the native reserves and the settled areas no general alterations either in a favourable or unfavourable direction can be recorded.

There may have been alterations in the direction of progress which, if all circumstances were taken into consideration, might rightly be regarded as considerable, but at the same time there may have been alterations in a contrary direction. Even in a country which is highly organised alterations in environment and in the standard of living are not readily measured from year to year, nor is the significance of such alterations always easy to evaluate. In Kenya the means available for estimating the circumstances and condition of the population as a whole are still too inadequate to allow of yearly comparisons being made except with regard to a few specific matters.

That there has undoubtedly been progress with regard to certain specific matters may however be recorded as fact. With regard to other matters, arrangements have in a number of cases been made which should result in improvement in the future.

Though, however, no noticeable alteration in sanitary conditions can be recorded there would appear to be a growing recognition of the fact that these conditions generally are still far from satisfactory, that more adequate machinery must be established, that data must be collected and facts established and that the results of outside experience must be applied to local problems. The basis of civil research would to some extent appear to have been established.

The manner in which the existing administrative machinery falls short of what is required if radical alterations of environment are to be brought about and economy ensured may be gathered from the record of conditions and work set out in the following sections.

In the last section under the heading "Recommendations for future work" the position is summarised and a suggestion with regard to development is there made.

Section 2. Review of Sanitary Administration—Authorities concerned—duties and functions thereof—work of the Medical Department—Legislation.

The Public Health Ordinance of the Colony (Ordinance No. 38 of 1921) does not recognise the term local sanitary authority but refers only to "local authorities". For the purposes of the Ordinance these authorities are at present the Council of the Municipal Corporation of Nairobi, the Township Committee of Muthaiga and for all other townships and districts (including Native Reserves) the Resident or District Commissioner or in areas to which a Medical Officer has been appointed the Resident or District Commissioner and the Medical Officer.

The duties of a local authority as defined by the Public Health Ordinance are generally ".....to take all..... reasonably practicable measures for preventing the occurrence or dealing with any infectious, communicable or preventable disease, to safeguard or promote the public health and to exercise the powers and perform the duties in respect of the public health conferred or imposed on it by this or any other law". Certain specific duties are also defined, more particularly with regard to the abatement of nuisances, the survey of housing conditions and the prevention of overcrowding.

As the Ordinance does not deal with finance and makes no arrangements for the control or assistance of local authorities in regard to expenditure it is not a local government ordinance in the usual sense of that term but the duties which it imposes are those which it is the main function of any local government body to perform.

In most districts and townships in the settled areas the District or Resident Commissioner is advised by a nominated advisory District Committee. It is satisfactory to record that these committees have without exception taken an increasing interest in the government, development and sanitary administration of the districts or townships for which they have been appointed. This increasing interest has been one of the noticeable features of the year.

In the Native Reserves a new type of local authority has recently come into existence in the Local Native Councils. These Councils though unrecognised by the Public Health Ordinance must nevertheless be regarded as local health authorities in as much as in accordance with Section 6 of the Ordinance under which they are established ("The Native Authority (Amendment) Ordinance 1924") they may make and pass resolutions in respect of—among other matters—"Public Health", "The provision, maintenance and regulation of food and water supplies", "The use of land", etc. A matter of great significance is that these councils—a proportion of the members are elected—may with the approval of the Governor in Council impose and collect a rate. The Chairman is the District Commissioner.

The Local Native Councils have as yet only been in existence for a short period—in no case for a complete year—but many of them have already displayed considerable interest in a number of fields of Public Health Work. As noted elsewhere they have in many cases voted funds for the establishment of hospitals and dispensaries, while one council has passed a resolution aimed at the control of venereal disease. It is probable that in the future these Councils may be able to exercise a very large influence on the sanitary development of their districts.

Other bodies and departments concerned in Sanitary Administration or in the provision of local services are the following:—

The Central Board of Health (established under the Public Health Ordinance, 1921),

The Board of Health (established under the Public Health Ordinance, 1913),

The Townships Board (not statutory). ,

The Land Department,

Town Planning Authorities appointed under the Town Planning Ordinance, 1921.

The Public Works Department,

The Labour Inspection Division of the Native Affairs Department, and
The Medical Department.

THE CENTRAL BOARD OF HEALTH is a nominated advisory body under the chairmanship of the Director of Medical and Sanitary Services which may advise the Government with regard to all matters affecting the public health. Regulations affecting the public health must be submitted to this Board for approval.

THE BOARD OF HEALTH is concerned only with proposals and schemes for the sub-division of certain land outside townships into plots of less than 3 acres in extent. The Board's consent is required before any such division may take place and it has power to specify the conditions on which such consent is given.

THE TOWNSHIPS BOARD, consists of the Commissioner of Lands, the Director of Survey, the Director of Public Works, the Director of Medical and Sanitary Services. The Board is not a statutory body: it advises Government with regard to the layout, use and alienation of Crown Land for township purposes.

THE LAND DEPARTMENT is responsible for the preparation of "layout" schemes in connection with Government townships and trading centres. These schemes are prepared by the Survey Division of the Department assisted by Officers of the Land Division and Officers of the Medical, Public Works and Administrative Departments of Government. No engineering staff is retained.

TOWN PLANNING AUTHORITIES APPOINTED UNDER THE TOWN PLANNING ORDINANCE, 1921.

Up to the present only one authority has been appointed under the Ordinance viz, the Authority appointed to prepare a Town Planning scheme for Mombasa. This authority has now been in existence for some years and has prepared a scheme of some magnitude for the development of Mombasa Island. The very considerable amount of work involved has largely been carried out by Officers of the Land and Survey Departments posted at Mombasa and without their help the preparation of any scheme would have been impossible. The authority has, however, been severely hampered by the fact that it has been unprovided with any engineering or legal staff experienced either in municipal or town planning administration.

THE PUBLIC WORKS DEPARTMENT.

Under the Public Health Ordinance 1921, the Public Works Department in default of any other appointment having been made is the Drainage Authority in all townships and districts.

The Public Works Department is also responsible for the preparation and execution of all water supply schemes other than those undertaken by the Council of the Nairobi Municipality and the Kenya and Uganda Railway.

Except in Nairobi the upkeep and improvement of township roads and the design and construction of public buildings, such as markets, slaughter houses, etc., are also carried out by this Department.

To the local officers of the Public Works Department building plans submitted by members of the public are, in those townships where the local authority is unprovided with a building inspector, as a rule referred for scrutiny. As, however, the local officers of the Public Works Department are concerned chiefly with the execution of approved public works, the construction of roads and bridges, and are in all cases appointed not to a township but to a province, they are unable as a rule to scrutinise such plans from any point of view other than that of stability. The primary function of the Public Works Department is the execution of approved public works and it has no branch or divisions specially concerned with municipal or sanitary engineering work nor does it necessarily retain on its staff any officers who have specialised in the municipal or sanitary side of engineering and there are no officers available for appointment as executive or advisory officers with regard to the engineering side of local Government administration in a fashion comparable to that in which Medical Officers of Health are retained by the Medical Department and appointed to perform executive or advisory functions with regard to other branches of local sanitary administration.

THE LABOUR INSPECTION DIVISION OF THE NATIVE AFFAIRS DEPARTMENT.

In the course of administering certain provisions of the Masters and Servants Ordinance and the various amending ordinances this division plays a considerable part in securing the improvement of sanitary conditions on estates.

THE MEDICAL DEPARTMENT.

The functions and activities of the Medical Department with regard to that part of Public Health Administration which is usually termed Sanitary Administration can be divided into two groups—advisory and executive.

The Medical Department has also a directive function with regard to local authorities but as it has no financial control over the operations of these authorities and is not concerned in the appointment of officers other than Medical Officers of Health and Sanitary Inspectors this function is not directly exercised but is limited to advising the central Departments, i.e., the Colonial Secretary's Department and the Native Affairs Department as to the manner in which Government's Sanitary Policy may best be carried out.

For the purposes of the Annual Medical and Sanitary Report Sanitary Administration is regarded as that part of Public Health Administration which is concerned more particularly with the matters detailed below:—

- | | |
|------------|--|
| Group I. | General Sanitary Inspection.
Inspection of Licensed Premises.
Meat and Food Inspection. |
| Group II. | Abatement of Nuisances. |
| Group III. | Issue of Permits and Licenses.
Registration of persons and premises. |
| Group IV. | THE TOWN PLANNING AND ENGINEERING GROUP.
Water supplies, provision and control of.
Markets, dairies and slaughter-houses, provision and control of.
Public washing and bathing places, provision and control of.
Collection and disposal of excreta.
Public latrines, provision of.
Scavenging and disposal of refuse.
Drainage and sewerage, provision and control of.
Cemeteries, provision and control of.
Playgrounds and open spaces.
Scrutiny of building plans.
Inspection of buildings in course of erection.
Roads and lanes, provision, construction and control of.
Housing, provision of.
Improvement schemes, preparation and execution of.
Sub-division of land into building plots, etc.
Zoning. |
| Group V. | WELFARE.
Labour conditions, inspection and control of.
Maternity and child welfare.
Medical and Sanitary Inspection of School Children. |
| Group VI. | Infectious disease, prevention of and provision of hospitals for. |
| Group VII. | Propaganda. |

For the administration of services in connection with those matters included in Group I and II above the Medical Department acting through its local officers is largely responsible and executive.

For services in connection with matters included in Groups V, VI, and VII the responsibility is shared to a greater or less degree with Officers of the labour inspection department and with the local authorities.

For the administration of services in connection with the many important matters included under Groups III. and IV. the local authority (or in a few cases the Public Works Department) is directly responsible and the functions of the Medical Department and its officers are largely confined to inspection, report and advice from the medical point of view.

EXERCISE OF FUNCTIONS BY THE ADMINISTRATION DIVISION
OF THE MEDICAL DEPARTMENT WITH REGARD TO SANITA-
TION.

1. Whole time Medical Officers of Health have been maintained throughout the year at Mombasa, Nairobi and Kisumu.
2. An average of five qualified European Sanitary Inspectors has been maintained at Nairobi throughout the year and a similar number at Mombasa. One inspector was maintained at Kisumu for the last four months of the year.
3. One European Sanitary Overseer was maintained at Nairobi throughout the year for rat destruction work, etc.
4. One European Sanitary Overseer was maintained at Mombasa in charge of conservancy which service in Mombasa is, as a matter of present convenience, controlled and directed by the Medical Officer of Health though the financial provision is carried by the "Administration" budget, and not by that of the Medical Department.
5. Infectious diseases hospitals were maintained at Mombasa, Nairobi and Kisumu.
6. Two qualified European Nursing Sisters were maintained throughout the year—one at Mombasa and one at Nairobi—as health visitors.
7. The necessary subordinate and clerical staff was maintained in all these towns.
8. The expenditure incurred by the Medical Department in maintaining the above establishment and staff and supplying medical stores, drugs and rations for the Infectious Diseases Hospitals was as follows:—

in the case of Nairobi *	...	...	£9,415
in the case of Mombasa *	...	...	£9,188
in the case of Kisumu *	...	...	£2,571

* leave, passages, office buildings and housing not included.

9. In two districts in the settled areas (Nakuru and Eldoret) part time district surgeons were maintained who acted as Medical Officers of Health with regard to certain matters.
10. In seven districts (Native Reserves) where medical centres have been established the Medical Officers in charge carried out certain sanitary duties and a large amount of work in connection with the prevention of infectious disease in addition to their very numerous duties in connection with outdoor and indoor medical relief.
11. To seventeen districts with a total population of about a million no Medical Officers or Medical Officers of Health were appointed.
12. Advice and assistance was given to local authorities with regard to various matters. Type plans for native housing, latrines, native trading centres etc., were prepared by the Chief Sanitary Inspector. In the case of the townships of Nakuru and Eldoret arrangements were made whereby all building plans submitted by members of the public were referred to Medical Headquarters for scrutiny and report by the Chief Sanitary Inspector.
13. A Health Exhibit was prepared and shewn at the Agricultural Show at Nairobi and Fort Hall.
14. Outbreaks of small-pox and other infectious diseases were dealt with as occasion required.

With regard to the matters mentioned above, the necessity of more frequent and intimate inspection of local conditions has been emphasised elsewhere in this report.

Provision has been made in the estimates for 1926 which should make such inspections and investigations a possibility. Of particular importance also is additional staff work in connection with propaganda among all sections of the community.

15. **LEGISLATION.** The Chief Sanitary Inspector of the Colony was engaged throughout the first 11 months of the year on the drafting of Drainage Regulations, and Building Regulations, the revision of the Milk and Dairies Regulations, and the drafting or revision of bye-laws for local authorities. As the result of his work there has now been prepared a complete set of Drainage Regulations and a fairly comprehensive set of building regulations suitable for application throughout the Country. The scope of this work may be gathered from the fact that the draft drainage regulations occupy 70 pages of typescript (106 sections) and the building regulations 40 pages (112 sections). It is hoped that both sets of regulations may be submitted to Government for approval during the ensuing year. The Public Health (Milk and Dairies) Regulations (47 Sections) were approved and gazetted in 1925. Another important piece of legislation which was approved during the year is the Public Health (Density of Buildings) Regulations.

The promulgation of the Density of Buildings Regulations though they comprise but a dozen sections represents a very important step in the control of township development. Briefly the requirements of these regulations are as follows:—

- (a) That in the case of any plot which is to be used for residence not more than half the plot shall be built over.
- (b) That in no case shall dwellings be erected on any plot so as to give a larger number of dwellings than is represented by the ratio of 35 dwellings per net acre.
- (c) That all buildings used, intended to be used, or adapted to be used, as dwellings shall have separate and independent access to a frontage street.

The Draft "Model" Building Regulations which have been prepared include sections dealing with the density of dwellings. It is hoped that after revision the "Model" Building Regulations will be applied to all townships in the country and that the various different and inadequate building rules will then be repealed. At present it is almost impossible for an architect resident in Nairobi to know what may be required by the rules which are in operation in another town while a Resident Commissioner, a Medical Officer of Health or a Sanitary Inspector transferred from one township to another has equal difficulty in finding out what he may or may not be entitled to require.

Section 3. Town Planning and Housing.

The making of such arrangements as may be necessary to allow of the preparation of town planning or town improvement schemes, the preparation of such schemes and their subsequent execution, the provision of housing and the control of building operations is not only a matter of sanitary administration, but it is by far the most important matter which comes within the meaning of that term.

Unfortunately neither the central Government nor any local authority in Kenya with the exception of the Municipal Council of Nairobi, as yet retains any staff experienced either in town planning or municipal or sanitary engineering and the administrative problems connected therewith. Both centrally and locally the machinery necessary to secure effective town planning and municipal sanitary engineering administration is radically defective.

To-day in Kenya as the result of the introduction of mechanical transport, the increase of production and the development of trade, towns are rapidly growing up where before there was not even a village and the shortage of adequate housing is everywhere acute. Up to the present the growth of these towns has been effected chiefly as the result of a redistribution of population but the time is probably not far distant when as the result of an actual increase of the general population the rate of growth will be greatly accelerated. The experience of Europe and of the great ports of India and the East has clearly shewn that under such circumstances neither good housing nor good working conditions can be obtained unless there be conscious and intelligent planning.

The condition of Nairobi and Mombasa and of the smaller towns of Kenya is in accord with that experience, and if our slums differ from those of Bombay or Singapore or Glasgow they differ only in extent and not in the essential qualities of slumdom. To-day in Kenya the need for skilled and conscious planning and for what may be termed the Engineering Officer of Health is more than urgent.

During the year Government retained for several months in the capacity of Government Advisor on Town Planning the services of an officer experienced in municipal and sanitary engineering problems and administration. The officer in question, Mr. F. Walton Jameson was required in particular to advise and report on the town planning scheme for the undeveloped portion of Mombasa Island then before Government and on the steps which ought to be taken to secure the improvement of the Old Town. Mr. Jameson's Report is of great interest with regard to both matters and emphasis is laid on the fact that town planning is not confined to the layout of streets but comprises the making of all arrangements necessary to ensure the convenient use of land, the erection of suitable buildings and the provision of essential services in an economical manner. And especial emphasis is laid on the fact that without engineering staff and adequate administrative machinery these things cannot be obtained.

Mr. Jameson's recommendation with regard to Mombasa and the progress which has been made with regard to the scheme are dealt with later. Here it need only be recorded that with the approval of that scheme the town planning of Mombasa will not be complete. So long as the town continues to develop, amplifications and extensions of the scheme will on occasion be required and if planning is to be ahead of development the first of these extensions is necessary now.

The arrival of Mr. Jameson also enabled some progress to be made with regard to the town planning of Nairobi but the time at his disposal was so short that he was only able to indicate the broad lines on which the town planning of the area should be considered. Nothing in the nature of a detailed town planning scheme for Nairobi has yet been prepared and the need for a complete, definite and comprehensive scheme is becoming increasingly urgent. Until such a scheme has been prepared and the necessary machinery and organisation for its execution provided building and industrial development and measures directed towards the improvement of public health cannot proceed on sound lines. The time has now arrived when stable and permanent development should be encouraged and the future amenity of the town secured.

Section 4. Sanitation, Sanitary Administration and Housing and Town Planning in:—

- (a) Native Reserves,
- (b) The Settled Areas (Rural).
- (c) The Settled Areas (smaller townships).
- (d) The larger townships—Nairobi and Mombasa.

(a) NATIVE RESERVES.

Though no general improvement in the sanitary conditions of the Native Reserves can be recorded as having occurred during the year a number of changes are taking place which should render marked improvement in the course of the next few years a possibility. General improvement in sanitary conditions is dependent on increased production per head of population, improved communications and education and direction. Of these matters it can be recorded that production is steadily increasing and communications improving, both by road and rail. Of particular importance perhaps is the remarkable development which has recently taken place in the use of the motor bus and the motor lorry. By means of these vehicles not only can the rural native market his produce and obtain essential supplies but also both he and his women folk can now with comparative ease and small expense pay visits to important centres which less than a year ago were practically inaccessible to all but a few.

The effects of education, using that term in a broad sense, daily become more noticeable and the desire to erect a better home, to secure a better dietary and to wear better clothes is becoming more general. The actual number of improved houses is still small and compared to the number of unimproved huts all but negligible, nevertheless it is probable that with a minimum of direction the movement towards improved home conditions would assume important proportions and secure far reaching results. It is with the object of supplying a certain amount of direction and assistance to this movement that provision has been made in the Medical Estimates for 1926 for the beginning of an European Sanitary Staff in the Native Reserves. It is hoped that towards the end of that year or early in 1927 at least a few of the reserves will be provided with a Medical Officer of Health and a qualified European Sanitary Inspector. If, however, direction is to be effective it must be central as well as local, and general as well as particular

and greater co-ordination of the energies of all Departments of Government will be required. In addition the assistance of an "Engineering Officer of Public Health" must be made available and the possibilities of the machinery afforded by the new Local Native Councils utilised to the full. The Councils are already aware of the advantage of having a hospital or a dispensary and are willing to raise funds for their construction, it is essential also however that they should know that pure water supplies, good market buildings and slaughter houses are also matters of practical politics and that if they are willing to raise the necessary funds an engineer is available who will enable them to carry the project into effect. Not a little propaganda has been carried out both by officers of the Administration, the Education and the Medical Department and by missionaries with regard to the necessity for improved housing but if the precepts of hygiene are to be put into practice the services of an engineer are essential. The type of house that is required may be simple but the number required is large, the brick making industry has to be established, the local materials investigated and the builders supervised.

(b) THE SETTLED AREAS (RURAL).

No local authority can yet be said to carry out any sanitary administration in the rural parts of the settled areas and such sanitary work as has been done has largely been carried out by officers of the Medical Department and of the Labour Inspection Division of the Department of Native Affairs. This work has largely been confined to the inspection of native quarters on farms and estates and has been referred to in the section on Labour Conditions.

In the Thika-Ruiru Area however which lies some 16 miles from Nairobi a mosquito and malaria survey has been begun by the Entomologist and a number of settlers advised as to the measures which they should adopt to improve health conditions on their estates with regard to this matter. Of general sanitary inspection of the conditions under which the European farming community lives there has been practically none. From what little information is available however it would appear that there is a very large amount of work to be undertaken in this direction. It is hoped that it may be possible to make a beginning during the ensuing year in the rural areas in the neighbourhood of Nairobi and possibly also in the neighbourhood of one of the up-country towns.

(c) THE SETTLED AREAS: THE SMALLER TOWNSHIPS:

KISUMU, NAKURU, ELDORET AND KITALE.

Up till 1925 it was usual to bracket Kisumu with Nairobi and Mombasa as one of the larger townships, while Nakuru and Eldoret were referred to as the smaller townships. Kitale, which at the beginning of 1925 consisted of nothing more than three small Indian dukas or shops, two or three Government bungalows and a number of recently surveyed but still vacant plots, has not previously been referred to in these Reports.

The growth and expansion of Nairobi and Mombasa and the comparative stagnation of Kisumu have rendered the continuance of that classification unsuitable.

As usual it can be recorded that the Sanitary Administration in Kisumu so far as scavenging and conservancy and the supervision of building operations are concerned has owing to the existence of a technical officer, the superintendent of Inland Revenue and Conservancy, been satisfactory but that is all. Kisumu is still without an adequate water supply or a water borne sewage disposal system and its bazaar though fairly clean remains an overcrowding slum. A new water supply it is true has been arranged for and should be available within the next twelve months and regulations (the Kisumu Density of Buildings Regulations) have been introduced which in conjunction with the alienation of further land for business and residential purposes should result in the very radical improvement of the bazaar. So far progress may be recorded; it remains however for schemes to be prepared for the institution of water borne drainage, for the housing of Africans and for the rating of the township. The latter is at present being arranged for, and the two former should not be impossible.

Of Nakuru and Eldoret on the other hand it cannot be recorded that either scavenging or conservancy are effectively carried out or that building operations are supervised, while owing to the fact that building plans have not in the past been subject to scrutiny by any officer with sanitary engineering experience most plots in both of these towns are seriously overcrowded with buildings of the most insanitary description and structural

nuisances of a serious nature exist throughout both towns. The water supplies are bad and inadequate, drainage—even surface drainage is conspicuous by its absence, while many roads and lanes have not been made up. No provision exists for the housing of casual labour, food inspection has not been initiated and the inspection of licensed premises is largely ineffective. No general rate is levied for township purposes.

The above description would probably be equally applicable to most towns in the pioneer stage of development of any Colony. That such conditions should have arisen is not surprising, they followed from the fact that the local authorities—i.e., the resident or district commissioners—responsible for the control of development in these townships were from the beginning entirely unprovided with local technical staff, while no central department capable of providing the necessary assistance or advice was in existence. During 1925 a recommendation was made to Government that funds should forthwith be placed at the disposal of the Resident Commissioners of Eldoret and Nakuru for the employment of cleansing superintendents but the problem of the scrutiny of plans and the inspection of building construction remains to be dealt with. An attempt has been made to deal with the matter of the scrutiny of plans in the case of Nakuru by arranging with the Resident Commissioner for all plans submitted to him to be forwarded to Medical Headquarters for scrutiny and report. This method though effective to an extent is cumbersome and it is still defective in that it makes no provision for ensuring that the building actually erected is constructed according to the approved plan or in a workmanlike manner. The method is also unsound in that to a certain extent it results in the Medical Department becoming, or being regarded as, the sole authority on a subject with only part of which it is properly qualified to deal.

For the improvement of the water supplies of Eldoret and Nakuru provision is being made from loan funds and the appointment of a medical officer of health and sanitary inspectors is foreshadowed in the Estimates for 1926. Whether it may be possible to make the necessary appointments during that year will depend on whether sufficiently trained and experienced staff may become available. To appoint insufficiently trained and inexperienced staff is not only uneconomical but is liable to make future progress more difficult. For drainage, sewerage, the improvement of roads and lanes, the acquisition of the plant essential for efficient cleansing, the provision of housing for casual labour and the inauguration of improvement schemes for the slum areas of the bazaars, arrangements have still to be made. These arrangements involve financial consideration and one aspect of that question has received attention from Government in that instructions for an assessment of township values have been issued. The matter is not however purely a local one; it is of importance to the Colony as a whole that its townships should be adequate and sanitary and examples of what can be achieved by organised effort. No town in the early stages of development has as a rule either the capital or the credit necessary to ensure hygienic social conditions and the measure to which such conditions are of value to the population of the Colony as a whole must at an early date be determined, and an proportionate contribution made from central funds to the revenues locally available; but together with the contribution of central funds technical advice with regard to administration and engineering must also be made available.

With regard to the township of Kitale, the following facts are of interest. The town was planned some few years ago but plots were only auctioned in 1924. The plan is probably not the best that could have been produced but in essentials it is probably sound. The plots are of suitable sizes and the roads and sanitary lanes of adequate width. The conditions contained in the leases under which the plots were granted required that certain plots should only be used for business purposes and others only for residential purposes. In the case of business plots not more than two-thirds of the plot is allowed to be built over and in the case of the residential plots at least one-half must remain vacant. A few inadequate and antiquated building rules had been applied to the township. An inspection carried out early in 1925 showed that three badly designed, ill-lit and badly constructed shops of corrugated iron on timber framing had been erected on three plots in such a manner as to leave narrow passages between each building and had no action been taken the town to-day would have consisted of a congeries of similar buildings but little different from any other town in East Africa. With a view to avoiding the erection of further unsatisfactory buildings however, an arrangement was made with the Resident Commissioner whereby all plans submitted were first sent to Medical Headquarters in Nairobi for scrutiny and report by the Chief Sanitary Inspector. No cognisance was

taken of what might or might not be required by the few inadequate building rules applicable in Kitale. Reports were submitted which directed attention to all faults in design and suggested improvements with reasons for the same. By this means it has been possible to secure the erection of most buildings in brick rather than corrugated iron, to secure adequate lighting, ventilation, convenience, general sound construction and precautions against fire while overcrowding of the land with buildings has been prevented.

At the beginning of the year most of the plans submitted were as a rule defective and objectionable in many respects, by the end of the year a very marked improvement had taken place and it had become unnecessary in most cases to offer any criticism except with regard to points of detail.

There remain however the matters of roads and drains, water supplies, slaughter houses, markets, housing of casual labour, conservancy and refuse disposal, the collection of revenue, the inspection of buildings and the inspection of nuisances, to be arranged. To provide these services in anything like an adequate fashion would be beyond the present financial resources of the townsfolk but the district which is served by the township is neither unimportant nor poor. It would be unfortunate if within the next year or so some financial relationship could not be devised such as would allow of the establishment of all essential services on modern lines.

(d) THE LARGER TOWNSHIPS OF NAIROBI AND MOMBASA.

1. NAIROBI.

While some progress can be recorded in the improvement of the sanitation and public health of Nairobi during the year, the progress when compared with that attained during the previous few years has not been striking.

Political and economic factors and the general trade depression which have retarded progress for some time have largely passed away and during the period under review the town has enjoyed an era of comparative prosperity. In spite of these more favourable conditions long needed sanitary reform has received but scanty attention and has not kept pace with commercial development.

It is to be regretted that the Municipal Loan for urgent public works has not yet materialised, and that while some improvement in the situation as regards native housing can be recorded, the position in regard to the water supply, the extension of the sewerage system, the construction of a modern slaughter-house and numerous other matters of vital importance in connection with public health remains much the same as it was a year ago.

An increasing proportion of the community is beginning to appreciate the necessity for raising the general standard of sanitation, it is also necessary however that existing conditions should be very fully appreciated by the Municipal Council and that energy and enterprise in dealing with public health matters should be consistently maintained. It is essential that a greater interest in sanitation and public health on the part of the local health authority should be aroused and that councillors should to a much greater extent than has always been customary personally visit the insanitary areas in the town and familiarise themselves with existing conditions.

Successful public administration cannot be achieved without an intimate knowledge of the social conditions which pertain.

Increasing development demands that the position should be fully appreciated, as owing to the insanitary features which exist in most parts of the town the danger of a serious outbreak of infectious disease, with a resulting disorganisation of commercial activities, is ever present.

While the year 1925 cannot be regarded as an auspicious one in the annals of the town in regard to public health affairs the arrival of Mr. Walton Jameson, towards the end of the year must be mentioned. The valuable advice which he gave on town planning, Municipal government and kindred matters raises the hope that it will be possible to record greater progress in 1926.

GENERAL SANITATION.

A. Water Supply.

The water supply of Nairobi is most unsatisfactory and the recent drought and consequent shortage of water has once more emphasized the necessity of obtaining an adequate quantity of water for the present and future requirements of the town. The present supply is inadequate for the needs of the community, its quality is uncertain and the distribution of the

supply leaves much to be desired. Although attention has been drawn to this unsatisfactory state of affairs on numerous occasions during the past few years no material improvement can be recorded.

The town still derives the whole of its water supply from springs at Kikuyu and during the year a daily supply of approximately a million and a half gallons was available from this source. Estimating the population served at 30,000 this is equivalent to about 50 gallons per head, but owing to lack of storage facilities and other factors a large amount of this water runs to waste and as a result the actual supply available for consumption is very much less.

The completion of the million gallon storage tank, which was erected during the year, will relieve the situation to some extent, and the appointment of a waste water inspector and the proposal to install meters on all supplies will also tend to check waste. In this connection it is suggested that the passing of a bye-law compelling all householders to place their domestic water supply inside their houses instead of having standpipes in the compounds as at present would still further tend to reduce waste. Incidentally the passing of such a bye-law would simplify drainage problems and lessen facilities for the breeding of mosquitoes.

Samples of water analysed at periodic intervals during the year show comparatively little contamination, but as it is known that under existing conditions contamination is liable to occur at any time it is still considered necessary to advise the public by weekly notices in the Press that all water to be used for drinking purposes should be boiled. The installation of a purification plant is essential and the cost of an efficient plant would not be great.

A complete and thorough investigation and report by a competent engineer on the whole situation in relation to the present and future water supply of the town is urgently required. The Municipal Engineer has strongly advised the Municipal Council to adopt this course, advice which it is hoped the Council will not only accept but act upon without further delay.

B. Disposal of Excreta.

The completion of several sections of the new water borne sewage system in some of the main streets of the commercial area of the town early in the year enabled a number of drainage connections to be made with the sewers. The work is proceeding fairly rapidly and by the end of 1926 the majority of pail closets in the area served by the sewers will have been converted into water closets.

The single bucket system of conservancy is still, however, the system maintained in most parts of the town and the service rendered by the Municipal Council in this respect cannot be described as satisfactory. Little or no provision is made for the cleansing of buckets, the charges for the service are high and in addition, in the interests of health, householders are compelled to employ private sweepers. While the collection and disposal of night-soil by means of pail closets and night soil carts can never be an ideal arrangement, by proper organisation and administration a fairly efficient service can be maintained. During the year no improvement in this service took place.

Private water borne sewage systems have been installed on a number of premises and these are becoming increasingly popular in the town. In the past no objections to such installations were raised provided the size of the plot and the nature of the soil were suitable. As development proceeds and closer settlement takes place the dangers arising from such installations increase and increase to a much greater degree when such installations are multiplied. It must also be mentioned that in permitting night soil to be disposed of in this way the local authority has countenanced a system condemned in older established countries. The desire on the part of a large number of the inhabitants of Nairobi to adopt water closets in preference to pail closets, a desire which can be readily appreciated, rendered it necessary during the year to draw the attention of the Municipal Council to this matter in order that the position might be fully considered. To enable the Council to become conversant with all the facts of the case a careful memorandum was prepared for consideration. It would appear that the time has now arrived when the disposal of excreta by means of septic tanks and soakage pits should be definitely prohibited within the Municipal area and the Municipal Council should insist on the adoption of a system of water-tight cesspools which are exhausted at regular intervals and the contents carried by portable tanks to proper disposal grounds. As many years must

elapse before the water-borne sewage system can be extended to all parts of the town, improvements in present methods of excreta disposal are most necessary and it is essential that the local health authority should give the matter further and more serious consideration.

The provision of public latrines in the commercial area of the town for all sections of the community and the reconstruction of existing public latrines should be considered immediately, as the lack of accommodation has given rise to many complaints during the year.

C. Drainage and Sewerage.

Although some improvement can be recorded during the period under review the disposal of storm water and sullage water from premises both commercial and residential in numerous instances gives rise to considerable difficulty.

The open concrete drains in the commercial area of the town have in many cases become so broken and dilapidated that they have ceased to function and in the residential area proper drainage is conspicuous by its absence.

Experiments conducted in the use of porous agricultural pipes in properly graded cuttings and covered with stones have given encouraging results and are being continued during the present year.

No extension of the water borne sewage system took place, but the construction of a small additional section in the centre of the town has been decided upon during 1926. The extension of the system not only in the commercial area but in some of the more closely settled residential areas of the town should be considered immediately as a marked improvement in general sanitation would result. The construction of several sewage intake depots for the disposal of the contents of night soil carts should also receive early consideration. If these were conveniently situated and properly designed no nuisance should occur and a considerable saving in the transport of night soil would be effected.

The acquiring of land and the preparation of plans for sewage disposal works are other matters which require consideration in the near future, as at present all sewage passes directly into the Nairobi River without treatment.

Experiments carried out during the year have shown that sewage passing through the large papyrus swamp, situated below the present outfall of the main sewer, undergoes a considerable amount of purification and no great nuisance occurred. When the quantity of crude sewage to be dealt with increases this natural purification cannot be relied upon and nuisance will most certainly arise.

D. Scavenging and Disposal of Refuse.

The Municipal Council employs a large native staff for the cleaning of streets and drains. While the cleansing itself is carried out in a fairly efficient manner, the provision of a supply of covered hand-carts into which rubbish can be placed immediately on collection would improve this service. At present rubbish which has been collected is dumped in heaps at the sides of the streets where it remains for hours before being removed, with the result that a considerable quantity of it is continually being blown about the town.

The indiscriminate dumping of rubbish and building debris on both public and private lands still continues and gives the town a most untidy appearance. The complete blocking of sanitary lanes and passages with packing cases, dilapidated vehicles and other accumulations of rubbish is by no means rare and a more strict enforcement of the bye-laws controlling these practices is advisable.

The Municipal incinerators, which are of an obsolete pattern and small capacity, are quite unable to dispose of the large quantity of refuse which is collected daily, with the result that considerable nuisance in their vicinity occurs and the present state of affairs is rapidly getting worse.

The installation of a modern refuse destructor on a permanent site should be proceeded with without delay, as not only would such a plant dispose of all refuse in an efficient manner and without nuisance, but some revenue from by-products might also be collected.

E.—Sanitary Inspections and Abatement of Nuisances.

While some improvement in the general sanitation of the town can be recorded, progress has again been slow. Many nuisances have been abated, but many still exist and others are continually arising. During the past few years efforts have chiefly been directed towards the prevention of the possibility of insanitary features arising in connection with new buildings and in this connection a considerable amount of success has been achieved. In regard to existing premises, however, more particularly those situated in the commercial area of the town, improvement of sanitation is usually a most difficult matter and can often only be carried out by complete demolition and reconstruction. The routine inspection of trade premises in connection with licensing and the refusal to recommend the granting of a licence until sanitary defects had been remedied has enabled a certain amount of control to be exercised, but improvements undertaken have generally been more of a temporary than of a permanent nature.

The careful scrutiny of all building plans, whilst occupying a large amount of the time of the staff, has had most valuable results, particular attention being paid to new drainage installations.

AERATED WATER FACTORIES.

These, of which there are 4 in the town, were maintained in a fairly clean and sanitary condition, but the construction and situation of the premises leave a good deal to be desired. Cleaning of bottles is carried out in a satisfactory manner in all the factories, and samples of aerated water taken during the year were of a reasonable standard of purity.

BAKERIES.

Bakeries, of which there are 7 in the town, were inspected frequently and as a result of these inspections minor repairs and cleansing were effected. In the majority of premises there was considerable room for improvement and it was only by constant supervision that a reasonable standard of cleanliness was obtained.

BUTCHERS:

Thirty-five butchers' premises were licenced during the year and 758 inspections were made. Many of the premises inspected could not be described as satisfactory, but the reconstruction of several was undertaken during the year and on the whole there was a slight improvement as compared with previous years.

CATTLE SHEDS AND STABLES:

During the year the closing of cattle sheds used for the housing of milch cattle was continued and very few of these remain within the Municipal area. Stables for mules and cattle sheds for transport oxen have been confined as far as possible to a certain part of the commercial area. In most cases the construction and sanitation of these premises is by no means satisfactory and the desirability of moving these animals further away from the centre of the town is a matter for consideration. The bye-laws controlling the housing of cattle, horses and mules appear to be somewhat ambiguous and the licensing of such premises is not yet enforced by the Municipal Council.

EATING HOUSES:

Thirty-one Asiatic and African Eating Houses exist in the town and 572 visits were made to these premises during the year. No licence for an Eating House was recommended until the place had been thoroughly cleansed and provided with adequate sanitary accommodation and proper facilities for cooking. On the whole some improvement in the sanitation of these premises can be recorded.

FISHMONGERS:

These, of which there are two in the town, were subjected to 28 inspections.

DHOBIES:

Twelve dhobies were provisionally licenced during the year, pending the erection of Municipality owned model dhobi quarters. Although the previous Municipal Council had thoroughly discussed this matter and had made provision in the proposed Municipal loan for the construction of suitable

buildings, the present Municipal Council, towards the end of the year, decided not to proceed with the scheme. As a result of this somewhat belated decision valuable time has been lost and the dhobi premises throughout the year remained in a most dilapidated and insanitary condition. Sanitary notices have now been served on the owners of all premises and the strongest possible action will be taken by the Health Office during 1926 without further warning to have these premises closed.

LAUNDRIES:

Five laundries are licensed in the town and these on the whole are maintained in a fairly satisfactory condition.

LODGING HOUSES:

The licensing of Lodging Houses is not yet enforced and until additional native housing is provided on a large scale and proper regulations are framed, the control of lodging houses will be quite impossible.

TRADE PREMISES:

Six hundred and ninety-eight premises were licensed during the year and 5,019 inspections were made. As a result of these inspections cleansing and minor works were carried out, but little has been accomplished in the way of permanent improvement.

VEGETABLE SELLERS:

Twenty-four vegetable sellers were licensed during the year and 415 inspections were made.

SWEETMEAT SELLERS:

Eleven sweetmeat sellers were licensed during the year and 205 inspections were made.

VERANDAH TRADERS:

Verandah trading has again been difficult to control and, as in past years, has been responsible for much of the untidy appearance of the Bazaar area.

LIQUOR LICENSED PREMISES, HOTELS, BARS, etc.

With few exceptions these premises can be described as satisfactory and a fairly high standard of sanitation is maintained.

Housing and Town Planning.

The housing of the European population, as regards the type of building occupied, on the whole may be described as satisfactory, but there is a considerable shortage of houses and rents remain high. Increasing development has resulted in a scarcity of labour, both skilled and unskilled; the cost of building is rising and this state of affairs will probably be more acutely felt during the next few years. Native quarters and outbuildings attached to European bungalows have again received a large amount of attention and many improvements have been effected. Towards the end of the year the Railway authorities commenced work on a housing scheme for the accommodation of their European employees, the existing housing on account of both its situation and construction being most unsatisfactory. Under the scheme some fifty or more houses will eventually be built and it is hoped that approximately half of them will be ready for occupation by the end of 1926.

In regard to Government housing modern flyproof latrines and new native quarters have been erected at a number of bungalows, but many of the bungalows themselves are still in urgent need of repair. Several of them are rapidly falling into a state of dilapidation and in a few cases the housing provided for Government employees is unfit for human habitation.

In spite of high building costs many new European residences were built and occupied during the year, but building development has not kept pace with the increase in population. Owing to the general shortage of housing numerous business premises in the town designed for office accommodation are being used for residential purposes. In many instances the buildings are most unsuitable, kitchens, bathrooms, latrines and servants' quarters not being provided and as a result many nuisances occur. The demand on the part of a section of the European community for housing accommodation in the centre of the town is increasing and it is surprising that housing in the form of flats or residential clubs has not yet been built by private enterprise.

Concrete blocks and local bricks are becoming increasingly used in housing construction and are gradually replacing the use of stone, and the use of corrugated iron is rapidly being discarded.

B. Asiatic Housing.

Little improvement can be recorded in the housing of the Asiatic population and in most parts of the town the conditions under which the Asiatic community lives can only be described as appalling. Legislation introduced during the previous year regulating the density of buildings has enabled some control to be exercised in regard to new buildings, but the problem of dealing with existing insanitary and congested buildings still remains to be solved. The opening of the new Asiatic residential area may possibly improve matters to some extent, but there is no reason to suppose that any great migration of the Asiatic population to this new area will take place.

Most premises in the bazaar areas are used for combined business and residential purposes. The premises in the majority of instances are in an insanitary and dilapidated condition and much overcrowding occurs. As a result of sanitary notices alterations, repairs and reconstructions have been carried out on some premises and in a few of the worst cases the buildings have been closed and demolished. While these improvements tend to ameliorate conditions they are but palliative measures and the only way in which to deal with these large areas of "slumdom" in a satisfactory manner is by the methods suggested in the English Housing and Town Planning Acts. Existing conditions in certain parts of the town are a serious menace to public health and demand the serious attention of the Council.

C. African Housing.

During the year considerable progress has been made in the housing of the African population of the town, particularly by the Railway authorities who are rapidly providing modern sanitary housing for the whole of their African employees. As this accommodation becomes available the demolition of the old insanitary housing is gradually being undertaken and a marked improvement in the sanitation of this area of the town is taking place. In regard to the Municipal housing scheme, although a loan of £16,000 was sanctioned early in the year, building operations were not commenced before the end of the year and progress has been extremely slow owing to shortage of bricks and other factors. The Government native housing scheme was not proceeded with, but plans have been prepared and it is hoped that this accommodation, which is urgently required, will be provided in 1926.

The supply of African housing in the town is quite unable to meet the demand and although the greater portion of the available housing is in a most undesirable condition, no action could be taken as demolition simply meant that the inhabitants would have to find lodging on other premises already overcrowded.

The provision of African housing on a large scale still remains an urgent necessity and no marked improvement in sanitation or public health can be expected until a large quantity of additional housing has been provided.

GENERAL SANITARY OPERATIONS, NAIROBI.

House to House and General Inspections.

First inspections	...	...	...	...	...	1,824
Subsequent inspections	...	...	...	...	...	5,572
Trade inspections	...	...	...	...	...	8,251
Drainage inspections	...	...	...	...	...	778
New buildings	...	...	...	...	...	887
Total						17,312

Sanitary and Other Notices Served.

Outstanding from previous year	...	...	...	...	55
Served during the year	...	...	...	...	301
Not proceeded with	...	...	...	...	10
Complied with	...	...	...	...	301
Outstanding	...	...	...	...	45

Result of Notices and Inspections.

Premises demolished	...	...	...	...	82
" closed	...	...	...	...	39
" cleansed	...	...	...	...	56
" limewashed and painted	...	...	...	...	75
" floors of, relaid	...	...	...	...	26
" floors of, repaired	...	...	...	...	42
" roofs of, repaired	...	...	...	...	7
" yards of, paved	...	...	...	...	1
" " of, paving repaired	...	...	...	...	15
" " of, cleansed	...	...	...	...	22

Latrines and Water Closets.

Water closet installations connected to the sewer	29
Water closets: private installations	11
Latrines, provided to Government quarters	38
" provided to other premises	105
" repaired	141
" cleansed	28
" demolished (Government quarters)	38
" demolished (other premises)	70
" buckets provided	74

Drainage.

New drains tested	...	...	...	...	55
Open concrete drains provided	...	...	...	...	345 Lin.
" " " cleansed	...	...	...	...	211 yards.
" " " repaired	...	...	...	...	28 "
" " cut	...	...	...	...	166 "
" " cleansed	...	...	...	...	322 "
Concrete splash basins provided	...	...	...	...	21
Waste pipes provided	...	...	...	...	6
" " repaired	...	...	...	...	7
Baths trapped	...	...	...	...	4
Sinks	...	...	...	...	1
Soakaway pits provided	...	...	...	...	3
" " emptied	...	...	...	...	2
" " filled in	...	...	...	...	16
Rain water pipes, provided	...	...	...	...	28
" " " repaired	...	...	...	...	37
Eaves gutters provided	...	...	...	...	18
" " repaired	...	...	...	...	19

Native Housing.

New native quarters erected (Government premises)	12
New native quarters erected (other premises)	31
Native huts demolished	110
Glazed windows provided	33
" " repaired	4

Kitchens.

Kitchens provided	15
" repaired	20
" demolished	9

Refuse Disposal.

Dustbins provided	105
Dustbin lids provided	74
Deposits of refuse, stones, etc., removed	32
Vacant plots, cleared	49

Cattle Sheds and Bomas.

Repaired	6
Cleansed	53
Closed	16

Miscellaneous.

Sleeping in kitchens and stores stopped	56
Overcrowding stopped	35
Trestles for stacking foodstuffs provided	27
Trestles for stacking firewood provided	6
Unspecified nuisances abated	75

Mosquito Suppression.

Areas cleaned of long grass and bush	...	...	app. 267 acres.
Excavations stopped	...	...	3
Culverts cleansed	...	...	3
Culverts repaired	...	...	1
Culverts oiled	...	...	2
Swamp areas oiled	...	...	7
Mosquito-breeding places dealt with	...	...	35
Borrow pits and hollows filled in	...	...	8

Disinfections.

Premises disinfected	...	...	51
Number of articles disinfected	...	...	1,134
Number of articles destroyed	...	...	35

Licensed Premises.

Description.	No. of Premises.	No. of Inspections.	Applied for.	Approved.	Not approved.
Aerated water factories	4	96	4	4	—
Bakeries	7	194	7	7	—
Butchers	30	758	43	35	8
Cattle sheds and bomas	51	809	Nil	Nil	10 closed
Eating Houses	31	572	49	38	11
Fishmongers	2	28	2	2	—
Dhobies & laundries	22	155	19	17	2
Trade premises	591	5,019	787	698	89
Vegetable sellers	14	415	29	24	5
Sweetmeat sellers	10	205	12	11	1
	762	8,251	952	836	126

Building Plans.

Plans submitted	...	...	...	...	236
„ returned for amendment	...	...	...	...	222 *
„ approved	...	...	...	...	206
„ disapproved	...	...	...	...	12
Plans pending or otherwise not proceeded with	...	...	...	...	18

* It will be noted that a large percentage of plans submitted have had to be returned for amendment.

Prosecutions.

	No. of cases.	Convic- tions.	With- drawn.	Cases Lost.	Penalties.
Under Township Rules	70	70	Nil	Nil	Fines 2,548/- & 14 natives awarded corporal punishment.
Under Public Health Ordinance	27	22	4	1	Fines 717/- & 19 Court Orders to comply with the Sanitary Notice.

Of the 70 prosecutions undertaken under the Nairobi Township Rules 62 were for selling adulterated milk. All ended in conviction and fines totalling Shs. 2,490/- were imposed and six of the accused, in addition, were awarded corporal punishment. As an alternative to the fines a total of 1,086 days imprisonment were imposed.

Seven prosecutions were for conveying meat through the streets without sufficient covering, fines totalling Shs. 53/- or 76 days imprisonment being imposed. One prosecution was for selling meat whilst improperly clothed and the accused was fined Shs. 5/-. Of the 27 prosecutions made under the Public Health Ordinance, 13 were for non-compliance with sanitary notices. In ten cases a Magistrate's Order was obtained and fines amounting to Shs. 237/- were imposed. Three cases were withdrawn on compliance prior to the date of hearing in Court.

Eight cases were for the demolition of premises and as a result eleven buildings containing 28 insanitary dwellings were demolished. Two cases were for depositing carcases to the detriment of public health, orders for removal and proper disposal were obtained and fines amounting to Shs. 300/- were imposed.

Four cases were for exposing foodstuffs unfit for human consumption, one case was lost, one withdrawn and two were convicted and fines amounting to Shs. 1,803/- inflicted.

II. MOMBASA.

Water Supply.

Mombasa derives its water supply from two sources:—

- (a) Wells, (b) A gravitation pipe supply.

The wells as is to be expected in a town where much sullage water and sewerage is disposed of underground are in most cases more or less seriously contaminated and as soon as the pipe supply, which is of excellent quality, has been sufficiently increased should be closed down.

Unfortunately the pipe supply is at present insufficient in quantity, only about 600,000 gallons being available per diem.

The laying of a new main is however about to be commenced which by the end of 1928 should bring the daily supply up to about 1,100,000 gallons and considerably relieve the situation. For how long a supply at the rate of 1,100,000 per diem will be sufficient it is impossible to say. The present population of Mombasa is estimated at about 40,000 and when the new main is in operation about 27 gallons per head per diem will be available provided no increase in the population takes place in the meantime.

A stationary population is however an unlikely eventuality and it becomes a matter of importance that a new and additional supply should be discovered as no more than 1,100,000 gallons per diem can be obtained from the present source.

Drainage and Sewerage.

There are no sewers in Mombasa and but few storm water drains. Rainwater is either collected in tanks or disposed of by soakage pits, while sullage water is led to cesspits.

Night soil in the European quarter is disposed of by dry conservancy in the case of most houses, though in an increasing number of cases water closets are being installed and the sewage dealt with by means of septic tanks, the effluent from which is led to soakage pits.

As the coral of which the Island is in many places composed provides easy soakage the system is popular and it has hitherto been difficult to convince the public that the system of underground disposal is unsound in principle and not one which can be relied on to meet the needs of a developing town. Owing, however, to the vigorous propaganda which has been carried out by the Medical Officer of Health during the year it is probable that the system is not now everywhere regarded with the same confidence as formerly and there can be little doubt that the inconveniences and nuisances which inevitably result from makeshift methods of rain-water, sullage water and sewage disposal will at no distant date engender a desire to explore the possibilities of initiating main drainage. Whatever may be the possibilities of progress in this direction it is of the utmost importance that the lines which the sewers in the New Town which is about to be developed will require to follow should be determined at once if convenience in the arrangement of buildings is to be secured and regard had for the pockets of private property owners and the local authority.

With regard to Mombasa Old Town matters are different and the conditions which have resulted from the overcrowding of the land with buildings and the almost complete absence of surface drainage have led to the most deplorable conditions. It is probably but little exaggeration to state that in the majority of cases in the old stone town the sullage water from one building is disposed of under the foundations of the next. A few lengths of new storm water drain have been laid during the year in order to facilitate surface drainage in certain areas which were apt to become all but uninhabitable owing to flooding during the rains. In so far as they prevent flooding these new lengths of drain are useful but in that they become of necessity channels for the conveyance of sullage water and are in places covered they are a fruitful source of nuisance and cannot be regarded as a serious

contribution to the improvement of conditions generally. The matter of the sewerage of the old town is dependent on the introduction of a general improvement scheme for the area and will be referred to again in connection with town planning.

Scavenging and Refuse Disposal.

In Mombasa the Medical Officer of Health is in executive control of scavenging, refuse disposal and conservancy. A double bucket system is in operation and refuse is destroyed by incineration in a 4 celled Horsfall destructor, the department is now well organised and operates in as efficient a manner as the plant, staff and labour at its disposal permit.

Sanitary Inspections—Abatement of Nuisances.

A summary of routine work carried out by Sanitary Inspectors is appended. It is obvious from a casual tour of the Bazaar area that all nuisances are not dealt with nor can they be definitely dealt with so long as people continue to live in overcrowded houses and in insanitary surroundings.

The difficulty of dealing with overcrowding is the essential difficulty experienced throughout the Bazaar area. Thus, if one overcrowded block were dealt with, radically, the excess population would proceed to overcrowd and congest some adjoining block. One solution is to provide ready access to cheap land for the excess population—the only comparatively cheap land is on the mainland.

Until a definite policy with regard to the provision of housing has been adopted endeavour can only be made to abate the more glaring and dangerous nuisances, or those where the conditions are such that permanent improvement can be effected, and those connected with such public places as hotels, bars, eating houses, lodging houses, etc.

Licensed Premises.

Licensed premises in Mombasa are Aerated Water and Ice Factories, Bakeries, Billiard Saloons, Cattle Sheds, Dairies, Eating Houses, Laundries, Hotels, Native Beershops, Lodging Houses, Butchers' premises, vegetable sellers' premises, soap factories and Cemeteries and an account of inspections made is given in the attached table. It would be of value were all trade premises in Mombasa required to be licensed as is the case in Nairobi and cognisance taken of the Health Officer's report as to their fitness for the purpose for which they were to be used.

HOUSING AND TOWN PLANNING.

Housing.

The housing problem in Mombasa is acute, urgent and fundamental and all sections of the community are affected. The matter may be considered under the following headings:—

Housing of the Official Population	(European
	:- Asiatic
	(African.
Housing of the General Population	(European
	:- Asiatic
	(African

Housing of the Official Population, European Officials.

The houses provided by Government are too few for the number of officials and administration is adversely affected thereby. That it is undesirable that officers whether married or single should have no option but to live in expensive hotels is obvious. It is an urgent matter that the erection of more Government accommodation should be expedited.

Asiatic Officials and Clerical Staff.

The Kenya and Uganda Railway provides accommodation for its Asiatic Officials but no other Department does so and house allowances are given in lieu of quarters. Unfortunately such quarters as are obtained are almost without exception bad, nothing else being available. The provision of satisfactory accommodation for these officials is urgently necessary.

African Official Employees.

There are various compounds in which Government native employees are housed and of these the Conservancy Compound is satisfactory according to present standards. The police lines also represent fairly good housing. The Public Works Department possess one or two fairly good dormitories for their unskilled labour but the accommodation provided is inadequate for the numbers employed.

A great advance can be recorded with regard to the housing of Africans employed by the Kenya and Uganda Railway at Kilindini where a very large housing scheme is being carried out. The scheme is similar to that which has proved so satisfactory at Nairobi.

Housing of the General Population.

EUROPEANS.

Though a number of very good class houses have been erected during the year the supply of housing is still inadequate and accommodation expensive. A considerable amount of inconvenience necessarily results but as the population concerned is still small and for the most part fairly well to do no problem yet exists which need be referred to in this report. That unsatisfactory conditions may arise in the future is however a possibility which should not be lost sight of by the local authority.

ASIATICS AND AFRICANS.

The following extract from the Annual Report for 1924 is reproduced:—

“ In Mombasa no notable developments have taken place during the year, nor will any marked improvement of sanitary conditions be possible until more land can be set free for the erection of further housing.

It is further stated that:—

“ Progress in Mombasa is dependent on town planning, as, till that is accomplished neither demolition schemes, housing schemes, nor main drainage are possible and it is fundamental and radical alteration that is required if sanitary conditions are to be improved.”

The record of 1925 is as follows:—

- (a) Towards the middle of the year Government was informed by the Secretary of State that in addition to the loan funds required for the execution of the “ Town Planning Scheme ” for the undeveloped portion of the Island a loan of £50,000 would be made available for the improvement of the “ Old Town ”.
- (b) Arrangements were made during the year by Government to retain for a limited period the services of an engineer with experience of Municipal and Town Planning work to advise and report on the Mombasa Town Planning work to advise and report on the Mombasa Town Planning Scheme, the town planning of the Mainland and the improvement of the old town.
- (c) An Engineer (Mr. F. Walton Jameson) was accordingly engaged. He arrived in Mombasa in August and rendered his report to Government in due course.

Mr. Jameson's report dealt with three matters.

- (a) The Town Planning Scheme for the undeveloped portion of the Island.
- (b) The improvement of the Old Town.
- (c) The development of the Mainland.

Mr. Jameson recommends certain alterations in the road system shewn by the existing scheme to allow of better provision for through traffic and makes certain important proposals with regard to the position of the Railway Station, industrial areas and the civic centre. The majority of these important recommendations which involve many considerations besides sanitary ones have been accepted by the local Town Planning Authority and by Government.

The report is not however confined to the above matters but lays very great stress on the fact that the ultimate object of town planning is to secure for the mass of the people adequate convenient and sanitary homes in which physical, mental and moral development may be a possibility and attention is drawn to the methods by which such homes may be secured and the pitfalls which have to be avoided in the process are pointed out. The necessity for adequate staff and improved administrative machinery is specially emphasised and in a careful perusal of the Report the necessity for such staff and machinery becomes obvious on almost every page.

Of particular importance from the public health point of view are the recommendations which are made with regard to the establishment of a model Swahili quarter for persons dispossessed of their holdings as the result of the acquisition of land for roads, with regard to the institution of a housing scheme for whom no adequate accommodation is as yet available.

The necessity for the Swahili housing scheme is appreciated by the Authority and no obstacles stand in the way of its being carried into effect. Whether the very urgent necessity for the scheme for the housing of up-country labourers and their families and the full significance of the comments thereon contained in the Report are as fully appreciated as is the case with regard to the scheme for a Swahili village is perhaps doubtful.

The first scheme is essential and if only because it is obvious that people dispossessed of their land and houses must of necessity be provided with alternative accommodation it has been accepted and approved as a matter of course.

The second scheme on the other hand is in a different category and though it has not been made necessary by any action of the authority its adoption and a full appreciation of the reasons for its adoption is of outstanding importance.

This importance lies in the fact that the adoption of the scheme would represent the initiation and acceptance of a definite policy aimed at securing the full development of the individuals of whom the population is composed and designed to obviate as far as may be possible in the case of Mombasa the colossal waste of human effort which in the case of all the great ports of the East has been the inevitable accompaniment of the growth of commerce.

(b) The Improvement of the Old Town.

In considering the question of the improvement of the Old Town it is necessary to have a clear idea as to what the conditions are with which it is necessary to deal. The following description has been supplied by the Hon. Director of Land Surveys:—

“The town..... is 130 acres in extent. It is undoubtedly a much congested and very insanitary area, it contains 2,000 houses ranging from the three storied house worth £10,000 to the makuti hut worth £50. There are thus on an average 15 houses to the gross acre. There are no public open spaces and no roads worthy of the name. Access is provided by lanes varying in width from 5 to 15 feet. The population is estimated at 17,900 (5,500 Indians, 3,000 Arabs, 9,000 Swahilis and natives). The average is therefore 138 persons to the acre and nine to a house.

“There are 1,900 freehold plots within the Town of an average size of 0.68 acres but the vast majority of the plots are only half the size that is to say 30 to the acre.”

The extract reproduced above indicates the general condition but it must be remembered that the distribution of the population and of dwellings is not even. In places there are fewer than 139 persons per gross acre and in other places many more than that number. One hundred and thirty-nine persons per gross acre, is a very high figure indeed and would anywhere, except perhaps in the case of a population living in high-class flats, represent serious overcrowding. When 139 per gross acre is the average figure for a population most of whom are accommodated in buildings which are largely devoid of light and ventilation unprovided with drainage or sewerage, where excreta is disposed of by means of a pit within the house and sullage water either by a pit in the immediate vicinity or by a drain which ultimately disappears under the foundations of some neighbouring building, it represents conditions which are insanitary to a degree.

The problem which is presented by the old town of Mombasa is however not insuperable. Larger and worse slums have been dealt with elsewhere in recent years and the experience which has been gained in the process is at our disposal should we desire it. The financial difficulty certainly exists but together with other difficulties will be solved in time provided there is a general appreciation of the existence of conditions such that their indefinite continuance cannot be contemplated.

Mr. Jameson's Report records a very exact appreciation of the conditions which prevail in Mombasa old town and while the problem which was set before him was not the improvement of the old town but the more difficult one of how a specific sum of £50,000 might best be expended he indicates very clearly the methods which should be adopted to secure general improvement in addition to proffering advice with regard to the expenditure of funds at present available. Especial prominence is given in his report to the paramount necessity of providing an adequate municipal staff and improved administrative machinery in the interests both of efficiency and economy and as a necessary preliminary to the making of further financial provision possible.

The recommendations contained in the Report may be summed up as follows:—

- (a) That the intensification of existing insanitary conditions should be prevented by not allowing new buildings to be erected except under suitable circumstances, by enforcing sanitary regulations and by preventing reconstruction except on certain conditions.
- (b) That land should be acquired on the Mainland for the accommodation of certain classes of the population.
- (c) That a certain amount of alternative accommodation should be provided elsewhere on the Island.
- (d) That a fund should be established to buy up land and buildings from time to time, these areas to be retained as open spaces.
- (e) That at an early date the question of sewerage for the old town should engage the attention of the authorities.
- (f) That the building regulations should be completely revised, redrafted and brought into line with local requirements.
- (g) That the local authority should be re-enforced with the staff necessary to administer law.
- (h) That a certain length of 50 feet roadway should be provided as the commencement of a road scheme.

THE MAINLAND.

The question of the development of the Mainland is approached by Mr. Jameson with two main objects in view:—

- (a) The provision when necessary of healthy housing under suburban conditions for the large population which will work in Mombasa.
- (b) The maintenance of the possibility of adequate and convenient approach through the suburban area from the hinterland.

Two important recommendations are made:—

- (a) That a certain amount of land should be at once acquired with a view to the establishment when necessary of satellite villages or towns.
- (b) That steps should be taken to direct and control development generally from now on, firstly by an extension of the township boundaries and secondly by the establishment of a town planning authority for the extended area.

GENERAL SANITARY OPERATIONS—MOMBASA.

1. Approximate number of Inspections by Sanitary Inspectors.

(a) Nuisance and General	9,618
(b) Licensed Premises	6,478
(c) Disinfections	47
(d) Water Supply	174
(e) Food	1,007
(f) Imported Second-Hand Clothing	58

Total 17,382

2. Sanitary Notices.

Number served during the year	286
„ outstanding from last year	37
„ cancelled	4
„ complied with	295
„ outstanding	24

3. Result of Inspections and Notices.

Premises cleansed and repaired	591
„ closed	3
„ demolished	6
„ in which drainage provided	71
„ „ „ repaired	103
Cesspools constructed	120
„ repaired and cleansed	67
„ closed	25
Dustbins provided	169
Yards cleansed	110
Plots cleansed of bush	)
Deposits of refused removed	As required.
Cattle sheds, stables, bandas, etc., cleansed	)
Cattle sheds, stables, bandas, etc., repaired	21
Cattle sheds, stables, bandas, etc., demolished	33
Improvements effected and nuisance abated	430

4. Mosquito Prevention.

Mosquitoes breeding places dealt with	382
Number of mango trees cut	—
" " " " stopped	—
" " wells stocked with fish	19

5. Complaints.

Number of complaints received	112
" " " " dealt with	111
" " " " pending	1

6. Licensed Premises.

	Total number.	Number Licensed.	Approximate number of inspections.
Aerated water and Ice Factories	5	5	162
Bakeries	9	9	224
Cattlesheds, stables, camelsheds, etc.	14	14	422
Pig keepers	3	2	100
Dairies, cowsheds and Milk Shops	21	21	3,045
Eating Houses	50	50	1,767
Laundrymen's premises	23	20	443
Liquor Licensed Premises	20	20	292
Lodging Houses	4	4	106
Soap Factories	4	4	62
Billiard Saloons	3	3	34
Cemeteries	49	5	63
Total	205	157	6,720

7. Building Applications.

Remaining from last year	13
Number of applications submitted	666
" " " " approved	505
" " " " disapproved	163
" " " " pending	11

8. Building Plans.

Number of plans submitted	57
" " " " approved	22
" " " " disapproved	18
" " " " returned for alteration and ultimately approved	17

9. Pipe Water Supply.

Applications submitted	83
" " approved	61
" " disapproved	15
" " pending	4
" " withdrawn	3

10. Disinfections.

Premises disinfected	50
" " burnt	5
Rooms disinfected	164
Articles disinfected	(approx.) 3,388

11. Imported Second-hand clothing.

Articles inspected	21,655
" " passed	20,389
" " " " after disinfection	1,016
" " prohibited	250

12. Rat Trapping and Poisoning, etc.

Houses examined	452
Number of rat-traps set	259,630
" " rats caught	19,291
" " " " found dead	20
" " " " poison baits set	(approx.) 155,600

13. Prosecutions.

Class of prosecution.	Number	Withdrawn.	Lost.	Conviction.	Fines.
Licensed Premises ...	1	—	—	1	100/-
Nuisance ...	—	—	—	—	—
Mosquito Rules ...	30	—	—	30	148/-
P.H.O., 1921 ...	4	—	—	2	10/-

Nuisance orders obtained from Court ... 2

Court cases pending ... —

SECTION 5.—MATERNITY AND CHILD WELFARE.

One trained European Nursing Sister has been maintained at the Health Office in Nairobi and one at Mombasa in the capacity of Health Visitors throughout the year while for the last five months of the year two sisters were maintained at Nairobi. A short account of the work of these sisters is given below.

For 1926 the engagement of an additional sister both at Nairobi and at Mombasa has been approved and an extension of the work should then be possible more particularly in the new Municipal and Railway native locations where improved housing conditions and the maintenance of accurate records should enable some at least of the precepts of the health visitors to be translated into practice.

In the Native Reserves maternity and child welfare work has so far been confined to the anti-syphilitic treatment of expectant mothers and in Central Kavirondo where alone a Medical Officer is able to devote his whole time to travelling a good deal of work has been accomplished in this direction.

In the Estimates for 1926 provision has been made for the posting of two nursing sisters to the Hospitals at Kisii and Machakos and it is hoped that as a result there may be a considerable increase in the attendance of women and children and that a certain amount of maternity and child welfare work may also be accomplished.

NAIROBI.

For some reason it does not seem to be as well-known as it ought to be that during the last few years the Health Office has been making serious efforts to promote the welfare of mothers and children in the town. While this important branch of Public Health work is as yet in its infancy, it is satisfactory to be able to report that considerable progress has been made during the period under review. Welfare centres have been established at the Health Office, at the Native Location and at Kabete and in 1926 others will be opened at Pangani and in the Railway area. Lack of proper accommodation, shortage of staff and the absence of legislation providing for the notification and registration of births have handicapped efforts to a large extent, but in spite of these difficulties the work is meeting with increasing success as time goes on. The centres in the town are visited daily by Health sisters holding special qualifications in maternity and child welfare work and bi-weekly visits are paid to Kabete.

At these clinics instruction is given in the care and treatment of infants and children, in their feeding, in their clothing, in the prevention of the spread of infectious disease and in simple hygiene. Visiting of houses is also undertaken and a certain amount of ante- and post-natal work attempted. In addition dispensaries are maintained at each centre for the treatment of minor ailments; the provision of such facilities being extremely important in gaining the confidence of the people. During the year 4,202 persons attended at the different centres, the majority of them attending on several occasions, and 224 visits to homes were paid by the Health sisters. The results of the work amongst the African population have been most encouraging, but in the Asiatic community little progress can be recorded.

Health visiting and maternity and child welfare work are important activities in the promotion of public health and can with advantage be extended, but the ultimate success of such measures is largely dependent on suitable home conditions. Existing housing conditions amongst the Asiatic and African communities are far from satisfactory and until a marked improvement is brought about maternity and child welfare schemes can only be partially effective. The importance of this aspect of the problem cannot be too strongly emphasized.

MOMBASA.

A. Record of Work Done.

Month.	Cases treated in office.	Outside visits.	New cases.	Vac- cination
January	877	218	282	706
February	Clinic closed on account			
March	of small-pox epidemic.			
April	514	110	136	189
May	583	100	143	220
June	693	221	149	194
July	617	222	139	99
August	443	105	197	6
September	404	74	135	1
October	618	128	188	13
November	502	147	149	50
December	724	298	163	97
Total ...	5,975	1,623	1,571	1,575

Number of Indians visiting the Clinic for the year ...	785
Number of Arabs visiting the Clinic for the year ...	398
Number of Swahilis visiting the Clinic for the year ...	388

B. List of Various Complaints treated.

Diseases of the Skin	162
Diseases of the Eye	24
Diseases of the Ear	39
Diseases of the Throat	16
Ulcers and abrasions	252
Intestinal Diseases and Disorders	141
Respiratory Diseases (Cough, etc.)	272
Worms	113
Rheumatism	110
Venereal Diseases	30
Fever (undiagnosed)	154
Anaemia	50
Yaws	17
Gynaecological	46
Malnutrition	8
Pregnancy	25
Enlarged Spleen	6
Glands, neck	8
Umbilical Hernia	17
Senility	16
Bladder trouble	3
Spinal Curvature	2
Infantile Paralysis	2
Burns	18
Enteric	1
Requiring Dental Treatment	39
Total ...	1,571

During the first three months of the year there was practically no routine work done except vaccination—the Health Sister was fully employed in nursing small pox cases in the Infectious Diseases Hospital.

The Clinic was re-opened in April but it was some time before the Health Visitor could get into touch with the people again, and even then the Indian people seemed afraid to bring their children to the Clinic, because during the small pox epidemic all had been compulsorily vaccinated and a large number of Indians are unwilling to have their babies vaccinated—such vaccinations are only carried out after much persuasion.

Compulsory birth registration and routine vaccination of infants would simplify this part of the Clinic work.

Between September and December 40 women and children (Arabs and Swahilis) suffering from either yaws or syphilis have reported at the Clinic for Bismuth injections. About half of them have had a full course of 6 injections with good results—the others have had two or three injections and then, apparently cured, have failed to return.

So far, the Health Visitor has not been invited to assist at native confinements nor has she had any opportunity for ante-natal work. She has however in some cases been called in soon after the confinement. The usual scene presented to her on such occasions has been, a small dark room with all its windows sealed, a charcoal fire burning under the bed; the baby, its face smeared with some paste, swaddled up in a heavy garment lying in a closed-in cot and the room full of enquiring friends, relatives and busy bodies.

Under such circumstances a heavy mortality of infants during the first few days after birth is to be expected and the following table easily understood:—

AGE DISTRIBUTION OF INFANTILE MORTALITY IN 1925.

Under 4 weeks	63
4 weeks to 3 months	28
3 months to 6 months	27
6 months to 1 year	29
Total	147

43% of deaths under 1 year, occurred during the first 4 weeks.

Much useful work is carried out by the Health Visitor, assisted by a native ayah, in the Arab and Swahili quarter. Each day the native ayah, is given a certain district which she visits. She reports on the cleanliness and ventilation of the houses and reports also any sickness. The Health Visitor is thus enabled to visit and assist bed ridden patients who could not reach the Clinic.

Where simple treatment and nursing only is required the Sister carries it out, e.g. dressing bedsores, giving of enemata, douches, etc; where more is required she tries to persuade the patient to go to hospital and if successful makes all arrangements for stretcher and ambulance, etc.

Much is accomplished by this Clinic and it reflects great credit on the Nursing Sister in charge but it is, of course, merely the beginning of a maternity and child welfare centre.

Compulsory registration of all births and the training of native midwives are two measures which are necessary for the further extension of the Clinic and the carrying out of its proper functions.

SECTION 6.—SCHOOL MEDICAL INSPECTION.

NAIROBI.

Buildings.

The school accommodation provided in Nairobi both by Government and by private enterprise cannot be said to be altogether satisfactory. The buildings in the majority of cases are unsuitable for the purpose for which they are designed, the sanitary conveniences leave much to be desired and a considerable amount of overcrowding occurs. All schools were inspected on several occasions during the year and were found to be maintained in a reasonably clean and sanitary condition.

Medical Inspection of School Children.

During the year no detailed inspection of school children was possible but visits were paid by the health sister to a number of schools at frequent intervals and the school children inspected. The health of the school child is an important matter and one that cannot be dissociated from child welfare work in general and for these reasons every effort is being made to extend activities in this direction. Arrangements have now been made to place the medical inspection of school children on a proper basis and commencing in 1926 all school children in Nairobi, African, Asiatic and European, will be medically examined once annually and the results tabulated. An endeavour will be made to extend this system throughout the country.

SECTION 7. MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

The public health museum established in connection with the Health Office in Nairobi has been maintained and the number and variety of the exhibits has been increased. Public Health stalls were arranged at agricultural shows both in the settled areas and in the native reserves and through the courtesy of the Government of Zanzibar, Rockefeller cinematograph films dealing with Malaria and Hookworm were obtained on loan and exhibited in Nairobi under the auspices of the East Africa Natural History Society and the Medical Department. A certain amount of instruction in hygiene is carried out by the Health Visitors attached to the Health Offices in Nairobi and Mombasa and by Medical Officers in the native reserves. Opportunity is taken as occasion arises to address meetings of chiefs and headmen on sanitary matters.

Social and personal hygiene are taught practically at all Government and aided schools and simple theoretical instruction especially in regard to cleanliness and the more prevalent diseases is given in all central and a large number of village schools. Hygiene is laid down as a subject for native teachers in training. Special attention is being given to this subject at the Jeanes school which was opened during this year. The importance of the subject is very fully realised by the Education Department and every endeavour is made by that Department to promote the spread of knowledge with regard to sanitation among school children. With an increase of Medical Officers and the posting of nursing sisters to hospitals in the native reserves it should be possible for the Government Medical Department to take a more active part in this branch of educational work than has been the case in the past.

The spread of the knowledge of hygiene and sanitation in native reserves is dependent not only on theoretical instruction but also to a large extent on the existence of officers who may be able to assist the people to carry precepts into practice and one of the most important functions of the Medical Officers of Health and Sanitary Inspectors whom it is proposed to appoint to these reserves will be the provision of such assistance.

SECTION 8.—TRAINING OF SANITARY PERSONNEL.

No attempt has so far been made in Kenya to train African Natives as Sanitary Inspectors and though a large number of Africans are employed in the Sanitation division in the capacity of overseers, interpreters, headmen, vaccinators, mosquito boys, rat catchers, etc., and many of these natives have achieved considerable proficiency in the particular work on which they are engaged none are employed in the capacity of Sanitary Inspectors.

With the development of the Local Native Councils and the establishment of Medical Officers of Health and European Sanitary Inspectors in the native reserves it is probable that it may in the course of a few years be possible to utilise the services of African natives in connection with sanitary work to a much greater extent than is at present the case and in drawing up a scheme for the establishment of a Native African Medical Corps the possibility of development in this direction has been recognised. It is not, however, proposed in the meantime to attempt to provide any general course of instruction such as might be recognised by the Royal Sanitary Institute or to endeavour to produce native Sanitary Inspectors. Few natives have yet reached such a standard of literary education as would enable them to benefit by such a course and for some time to come it will be wise to confine attention to the production of disciplined subordinates with a sound practical knowledge of the work entailed by routine duties in connection with certain specific branches of sanitary work.

SECTION 9.—RECOMMENDATIONS.

The proposals for the expansion of the medical service which were submitted to and accepted by Government dealt very largely with recommendations for future work chiefly with regard to an extension of existing activities and the undertaking of activities hitherto impossible. It would appear to be unnecessary to recapitulate recommendations already made. The increase of staff which is expected to eventuate during 1926 and 1927 will allow for a general increase in medical activities.

It must be borne in mind that the increases for the Medical Department do not cover the whole field of sanitary administration. If improvement in the Public Health is to keep pace with commercial, industrial and social developments it is necessary to ensure that such are in the fullest sense of the term, economic and are followed by an improvement in the standard of living.

Reference has been made in a previous section to the urgent requirements of the country with regard to town planning and sanitary engineering. Unless the towns which are coming into existence are to develop on lines previously thought out with adequate drainage, water supply and a sufficiency of housing accommodation, then a healthy and contented urban population is impossible. The town planner and sanitary engineer are essentials.

The Central Board of Health formulated during the year a resolution to the effect that it is desirable that there should be retained permanently by Government an officer specially qualified in town planning; to that resolution attention is directed.

An urgent need of the Colony is for additional and improved housing for all sections of the community. New large expenditure will be necessary both on the part of Government and private individuals. Such expenditure should, however, be reproductive and it is of paramount importance that the whole position should be most carefully explored at an early date. Without the services of an engineer experienced in town planning, sanitary administration, housing and in the finance of housing such cannot be undertaken.

Specific matters which require attention may be instanced as follows:—

Improvement schemes with regard to the more insanitary areas of Nairobi, Mombasa and the smaller towns.

Housing schemes aimed at providing adequate and sanitary housing for African natives in Nairobi, Mombasa and the smaller townships.

Sewerage schemes for Nairobi, Mombasa, Nakuru, Kisumu, Eldoret and possibly Kitale.

Water supply schemes for Nairobi, Mombasa, Kitale and a number of administrative stations.

Improvement of refuse disposal systems.

Improved control of building operations.

Town planning generally.

Advice and assistance to local authorities including native councils and district commissioners in all matters of municipal and general sanitary administration.

The improvement of environmental conditions in the native reserves.

A Medical Department of Public Health is in existence and is being expanded. An Engineering Department of Public Health is also necessary.

VII. PORT SANITATION.

(A) GRANTING OF PRATIQUE AND ISSUE OF BILLS OF HEALTH.

The number of vessels which entered Kilindini or Mombasa harbour during the past three years was as follows:—

			1923		1924		1925
Steamships	...	...	380	...	383	...	439
Dhows	...	...	558	...	223	...	242
Total	...	...	938	...	606	...	681

Bills of Health were issued to ships proceeding to ports outside the Protectorate as follows:—

		1923		1924		1925
		485	...	426	...	515

There is practically no change in the number of dhows compared with 1924 but a marked decrease compared with 1923. Many obscure factors influence this trade but probably the chief cause of the decrease is to be found in steamship competition.

The number of steamships calling at the port during 1925 was much higher than in 1924.

The net tonnage of steamers calling at Mombasa during the past 3 years was:—

1923	1924	1925
946,029	1,037,631	1,180,535

The obvious inference from all these figures is that Mombasa is developing and increasing in importance as a port.

(B) INFECTIOUS DISEASES IN VESSELS ARRIVING.

Small pox.

Small pox cases were landed from S.S. "Karoa" on the 27th March, 1925, from Bombay; from the S.S. "Karagola" on the 7th May from Durban; and from the S.S. "Khandalla" on the 10th May from Bombay.

The procedure adopted in each case was that all on board were vaccinated, the ship worked in quarantine, 1st and 2nd class passengers were landed under surveillance, then the ship and deck passengers were sent to Zanzibar Quarantine Station.

Typhoid.

Cases were landed as follows:—

26th September	...	1 case	S.S. "Karoa".
22nd October	...	2 cases	S.S. "Gascon"

These cases were treated in the Infectious Diseases Hospital.

Adequate measures to prevent the spread of the disease were taken and the ships allowed to proceed.

Precautionary Measures against Transference of Infectious Disease between Shore and Shipping.

During the year the only disease dealt with was small pox. The first case was discovered on shore and measures had to be taken to protect ships from the disease.

These measures were entirely successful and no ships were reported as having been infected in Mombasa.

Briefly the measures taken were that, during the outbreak ships, worked in voluntary quarantine, only vaccinated officials, passengers and labour were allowed on board, no transit passengers were allowed on shore and all deck passengers for Kenya were vaccinated before landing.

Subsequently ships arrived from Bombay with cases on board and the port had to be protected from the introduction of fresh infection—this was effected by isolating the cases and contacts in the Infectious Diseases Hospital allowing 1st and 2nd class passengers to land only under surveillance and sending the ship and deck passengers to Zanzibar for disinfection and quarantining.

From such evidence as could be obtained it appeared likely that the original case discovered on the island came from Bombay.

(C) EXAMINATION OF FOOD AND SECOND-HAND

CLOTHING AT PORT.

During the year 58 inspections of second-hand clothing were made. 21,655 articles were passed as being clean while 1,016 articles were ordered to be disinfected under the Port Health Regulations. Early in the year importers and agents were advised to arrange for having second-hand clothing disinfected before despatch to the Colony. Only seven certificates have, so far been received showing that this has been done.

The advisability of instituting more stringent measures re second-hand clothing is being considered and probably disinfection of all second-hand clothing which arrives without a proper certificate of disinfection will be enforced.

A considerable amount of food inspection is now carried out at the port of Mombasa and large numbers of cases of bottled and tinned foods were examined and reported on at the request of agents and importers.

VIII. HOSPITALS, DISPENSARIES AND INSTITUTIONS.

1.—GENERAL REMARKS.

Analysis of the figures of admission to the hospitals throughout the Country reveals the following:—

	In-patients.			Deaths.		
	1925	1924	1923	1925	1924	1923
European Officials ...	875	594	596	6	4	4
Non-European Officials	3,655	2,554	2,607	8	5	2
General European Popu- lation	855	723	629	13	23	13
General Native Popula- tion	21,112	25,990	33,229	898	786	830

The drop in the number of native in-patients returned is due to an extension of the system referred to in the previous report. The figure now represents the number which actually received hospital treatment, i.e. they were accommodated in hospital wards and received hospital food and clothing. There is now no inclusion in the in-patient returns of patients accommodated in camps near the hospitals. Reference to the table in connection with the sub-section on native hospitals below shows that there has been a large increase of out-patients.

A suggestion was submitted to Government during the year to the effect that the time has now arrived when the European Hospital at Nairobi can be handed over to the European Community as was done in the case of Eldoret at the time of retrenchment. The matter is still under consideration, but Government in respect of Nairobi has authorized the acceptance of the principle of communal hospitals each to be controlled by Boards of Management; this refers to accommodation for Asiatics and Europeans.

Kismayu and Serenli with Jubaland generally became Italian territory during the year. Mandera replaced Serenli as a medical station.

Chuka was definitely abandoned as a medical headquarter station as was foreshadowed in the previous report. The Chogoria Mission was completing hospital wards and it had become increasingly evident that there was no necessity for two hospitals in the district. The existing Government dispensaries remained and the medical man attached to the mission was employed as a district surgeon for purposes of supervision. The Medical Officer previously in charge of Chuka was removed to Meru which thus became the medical as well as the administrative headquarters of a large district.

2. EUROPEAN HOSPITALS.

The operating theatre at Mombasa for which money was provided by special vote at the end of 1924 was almost completed by the end of the year. A building on modern lines has resulted.

The comparative table of admissions to the three European Hospitals is as follows:—

	1925	1924	1923
Total number treated	802	602	490
Total number discharged	754	567	464
Total number of deaths	17	21	12
Total number remaining	31	14	14

Of the above, 219 admissions were of officials as against 137 in the preceding year.

Six officials and 11 non-officials died as against 4 and 17 in 1924.

The distribution of the various cases was as follows:—

	Officials.	Non-officials.
Mombasa	56	198
Nairobi	143	341
Kisumu	20	44

The figures show a considerable increase all round and reflect the increase of the European population of the country which has occurred.

Another increase in the total of operations performed is recorded. The distribution was as follows:—

Mombasa	24
Nairobi	228
Kisumu	Nil.

Malaria, the chief cause of admissions to hospital provided 19.2 per cent. of the total cases. The total was 154 as against 147 in 1924.

3. NATIVE HOSPITALS AND DISPENSARIES.

At Mombasa a temporary ward for the accommodation of 18 patients has been erected together with a temporary office; another temporary ward has been enlarged.

At Fort Hall another mud and wattle building for the accommodation of patients from the Thika-Nyeri Railway Construction was built.

Apart from the foregoing there has been no new construction and there is no improvement to report with regard to the unsatisfactory buildings which are in use as native hospitals at some of even the large centres. Kakamega is a particular example.

The new hospital buildings proposed to be erected at Nairobi and elsewhere and for which money was provided have not materialized. Delay has occurred in obtaining materials from England.

At Meru a well constructed wooden dispensary and house for the Sub-Assistant Surgeon were built. These form the nucleus of a projected native hospital of some considerable size. A semi-temporary ward is under construction by the District Commissioner. The present accommodation for patients consists of a dilapidated and exceedingly insanitary log hut.

In connection with loan proposals, money has been inserted to provide for the erection of hospitals of permanent materials throughout the Country. It is to be hoped that construction will not be too long delayed. The present buildings are not only expensive in upkeep but are most unsuitable for the purposes to which they are put.

Money was provided by special vote during the year to replace the dilapidated buildings constituting the non-European section of the Infectious Diseases Hospital at Nairobi. Construction had not been commenced at the end of the year.

The European nursing staff at Nairobi and Mombasa native hospitals has been increased. It has been possible to post an European nursing sister at the Native Hospital, Kisumu, with the usual result that the patients are better looked after and the native attendants receive better instruction in their nursing duties. The proposals for expansion of the medical service which are outlined in the section "Administration" make provision for nursing sisters to be attached to all the large native hospitals of the Country; this cannot be given effect to however until proper quarters and buildings are provided.

At Nairobi and Kisumu the nursing sisters are considerably handicapped in their work in that their living quarters are situated at a distance from the Hospitals. Considerable expense is incurred in transport and the sisters are not easily available in emergencies. At Nairobi quarters are under construction.

The record of cases treated and deaths at the various native hospitals is as follows:—

	1925		1924		1923	
	In.	Out.	In.	Out.	In.	Out.
Admissions ...	21,112	162,781	25,990	150,172	33,229	245,554
Deaths ...	900		786		830	
Death rate per 1000						
of admissions ...	42.6		30.2		24.97	

The accommodation at the native hospitals has again been strained to its uttermost. Considerable numbers over the authorized capacity have been crowded into the wards while others have been accommodated in tents. It has been necessary carefully to select patients for admission; others have had to be told that they must apply later when it was likely that a bed would be vacant.

4. NATIVE RESERVES.

By the end of the year it was possible again to post a Medical Officer to the Masai Reserve and to re-open the station which had perforce to be closed down in 1923. The arrival of new staff also allowed of an extra Medical Officer to be posted to South Kavirondo to take exclusive charge of sleeping sickness work and to push venereal disease and yaws work in that district. A Medical Officer was available for the Malindi area and took up his headquarters in Malindi itself but reports indicate that this is not the most suitable site for a reserve centre. The position will have to be considered seriously before hospital construction is proceeded with.

The number of sub-dispensaries in connection with the medical centres in the Reserves remains at about the same figure as previously; they are:—

Fort Hall	10
South Kavirondo	6
Central Kavirondo	10
North Kavirondo	18
Chuka	4
Machakos	12
Kabete	1

There has been an increase in the number of dressers able to give injections of bismuth salt for syphilis and yaws. Until additional medical staff is available for posting at the various centres the position with regard to sub-dispensaries will not be satisfactory. Under usual present conditions one medical officer is responsible for both the central hospital and the sub-dispensaries. Without adequate supervision the usefulness of the sub-dispensaries is a matter of some doubt and supervision is a difficult matter when the multiplicity of duties is considered. The proposals for expansion of the medical department provide the necessary help.

The whole system of sub-dispensaries will require, when staff is available, to be considered from the point of view of siting with regard to population and accessibility for purposes of supervision. The type of dressers employed is likely to be a cause of uneasiness until better trained men become available and men whose terms of service are such as to render them unwilling to run the risk of dismissal or punishment.

The whole position in Native Reserves is likely to be influenced considerably by the native councils which have come into being during the year. Money has been voted by the councils themselves to provide suitable dispensary buildings and dressers' huts built to plans drawn up by the Department.

The work of both the dresser in charge and the medical officer on tour will be facilitated by the provision of buildings where work can be carried out under reasonable conditions, the dressers' huts will show what can be erected in the way of a sanitary building at reasonable cost. The lesson will be more nearly brought home from the fact that funds for erection will be provided locally instead of from central revenue. Previously existing difficulties in connection with the repair and erection of buildings which were formerly the duty of the local chief should disappear. The following figures give some idea of the cases which are treated in the Reserves by the dressers at sub-dispensaries and by medical officers on tour.

	Cases treated by dressers.	Cases treated by Medical Officers.
Central Kavirondo	44,820	9,844
Machakos	47,719	—
South Kavirondo	19,728	9,502
Fort Hall	20,635	1,370

The figures relating to cases treated by dressers must be taken with reserve. It must be remembered that the dressers are almost illiterate, furthermore, it is not unknown for registers to be made up several days in advance.

5. MATHARI MENTAL HOSPITAL.

As with other medical institutions the accommodation at the Mental Hospital has been insufficient for the calls made upon it and a chronic condition of overcrowding in the native section has resulted. There appears to be an increasing tendency for harmless cases who previously remained in the villages to be sent to Mathari.

The unsuitable nature of the accommodation provided for natives has caused the inclusion in the proposed expenditure of loan funds of provision for the complete rebuilding of this section.

The quarters for European females are not suitable for violent or noisy patients; such have to be accommodated temporarily in the European male section.

During the year an investigation was made as to the Wasserman reactions of the bloods of the native inmates. Out of 69 cases examined 21 gave positive results, whether due to yaws or syphilis it is impossible to say.

The following is the table of admissions and deaths during the past three years:—

	Admissions.			Deaths.		
	1925	1924	1923	1925	1924	1923
Males	86	70	69	30	15	9
Females	22	14	11	4	7	5
Total	108	84	80	34	22	14

During the year the total number of patients under treatment was 180. The varieties of insanity for which patients were admitted were:—

Mania	30
Dementia	14
Delusional Insanity	16
Melancholia	1
Other mental diseases including epilepsy	47

DEATHS. Thirty four deaths occurred including one European and two Indians. The percentage of deaths to the total number treated was 16.50 and to admissions was 31.48.

Death was due to a considerable variety of causes. Nothing in the way of an epidemic occurred. Communicable diseases were responsible for deaths as follows:—

Malaria	1
Dysentery	1
Pneumonia	2
Tuberculosis	3

DISCHARGES. Sixty two patients were discharged during the year, 52 females and 10 males.

REMAINING. At the end of the year 110 patients remained under treatment as against 98 and 96 in the two preceding years.

European Section.

Twelve cases only were treated during the year, a decrease of 10 from 1924.

ADMISSIONS, totalled five only during the year, three male and two females. The cases came from:—

Nairobi	3
Mombasa	2

DISCHARGES corresponded to admissions, viz., three males and two females.

DEATHS. A case of Manic Depressive Insanity admitted at the latter end of 1924 died in March.

REMAINING. Six chronic cases remained at the end of the year.

RECREATION AND AMUSEMENTS. Tennis is played if the condition of the patients allow. Indoor games, draughts, dominoes, cards, etc., are provided and there is a library to which additions are made from various sources. Patients whose condition allows are taken for motor-car rides by friends.

Asiatic Section.

Seventeen cases in all were treated during the year.

ADMISSIONS. Nine males.

DISCHARGES. Four males were discharged and one female.

REMAINING. At the end of the year nine males and one female remained under treatment.

Native Section.

One hundred and seventy three native cases were treated during the year.

			Males.	Females.	Total.
Admissions	...	...	74	20	94
Discharges	...	...	45	7	52
Deaths	...	...	27	4	31
Remaining	...	...	46	28	94

It has been found possible during the year to arrange for two sickrooms to accommodate six patients; this has helped to provide a long felt want though at the same time there is not sufficient provision for all the infirm cases who usually number about 20.

There is no provision for the separate accommodation of criminal lunatics of whom there are always a considerable number. A possible escape is a continual cause of anxiety.

AMUSEMENTS. Patients who have a trade which can be practised in the hospital are encouraged to do so and many useful articles and minor repairs are carried out by those able to use carpenters tools. A football is provided and games take place in the evenings. Patients are occupied in work about the grounds and as much as possible of the food supply of the institution is grown. The yield is usually poor on account of the nature of the soil and was exceedingly small in 1925 owing to the drought.

6. GAOLS.

The sick rate and death rate for the prisons of the Colony and Protectorate for 1925 show a considerable improvement on those for 1924, the total number of deaths being the lowest on record for years past; the figures are as under:—

Year		Daily average in prison.	Admissions to Hospital.	Daily average on sick list.	Percentage of total inmates.	Deaths.
1923	...	2,086	1,813	78.5	3.7	50
1924	...	2,282	1,758	82.7	3.6	50
1925	...	2,135	1,531	66.7	3.1	35

For the three principal prisons the figures are :—

	Nairobi.					Mombasa.					Kisumu.				
	1922	1923	1924	1925		1922	1923	1924	1925		1922	1923	1924	1925	
Average daily number in gaol ...	738	794	865	650		333	286	339	264		145	201	232	358	
Average daily number on sick list ...	41.1	38.3	29.8	21.9		8.3	3.0	11.2	4.4		2.43	3.5	3.0	13.7	
Percentage of average daily sick to average number in gaol ...	5.6	4.8	3.4	3.4		2.5	1.0	3.3	1.7		1.7	1.5	1.3	3.8	
Total deaths ...	23	35	35	11		4	1	3	4		6	1	3	10	
Percentage of deaths to average daily number in gaol ...	3.1	4.4	4.0	1.7		1.2	.3	.09	1.5		4.1	.5	1.3	2.8	

The thirty five deaths (excluding executions) which occurred in the various prisons throughout the year were classified as under:—

			Nairobi.	Mombasa	Kisumu	All other Prisons.	Total.
Pneumonia	...	...	7	—	6	4	17
Influenza	...	...	1	—	—	—	1
Tuberculosis	...	...	1	—	—	—	1
Meningitis	...	...	1	—	—	—	1
Intestinal Obstruction	...	...	1	—	—	—	1
Malaria	...	...	—	2	—	—	2
Peritonitis	...	...	—	1	—	—	1
Septicaemia	...	...	—	1	—	—	1
Enteric Fever	...	...	—	—	2	—	2
Dysentery	...	...	—	—	1	—	1
Enteritis	...	...	—	—	1	—	1
Other diseases	...	...	—	—	—	6	6
			11	4	10	10	35

It will be noticed from the above tables that in Nairobi with a decrease in overcrowding there was a fall in both the sick and death rates and that in Kisumu with an increase in overcrowding there was a notable rise while in both cases the chief cause of mortality was pneumonia.

That there has been an improvement in the sick and death rates at Nairobi Prison is satisfactory but it must be recorded that these rates are still far too high. Though some improvements were made during the year with regard to the provision of additional accommodation at various prisons the average air space per prisoner is still only 275 cubic feet and till it becomes possible to make considerably increased provision in this respect and to replace temporary and unsuitable buildings by permanent structures of good design no notable or permanent decrease in the sick and death rates can be expected.

RETURNS.

TABLE I.

ADMINISTRATIVE DIVISION.

Dr. J. L. Gilks	...	...	Principal Medical Officer.
Dr. C. J. Wilson, M.C.	...	...	Deputy Principal Medical Officer.
Dr. A. R. Paterson	...	...	Chief Sanitation Officer.
(1) Mr. F. Strawbridge	...	...	Chief Sanitary Inspector.
Capt. J. S. Robertson, M.B.E.	...	...	Medical Storekeeper.
Mr. H. Ogden	...	...	Office Superintendent.
Mr. G. E. Scattergood	...	...	Accountant.
Mr. T. R. Wilson, D.C.M.	...	...	Clerk.
Mr. J. L. Byrne, M.C.	...	...	"
Miss J. S. Wishart	...	...	Stenographer.
Miss M. E. Cameron	...	...	"
Miss M. Longmate	...	...	"

MEDICAL DIVISION.

(2) Dr. H. H. V. Welch	...	...	Resident Surgical Officer.
" N. P. Jewell, M.C.	...	...	Senior Medical Officer.
" A. D. J. B. Williams, O.B.E.	...	...	" " "
" T. H. Massey, M.C.	...	...	" " "
(3) " P. F. Nunan	...	...	" " "
" V. M. Fisher	...	...	Medical Officer.
" A. S. Mackie	...	...	" "
" R. C. Briscoe	...	...	" "
(4) " B. W. Dakers	...	...	" "
" C. V. Braimbridge	...	...	" "
" K. T. K. Wallington	...	...	" "
" J. O. Beven	...	...	" "
" R. A. W. Procter, M.C.	...	...	" "
" R. J. Harley-Mason	...	...	" "
" J. C. J. Callanan	...	...	" "
" C. H. Brennan, M.C.	...	...	" "
" J. A. Ross	...	...	" "
" P. Milne	...	...	" "
" G. M. Ross	...	...	" "
" F. R. L. Miller	...	...	" "
" E. W. C. Jobson	...	...	" "
" A. R. Esler	...	...	" "
" A. J. Enzer	...	...	" "
" K. A. T. Martin	...	...	" "
" C. R. Philip	...	...	" "
" W. Wilkinson	...	...	" "
" T. S. Cochrane	...	...	" "
" J. R. Davies	...	...	" "
" A. C. Thomson	...	...	" "
" J. Forbes	...	...	District Surgeon.
" C. J. Caddick	...	...	" "
" F. L. Henderson	...	...	" "
Mr. F. W. Day	...	...	Dispenser.
" A. H. Ball	...	...	"
Miss E. B. Wishart	...	...	Matron.
" I. Wilson	...	...	Nursing Sister.
Mrs. S. J. Harrison	...	...	" "
Miss A. E. Davis	...	...	" "
" M. I. Rhind	...	...	" "
" R. Anderson	...	...	" "
(5) " P. S. Joubert	...	...	" "
" H. Masters	...	...	" "
" F. M. Biggar	...	...	" "
" H. Baumann	...	...	" "
" C. Tilney	...	...	" "
" M. Wallace	...	...	" "
" A. K. Wilson	...	...	" "

- | | | | | | |
|-----|---------------------|-----|-----|--------------------------------|---|
| (6) | Miss M. A. Currall | ... | ... | " | " |
| | " R. F. Nimmo | ... | ... | " | " |
| | " A. Cockman | ... | ... | " | " |
| | " J. M. Pearson | ... | ... | " | " |
| | " R. E. V. Nicholas | ... | ... | " | " |
| | " E. Johnson | ... | ... | " | " |
| | " E. G. Moore | ... | ... | " | " |
| | " M. E. Mindham | ... | ... | " | " |
| | " A. Hagan | ... | ... | " | " |
| | " M. A. Robertson | ... | ... | " | " |
| (7) | Mr. W. Henfrey | ... | ... | Supt. Mental Hospital. | |
| (8) | Mrs. L. A. Henfrey | ... | ... | Matron, Mental Hospital. | |
| | Mr. W. G. Howe | ... | ... | Supt. Mental Hospital. | |
| | Mrs. A. T. Howe | ... | ... | Matron, Mental Hospital. | |
| (9) | Mrs. M. A. Bosch | ... | ... | Asst. Matron, Mental Hospital. | |
| | " G. Bowring | ... | ... | " | " |
| | Mr. S. J. Bosch | ... | ... | Warder, Mental Hospital. | |
| | " F. J. B. Jordan | ... | ... | " | " |
| | " T. Johnston | ... | ... | Male Nursing Orderly. | |

SANITATION DIVISION.

- | | | | | |
|------|-------------------------|-----|-----|-------------------------------------|
| | Dr. H. S. de Boer, M.C. | ... | ... | Medical Officer of Health. |
| | " F. J. C. Johnstone | ... | ... | " " " |
| (10) | " R. N. Hunter | ... | ... | " " " |
| | " J. Mc. P. Campbell | ... | ... | " " " |
| | " P. C. C. Garnham | ... | ... | " " " |
| | Mr. J. P. Cook | ... | ... | Senior Sanitary Inspector. |
| | " A. P. Ling | ... | ... | " " " |
| | " E. E. Williams | ... | ... | Sanitary Inspt. 1st Grade. |
| | " D. P. Broad | ... | ... | " " " " |
| | " A. Bunker | ... | ... | " " " " |
| | " R. C. Mills | ... | ... | " " 2nd " |
| | Mr. H. E. Taylor | ... | ... | " " " " |
| | " F. Hewitt | ... | ... | " " " " |
| | " H. O. Salt | ... | ... | " " " " |
| | " S. M. Jackson | ... | ... | " " " " |
| | " A. C. Arnold | ... | ... | " " " " |
| | " H. Martin | ... | ... | " " " " |
| | " R. W. Robinson | ... | ... | " " " " |
| (11) | " G. W. Barnes | ... | ... | Sanitary Overseer. |
| | Miss R. K. Sharp | ... | ... | Nursing Sister. |
| | " E. A. M. Riordan | ... | ... | " " " |
| | Mr. W. J. Henfrey | ... | ... | Supt. Infectious Diseases Hospital. |

LABORATORY DIVISION.

- | | | | | |
|------|---------------------------|-----|-----|---------------------------|
| | Dr. W. H. Kauntze, M.B.E. | ... | ... | Bacteriologist. |
| (12) | " P. A. Clearkin | ... | ... | 1st Asst. Bacteriologist. |
| (13) | " G. V. Allen | ... | ... | 2nd " " |
| | " R. N. Hunter | ... | ... | " " " |
| | " W. C. Birch | ... | ... | Government Analyst. |
| (14) | " R. W. R. Miller | ... | ... | Chemical Officer. |
| | " C. B. Symes | ... | ... | Entomologist. |
| | " F. A. Bailey | ... | ... | Laboratory Assistant. |
| | " J. A. Bell | ... | ... | " " " |
| | " R. Brunsten | ... | ... | " " (learner grade) |

- 1 Died 29th November 1925.
- 2 Resigned 24th August, 1925.
- 3 Retr transferred from Tanganyika Territory, 8th August, 1925.
- 4 Died 16th July, 1925.
- 5 Resigned 15th February, 1925.
- 6 Resigned 14th March, 1925.
- 7 Retired on pension 17th February, 1925.
- 8 Retired on pension 17th February, 1925.
- 9 Resigned 24th April 1925.
- 10 Transferred to Laboratory Division 30th September 1925.
- 11 Died 20th December 1925.
- 12 Transferred to Tanganyika Territory 26th November 1925.
- 13 Promoted Senior Bacteriologist 30th September 1925.
- 14 Transferred to Tanganyika Territory 15th November 1925.

TABLE II.
FINANCIAL.

The sanctioned Medical Budget for the year 1925 was a total of £134,406, as compared with £126,943 for the preceding 12 months.

Of the 1925 grand total £132,957 was expended, leaving an unexpended sum of £1,449.

The headings under which the vote was arranged were as follows:—

MEDICAL DEPARTMENT.

Administrative Division.

	Estimates.	Actual Expenditure.
	£	£
Personal Emoluments	11,999	11,959
(Under this heading are included the salaries of the Principal Medical Officer, Deputy Principal Medical Officer, Chief Sanitation Officer, Chief Sanitary Inspector, Office Superintendent, Medical Storekeeper, Accountant, Clerical Establishment, Messengers and Packers).		

Medical Division.

Personal Emoluments	51,096	49,319
(Under this heading are included the salaries of the Senior Medical Officers, Resident Surgical Officer, Medical Officers, Nurses, Superintendent, Warders, Matron, Assistant Matron, Mental Hospital, Assistant Surgeons, Sub-Assistant Surgeons, Compounders, Native Hospital Attendants, and Mental Hospital Attendants).		

Sanitation Division.

Personal Emoluments	13,001	11,583
(Under this heading are included the salaries and duty allowances of the Medical Officers of Health, Sanitary Inspectors, Nurses, Vaccinators, Native Attendants for Infectious Diseases Hospitals, Leper Lazaretto and quarantine stations, clerical establishment, Mechanics for Clayton Disinfectors, Office Boys, and messengers).		

Laboratory Division.

Personal Emoluments	6,982	6,545
(Under this heading are included the salaries of the Senior and Assistant Bacteriologists, Government Analyst, Chemical Officer, European and Asiatic Laboratory Assistants, and Native Attendants).		

MEDICAL DEPARTMENT.

Other Charges	50,964	53,231
(Under this heading are included Medical and Surgical Stores, Contingencies, Transport, Up-keep of Hospitals, Uniforms, Furniture and Equipment, Electric Lighting, Water Supplies, Epidemics, Bush Clearing, Ambulance and Motor Services, etc., Medical Mission Units and Medical work in Native Reserves).		
Special Expenditure	375	320
(Motor Ambulance, Mombasa).		

REVENUE.

The total amount of revenue collected as hospital fees, sales of medicines, and surgical stores, bills of health and registration fees, was as follows:—

	£	£
Hospital fees, sales of medicines and registration fees	7,602	
Bills of Health	522	
Laboratory Fees	866	8,990
Re-imbusement from Uganda Government on account of Zanzibar Sanitary Station	425	
Re-imbusement from Uganda Railway on account of medical and dental services	6,825	7,250
Total ...		16,240

Last year the total revenue collected amounted to £12,256.

TABLE III.

RETURN OF STATISTICS OF POPULATION FOR THE YEAR 1925.

Colony and Protectorate of Kenya.	Europeans and Whites.	Africans and Others.	Asiatics.
Number of Inhabitants in 1925 ...	12,529*	2,515,330†	26,759*
Number of Births registered in 1925		Figures not available.	
Number of Deaths registered in 1925		Figures not available.	
Number of Immigrants during 1925	4,951	2,076	11,718
Number of Emigrants during 1925		Figures not available.	
Number of Inhabitants in 1925 ...	12,529	2,515,330	26,759

* 1926 Census. † Estimated.

TABLE V.

METEOROLOGICAL RETURN FOR THE YEAR 1925.

NAIROBI.

Month.			Temperature.				Rainfall.	Winds.			Remarks.		
			Solar maximum.	Maximum on grass.	Shade maximum.	Range.	Maximum and minimum mean combined.	Shade minimum.	Amount in inches.	Degree of humidity.		General Direction.	Average force.
January	...	...	No Observations.	No Observations.	76	64.	64.5	53	4.20	79	N.E.	1.8	
February	...	...			80		67.0	54	1.91	70	N.E.	2.0	
March	...	...			78		68.0	58	5.16	85	N.E.	2.2	
April	...	...			76		67.0	58	3.97	80	N.E.	2.2	
May	...	...			78		68.0	58	1.48	75	N.E.	1.5	
June	...	...			76		66.0	56	0.76	75	N.E.	1.4	
July	...	...			72		63.0	54	0.81	80	N.E.	1.7	
August	...	...			71		61.0	51	1.02	78	N.E.	1.8	
September	...	...			79		65.5	52	0.00	67	N.E.	2.1	
October	...	...			81		68.0	55	0.65	66	N.E.	2.1	
November	...	...			75		66.5	58	5.09	80	N.E.	1.0	
December	...	...			77		67.0	57	2.09	77	N.E.	1.0	
Year average ...					76		65.5	55	27.14	76		1.7	

MOMBASA.

Month.			Temperature.				Rainfall.	Winds.			Remarks.	
			Solar maximum.	Maximum on grass.	Shade maximum.	Range.	Maximum and minimum mean combined.	Shade minimum.	Amount in inches.	Degree of humidity.		General Direction.
January	...	...	No Observations.	No Observations.			4.75				January-April Station under reconstruction.	
February	...	...						0.61				
March	...	...						0.64				
April	...	...						0.57				
May	...	...			80	70.5	61	6.56	76			
June	...	...			77	68.0	59	5.88	80			
July	...	...			76	66.5	57	11.76	79			
August	...	...			76	66.5	57	2.06	81			
September	...	...			79	68.5	58	2.02	78			
October	...	...			80	70.0	60	9.11	74			
November	...	...			83	72.0	61	5.68	75			
December	...	...			81	71.0	61	2.16	74			
Year average ...				79	69.0	59	51.80	77				

TABLE V.—(Continued).

FORT HALL.

			Temperature.			Rainfall.		Winds.					
Month.			Solar maximum.	Maximum on grass.	Shade maximum.	Range.	Maximum and minimum mean combined.	Shade minimum.	Amount in inches.	Degree of humidity.	General Direction.	Average force.	Remarks.
January	...	...	No Observations.	No Observations.	80		67.5	55	3.10	88	No Observations.	No Observations.	
February	...	...			84		69.0	54	0.75	57			
March	...	...			82		68.5	55	5.60	85			
April	...	...			79		67.0	55	4.79	83			
May	...	...			79		67.5	56	5.09	90			
June	...	...			78		67.0	56	2.18	81			
July	...	...			77		65.5	54	0.92	88			
August	...	...			77		65.0	53	1.27	84			
September	...	...			—		—	—	0.13	—			
October	...	...			80		66.5	53	2.52	65			
November	...	...			79		66.0	53	6.50	81			
December	...	...			79		66.0	53	0.74	75			
Year average ...					79		66.5	54	33.59	80			

KISUMU.

			Temperature.			Rainfall.		Winds.			
Month.	Solar maximum.	Maximum on grass.	Shade maximum.	Range.	Maximum and minimum mean combined.	Shade minimum.	Amount in inches.	Degree of humidity.	General Direction.	Average force.	Remarks.
January	No Observations.	No Observations.					4.81		No Observations.	No Observations.	
February							1.08				
March							8.52				
April			85	74.5	64	2.55	57				
May			81	72.5	64	7.15	79				
June			80	72.0	64	2.43	96				
July			80	72.0	64	3.22	77				
August			80	71.0	62	1.69	64				
September			81	72.5	64	0.69	57				
October			83	73.5	64	2.36	62				
November			81	71.5	62	9.71	96				
December			82	73.0	64	2.15	86				
Year average			81		72.5	64	46.36	75			

TABLE V.—Continued.

TABLE SHOWING MEAN ANNUAL RAINFALL AT VARIOUS POINTS
IN THE DIFFERENT AREAS FOR THE YEAR 1925.

COAST AREA.

Station.	1925.
Malindi	39.13
Mombasa	51.80
Mazeras	17.87
Mackinnon Road	22.27
Voi	28.15
Taveta	20.66 (11 months)

MOUNTAINOUS AREA.

Masongaleni	21.60
Makindu	15.78
Kiu	19.51
Athi River	19.85
Nairobi Laboratory	30.39
Kabete Reformatory (near Nairobi)	31.87
Najvasha	21.43
Nakuru	26.45
Molo	47.22
Eldama Ravine	40.79

NYANZA AND KENYA PROVINCE.

Lumbwa	36.57
Muhuroni	63.05 (11 months)
Kisumu	46.36
Mumias (Kakamega)	79.49
Karungu	—
Kericho	67.98
Nandi	58.22
Fort Hall	33.59
Nyeri	28.34
West Kenya	23.41

TABLE VI.

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

Diseases.	EUROPEAN OFFICIALS				GENERAL EUROPEAN POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.
INFECTIVE DISEASES:								
Beri-beri	—	—	—	—	—	—	—	—
Cerebro-spinal Fever	—	1	1	1	—	—	—	—
Chicken-pox	—	—	—	—	—	—	2	2
Cholera	—	—	—	—	—	—	—	—
Dengue	—	4	—	4	—	—	8	8
Diphtheria	—	—	—	—	—	—	2	2
Dysentery	—	19	—	19	—	—	32	1
Endocarditis-Infective	—	—	—	—	—	—	—	—
Enteric	—	1	—	1	—	1	5	6
Erysipelas	—	—	—	—	—	—	—	—
Gonorrhoea	—	1	—	1	—	—	—	—
Influenza	2	159	—	161	6	2	64	66
Kala Azar	—	—	—	—	—	—	—	—
Leprosy:								
(a) Nodular	—	—	—	—	—	—	—	—
(b) Anaesthetic	—	—	—	—	—	—	—	—
Malaria:								
(a) Sub-Tertian	1	82	1	83	—	—	48	1
(b) Benign Tertian	—	1	—	1	—	—	3	3
(c) Quartan	—	—	—	—	—	—	1	1
(d) Undifferentiated	—	107	—	107	2	1	107	2
(e) Blackwater	—	4	—	4	1	—	11	1
Measles	—	1	—	1	—	—	3	3
Malta Fever	—	—	—	—	—	—	—	—
Plague	—	—	—	—	—	—	—	—
Pneumonia	—	1	—	1	1	—	4	2
Rabies	—	—	—	—	—	—	—	—
Relapsing Fever	—	—	—	—	—	—	11	11
Rheumatic Fever	—	1	—	1	—	—	2	2
Septicæmia	—	—	—	—	—	—	1	1
Trypanosomiasis (Sleeping Sickness)	—	—	—	—	—	—	—	—
Small-pox	—	—	—	—	—	—	2	1
Syphilis:								
(a) Primary	—	—	—	—	—	—	1	1
(b) Secondary	—	—	—	—	—	—	—	—
(c) Inherited	—	—	—	—	—	—	—	—
Tetanus	—	4	—	4	—	—	—	—
Tuberculosis	—	4	—	4	—	—	4	4
Whooping Cough	—	—	—	—	—	—	—	—
Yaws	—	—	—	—	—	—	—	—
Yellow Fever	—	—	—	—	—	—	—	—
Mumps	—	1	—	1	—	—	—	—
Anthrax	—	—	—	—	—	—	—	—
Typhus	—	—	—	—	—	—	2	2
Other Infectious Diseases	—	8	—	8	—	—	1	1
INTOXICATIONS:								
Alcoholism	—	3	—	3	—	—	4	4
Morphinism	—	—	—	—	—	—	—	—
Others	—	—	—	—	—	—	—	—
GENERAL DISEASES:								
Anæmia	—	3	—	3	—	—	1	1
Anæmia-Pernicious	—	—	—	—	—	—	—	—
Diabetes	—	—	—	—	—	—	—	—

TABLE VI.—Continued.

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

Diseases.	EUROPEAN OFFICIALS				GENERAL EUROPEAN POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.
GENERAL DISEASES.—Contd.								
Exophthalmic Goitre ...	—	—	—	—	—	—	—	—
Gout ...	—	—	—	—	—	1	—	1
Leucocythæmia ...	—	—	—	—	—	—	—	—
Hodgkin's Disease ...	—	—	—	—	—	—	—	—
Myxœdema ...	—	—	—	—	—	—	—	—
Purpura ...	—	—	—	—	—	—	—	—
Rickets ...	—	—	—	—	—	—	—	—
Scurvy ...	—	—	—	—	—	—	—	—
Other General Diseases ...	—	16	—	16	—	18	—	18
LOCAL DISEASES:								
Diseases of the Nervous System:								
Sub-Section 1.								
Neuritis ...	1	3	—	4	—	3	—	3
Meningitis ...	—	—	—	—	—	—	—	—
Myelitis ...	—	—	—	—	—	—	—	—
Hydrocephalus ...	—	—	—	—	—	—	—	—
Encephalitis ...	—	—	—	—	—	—	—	—
Abscess of Brain ...	—	—	—	—	—	—	—	—
Congestion of Brain ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	7	—	7	1	9	—	10
Sub-Section 2.								
Apoplexy ...	—	—	—	—	—	—	—	—
Paralysis ...	—	—	—	—	—	—	—	—
Chorea ...	—	—	—	—	—	—	—	—
Epilepsy ...	—	—	—	—	—	—	—	—
Neuralgia ...	1	13	—	14	—	2	—	2
Hysteria ...	—	1	—	1	—	2	—	2
Other Nervous Diseases ...	—	2	—	2	—	6	—	6
Mental Diseases:								
Sub-Section 3.								
Idiocy ...	—	—	—	—	—	1	2	1
Mania ...	—	—	—	—	—	3	—	3
Melancholia ...	—	—	—	—	—	1	1	2
Dementia ...	—	—	—	—	—	2	4	6
Delusional Insanity ...	—	2	—	2	—	2	—	3
Other Mental Diseases ...	—	—	—	—	—	—	—	—
Diseases of the Eye:								
Conjunctivitis ...	—	1	—	1	—	2	—	2
Keratitis ...	—	—	—	—	—	—	—	—
Ulceration of Cornea ...	—	—	—	—	—	—	—	—
Iritis ...	—	—	—	—	—	—	—	—
Optic Neuritis ...	—	—	—	—	—	—	—	—
Cataract ...	—	—	—	—	—	—	—	—
Other Eye Diseases ...	9	—	9	—	1	—	—	—
Diseases of Ear:								
Inflammation ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	3	—	3	—	1	5	6
Diseases of Nose:								
Pericarditis ...	—	—	—	—	—	—	—	—
Endocarditis ...	—	1	1	1	—	1	—	1
Valvular Mitral ...	—	—	—	—	—	—	—	—
Valvular Aortic ...	—	—	—	—	—	—	—	—
Valvular Tricuspid ...	—	—	—	—	—	—	—	—

TABLE VI.—Continued.

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

Diseases.	EUROPEAN OFFICIALS				GENERAL EUROPEAN POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated. Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated. Remaining in hospital at end of 1925.
LOCAL DISEASES.—Contd.								
Valvular Pulmonary	—	—	—	—	—	—	—	—
Arterial Sclerosis	—	—	—	—	—	—	—	—
Aneurism	—	—	—	—	—	—	—	—
Other Diseases	1	7	—	8	—	12	1	12
Diseases of the Respiratory System:								
Laryngitis	—	—	—	—	—	—	—	—
Bronchitis	—	18	—	18	—	10	—	10
Broncho-pneumonia	—	2	—	2	—	—	—	—
Abscess of Lung	—	—	—	—	—	—	—	—
Gangrene of Lung	—	—	—	—	—	—	—	—
Emphysema	—	—	—	—	—	—	—	—
Pleurisy	1	5	—	6	—	2	—	2
Empyema	—	—	—	—	—	2	—	2
Other Diseases	—	24	—	24	1	32	1	32
Diseases of the Digestive System:								
Stomatitis	—	—	—	—	—	—	—	—
Caries of Teeth	1	7	—	8	—	6	—	6
Glossitis	—	4	—	4	—	—	—	—
Sore Throat	—	1	—	1	—	5	—	5
Inflammation of Tonsils	—	23	—	23	3	33	—	34
Gastritis	—	19	—	19	3	10	—	10
Ulceration of Stomach	—	1	—	1	—	—	—	—
Hæmatemesis	—	—	—	—	—	1	—	1
Dilatation of Stomach	—	—	—	—	—	—	—	—
Stricture of Stomach	—	—	—	—	—	—	—	—
Dyspepsia	—	5	—	5	—	4	—	4
Enteritis	—	—	—	—	—	8	—	8
Appendicitis	—	13	—	13	—	27	1	27
Colitis	—	—	—	—	—	7	—	7
Ulceration of Intestines	—	1	—	1	—	—	—	—
Sprue	—	—	—	—	—	2	—	2
Hernia	—	1	—	1	—	6	—	6
Diarrhœa	1	24	—	25	—	37	—	37
Constipation	—	1	—	1	—	8	—	8
Colic	—	22	—	22	—	18	—	18
Hæmorrhoids	—	6	—	6	—	3	—	3
Pancreatitis	—	1	1	1	—	—	—	—
Hepatitis (Acute)	—	7	—	7	—	4	—	4
Abscess	—	1	—	1	—	2	—	2
Cirrhosis	—	—	—	—	—	1	—	1
Jaundice	—	1	—	1	—	1	—	1
Peritonitis	—	—	—	—	—	3	—	3
Ascites	—	—	—	—	—	—	—	—
Other Diseases	1	19	1	20	—	37	1	37
Diseases of the Lymphatic System:								
Splenitis	—	—	—	—	—	—	—	—
Inflammation of Lymphatic Gland	—	—	—	—	—	—	—	—
Suppuration of Lymphatic Gland	—	—	—	—	—	—	—	—
Lymphangitis	—	—	—	—	—	—	—	—
Elephantiasis	—	—	—	—	—	—	—	—
Other Diseases	—	3	—	3	—	8	—	8
Diseases of the Urinary System:								
Acute Nephritis	—	1	—	1	—	3	—	3
Bright's Disease	—	—	—	—	—	—	—	—
Pyelitis	—	—	—	—	—	2	—	2
Calculus	—	—	—	—	—	—	—	—

TABLE VI.—Continued.

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

Diseases.	EUROPEAN OFFICIALS				GENERAL EUROPEAN POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.
LOCAL DISEASES.—Continued.								
Renal Colic ...	—	2	—	2	—	—	2	—
Cystitis ...	—	2	—	2	—	—	5	—
Vesical Calculus ...	—	—	—	—	—	—	—	—
Suppression ...	—	—	—	—	—	—	—	—
Hæmaturia ...	—	1	—	1	—	—	—	—
Chyluria ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	3	1	3	—	—	2	—
Diseases of the Generative System:								
<i>Male Organs—</i>								
Urethritis ...	—	—	—	—	—	—	1	—
Gleet ...	—	—	—	—	—	—	—	—
Stricture ...	—	—	—	—	—	—	—	—
Prostatitis ...	—	—	—	—	—	—	1	—
Soft Chancre ...	—	—	—	—	—	—	—	—
Condyloma ...	—	—	—	—	—	—	—	—
Inflammation of Scrotum ...	—	—	—	—	—	—	—	—
Hydrocele ...	—	—	—	—	—	—	—	—
Orchitis ...	—	2	—	2	—	—	1	—
Epididymitis ...	—	—	—	—	—	—	1	—
Abscess of Testicle ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	1	—	1	—	—	6	—
<i>Female Organs—</i>								
Ovaritis ...	—	—	—	—	—	—	—	—
Ovarian Cyst ...	—	—	—	—	—	—	2	—
Displacement of Uterus ...	—	—	—	—	—	—	2	—
Vaginitis ...	—	—	—	—	—	—	—	—
Amenorrhœa ...	—	—	—	—	—	—	—	—
Dysmenorrhœa ...	—	—	—	—	—	—	4	—
Menorrhgia ...	—	—	—	—	—	—	8	—
Leucorrhœa ...	—	—	—	—	—	—	—	—
Abortion ...	—	—	—	—	—	—	4	—
Delayed Labour ...	—	—	—	—	—	—	—	—
Post-partem Hæmorrhage ...	—	—	—	—	—	—	—	—
Retained Placenta ...	—	—	—	—	—	—	—	—
Premature Birth ...	—	—	—	—	—	—	—	—
Puerperal Septicæmia ...	—	—	—	—	—	—	—	—
Mastitis ...	—	—	—	—	—	—	1	—
Abscess of Breast ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	1	—	1	—	1	35	—
Diseases of the Organs of Locomotion:								
Osteitis ...	—	—	—	—	—	—	1	—
Arthritis ...	—	—	—	—	—	—	—	—
Spondylitis ...	—	—	—	—	—	—	—	—
Bursitis ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	30	—	30	—	—	12	—
Diseases of the Connective Tissue:								
Cellulitis ...	—	9	—	9	—	—	11	—
Abscess ...	—	6	—	6	—	—	6	—
Elephantiasis ...	—	—	—	—	—	—	—	—
Other Diseases ...	—	2	—	2	—	—	10	—
Disease of the Skin:								
Urticaria ...	—	—	—	—	—	—	1	—
Eczema ...	—	2	—	2	—	—	3	—
Boil ...	—	5	—	5	—	—	1	—
Carbuncle ...	—	—	—	—	—	—	2	—
Herpes ...	—	—	—	—	—	—	3	—

TABLE VI.

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

Diseases.	EUROPEAN OFFICIALS				GENERAL EUROPEAN POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated. Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated. Remaining in hospital at end of 1925.
LOCAL DISEASES.—Contd.								
Psoriasis	—	1	—	1	—	1	—	1
Oriental Sore	—	—	—	—	—	—	—	—
Tinea	—	—	—	—	—	—	—	—
Scabies	—	—	—	—	—	—	—	—
Acne	—	—	—	—	—	—	—	—
Prickly Heat	—	1	—	1	—	—	—	—
Other Diseases	—	—	—	—	1	19	—	20
Injuries—General:								
Local	3	117	—	120	5	4	53	57
*Surgical Operations	—	(58)	—	(58)	—	(186)	—	(186)
Tumours	—	2	—	2	—	7	—	7
Malformations	—	1	—	1	—	—	—	—
Poisons	—	2	—	2	—	—	—	—
Parasites—Animal	—	—	—	—	—	—	—	—
Protozoa	—	—	—	—	—	—	—	—
Trematoda (Flukes)	—	—	—	—	—	3	—	3
Cestoda—								
Tænia Solium	—	2	—	2	—	2	—	2
Tænia Saginata	—	1	—	1	—	—	—	—
Nematoda—								
Ascaris	—	—	—	—	—	1	—	1
Trichocephalus Dispar	—	—	—	—	—	—	—	—
Trichina	—	—	—	—	—	—	—	—
Dracunculus	—	—	—	—	—	—	—	—
Filariasis	—	—	—	—	—	—	—	—
Strongylus	—	—	—	—	—	—	—	—
Ankylostomiasis	—	1	—	1	—	—	—	—
Oxyuris	—	—	—	—	—	—	—	—
Insecta—								
Myiasis	—	—	—	—	—	—	—	—
Other Diseases	—	1	—	1	—	—	—	—
Total ...	13	875	6	888	23	20	885	13
								905
								26

* Recorded under respective diseases.

TABLE VI.—Contd.
RETURN OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1925.

Diseases.	NON-EUROPEAN OFFICIALS.				GENERAL NATIVE POPULATION.					
	Yearly total.				Yearly total.					
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.
GENERAL DISEASES.—Contd.										
Leucocythæmia	—	—	—	—	—	—	—	—	—	—
Hodgkin's Disease	—	—	—	—	—	—	1	—	1	—
Myxœdema	—	—	—	—	—	—	—	—	—	—
Purpura	—	—	—	—	—	—	—	—	—	—
Rickets	—	—	—	—	—	—	—	—	—	—
Scurvy	—	—	—	—	—	—	3	2	3	—
Other General Diseases	—	4	—	4	—	5	115	16	120	3
LOCAL DISEASES:										
Diseases of the Nervous System:										
Sub-Section 1.										
Neuritis	—	3	—	3	—	1	16	—	17	1
Meningitis	—	—	—	—	—	—	19	17	19	—
Myelitis	—	—	—	—	—	—	4	—	4	2
Hydrocephalus	—	—	—	—	—	—	1	—	1	—
Encephalitis	—	—	—	—	—	—	2	—	2	1
Abscess of Brain	—	—	—	—	—	—	—	—	—	—
Congestion of Brain	—	—	—	—	—	—	—	—	—	—
Other Diseases	—	5	—	5	—	—	13	5	13	—
Sub-Section 2.										
Apoplexy	—	—	—	—	—	—	1	1	1	—
Paralysis	—	1	1	1	—	5	23	4	28	1
Chorea	—	—	—	—	—	—	2	—	2	—
Epilepsy	—	1	—	1	—	1	39	1	40	2
Neuralgia	—	48	—	48	1	3	58	—	61	3
Hysteria	—	—	—	—	—	—	6	—	6	—
Other Nervous Diseases	—	3	—	3	—	6	190	1	196	5
Mental Diseases:										
Sub-Section 3.										
Idiocy	—	—	—	—	—	1	1	—	2	—
Mania	—	—	—	—	—	28	43	8	71	37
Melancholia	—	—	—	—	—	—	4	—	4	2
Dementia	—	—	—	—	—	29	18	11	47	27
Delusional Insanity	—	—	—	—	—	9	16	6	25	8
Other Mental Diseases	—	1	—	1	—	25	60	9	85	31
Diseases of the Eye:										
Conjunctivitis	—	28	—	28	—	5	279	—	284	7
Keratitis	—	2	—	2	—	—	23	—	23	1
Ulceration of Cornea	2	8	—	10	—	—	29	—	29	2
Iritis	—	1	—	1	—	2	17	—	19	3
Optic Neuritis	—	—	—	—	—	—	—	—	—	—
Cataract	—	—	—	—	—	—	7	—	7	2
Other Eye Diseases	—	19	—	19	1	4	78	—	82	5
Diseases of Ear:										
Inflammation	—	8	—	8	—	—	41	—	41	—
Other Diseases	—	1	—	1	—	1	30	1	31	—
Diseases of Nose										
Diseases of the Circulatory System:	1	7	—	8	—	—	20	—	20	2
Pericarditis	—	—	—	—	—	—	3	—	3	—
Endocarditis	—	—	—	—	—	—	—	—	—	—
Valvular Mitral	—	—	—	—	—	—	29	12	29	4
Valvular Aortic	—	—	—	—	—	1	2	2	3	—
Valvular Tricuspid	—	—	—	—	—	—	—	—	—	—
Valvular Pulmonary	—	—	—	—	—	—	—	—	—	—
Arterial Sclerosis	—	—	—	—	—	—	—	—	—	—
Aneurism	—	1	—	1	—	—	1	1	1	—
Other Diseases	—	9	—	9	1	—	36	15	36	3

TABLE VI.—Contd.

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

Diseases.	NON-EUROPEAN OFFICIALS.				GENERAL NATIVE POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.
				Remaining in hospital at end of 1925.				Remaining in hospital at end of 1925.
LOCAL DISEASES.—Contd.								
Diseases of the Respiratory System:								
Laryngitis	—	—	—	—	1	38	—	39
Bronchitis	1	73	—	74	8	686	1	694
Broncho-pneumonia	—	8	1	8	1	103	17	104
Abscess of Lung	—	—	—	—	—	—	—	—
Gangrene of Lung	—	—	—	—	—	1	1	1
Emphysema	—	—	—	—	—	—	—	—
Pleurisy	—	5	—	5	1	24	—	25
Empyema	—	1	—	1	2	13	4	15
Other Diseases	—	30	—	30	1	98	6	98
Diseases of the Digestive System:								
Stomatitis	—	—	—	—	—	14	—	14
Caries of Teeth	1	34	—	35	—	13	—	13
Glossitis	—	—	—	—	—	—	—	—
Sore Throat	—	18	—	18	1	47	—	48
Inflammation of Tonsils	—	11	—	11	1	69	—	69
Gastritis	—	16	—	16	—	19	—	19
Ulceration of Stomach	—	—	—	—	—	—	—	—
Hæmatemesis	—	—	—	—	—	1	—	1
Dilatation of Stomach	—	—	—	—	—	—	—	—
Stricture of Stomach	—	—	—	—	—	—	—	—
Dyspepsia	—	13	—	13	3	38	—	41
Enteritis	—	1	—	1	—	41	6	41
Appendicitis	—	7	—	7	—	7	—	7
Colitis	—	10	—	10	—	32	—	32
Ulceration of Intestines	—	—	—	—	—	1	1	1
Sprue	—	—	—	—	—	—	—	—
Hernia	—	—	—	—	3	55	3	58
Diarrhœa	1	65	—	66	1	284	10	291
Constipation	—	17	—	17	—	61	—	61
Colic	1	91	—	92	—	96	1	96
Hæmorrhoids	—	15	—	15	—	9	—	9
Peritonitis	—	—	—	—	—	—	—	—
Hepatitis (Acute)	1	7	—	8	2	27	9	29
Abscess	—	—	—	—	2	9	1	11
Cirrhosis	—	—	—	—	1	19	5	20
Jaundice	—	—	—	—	—	7	—	7
Peritonitis	—	—	—	—	—	12	4	12
Ascites	—	—	—	—	3	24	3	27
Other Diseases	—	22	—	22	3	69	15	72
Diseases of the Lymphatic System:								
Splenitis	—	3	—	3	1	50	1	51
Inflammation of Lymphatic Gland	1	3	—	4	4	131	—	135
Suppuration of Lymphatic Gland	—	1	—	1	5	26	1	31
Lymphangitis	—	—	—	—	—	1	—	1
Elephantiasis	—	—	—	—	—	2	—	2
Other Diseases	—	—	—	—	1	2	1	3
Diseases of the Urinary System:								
Acute Nephritis	—	1	—	1	—	12	4	12
Bright's Disease	—	—	—	—	—	9	5	9
Pyelitis	—	—	—	—	—	—	—	—
Calculus	—	—	—	—	—	—	—	—
Renal Colic	—	1	—	1	—	2	—	2
Cystitis	—	4	—	4	—	12	2	12

TABLE VI.—Contd.

RETURNS OF DISEASES AND DEATHS (IN-PATIENTS) FOR THE YEAR 1925.

Diseases.	NON-EUROPEAN OFFICIALS.				GENERAL NATIVE POPULATION.								
	Yearly total.				Yearly total.								
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1925.			
LOCAL DISEASES.—Contd.													
Vesical Calculus	...	...	...	—	—	—	—	—	—	—			
Suppression	...	...	...	—	—	—	—	—	—	—			
Hæmaturia	...	...	...	—	—	—	—	12	—	12			
Chyluria	...	...	...	—	—	—	—	—	—	—			
Other Diseases	...	...	...	1	2	—	3	—	16	2	16		
Diseases of the Generative System:													
Male Organs—													
Urethritis	...	...	...	—	—	—	—	9	—	9	—		
Gleet	...	...	...	—	—	—	—	2	—	2	—		
Stricture	...	...	...	—	—	—	—	4	—	4	—		
Prostatitis	...	...	...	—	—	—	—	2	1	2	—		
Soft Chancre	...	...	...	—	—	—	—	20	—	20	—		
Condyloma	...	...	...	—	—	—	—	1	—	1	—		
Inflammation of Scrotum	...	...	...	—	—	—	—	2	—	2	—		
Hydrocele	...	...	...	—	—	—	—	1	48	—	49	9	
Orchitis	...	...	...	—	5	—	5	—	60	—	60	4	
Epididymitis	...	...	...	—	1	—	1	—	1	23	—	24	1
Abscess of Testicle	...	...	...	—	—	—	—	—	—	—	—	—	—
Other Diseases	...	...	...	—	2	—	2	—	2	37	—	39	5
Female Organs—													
Ovaritis	...	...	...	—	—	—	—	—	—	—	—	—	—
Ovarian Cyst	...	...	...	—	—	—	—	1	4	1	—	5	—
Endometritis	...	...	...	—	3	—	3	—	3	—	—	3	—
Displacement of Uterus	...	...	...	—	—	—	—	—	—	—	—	—	—
Vaginitis	...	...	...	—	—	—	—	1	—	—	—	1	—
Amenorrhœa	...	...	...	—	—	—	—	—	3	—	—	3	—
Dysmenorrhœa	...	...	...	—	—	—	—	—	4	—	—	4	—
Menorrhagia	...	...	...	—	—	—	—	—	3	—	—	3	—
Leucorrhœa	...	...	...	—	—	—	—	—	1	—	—	1	—
Abortion	...	...	...	—	—	—	—	—	16	—	—	16	—
Delayed Labour	...	...	...	—	—	—	—	1	22	3	—	23	—
Post-partem Hæmorrhage	...	...	...	—	—	—	—	—	—	—	—	—	—
Retained Placenta	...	...	...	—	—	—	—	—	6	—	—	6	—
Premature Birth	...	...	...	—	—	—	—	—	2	2	—	2	—
Puerperal Septicæmia	...	...	...	—	—	—	—	—	6	4	—	6	—
Mastitis	...	...	...	—	—	—	—	1	2	—	—	3	—
Abscess of Breast	...	...	...	—	—	—	—	—	5	—	—	5	—
Other Diseases	...	...	...	—	—	—	—	5	25	6	—	30	—
Diseases of the Organs of Locomotion:													
Osteitis	...	...	...	—	—	—	—	1	34	—	—	35	5
Arthritis	...	...	...	—	1	—	1	—	6	101	1	107	8
Spondylitis	...	...	...	—	—	—	—	—	—	—	—	—	—
Bursitis	...	...	...	—	80	—	80	—	3	—	—	3	—
Other Diseases	...	...	...	1	62	—	63	3	22	434	4	456	30
Diseases of the Connective Tissue:													
Cellulitis	...	...	...	—	—	—	—	11	320	—	—	331	10
Abscess	...	...	...	—	10	—	10	—	22	340	6	362	17
Elephantiasis	...	...	...	1	14	—	15	—	4	19	—	23	—
Other Diseases	...	...	...	—	7	—	7	—	71	499	5	570	44
Disease of the Skin:													
Urticaria	...	...	...	—	13	—	13	—	1	15	—	16	—
Eczema	...	...	...	—	6	—	6	—	1	28	—	29	—
Boil	...	...	...	—	39	—	39	1	2	44	—	46	1

TABLE VI.—Contd.

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

Diseases.	NON-EUROPEAN OFFICIALS.				GENERAL NATIVE POPULATION.			
	Yearly total.				Yearly total.			
	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.	Remaining in hospital at end of 1924.	Admissions.	Deaths.	Total cases treated.
	Remaining in hospital at end of 1925.				Remaining in hospital at end of 1925.			
LOCAL DISEASES.—Contd.								
Carbuncle	—	—	—	—	—	4	—	4
Herpes	—	1	—	1	—	1	—	1
Psoriasis	—	—	—	—	—	1	—	1
Oriental Sore	—	—	—	—	—	1	—	1
Tinea	—	—	—	—	—	6	—	6
Scabies	—	—	—	—	5	147	1	152
Acne	—	—	—	—	—	1	—	1
Prickly Heat	—	—	—	—	—	1	—	1
Other Diseases	—	11	—	11	74	987	2	1061
Injuries—General:					8	40	15	48
Local	1	—	—	1	152	2584	43	2736
*Surgical Operations	6	211	—	217	4	(1012)	—	(1012)
Tumours	—	(23)	—	(23)	—	8	106	7
Malformations	—	—	—	—	—	3	—	3
Poisons	—	—	—	—	—	2	13	2
Parasites—Animal	—	—	—	—	—	—	—	—
Protozoa	—	—	—	—	—	—	—	—
Trematoda (Flukes)	—	—	—	—	1	14	—	15
Cestoda—								
Tænia Solium	—	1	—	1	—	1	114	—
Tænia Saginata	—	1	—	1	—	—	71	—
Nematoda—								
Ascaris	—	—	—	—	—	1	67	1
Trichocephalus Dispar	—	—	—	—	—	—	4	—
Trichina	—	—	—	—	—	—	—	—
Dracunculus	—	—	—	—	—	—	—	—
Filariasis	—	—	—	—	—	2	—	2
Strongylus	—	—	—	—	—	—	—	—
Ankylostomiasis	—	1	—	1	—	6	134	8
Oxyuris	—	—	—	—	—	—	—	—
Insecta—								
Myiasis	—	—	—	—	—	3	5	—
Other Diseases	—	1	—	1	—	—	82	—
Total	38	3655	8	3693	57	197	20828	898
								22025
								1366

* Recorded under respective diseases.

TABLE VII.—Continued.

RETURN OF DISEASES (OUT-PATIENTS) FOR THE YEAR 1925.

Diseases.	EUROPEAN OFFICIALS.		GENERAL EUROPEAN POPULATION.		NON-EUROPEAN OFFICIALS.		GENERAL NATIVE POPULATION.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
GENERAL DISEASES.—Continued.								
Hodgkin's Disease	—	—	—	—	—	—	—	—
Myxœdema	—	—	—	—	—	—	—	—
Purpura	—	—	—	—	—	—	1	—
Rickets	—	—	1	—	—	—	—	—
Scurvy	—	—	—	—	1	—	9	3
Other General Diseases	29	—	27	9	14	—	301	57
LOCAL DISEASES:								
Diseases of the Nervous System ...	32	—	18	13	43	—	2,391	383
Mental Diseases	—	—	2	3	—	—	32	6
Diseases of the Eye	18	—	11	7	38	—	4,164	1,558
Diseases of the Ear	11	—	24	11	17	—	1,741	467
Diseases of the Nose	6	—	3	5	25	—	367	80
Diseases of the Circulatory System ...	3	—	3	—	2	—	86	18
Diseases of the Respiratory System ...	34	—	35	10	140	—	14,768	2,341
Diseases of the Digestive System ...	102	—	109	82	357	—	18,763	3,852
Diseases of the Lymphatic System ...	6	—	13	4	2	—	814	139
Diseases of the Urinary System ...	1	—	3	2	2	—	51	12
Diseases of the Generative System ...	1	—	7	20	2	—	348	397
Diseases of the Organs of Locomotion	16	—	23	11	38	—	6,529	3,055
Diseases of the Connective Tissue ...	22	—	58	12	21	—	4,538	1,115
Diseases of the Skin	86	—	54	23	83	—	12,941	1,707
Injuries:								
General	—	—	—	—	—	—	92	19
Local	71	—	59	16	97	—	20,674	3,542
*Surgical Operations	(2)	—	—	—	(2)	—	(17)	(4)
Tumours	—	—	2	3	1	—	24	16
Malformations	—	—	—	—	—	—	3	—
Poisons	—	—	1	—	4	—	33	4
Parasites-Animal	5	—	2	3	1	—	2,962	1,114

EUROPEANS.

COLONY AND PROTECTORATE OF KENYA DURING THE YEAR 1925.

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TABLE VIII.

RETURN OF INFECTIVE DISEASES TREATED AT THE VARIOUS HOSPITALS AND DISPENSARIES IN THE
COLONY AND PROTECTORATE OF KENYA DURING THE YEAR 1925.
NATIVES (INCLUDING ASIATICS.)

Diseases.		Eldoret.	Fort Hall.	Kakamega.	Kilindini.	Kitui.	Kisii.	Kisumu.	Kericho.	Lamu.	Lodwar.	Machakos.	Malindi.	Mandera.	Mombasa.	Moyale.	Meru.	Nairobi.	Nakuru.	Nandi.	Nyeri.	Narok.	Voi.	Total.
Beri-beri ...	Cases ...	1	—	—	—	—	—	1	—	—	1	—	—	4	1	3	—	2	2	—	—	—	3	18
	Deaths ...	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2
Cerebro-spinal fever	Cases ...	2	7	—	—	—	—	—	—	—	—	1	—	—	3	—	—	11	4	—	1	—	1	30
	Deaths ...	2	7	—	—	—	—	—	—	—	—	1	—	—	2	—	—	6	3	—	—	—	1	22
Chicken-pox ...	Cases ...	27	43	1	—	3	10	121	6	1	—	46	—	1	27	—	—	268	66	36	16	—	5	677
	Deaths ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dengue ...	Cases ...	—	—	—	—	—	—	—	—	—	—	—	18	—	8	—	—	—	—	—	—	—	2	28
	Deaths ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Dysentery ...	Cases ...	27	23	1	24	54	150	33	9	55	2	27	25	4	160	52	19	215	93	5	22	—	34	1,034
	Deaths ...	1	5	—	—	2	3	1	—	1	—	2	—	—	12	3	—	10	9	—	1	—	5	55
Enteric Fever ...	Cases ...	—	—	—	—	1	—	2	—	—	—	2	—	—	17	—	—	10	2	—	—	—	—	34
	Deaths ...	—	—	—	—	—	—	2	—	—	—	—	—	—	2	—	—	1	2	—	—	—	—	7
Influenza ...	Cases ...	60	117	75	303	88	311	770	14	—	80	76	1,695	2	885	—	1,059	1,756	160	29	159	4	243	7,886
	Deaths ...	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	2	1	—	—	—	1	6
Leprosy ...	Cases ...	1	1	31	—	12	36	62	1	—	—	—	1	—	3	4	—	25	2	—	4	—	—	173
	Deaths ...	—	—	1	—	—	1	—	—	—	—	—	1	—	1	—	—	3	—	—	—	—	—	7*
Malaria ...	Cases ...	269	1,198	96	1,545	302	297	3,964	18	1,722	218	230	904	62	4,548	428	562	3,487	855	87	650	—	1,362	22,804
	Deaths ...	1	9	1	—	—	1	1	—	—	—	—	—	—	13	—	—	12	4	—	—	—	2	44
Blackwater Fever ...	Cases ...	2	—	2	—	—	1	7	—	—	—	—	—	—	7	—	—	6	3	—	2	—	5	35
	Deaths ...	1	—	1	—	—	—	2	—	—	—	—	—	2	3	—	—	—	2	—	—	—	1	10
Measles ...	Cases ...	—	2	—	—	—	—	6	—	—	—	—	—	—	18	—	1	8	—	—	—	—	—	35
	Deaths ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Malta Fever ...	Cases ...	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	7	—	—	—	—	1	10
	Deaths ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Plague ...	Cases ...	—	18	2	—	—	1	5	—	—	—	—	—	—	—	—	—	19	6	—	—	—	—	51
	Deaths ...	—	15	2	—	—	1	3	—	—	—	—	—	—	—	—	—	13	3	—	—	—	—	37
Pneumonia ...	Cases ...	37	33	8	1	11	25	170	—	7	12	21	6	2	71	8	18	442	60	2	—	2	30	975
	Deaths ...	7	9	2	—	2	—	28	—	1	1	7	—	—	19	1	1	77	24	—	—	1	5	185
Relapsing Fever ...	Cases ...	—	35	2	—	—	1	30	—	—	—	—	—	1	—	—	1	51	—	—	—	—	—	121
	Deaths ...	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	4
Septicaemia ...	Cases ...	1	—	—	—	—	—	—	—	1	—	—	—	—	5	—	—	3	2	—	—	—	—	12
	Deaths ...	1	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—	3	2	—	—	—	—	11
Trypanosomiasis ...	Cases ...	—	—	—	—	—	60	1	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	63
	Deaths ...	—	—	—	—	—	3	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Small-pox ...	Cases ...	—	—	—	—	—	—	—	—	—	—	—	—	—	234	—	—	1	—	—	—	—	2	237
	Deaths ...	—	—	—	—	—	—	—	—	—	—	—	—	—	61	—	—	—	—	—	—	—	—	61
Syphilis ...	Cases ...	113	20	66	1	38	1,896	2,685	7	11	29	4	21	8	148	223	29	288	375	45	22	7	14	6,050
	Deaths ...	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	1	10
Tetanus ...	Cases ...	—	—	—	—	—	—	2	—	—	—	—	1	—	10	—	—	—	—	—	—	—	1	14
	Deaths ...	—	—	—	—	—	—	1	—	—	—	—	—	—	5	—	—	—	—	—	—	—	—	6
Tuberculosis ...	Cases ...	3	28	10	2	3	71	18	1	6	—	7	16	4	69	14	55	113	4	—	1	—	10	435
	Deaths ...	1	11	1	—	—	3	4	—	—	—	3	2	—	27	—	2	29	1	—	—	—	—	84
Yaws ...	Cases ...	5	3	901	3	781	4,646	1,819	5	719	—	99	1,505	3	3,987	—	3,415	213	7	1	2,731	1	1,031	21,875
	Deaths ...	—	—	1	—	1	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	5
Mumps ...	Cases ...	—	9	1	1	—	—	7	—	—	—	1	1	—	11	—	—	46	—	—	5	—	—	82
	Deaths ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Anthrax ...	Cases ...	3	3	—	—	5	5	1	—	—	—	6	—	—	—	—	—	81	8	—	11	—	—	123
	Deaths ...	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	1	—	—	—	—	10

TABLE IX.
STATISTICS REGARDING ENTERIC FEVER AMONG EUROPEAN RESIDENTS IN THE COLONY AND PROTECTORATE OF KENYA
DURING 1925.

Total number admitted on account of Enteric.				Number admitted who had been previously inoculated against Enteric.		Number of cases who died.		Total number inoculated against Enteric Fever during the year.	
Officials.	Deaths.	Cases.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.	Officials.	Non-Officials.
1	...	...	5	...	...	...	...	...	21
The occurrence of the cases was as follows:—									
Nairobi	...	...	...	4					
Kitui	...	...	...	1					
Nyeri	...	...	...	1					

APPENDIX " A ".

ANNUAL REPORT OF THE PROCEEDINGS OF THE BOARD OF
HEALTH FOR THE YEAR 1925.

(The Public Health Ordinance, 1913).

(1) The membership of the Board consisted of:—

The Hon. Principal Medical Officer, (President).

The Hon. Director of Public Works.

The Hon. Commissioner of Lands.

The Hon. Director of Surveys.

A. C. Tannahill, Esq.

The Chief Sanitation Officer.

(2) Summary of work done:—

(a) Meetings held during the year	...	...	...	...	3
(b) Applications for Sub-divisions outstanding from previous year	...	...	...	...	—
(c) Applications for Sub-divisions submitted during the year					14
(d) Applications for Sub-divisions approved during the year					10
(e) Applications for Sub-divisions rejected during the year					2
(f) Applications for Sub-divisions referred back for modification					—
(g) Applications for Sub-divisions resubmitted	...	...			—
(h) Applications for Sub-divisions outstanding at end of year					2

The applications submitted to the Board during 1925 were with four exceptions concerned only with the division of plots or from three to five acres into smaller plots of about an acre, no points of interest arose in connection with these smaller schemes, and they were in all cases approved subject only to minor modifications chiefly with regard to the truncation of corners.

Of the four exceptions one was an application to subdivide a considerable area of land in the neighbourhood of a township, and in connection with this application consideration was given to the question of the maintenance of private roads. The matter was referred to the Hon. Attorney-General, who informed the Board that in his opinion the Ordinance only allows the Board to require the construction of roads and does not allow the Board to require the person subdividing to make provision for the subsequent maintenance of roads.

Two other applications made to the Board were for reconsideration of the Board's previously expressed opinion that certain large schemes of subdivision could not be approved until adequate arrangements could be made for conservancy of night soil and refuse removal. The Board reaffirmed its decision of the previous year with regard to these Schemes.

The fourth application of interest was one for the approval of a subdivisional scheme of some magnitude in the neighbourhood of a station on one of the new railway lines. This application was still under consideration at the close of the year.

JOHN L. GILKS,

President.

APPENDIX " B ".

ANNUAL REPORT OF THE PROCEEDINGS OF THE
CENTRAL BOARD OF HEALTH
FOR THE YEAR, 1925.

(The Public Health Ordinance, 1921).

1. Members of the Board, Resignations, New Appointments:—

(a) The Membership of the Board consisted of:—

The Hon. Principal Medical Officer, J. L. Gilks, Esq., M.R.C.S. (Eng.),
L.R.C.P. (Lond.), F.R.C.S. (Edin.), Chairman.

The Chief Sanitation Officer, A. R. Paterson, Esq., M.B., Ch.B.,
(Glasg.), D.P.H. (Camb.), D.T.M. & H. (Camb.).

G. V. W. Anderson, Esq., M.B., B.S. (Lond.), F.R.C.S., (Eng.).

W. H. Kauntze, Esq., M.B.E., B.S. (Lond) M.D., D.P.H. (Viet.).

Lt.-Col. O. F. Watkins, C.M.G., D.S.O., M.A. (Oxon.).

J. A. Watson, Esq., W.S.

T. A. Wood, Esq., C.M.G., M.B.E.

H. L. Sikes, Esq., B.A., B.E., M.Inst., C.E., F.G.S.

A. J. Jex-Blake, Esq., M.A., M.D. (Oxon.), F.R.C.P. (Lond.).

F. Strawbridge, Esq., Secretary.

(b) Two members of the Board were absent overseas during a considerable portion of the year.

(c) C. R. Davidson, Esq., A.M.I.C.E., was appointed by His Excellency the Governor to act as a member of the Board during the absence of J. A. Watson, Esq.

(d) A vacancy occurred in the membership in November on the death of the late F. Strawbridge, Esq., who had been a member and Secretary of the Board since its inception in 1921.

2. Meetings of the Board.

Three meetings of the Board were held during the year. A fourth meeting called for a date in December was postponed as a quorum was not available.

3. Regulations submitted to the Board for Confirmation.

The following Regulations were submitted to the Board for approval and confirmation in accordance with the provision 16 of the Ordinance.

(a) The Public Health (Kisumu Density of Dwellings) Regulations, 1925,
(Official Gazette of 11-11-25).

These Regulations make provision for limiting the density of dwellings to not more than 35 to the acre, and for securing a reasonable minimum of open space around buildings. The Regulations are designed not only to prevent the creation of new insanitary conditions, but also to secure gradual improvement of existing conditions without inflicting undue hardship on present owners of property.

(b) The Kisumu Building (Amendment) Rules 1925 (Official Gazette of 11-11-25).

These Rules are consequential on the Regulations referred to above.

(c) The Nairobi (Rickshaw Amendment) Bye-laws 1924 (Official Gazette of 1-4-25).

These Bye-laws confine the medical inspection of Rickshaw boys to Government Medical Officers.

(d) The Nairobi Sewerage Bye-laws 1925 (Official Gazette of 1-7-25).

These Bye-laws empower the Nairobi Municipal Council to require owners of earth closets within 120 feet of a sewer to convert the same into water closets. The Bye-laws also provide for the drainage of new buildings within 120 feet of a sewer, and for the discontinuance of the use of septic tanks, cesspools, etc., under certain circumstances. These Bye-laws were drafted to meet the situation created by the completion of certain lengths of sewer by the Corporation, and they were approved and confirmed by the Board "pending the introduction of comprehensive drainage regulations."

(e) The Public Health (Milk and Dairies) Regulations 1925. (Official Gazette of 25-11-25).

These Regulations comprise forty-nine sections, and are in the nature of model regulations which may be applied in whole, or in part to the whole, or only such part of the district of any local authority as may be necessary. The Regulations are comprehensive in character, and make provision for the registration of dairies, the licensing of milk vendors, the sanitary regulation of cowsheds, the supervision of milk production generally, the examination of samples, and the keeping of bacteriological records, and the publication of results.

(f) The Public Health (Mombasa Storage of Hides and Skins) Regulations.

These regulations make provision for confining the storage of hides and skins to certain defined areas in the township, and impose certain conditions with regard to the use of godowns for such storage. The regulations were approved by the Board, but owing to the necessity for certain alterations in the draft as submitted by the Local Authority, their publication has been delayed.

4. Supervision of building activities and the improvement of Conservancy.

During the year the Board gave consideration to the question of the supervision of building activities, and the improvement of sanitary conditions generally in growing townships, and the following resolution was submitted to Government:—

"That in view of the evident necessity for increased supervision of building activities in Eldoret and Nakuru, and in view of the necessity for improved conservancy, etc., this Board invites the favourable consideration by Government of the possibility of appointing officers in these Townships who would carry out duties similar to those carried out by the Superintendent of Conservancy in Kisumu."

Provision has been made in the draft Estimates as passed by Legislative Council for the engagement of Superintendents of Inland Revenue and Conservancy at Nakuru and Eldoret, in the scale of £300 by £15 to £400 per annum consolidated.

5. Principal to be followed in drafting legislation.

At the instance of the Director of Medical and Sanitary Services, the Board gave consideration to the principle which should be adopted with regard to the vesting of powers conferred by rules or regulations, and the following resolution was carried unanimously.

"That the Board is of opinion that in the drafting of new legislation dealing with public health, responsibility for action should as a general rule be vested in the local authority, rather than in any individual officer."

Effect has been given to the principle enunciated in the above resolution in all new public health legislation drafted during the year.

6. Conditions governing the alienation of township plots.

The following resolution was passed by the Board in view of the fact that it had for some time been apparent, that the previous policy in this matter, which aimed at the entire separation of business and residence in

townships was likely to break down sooner or later, as the result of economic causes:—

“ That this Board approves the principle that in future alienation of township plots, conditions of lease should be so modified as to admit of purchasers using a plot for the combined purposes of business and residence, but that any such modification should be accompanied by a condition of lease that in cases where any plot is to be used for the combined purposes of business and residence, not more than half such plot shall be built over, and further, that adequate control of building activity be effected by means of Township Regulations.”

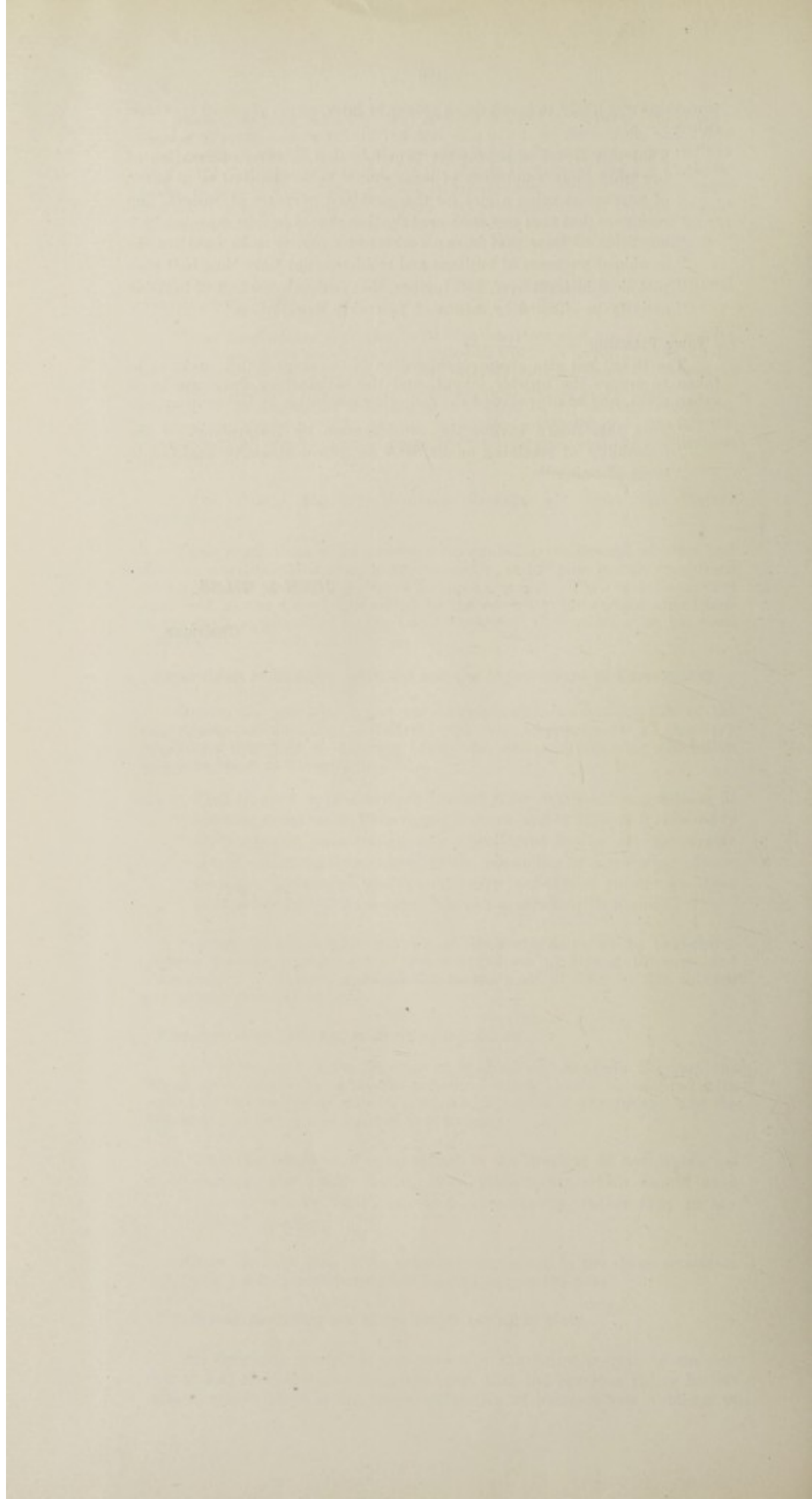
7. Town Planning.

The Board has also given consideration to the steps which ought to be taken to secure the orderly layout, and the satisfactory development of urban areas, and has forwarded the following resolution to Government:—

“ That this Board invites the consideration by Government of the desirability of retaining on its Staff an officer specially qualified in town planning.”

JOHN L. GILKS,

Chairman.



COLONY AND PROTECTORATE OF KENYA



ANNUAL REPORT

OF THE

Medical Research Laboratory
FOR THE YEAR 1925.

BY

W. H. KAUNTZE, M.D. D.P.H.

COLONY AND PROTECTORATE OF KENYA



ANNUAL REPORT

Medical Research Laboratory

for the year 1952

PRINTED BY THE GOVERNMENT PRINTER, NAIROBI

MEDICAL RESEARCH LABORATORY

KENYA COLONY & PROTECTORATE

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G. V. Allen.

R. N. Hunter.

GOVERNMENT ANALYST:

W. C. Birch.

CHEMICAL OFFICER:

R. W. R. Miller (till May 24th, 1925).

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ANNUAL REPORT OF THE MEDICAL RESEARCH LABORATORY,
KENYA COLONY AND PROTECTORATE, FOR 1925.

A. ADMINISTRATIVE SECTION.

1. CHANGES OF TITLE.

During the latter part of the year, new regulations for the East African Medical Service were brought into force by order of the Secretary of State, involving the following changes of title:—

- Senior Bacteriologist became Director of Laboratory.
- First Assistant Bacteriologist became Senior Bacteriologist.
- Second Assistant Bacteriologist became Assistant Bacteriologist.

2. CHANGES IN STAFF.

- Dr. Clearkin, Senior Bacteriologist (new title) promoted Director of Laboratory, Dar-es-Salaam, on 30th September, 1925.
- Dr. Allen, Assistant Bacteriologist (new title) promoted Senior Bacteriologist (new title) on 30th September, 1925.
- Dr. Hunter, Medical Officer of Health, appointed Assistant Bacteriologist (new title) on 30th September, 1925.
- Mr. Miller, Chemical Officer, proceeded on leave on appointment as Senior Agricultural Officer, Tanganyika Territory, on 24th May, 1925.
- Mr. Symes, Medical Entomologist, assumed duty on first appointment on 15th January, 1925.
- Mr. Bell was appointed Laboratory Assistant and assumed duty on 3rd November, 1925.

3. LEAVE.

- Dr. Kauntze, Director of Laboratory, returned from leave on 20th April, 1925.
- Dr. Clearkin, First Assistant Bacteriologist, proceeded on leave on 20th June, 1925.
- Mr. Ramji Das, Senior non-European Laboratory Assistant, returned from leave on 4th July, 1925.
- Mr. W. Pema, non-European Laboratory Assistant, proceeded on leave on 7th October, 1925.

4. ORGANISATION.

It is pleasing to record the changed attitude of public opinion in the Colony towards medical services, which is seen in the large expansion of the Medical Department allowed for in the 1926 Estimates. In the expansion the laboratory division shares, and although we can only record the addition to our staff of an Entomologist and a European Laboratory Assistant during 1925, in the coming year there will exist the following vacancies :

- 2 Assistant Bacteriologists (with an additional one in 1927).
- 1 Entomologist.
- 2 Trained European Laboratory Assistants.
- 3 European Laboratory Assistants (Learner Grade).
- 2 Non-European Laboratory Assistants.
- 1 Stenographer.

It was natural in the face of these anticipated increases that the question of the actual organisation of the laboratory should once more arise. Before any definite decision could be come to in this respect, consideration had to be given to the suggestions made by the East African Commission that research should be centralised in particular laboratories, and that much economy could be effected by the amalgamation of existing laboratories, as for example this laboratory with the Veterinary Laboratory at Kabete. The latter suggestion was shown to be impracticable, as not only was it impossible to risk the manufacture of calf lymph in close proximity to stables containing animals suffering from rinderpest or pleuro-pneumonia, but also it was essential that the Medical Research Laboratory should be in the closest possible touch with the main source of its material, namely the Native Civil Hospital, Nairobi. This was again one of the main difficulties in the adoption of the other suggestion of the Commission, namely, the centralisation of research. It is true that certain hospitals and certain laboratories are more conveniently situated than others for the study of certain diseases, but there is no one laboratory in close proximity to a large hospital where every disease which is a menace to African civilisation,

could be studied. The only measure of centralisation of medical research which would be feasible and of real practical value would be the setting up of a central clearing house for information in England to which any investigator could apply for the latest information on any subject and be supplied with references and possibly literature. All the existing laboratories will therefore require to carry on both research and routine work. It may be that certain of the larger problems such as those relating to malaria, yaws, dysentery, pneumonia, or trypanosomiasis, may be made the subject of a special investigation by a team of workers who will naturally be centred at the laboratory most conveniently situated as regards material. This will not however exclude research even in the same subject being carried on by members of the same or other laboratories as material is available to them. Hence the organisation of this Laboratory must allow both for research and routine work.

Having come to this decision, it was necessary to consider whether routine and research work should be divorced and delegated to separate staffs, or whether the staff should be so arranged that routine and research work in any particular section should be in the hands of the same individuals. Both schemes have been tried previously, the latter in 1921-22 when it failed owing to the lack of trained subordinate staff, and the former in the years since then. From the point of view of economy of staff there is no doubt that the carrying out of both routine and research work in a particular subject by the same workers is the more desirable plan, and has the advantages that not only is the man conducting research in a particular subject kept closely in touch with practical problems through the routine work for which he is responsible, but he is also enabled to specialise in a particular branch of laboratory work and make himself thoroughly acquainted with it. For these reasons and because in 1926 it is anticipated that a certain modicum of trained subordinate staff will be available, it has been decided that routine and research work shall be carried out by the same individuals, and the work of the Laboratory has therefore been organised in the following sections:—

- A. *Administrative Section*—deals with office, stores, plant, staff, library, and animals.
- B. *Serological Section.*
- C. *Calf Lymph Manufacture Section.*
- D. *Pathological Section.*
- E. *Bacteriological Section.*
- F. *Protozoological and Helminthological Section.*
- G. *Entomological Section.*
- H. *Biochemical Section.*
- I. *Analytical Chemistry Section.*

It will be impossible even with the increased staff which will probably be available in 1926 to avoid combining the charge of certain sections, thus one Bacteriologist will control Sections B and C, but it was felt that this scheme of organisation was an elastic one permitting of further expansion without any violent disorganisation.

5. LIBRARY.

A considerable number of new books have been added to the Library during the year. When the office staff is increased it may be possible to circulate a list of these to those interested. The card index of papers appearing in the periodicals taken by the Library has been kept up to date, and the Laboratory is now in a position to give anyone requiring it a list of articles on any required subject which have appeared in the medical journals received during the past two years. It is hoped that this service placed at the disposal of the medical practitioners of the Colony will be taken advantage of, as great care has been taken to index all articles likely to have any bearing on medical work in this country.

6. TRAINING OF AFRICAN LABORATORY ASSISTANTS.

It is with regret that we have to record that only one African has passed the examination for Second Grade African Laboratory Assistant during the year. A number of Africans have been taken on trial, but most have only survived a few months, and have then preferred to take their discharge rather than submit to minor punishments for breaches of discipline. Nothing is more disheartening than for this to happen after spending much time and trouble over the training of a boy, but such disappointments appear inevitable unless boys are enrolled for definite periods in a disciplined native medical corps.

7. BUILDINGS.

Presumably we have advanced a step nearer the new laboratory building, in that it appears in the third schedule of buildings to be constructed by the aid of loan funds. Unfortunately its position in the list is so low that it seems

probable that the loan funds may be exhausted before it materialises, a calamity which would leave us with an increased staff housed in a building condemned by the members of the East African Commission as utterly unsuitable for our work.

RESEARCH.

The following articles have been published during 1925 by members of the Laboratory Staff in the Journals noted:—

- P. A. Clearkin.—A Review of the Recent Literature on Undulant Fever of Man and Contagious Abortion in Animals (*Kenya Medical Journal*, Vol. I., p. 337.)
- G. V. Allen.—Microscopical Examination of Faeces: Certain Bodies which might be taken for Amoebae. (*Kenya Medical Journal*, Vol. II., p. 26.)
- W. H. Kauntze.—Infection with Coliform Bacilli as a cause of Rheumatoid Arthritis and Chronic Rheumatism: its Diagnosis and its Treatment by Autogenous Vaccines. (*Journal of Hygiene*, Vol. XXIII., p. 389.)
- R. N. Hunter.—Plague in Kenya (from the Records of the Medical Department). (*Kenya Medical Journal*, Vol. II., p. 75.)
- W. H. Kauntze.—Report on an Investigation into Plague in the Union of South Africa. (*Kenya Medical Journal*, Vol. II., p. 163.)
- C. B. Symes.—Tsetse Fly Control in Kenya. (*Kenya Medical Journal*, Vol. II., p. 191.)

Reports with maps on Tsetse Fly distribution in the Miriu River Area, the Homa Point Area, and the Aloach River Area in South Kavirondo, and in the Sio River Area in Central Kavirondo have been submitted to Medical Headquarters by Mr. Symes, Medical Entomologist, and are accompanied by his recommendations as to the best method of controlling contact of the people with fly in each area, and as to the safest and most economical methods of eliminating the fly-infested bush. A brief *résumé* of the information contained in these reports will be found in the Entomological Section report.

Investigations into trypanosomiasis, malaria, plague, yaws, and rheumatism have been initiated or continued during 1925.

1. TRYPANOSOMIASIS.

Considerable advances have been made during the year in our knowledge of the distribution of trypanosomiasis and of the tsetse fly in Kenya, and as far as can be ascertained at present the problem presented by sleeping sickness in Kenya is one much easier of solution than in the adjoining territories. The complete elimination of the tsetse fly from the infected districts is a matter of practical politics, and the only debatable point which arises is the manner in which the infested bush should be removed. Successful bush clearing depends upon extensive investigations of each individual "fly-belt," and the Medical Entomologist has already been engaged on this work, with a view to ascertaining the density and variations of the tsetse fly in each area, their breeding grounds, the food hosts of the fly, and the factors limiting or conducive to the spread of the fly. Certain facts have been noted, but investigations of this kind must in the nature of things involve prolonged observation, so that speedy results affecting the practical side of fly elimination must not be expected. Hand in hand with these researches into the bionomics of the tsetse fly must go investigations into the trypanosomes found in the fly and in man in the various regions, and into the pathological conditions in man produced by infection with these protozoa. A small amount of work has already been carried out both in the field and in the laboratory on this subject, but has been rather devoted to the elaboration of a technique than to the accumulation of facts as yet.

2. MALARIA.

It has often been stated that the problem of the colonisation of Africa is the problem of malaria. Certainly Southern Rhodesia has found it so, and malaria is far and away the disease of outstanding importance in Kenya both from the point of view of the mortality it causes, and the chronic debility attributable to it. For this reason we felt that it was time something was done to investigate the disease in this Colony. It has been noted in previous Annual Reports that the Fort Hall district is notoriously malarial and a number of blackwater fever cases occur there annually. The district is partly native reserve and partly occupied by European farms, on most of which sisal or coffee is the staple crop. Furthermore it has been observed that many of the cases of malaria which come from this district show the type of parasite which has been described under the name of *Plasmodium tenue*. For these reasons, and also because the district was conveniently situated as regards the Laboratory and was an area in which railway construction employing labour imported from other districts was taking place, it was decided to commence investigations into malaria there. Camps were chosen at suitable intervals along the Fort Hall-Nairobi road, or on farms in the neighbourhood of it, and a thorough mosquito

survey of the surrounding country made. At the same time blood examinations for malarial parasites were made of all natives in the locality. The preliminary survey was completed during the dry season, and it is planned to repeat it every three months over a period of two years, so that at the end of that time we shall have gained some slight knowledge of mosquito distribution in the district, and will be able to devise large scale measures of control. Certain practical hints to estate owners have already been given, but it is too early yet to secure results on which an anti-mosquito campaign on a large scale could be based. In this work Dr. Proctor, Medical Officer, Fort Hall, has given us invaluable assistance and devoted much time which he could ill spare from his medical duties.

The results of blood examinations for parasites have been somewhat contradictory, and further observation is necessary. A group of Kavirondo natives at a sisal factory on a very malarious estate has been kept under observation ever since its arrival, and blood examinations have been made at regular intervals. Observation of this group is still going on.

A mosquito survey of Kyambu boma has been made and measures of control suggested.

3. PLAGUE.

In the early part of the year, Dr. Kauntze travelled through South Africa where by the courtesy of the Government, he was enabled to study the plague problem as it exists in the Union. The information obtained was embodied in a report to Medical Headquarters and published later in the *Kenya Medical Journal*. Conditions in South Africa showed what an important part the infection of wild rodents played in the plague problem there, and how essential it was to find out if any such infection existed in Kenya. Now the district which shows natural conditions most closely resembling South African ones, and whose plague history is suspiciously reminiscent of that of the Union, is Nakuru, and here towards the latter quarter of the year, we were enabled with the assistance of a Sanitary Overseer lent by the Sanitation Division to commence a field investigation of wild rodents. This ended too late in December for the report to be available, but it has been shown that in the area between Nakuru and Naivasha through which the Uganda Railway and the main trunk road run, no evidence of plague in the wild rodents exists at all. The wild rodents in this area are limited to a comparatively few varieties, most of which however have been proved to be susceptible to plague in South Africa. Contrary to what is observed in the Union, the black rat abounds around all farmhouses and native huts, so that should plague occur in the surrounding wild rodents, its transmission to human beings by the black rat is extremely probable. An interesting fact observed near Lake Elmenteita which is in a volcanic area, is that the distribution of wild rodents is very patchy, and that wherever they are absent, a very obvious smell of sulphuretted hydrogen is noticeable.

Unfortunately these field observations ceased in December, but it is of the utmost importance that they should be extended in the near future, because South African experience has shown how easy it is to overlook plague infection in wild rodents until the problem of dealing with it has become impossible of solution, and grave interference with the grain traffic and serious loss of life have resulted.

4. RHEUMATIC AFFECTIONS.

Further study of the coliform bacilli isolated from patients suffering from rheumatoid arthritis and rheumatism has been made. Preliminary observations on the work already accomplished have been published during the year in the *Journal of Hygiene*. When the present series of experiments is completed, it is hoped to add to the information contained in this paper.

5. YAWS.

The investigation which has been attempted in connection with this disease, is recorded in the report of the Serological Section.

B. SEROLOGICAL SECTION.

(1) YAWS AND SYPHILIS.

An attempt was made during 1925 to carry out an investigation into the relationship existing between these diseases and certain serological tests. The investigation was planned with a view to discovering first, the reaction to the Sigma test in comparison to the Wassermann test given by cases of Yaws, and secondly how far these tests were influenced by treatment with bismuth in cases of these diseases.

For the purpose of this investigation a number of M.O.'s were asked to keep records of as many cases of Yaws as possible, noting the clinical condition of the patient, the treatment given, and its effects, and to take serum from these patients before, during and after treatment for serological tests.

It was hoped that it might be possible to perform at least three tests on each patient and arrangements were made by which a total of as many as 500 cases could be dealt with.

Unfortunately the investigation has been a comparative failure. While information by no means inconsiderable has been obtained with regard to the value of the Sigma Reaction as a test and also the establishment of the fact that the Sigma Reaction is possible in Yaws, little has been learned as to the effect of treatment of Yaws and Syphilis as indicated by serological reaction. The total number of cases examined was small, repeated tests were made in only a very few of them, the records for the most part were very incomplete with the result that classification according to disease or stage was impossible.

There are several reasons for failure. Great difficulty is experienced in following up cases, regular attendance of patients, etc., being impossible to obtain, the duties of a medical officer in out-stations are so multifarious and numerous that he has little time to devote to work of a special nature such as this investigation, and lastly but few medical officers are sufficiently interested in such work to devote the energy necessary to make it a success.

It must be conceded that investigations of a special nature such as this which involve considerable work cannot be carried out on haphazard lines. It is necessary that they be organised and certain numbers of the staff definitely deputed to carry out those portions of the investigation for which by reason of opportunity and interest they are most suited. It might also be added that in investigatory pieces of work involving clinical work as one of its main lines, the function of the Laboratory staff is co-operation rather than initiation.

WASSERMANN REACTION.						Blood Serum.
Positive	...	...	...	...	...	316
Negative	...	...	...	...	...	289
Contaminated sera giving unsatisfactory results						20
Total						625

WASSERMANN REACTION.						C.S. Fluid.
Positive	...	...	...	...	...	1
Negative	...	...	...	...	...	1
Total						2

SIGMA REACTION.						Blood Serum.
Positive	...	...	...	...	...	211
Negative	...	...	...	...	...	110
Total						311

COMPARISON OF SIGMA AND WASSERMANN.

Both tests positive	...	...	...	...	193
Both tests negative	...	...	...	...	98
Sigma Negative W.R. Positive	...	...	...	...	10
Sigma Positive W.R. Negative	...	...	...	...	23
Total					324

(2) AGGLOUTINATIONS.

Agglutination tests were performed on 155 specimens of sera received from patients. 58 specimens received were unsuitable for testing. In most cases *B. typhosus* and *B. paratyphosus* A and B were tested for by the Garrow Method and also using the Dreyer Technique, the emulsions used being comparable. When the series is sufficiently large, it is hoped to publish the results of the comparison of the two methods. At present, there are indications that the Garrow Technique is sufficiently sensitive to be used for clinical diagnosis, but one fallacy discovered is that false positives occur in a small percentage of cases. The only other point of interest is that the Garrow gives no indication of the titre of the serum as shown by the Dreyer Technique.

The following is a summary of the results:—

			Cultures Agglutinated.									
			Total Sera.	B. Typhosus.	B. para B. B. para A.	B. proteus X 19.	B. melitensis and B. abortus (Bang).	B. para Melitensis.				Negative.
Europeans	...	...	29	4	—	3	1	—	...	...	...	21
Asiatics	...	...	6	1	—	1	—	—	...	...	...	4
Africans	...	...	120	18	—	—	10	2	...	...	...	90
Totals	...	...	155	23	—	4	11	2	...	...	...	115

C. CALF LYMPH SECTION.

(1) STAFF.

The staff has been the same in number as in previous years, but with the difference that the Indian Laboratory Assistant's duties occupied his whole time, instead of part time as in previous years, and during the Mombasa and Fort Hall epidemics the greater part of the Laboratory staff was employed on this work.

(2) BUILDINGS.

Owing to the enormously increased demands for calf lymph, not only from the epidemic areas, but also from every station in the country, the existing buildings, in which the lymph was produced, were found to be inadequate. It was learned that the reserve stock previously maintained was insufficient to meet the demands occasioned by the occurrence of a large epidemic. Additional accommodation was necessary, and a new shed was erected for calves awaiting vaccination, and the shed previously used for that purpose was converted into a stall shed for vaccinated animals. There is now accommodation for 14 vaccinated calves, and the maximum possible output of lymph is now 175,000 doses per month as compared with 60,000 doses formerly. A reserve supply of calf lymph of 500,000 doses is now being maintained.

(3) CALVES.

The number of calves vaccinated in 1925 was 523, as compared with 45 in 1924, 70 in 1923, 94 in 1922, and 226 in 1921.

The source of supply has been the same as in previous years. During the epidemics Major Gray, the District Commissioner, Kiambu, rendered invaluable help by supplying the greatly increased demand with unfailing regularity.

(4) METHODS OF PRODUCTION.

This was the same as in previous years, except for two minor alterations. The amount of glycerine added to the pulp was increased to six times the weight of the pulp. The results have been equally satisfactory. The second change was that calves' bellies have been cleansed with ether in addition to sterile water, both before vaccinating and before removing the vesicles with the result that fewer bacteria are present in the glycerine-pulp mixture.

The purification by chloroform vapour has been very satisfactory. The value of the method was proved during the epidemics when calf lymph had to be supplied which had been stored for a shorter time than normal. By slightly lengthening the chloroforming process, the lymph was rendered safe in a relatively short time.

Tables are given showing the results of the different strains on all calves vaccinated, and the alternations between rabbits and calves.

(See Tables, pages 118a, 118b, and 118c.)

Table I.

"B" STRAIN, 1925.

118a

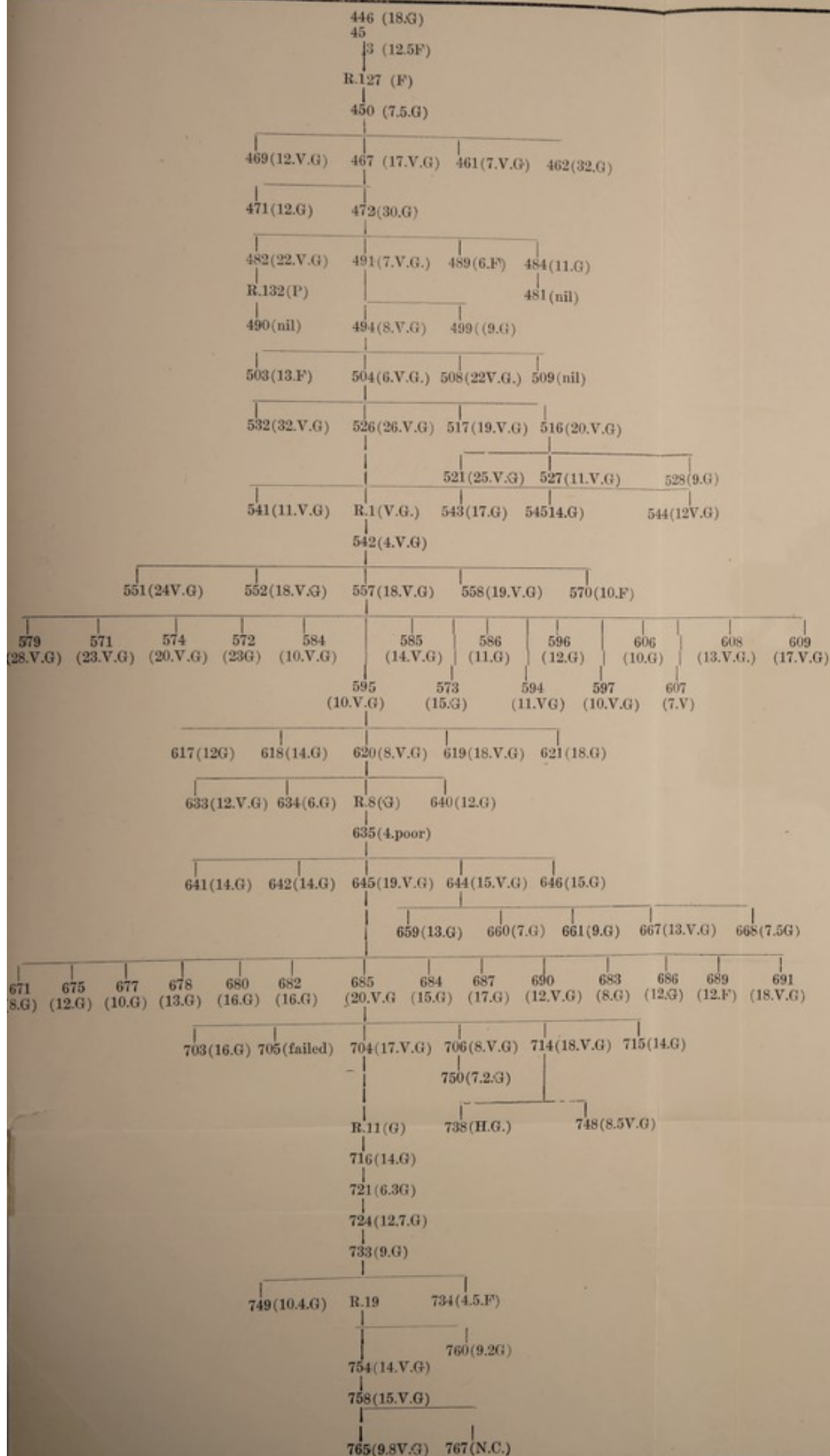


Table 2.

S.A. STRAIN, 1925.

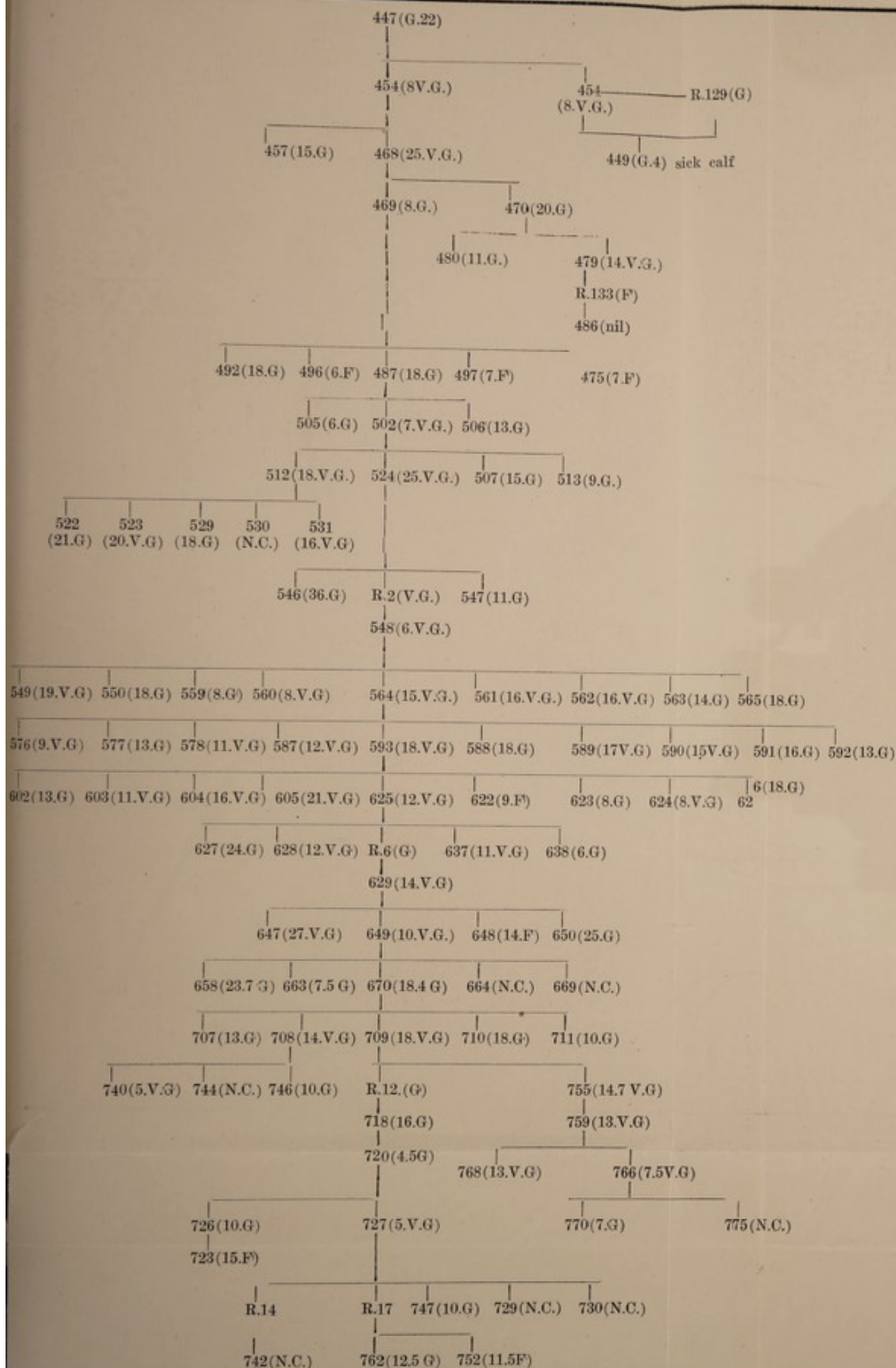


Table 3.

"Z" STRAIN.

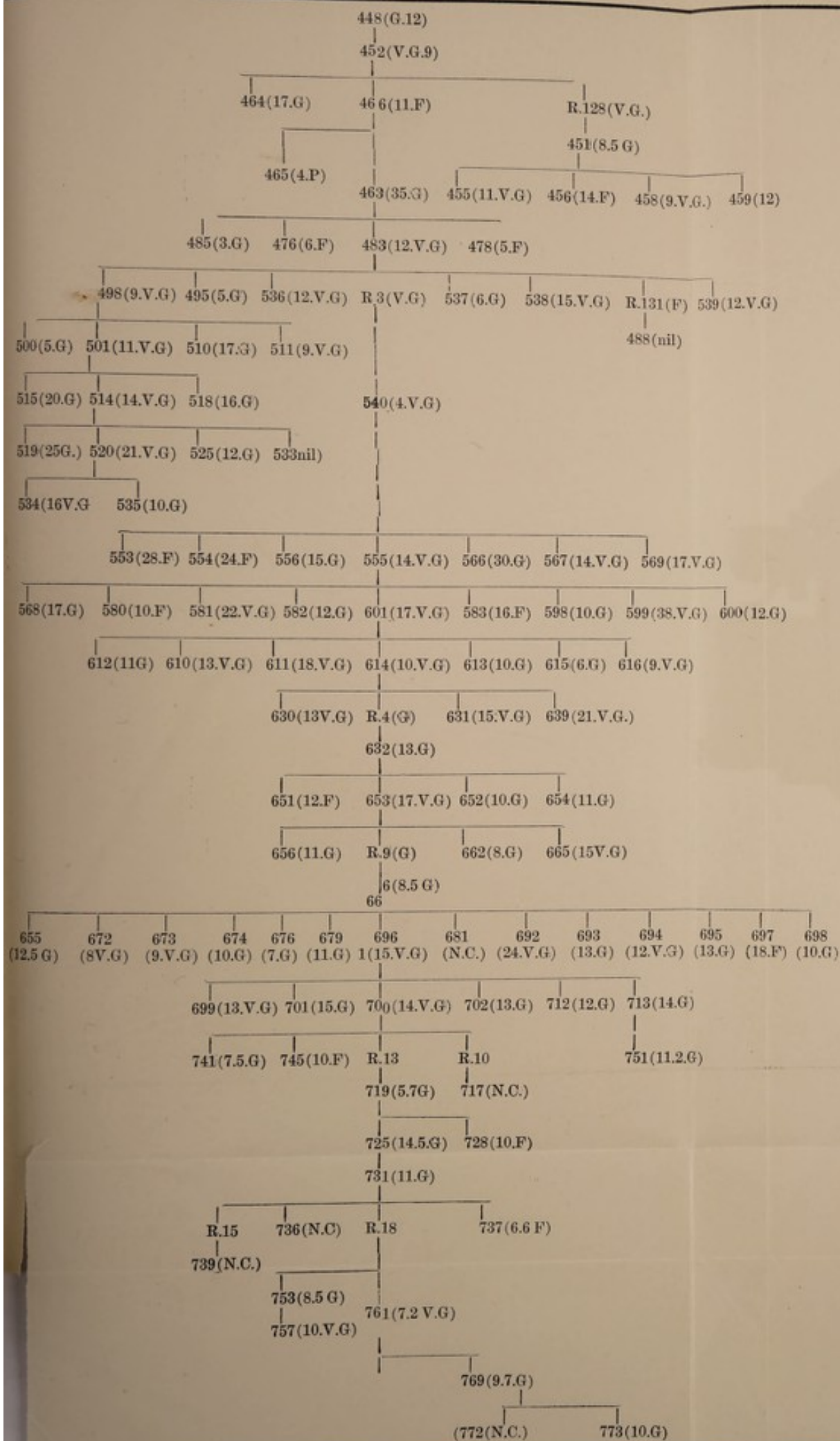


TABLE 4. VACCINATION RETURN, 1925.

Station.	No. of doses issued during year.	Total No. Vaccina- tions.	Sex.		Age.		Race.		Primary Vaccinations.				Re-vaccinations.				Vaccinal Condition not given.				% success rate in primary Vaccinations.	
			M.	F.	A.	C.	E.	I.	A.	T.	S.	F.	U.	T.	S.	F.	U.	T.	S.	F.		U.
Street	1,600	747	621	126	672	75	9	3	735	51	34	10	7	691	384	133	174	5	—	—	5	77
St. Hall	70,490	67,038	697	57	707	47	1	47	706	292	51	24	217	422	135	199	88	66,324	33	7	66,284	68
Idmanga	17,400	1,571	1,570	1	1,570	1	—	—	1,571	1,322	152	69	1,101	249	43	35	171	—	—	—	—	68
Agabot	588	438	350	88	307	131	1	1	436	425	384	23	18	13	8	3	2	—	—	—	—	94
Idicho	5,000	791	654	137	610	181	24	—	767	667	145	71	451	124	18	25	81	—	—	—	—	67
Idi	5,275	2,572	2,474	98	2,416	156	—	—	2,572	389	15	22	352	2,172	74	42	2,056	11	—	—	11	40
Idi	3,000	920	726	194	850	70	—	13	907	920	163	—	757	—	—	—	—	—	—	—	—	100
Idi	72,050	17,878	17,311	567	17,684	194	30	178	17,670	5,014	85	45	4,884	271	44	99	128	12,593	34	8	12,561	65
Idi	1,795	1,859	1,698	161	1,448	401	—	—	1,859	1,574	251	34	1,289	285	82	55	148	—	—	—	—	88
Idi	16,400	1,532	1,333	179	1,276	256	—	91	1,449	92	14	—	78	1,440	8	5	1,427	—	—	—	—	100
Idi	3,964	302	320	—	320	—	—	—	320	159	18	1	140	161	19	19	123	—	—	—	—	95
Idi	1,440	464	383	81	414	50	—	6	456	377	20	4	353	87	3	8	81	—	—	—	—	83
Idi	2,400	2,156	1,946	210	2,026	130	—	—	2,156	898	40	5	853	698	58	15	623	562	—	—	562	89
Idi	178,174	109,240	—	—	—	—	—	—	—	1	1	—	—	4	—	—	4	109,235	156	51	109,028	—
Idi	2,197	1,101	1,045	56	1,081	20	1	26	1,074	159	133	13	13	916	453	388	80	26	25	1	—	91
Idi	166,572	137,208	54,781	9,278	96,195	7,307	1,414	2,378	133,414	2,410	817	84	1,509	15,530	1,792	917	12,821	119,208	299	86	118,883	91
Idi	5,343	811	617	71	721	67	111	28	649	205	117	9	79	564	233	43	288	42	—	—	42	93
Idi	2,500	2,624	1,812	812	1,904	720	59	3	2,562	2,624	1,089	1	1,534	—	—	—	—	—	—	—	—	99.9
Idi	29,500	3,216	2,288	928	2,809	407	3	29	3,184	644	174	13	457	2,572	124	47	2,401	—	—	—	—	93
Miscellaneous	6,995	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	591,683	352,486	90,646	13,044	133,008	10,213	1,653	2,803	172,489	18,223	3,703	428	14,092	26,197	3,478	2,023	20,696	308,066	547	153	307,366	89.6

NOTE:—M — Male. E — European. S — Successful.
 F — Female. I — Indian. F — Failed.
 A — Adult. A — African. U — Unknown.
 C — Children. T — Total.
 * Return not received.

(5) THE SUPPLY OF VACCINE LYMPH TO STATIONS.

The average number of doses of calf lymph supplied to all stations from 1921 to 1924 has been 9,300 per month.

The total number of doses supplied to all stations during the months January to April, 1925, has been 260,000 or 65,000 per month, or seven times the normal output.

Mombasa district received 107,180 doses from January to April, 76,380 being supplied between 26th January and 10th March; Voi district was supplied with 25,600 doses between 10th March and 6th April, 1925; Fort Hall district was supplied with 49,000 doses between 12th April and 6th May.

In all 181,780 doses were supplied to the epidemic centres, and 78,820 doses to the rest of the country in four months.

To maintain this supply 339,000 doses were prepared in three months, one hundred calves being vaccinated, with an average of 3,390 doses per calf. The reserve stock at the beginning of April was 90,500 doses.

(See Table, page 118d.)

(6) THE VACCINATION RESULTS.

The vaccination returns for the country are given in Table 4.

Some of the returns show a very low percentage success rate in primary vaccinations. In spite of this the opinion expressed to the Laboratory staff by Medical Officers has been that the calf lymph has given eminently satisfactory results.

A table is given below, which has been copied from the report of the M.O.H., Mombasa, on the Smallpox Epidemic in that area.

Estimated stage of incubation when vaccinated.	No. of cases occurring.	No. of cases very mild.	No. of cases severe.	No. of cases confluent.	Deaths.	No. of deaths to cases.
2nd day	1	1	—	—	—	Nil.
3rd day	1	1	—	—	—	Nil.
4th day	3	1	—	2	—	Nil.
5th day	4	1	2	1	1	25%
6th day	5	1	2	2	—	Nil.
7th day	11	—	8	3	2	18%
8th day	6	—	5	1	—	Nil.
9th day	4	—	3	1	1	25%
10th day	—	—	—	—	—	—
11th day	2	—	1	1	—	Nil.
12th day	2	—	1	1	1	50%
	39	5	22	12	5	13%

(7) SUMMARY OF CALF LYMPH.

PRODUCTION IN 1925.

No. of calves vaccinated	323
No. of calves vaccinated successfully	304
No. of grammes of pulp collected	3,934
No. of doses manufactured	1,180,200
Average No. of grammes per calf	11.9 gms.
No. of calves vaccinated from rabbits	25
No. of calves successfully vaccinated from rabbits	19
Average weight of pulp from calves vaccinated from rabbits	6.9 gms.
Average weight of pulp from calves vaccinated from calves	12.6 gms.
Average weight of pulp from successfully vaccinated calves vaccinated from calves	13.8 gms.
Cost of calf lymph production (not including new buildings)	£950
Cost per dose manufactured	0.13 pence

D. PATHOLOGICAL SECTION.

(1) HISTOLOGICAL EXAMINATIONS.

Eighty-one pathological specimens were submitted for histological examination.

This number must be regarded as undesirably low having regard to the extent of surgical work now undertaken in the country. To some extent it may be accounted for by the difficulty experienced in sending specimens to the Laboratory as regards time taken in transmission and the large number of breakages, etc., which occur. It is to be noted that more than one-half of the specimens submitted were sent from practitioners and hospitals in Nairobi.

Of the eighty-one specimens examined twenty-one were from European patients and fifty-seven from natives; of the latter number eighteen were malignant new growths, most of them (13) sarcomata. This would suggest that malignant disease is of more common occurrence among natives than is generally admitted.

It is hoped that material for the expansion of this section of laboratory work will become available during the year 1926 and it is eminently desirable that medical officers exercise more care in packing specimens and adhering to instructions issued as to the preservative fluid which should be used as a medium for transmission.

(2) POST MORTEM EXAMINATIONS.

Only thirty-five post mortem examinations were performed by the laboratory staff during the year.

These were almost all medico-legal cases in which examinations were carried out on the order of the Police or of Magistrates and which were of little value or interest pathologically.

It follows therefore that a wealth of much needed pathological material is being wasted in Nairobi. There are two primary factors which are responsible for this state of affairs. First, Medical Officers attached to the hospitals have no time to carry out routine post mortem examinations and, beyond opening a body to satisfy themselves upon some point of interest, rarely make such examinations. The carrying out of routine post mortem examinations, an urgently necessary proceeding, is the function of laboratory staff where the latter is available, but in Nairobi the laboratory is situated at a distance of more than two miles from the Native Hospital. The carrying out of one post-mortem examination together with the time taken going to and returning from the hospital may frequently occupy the greater part of two hours. Up to the present, staff has not been sufficient to meet such a demand.

Secondly there does not exist in Nairobi a properly constructed and equipped post mortem room. The Town Mortuary where most of the examinations mentioned have been performed is a mortuary and nothing more, the room provided for post mortem examinations being very small, dark, ill-ventilated and ill-equipped. This mortuary is under the control of the Municipality not of the Medical Department. At the Native Hospital conditions are infinitely worse. The building used as a mortuary is built of wood and iron, is dilapidated, intensely hot, and ill-ventilated, a condition which is aggravated by the fact that the windows, being unprotected by gauze or other material, must remain shut in order to prevent the ingress of innumerable flies. The post mortem tables, which are of bad design, are of wood covered with zinc; the side tables are of uncovered wood. There is one small wash hand basin and one water tap which discharges over the floor. There is not even one sink. It would be difficult to find a building more unsuitable for use as a post mortem room.

It is essential that a well-constructed, properly-designed and equipped post mortem room, as distinct from a mere mortuary, be available at the Native Hospital or better, in the event of the new laboratory being built adjacent to the hospital, as a part of the Laboratory buildings.

Then and not until then an attempt can be made by the routine performance of post mortem examinations on all patients dying in hospital, to remove our knowledge of the pathological conditions incident to the disease of this country from the realms of speculation and to place it upon a sound basis of noted and recorded fact.

E. BACTERIOLOGICAL SECTION.

(I.) MICROSCOPICAL AND CULTURAL EXAMINATIONS.

Total examinations performed:—

Microscopical examinations	...	...	...	...	3,291
Cultural examinations	...	...	...	...	329

(1) ANTHRAX.

B. anthracis was detected in 17 smears taken from persons suffering from ulcers or pustules.

(2) CATARRHAL INFECTION OF RESPIRATORY TRACT.

Nine specimens of sputa were cultivated with a view to preparation of vaccines. In five of these *M. catarrhalis* and *Pneumococcus* were isolated.

(3) CEREBRO-SPINAL MENINGITIS.

Of 16 specimens of cerebro-spinal fluid *M. intracellularis meningitidis* was identified microscopically in 5 cases.

(4) COLIFORM BACILLI.

67 specimens of faeces were cultivated for preparation of coli vaccines.

27 specimens of urine were culturally examined for presence of *B. coli*. 11 yielded positive results, 6 were sterile. In one case *B. coli* was isolated from a purulent discharge from a wound of old standing.

(5) DYSENTERY.

66 specimens of faeces were submitted for cultivation. In only 6 of these cases were *B. dysenteriae* isolated. Organisms on several occasions have been isolated which correspond culturally to one or other of the Flexner strains. They have however, failed to agglutinate with Flexner sera obtained from the Laboratory of the University of Oxford. These sera have been shown to be active by the fact that they agglutinate their own cultures.

(6) DIPHTHERIA.

86 cultural examinations were made from throat swabs from patients in whom diphtheria was suspected or required to be excluded. In 9 cases *B. diphtheriae* was isolated.

(7) ENTERICA.

28 blood cultures were made from cases of suspected typhoid or paratyphoid infection. Only in one case was *B. typhosus* isolated, the remainder proving negative. It is to be noted that a considerable proportion of these cases eventually proved to be unlike typhoid clinically and in others in which the diagnosis of typhoid or similar infection was probably correct the blood culture was not made until late in the course of the disease.

Three specimens of faeces were examined for enteric infection with negative results.

In one case *B. typhosus* was isolated from bile. The paratyphoid bacilli were not met with in any specimen.

(8) GONORRHOEA.

248 smears were examined for presence of *D. gonorrhoeae*. In 72 cases the diplococcus was present and recognisable as such. In other cases a gram-negative diplococcus was seen but as no intracellular forms were present a positive diagnosis was not made. Of the 72 cases 64 were urethral smears. There were 2 positive vaginal smears and among four cases of suspected gonorrhoeal ophthalmia one yielded a positive result.

(9) LEPROSY.

Fifty-four smears were examined, in all cases the source of the specimen being nasal secretion. *B. leprae* was found in seven cases.

(10) PLAGUE.

71 smears from spleen or glands were examined for presence of *B. pestis*. In the majority of cases smears were taken post mortem from persons dying under circumstances in which death from plague was to be excluded. 23 cases showed positive results. Seven lung smears were positive and of four sputa two showed *B. pestis*.

2,390 smears from the spleens of rats were examined, almost all of these being derived from the daily routine examination of rats caught in Nairobi. Eight of these smears were positive, none of them being from Nairobi rats.

B. pestis was isolated in culture from a spleen puncture in one case. One blood culture made from a case of pneumonic plague proved negative.

(11) PNEUMOCOCCAL INFECTION.

Pneumococcus was identified microscopically in cerebro-spinal fluid in seven cases, in pus in one case, and once in the exudate from a liver puncture.

(12) SEPTIC INFECTION.

Staphylococcus was identified microscopically in pus in one case. It was isolated culturally in 10 specimens of pus in 7 urines, three times from sputum, and once in fluid from a knee joint.

Streptococcus was isolated in one of two blood cultures made in cases of septicaemia, in one sputum, in one urine, and in one specimen of pus.

(13) SYPHILIS.

17 exudates from ulcers suspected as syphilitic were examined. *S. pallidum* was found in one case.

(14) SKIN CONDITIONS.

Six scrapings from skin lesions were submitted for examination as to presence of various fungi. These all yielded negative results.

(15) TUBERCULOSIS.

Microscopical examinations of sputum for *B. tuberculosis* numbered 364, of which 75 showed presence of bacilli.

Source.	Positive.	Negative.	Total.
Native Hospital, Nairobi ...	33	155	188
I.D. Hospital, Nairobi ...	16	30	46
Prison Hospital, Nairobi ...	4	52	56
European Hospital, Nairobi ...	2	15	17
European Hospital, Kisumu ...	3	2	5
Native Hospital, Voi ...	4	6	10
Native Hospital, Meru ...	4	1	5
Mission Hospital, Kijabe ...	1	—	1
Native Hospital, Machakos ...	—	1	1
Native Hospital, Nyeri ...	—	1	1
European Hospital, Mombasa ...	—	5	5
Dispensary, Nairobi ...	—	21	21
Private Practitioners, Nairobi ...	8	—	8
	75	289	364

(II.) WATER ANALYSIS.

25 samples of water were bacteriologically examined during the year. These analyses were performed at the request of Medical Officers of Health.

The following waters were examined:—

Mombasa Water Supply	...	...	...	...	2 samples
Nairobi River	...	...	...	...	9 "
Mombasa Wells	...	...	...	...	3 "
Kibos River	...	...	...	...	7 "
Soda Water and supply tanks in aerated water factories in Nairobi	...	...	...	...	4 "

(III.) VACCINES.

(1) STOCK VACCINES.

- (a) *Plague*.—The manufacture of this vaccine was continued on the same lines and with the same technique as in 1924. The total number of doses made was 61,417.
- (b) *Gonococcal*.—469 doses were prepared. It is stated that good results were obtained by treatment with this vaccine.
- (c) *T.A.B.*.—210 doses only were made, the demand for the vaccine being small.
- (d) *Staphylococcal (Dreyer's defatted vaccine)*.—280 doses were made and issued for treatment of chronic staphylococcal infections. The results obtained appeared better than those from autogenous vaccines.
- (e) *Melitensis*.—60 doses were prepared.

(2) AUTOGENOUS VACCINES.

Autogenous vaccines were prepared a sunder:—

<i>B. coli</i>	...	...	...	...	56
Staphylococcal and Streptococcal	...	...	...	...	3
Catarrhal	...	...	...	...	5
Pyorrhoeal	...	...	...	...	3

(IV.) URINE.

BACTERIOLOGICAL AND CHEMICAL EXAMINATIONS (*excluding cultures*).

General chemical examination only	...	...	...	...	72
General chemical examination and microscopic examination of centrifuge deposit	...	...	...	...	72
Microscopic examination of centrifuged deposit only	...	...	...	...	32
Quantitative examination for urea	...	...	...	...	12
Examination for blood pigment	...	...	...	...	2
Total					190

F. PROTOZOAL AND HELMINTHIC SECTION.

(I.) PROTOZOA-MALARIA.

Total No. of blood smears examined for malaria	...	...	...	2,452
Total No. of blood smears in which parasites were found	...	...	...	318
Total No. of blood smears in which parasites were not found	...	...	...	2,134

(1) EXAMINATIONS IN WHICH MALARIAL PARASITES WERE FOUND.

(1) <i>P. falciparum</i>	...	...	...	288
(2) <i>P. vivax</i>	...	...	...	18
(3) <i>P. malarie</i>	...	...	...	10
(4) Mixed infections:				
<i>P. vivax</i> & <i>P. malarie</i>	...	...	1	
<i>P. falciparum</i> & <i>P. malarie</i>	...	...	1	2

Total ... 318

(2) ANALYSIS OF EXAMINATIONS IN WHICH *P. FALCIPARUM* WAS PRESENT.

Month.	Europeans.		Asiatics.		Africans.		Total No. showing parasites.
	Total No. showing parasites.	No. showing crescents.	Total No. showing parasites.	No. showing crescents.	Total No. showing parasites.	No. showing crescents.	
January ...	6	0	2	0	10	0	18
February ...	11	0	1	0	11	2	23
March ...	8	0	3	0	15	0	26
April ...	7	1	3	0	19	1	29
May ...	4	0	1	0	30	1	35
June ...	6	0	3	0	25	2	34
July ...	9	0	—	—	27	1	36
August ...	1	0	—	—	13	1	14
September ...	1	1	3	1	9	3	13
October ...	1	0	4	0	9	0	14
November ...	4	0	2	0	20	0	26
December ...	1	0	1	0	18	0	20
	59	2	23	1	206	11	288

Blood slides showing *P. falciparum* were received from the following sources in 1925:—

EUROPEANS:

Private Medical Practitioners, Nairobi ...	...	...	...	...	25
European Hospital, Nairobi ...	...	...	...	...	12
General Dispensary, Nairobi ...	...	...	...	...	11
European Hospital, Mombasa ...	...	...	...	...	9
Trans-Nzoia ...	...	...	...	...	1
Nanyuki ...	...	...	...	...	1
					—
					59

ASIATICS:

General Dispensary, Nairobi ...	...	...	...	...	20*
Voi (S.A.S.) ...	...	...	...	...	1
Malindi (S.A.B.) ...	...	...	...	...	1
Dr. Burkitt (Nairobi) ...	...	...	...	...	1
					—
					23

* Majority were Railway employees.

AFRICANS:

Native Hospital, Nairobi ...	...	...	...	...	182
Nairobi Prison ...	...	...	...	...	12
Nairobi Police ...	...	...	...	...	3
Laboratory Staff ...	...	...	...	...	2
Kikuyu Mission ...	...	...	...	...	2
Kisumu M.O.H. ...	...	...	...	...	2
Nyeri ...	...	...	...	...	2
Dr. Anderson, Nairobi ...	...	...	...	...	1
					—
					206

(3) ANALYSIS OF DIFFERENTIAL LEUCOCYTE COUNTS IN CASES OF INFECTION WITH *P. FALCIPARUM*.

Differential Leucocyte counts were performed on 187 of the smears in which *P. falciparum* was found. These counts are analysed in three tables according to race, and the types of leucocytes.

AFRICANS. 131 Differential Leucocyte Counts.

			Polymorpho- nuclears.		Lymphocytes.		Large Mono- nuclears.		Eosinophils.
Average percentage	...	...	51	...	30	...	17	...	1.5
Maximum percentage	...	...	79	...	59	...	49	...	14
Minimum percentage	...	...	18	...	7	...	4	...	absent in 63 cases.
No. of cases between	1%	and 10%	0	...	1	...	11	...	—
No. of cases between	11%	and 20%	2	...	29	...	92	...	—
No. of cases between	21%	and 30%	5	...	39	...	23	...	—
No. of cases between	31%	and 40%	23	...	38	...	4	...	—
No. of cases between	41%	and 50%	31	...	21	...	1	...	—
No. of cases between	51%	and 60%	32	...	3	...	0	...	—
No. of cases between	61%	and 70%	30	...	0	...	0	...	—
No. of cases between	71%	and 80%	7	...	0	...	0	...	—

EUROPEANS. 36 Differential Leucocyte Counts.

			Polymorpho- nuclears.		Lymphocytes.		Large Mono- nuclears.
Average percentage	...	...	67	...	19.1	...	10.7
Maximum percentage	...	...	92	...	45	...	31
Minimum percentage	...	...	38	...	5	...	3
No. of cases between	1%	and 10%	0	...	11	...	9
No. of cases between	11%	and 20%	0	...	7	...	24
No. of cases between	21%	and 30%	0	...	13	...	2
No. of cases between	31%	and 40%	2	...	3	...	1
No. of cases between	41%	and 50%	2	...	2	...	—
No. of cases between	51%	and 60%	6	...	—	...	—
No. of cases between	61%	and 70%	11	...	—	...	—
No. of cases between	71%	and 80%	6	...	—	...	—
No. of cases between	81%	and 90%	8	...	—	...	—
No. of cases between	91%	and 100%	1	...	—	...	—

ASIATICS. 20 Differential Leucocyte Counts.

			nuclears. Polymorpho-		Lymphocytes.		nuclears. Large Mono-
Average percentage	...	...	55.2	...	24.7	...	19.1
Maximum percentage	...	...	86.5	...	49	...	63
Minimum percentage	...	...	22	...	9	...	4.5
No. of cases between	1%	and 10%	0	...	2	...	2
No. of cases between	11%	and 20%	0	...	7	...	13
No. of cases between	21%	and 30%	1	...	4	...	3
No. of cases between	31%	and 40%	4	...	4	...	0
No. of cases between	41%	and 50%	3	...	3	...	1
No. of cases between	51%	and 60%	3	...	—	...	0
No. of cases between	61%	and 70%	7	...	—	...	1
No. of cases between	71%	and 80%	1	...	—	...	0
No. of cases between	81%	and 90%	1	...	—	...	0

(4) ANALYSIS OF EXAMINATIONS IN WHICH *P. VIVAX* WAS PRESENT.

				Europeans.	Asiatics.	Africans.	Total.
No. showing <i>P. vivax</i>	...	...	...	5	5	8	18
*Average Large Mono-nuclear percentage	...	...	...	15.3	18.3	16.2	—
*Maximum Large Mono-nuclear percentage	...	...	...	19	22	19	—
*Minimum Large Mono-nuclear percentage	...	...	...	13	15	13	—

* Differential Leucocyte Counts on 11 cases.

(5) ANALYSIS OF EXAMINATIONS IN WHICH *P. MALARIE* WAS PRESENT.

Differential Leucocytes Counts were made on 9 out of the 10 positive examinations. The average percentage number of large mononuclears was 20%, the maximum 36, the minimum 14. Nine of these examinations were from patients undergoing treatment in Nairobi. The tenth came from Fort Hall.

	Europeans. Asiatics. Africans. Total.			
No. showing <i>P. malarie</i>	3	2	5	10
Average Large Mono-nuclear percentage ...	18	—	21.8	—
Maximum Large Mono-nuclear percentage	19	—	36	—
Minimum Large Mono-nuclear percentage	17	—	14	—

(6) NEGATIVE EXAMINATIONS.

In 2,107 of the examinations made, no malarial parasites were found. It is however to be noted that blood slides are sent for examination for malarial parasites not only to confirm a clinical diagnosis of malaria but also to exclude that disease for purposes of differential diagnosis. It is rarely that information is received as to which is the object of the examination and it is therefore impossible to estimate what proportion of these negative examinations refer to patients actually suffering from malaria. In this connection it should be stated that as a rule only one examination for parasites is made on each patient, and as the prevailing infection in this country would appear to be with *P. falciparum*, it is not sufficiently realised that one negative examination for parasites is valueless.

Differential leucocyte counts were made on 1,881 of the 2,134 smears in which no parasites were found. 1,788 were received from Nairobi Hospitals, etc. It is unfortunate that no information can be obtained from these examinations, but owing to the absence of proper clinical records, there is no means of accurately ascertaining from what disease the patient was suffering. The labour from the point of view of establishing the value of the differential leucocyte count has been wasted, and it is only hoped that these reports have been of some assistance to the clinicians.

Total No. of negative examinations	2,134
Total No. of negative examinations on which Differential Leucocyte Counts were performed	1,881

(II.) PROTOZOA-INTESTINAL.

Intestinal protozoa were found in 118 specimens of faeces.

AMOEBAE.

	Free forms.	Cysts.
<i>E. histolytica</i>	1	5
<i>E. coli</i>	1	72
<i>E. nana</i>	—	4
<i>I. bütschlii</i>	—	3
	2	84
	—	—

FLAGELLATES.

Undifferentiated	12
<i>Giardia intestinalis</i>	12
<i>Chilomastix mesnili</i>	4
<i>Trichomonas hominis</i>	3
<i>Enteromonas hominis</i>	1
	32
	—

In 80 specimens helminthic ova were present in addition to intestinal protozoa.

TRIPLE HELMINTHIC INFECTIONS.

Combination of Helminthic ova in Triple Infections.	Triple Helminthic Infection only.	Plus <i>E. coli</i> cysts.	Plus <i>I. Bütschlii</i> cysts.	Plus Flagellates.	Total.
<i>Ascaris</i> , <i>Taenia</i> , and <i>Trichuris</i> ...	4	—	—	—	4
<i>Ascaris</i> , <i>Taenia</i> , and <i>Ankylostoma</i> ...	3	—	—	—	3
<i>Taenia</i> , <i>Trichuris</i> , and <i>Strongyloides</i> ...	1	—	1	—	2
<i>Ascaris</i> , <i>Ankylostoma</i> , and <i>Trichuris</i> ...	2	—	—	1	3
<i>Ankylostoma</i> , <i>Trichuris</i> , and <i>Taenia</i> ...	1	1	—	—	2
<i>Ankylostoma</i> , <i>Taenia</i> , and <i>S. mansoni</i> ...	2	—	—	—	2
<i>Taenia</i> , <i>S. mansoni</i> , and <i>Strongyloides</i> ...	1	—	—	—	1
<i>Taenia</i> , <i>Ankylostoma</i> , and <i>Strongyloides</i> ...	—	1	—	—	1
<i>Trichuris</i> , <i>Ankylostoma</i> and <i>S. mansoni</i> ...	—	1	—	—	1
<i>Ankylostoma</i> , <i>S. mansoni</i> and <i>Oxyuris</i> ...	1	—	—	—	1
<i>Trichuris</i> , <i>Taenia</i> and <i>S. mansoni</i> ...	1	—	—	—	1
Totals ...	16	3	1	1	21

QUADRUPLE HELMINTHIC INFECTIONS.

S. mansoni, *Strongyloides*, *Trichuris*, and *Taenia* ... 1 specimen

(V.) RELAPSING FEVER.

S. rossi was found in 48 blood smears. All the patients were Africans, 44 were received from patients in the Native Civil Hospital, Nairobi. In one case *P. falciparum* crescents were also found.

(VI.) SUMMARY OF MICROSCOPICAL EXAMINATIONS OF BLOOD.

Total No. of blood smears examined ...	2,502
Total No. of blood smears containing malarial parasites ...	318
Total No. of blood smears containing <i>S. rossi</i> ...	48
Total No. of blood smears containing <i>Microfilariae</i> ...	2
Total No. of Differential Leucocyte Counts ...	2,124

(VII.) SUMMARY OF MICROSCOPICAL EXAMINATIONS OF FAECES.

Total No. of specimens examined ...	1,071
Total No. of specimens containing Helminthic ova ...	450
Total No. of specimens containing Protozoa ...	118
Total No. of specimens containing blood, mucus, etc., but no Helminthic ova or protozoa ...	106
Total No. of specimens Negative ...	473

G. REPORT OF THE SECTION OF MEDICAL ENTOMOLOGY.

[By C. B. SYMES.]

Since the beginning of the branch in January, much time has been absorbed in settling down after the somewhat difficult initial conditions—no equipment to work with and no suitable place to work in.

About six months have been spent in the field on tsetse fly investigations, the remaining time being very fully occupied on organisation of the preliminary steps in the study of the several very important problems existing.

The training of boys for entomological field and laboratory work has been a necessary preliminary to investigations. The native staff at present consists of six boys who are employed on both field and laboratory work as far as possible.

I. TSETSE FLY.

(1) GENERAL REPORT.

Investigations were started on this in February, 1925, in the Miriu River district of South Kavirondo. The chronic form of human trypanosomiasis is said to exist here to a serious degree and other conditions combined to afford ample material for thorough study with a view to a practical experiment in control. Briefly it was found that the infested area consisted of a stretch of river bush in which the breeding of *G. palpalis* was very light but contact with humans broad, and a higher portion of very dense bush and difficult country between the hills providing the main breeding grounds, in which contact was narrow. The centre

of infestation could not be economically dealt with but the main contact area lower down offered no very great difficulties. About a mile and a quarter of river below the hills and some four to five hundred yards above, have been rendered free from bush by cutting and stumping. The fly has been thereby confined to the uninhabited hill portion of the river. The visible results of this work are as follows: (1) No tsetse fly exist on a mile stretch of river which was previously infested to a very dangerous extent. Fords, watering places and traffic routes are now perfectly safe: there is no risk of infection in the area treated. River fishing which at one time offered the greatest risks, can now be indulged in with safety.

(2) About $1\frac{1}{2}$ square miles of river land have been rendered safe for occupation and development. Shambas are taking the place of infested bush along the river banks. In a densely populated area such as this any additional facilities for expansion and production of food crops are of great value.

(3) The attitude of the local population has changed. Antagonism and at the best listlessness towards proposed measures—and this was to be expected since previous attempts to alleviate conditions here had no permanent results—have changed to a wholesome interest in the work done and a desire to help on the part of the Chief, headmen, and those in authority. But the interest of a native in any scheme has to be kept up until the benefits to himself are obvious. The clearing of an area of tsetse fly is merely the first step and a preliminary to the real work of reclamation. The effort of Government departments is not finished until there is no longer any possibility of the return to bush of treated areas; particularly so in the case of areas from which the fly cannot at present be totally eliminated. The removal of a well-known and popular agricultural officer from the South Kavirondo district is to be deplored.

The actual expenditure for labour in the first attempt at permanent and practical control of Sleeping Sickness was well below two hundred pounds. Apart from its effect on public health the work has released for permanent development, land which may be valued at many times this figure. As a purely agricultural policy it would appear to be an exceedingly profitable undertaking.

The most important point in connection with future policy issuing from the Miriu experiment is that the executive must be in the hands of the Administrative Department. The clearing of bush and reclamation of areas must be carried out by officers of that department upon the advice of the technical officers of the medical and other departments.

Two other infested and infected areas in Karachonya have been surveyed preparatory to tsetse fly control—the Aloach River area and the Homa shore. The former is in many respects similar to the Miriu fly area—a belt of dense bush starting about two miles from the Lake and providing accommodation for a dense isolated colony of *G. palpalis*. The central infestation is not more than a mile long and can be entirely eliminated without great difficulty. The clearance of from sixteen to twenty acres of heavy bush will render fit for occupation from one to one and a half square miles of the finest agricultural land in the district, quite apart from the arrest of Sleeping Sickness in the area.

The Homa area is a stretch of some eight miles of infested shore bush, varying from about fifty to some two or three hundred yards wide in a few places. For the most part it occurs below an escarpment about fifty feet high which forms a very definite limit to the conditions suitable to the tsetse fly. Sleeping Sickness in epidemic form has twice at least taken heavy toll of the population and the few survivors have been driven to live under conditions of great hardship either well back from the lake or on the wings of the infested bush.

The problem here is perhaps more difficult since there are so few natives left, first to do the necessary work of clearing and afterwards to complete the reclamation by occupying the cleared areas. If the locality is to remain inhabited, and its people be given a chance to live under tolerable conditions and make any progress at all the fly must be attacked. A plan of procedure has been submitted whereby the whole stretch of coast can be gradually made safe for the present remnants of a once dense population and ultimately, as expansion can be induced, be entirely cleared of tsetse fly. In such an area, however, it is important that no work be carried out that cannot be rendered permanent. Natives have to be educated as work proceeds. Voluntary occupation of cleared land will succeed where compulsory movement will fail. Apart from the scanty population available in the Homa area there is likely to be difficulty at first with regard to the introduction of crops or other growths to take the place of the dense bush on low lying shore belts. To rely on periodical clearing for permanent reclamation of areas is most undesirable.

The indiscriminate destruction of every bush harbouring a tsetse fly, if this could be done, is likely to involve an infinite amount of wasted labour and to have deplorable results.

Briefly, where an area is mapped out for the elimination of tsetse fly, recommendations aim at:—

- (1) The immediate safety of the population.
- (2) The destruction of the pest by attack on its breeding centres.

Details, accompanied by sketch maps of the three areas mentioned have been submitted in reports.

- (a) Tsetse fly: Mirui (Sandu) River.
- (b) Aloach River Tsetse fly area.
- (c) Homa Tsetse fly area.

In this and in an article to the *Kenya Medical Journal* (Oct.) 1925, emphasis has been laid upon the necessity for co-operation between Medical, Agricultural, Veterinary, Forestry, and Administrative Departments.

Agricultural, Veterinary, and Forestry development is more essential for public health than other reasons.

(2) SPECIES CONCERNED.

So far *G. palpalis* (Eastern form) and *G. brevipalpis* are the only species met with in the lake area; the latter in small numbers only along the Homa shore.

(a) *G. Palpalis*.—Pupæ were found in the river belt beneath rocks and at the base of tree trunks and bushes, lying underneath vegetable debris and in sand. Not more than six pupæ were found together in such spots, but breeding was discovered over wide areas.

Along the lake shore at Homa more concentrated breeding goes on on the sandy ridge of the old lake level, some few yards back from the present level. Here the vegetation consists of low broad leaved bush overhung by large trees (figs, etc.) Pupæ were present in large numbers in the sand at the base of bushes, tree trunks, overhanging rocks and logs. The majority occurs beneath both high and low shade though the largest deposits are found sheltered only by relatively thin logs (6-8 inches in diameter) lying across hippo paths that thread the shore bush.

Most pupæ occur within 20 yards distance from the river or lake level; many at about five yards only, and a few as far back as 50 yards.

(c) *Adults*.—Density in the river areas is much lower on the whole than that of the Homa shore. The highest average male densities recorded during the surveys of the Miriu and Aloach are 30 p.b.h. and 20 p.b.h. respectively, whilst the Homa belt yielded average maximums varying from 32 to 70 p.b.h.

The occurrence of males and females agrees generally with that observed elsewhere: high male density and low female percentage coinciding with heavy shade and good food supply; low male density and high female percentage with very light if any shade and scarcity of food hosts. The latter was particularly noticeable on the Aloach river where some two miles of reed and grass bordered river was lightly infested with migrant females only.

(c) *Food*.—Sufficient data have not yet been obtained to allow of any final conclusion on this point. In the Miriu river area the chief possible sources of food were crocodiles, lizards (*Varanus*), baboons, monkeys, birds, and perhaps the most important, cattle and man. On the Aloach there are no crocodiles, but lizards, baboons, monkeys, species of antelope, and birds occur in numbers. Along the Homa shore where density is generally very high, the most obvious possible hosts are hippos and birds, though crocodiles, lizards, monkeys, and buck are present.

(d) *Effect of Clearing on G. Palpalis*.—(i) During clearing, flies, both males and females, scatter and may be found in circumstances which are normally avoided. The cutting of infested bush results in thorough disorganisation of the colony.

(ii) One would anticipate a very natural movement of fly from the area of clearing to adjoining untouched bush with a consequent rise of density there. This occurs, but more slowly than might be expected. At the same time the interference with bush drives off wild hosts so that the fly becomes more active and aggressive. On the Miriu, three weeks after operations had ceased, the fly density in bush adjoining the last portion of the cleared area was over 60 p.b.h. as compared with 20 p.b.h. before clearing commenced. Whilst the work was going on female percentage rose from less than 10 to over 50. Three months later density had gone down to 20 p.b.h. though female percentage still remained high.

Recommendations for clearing have been formulated to ensure the greatest degree of safety to the workers.

(e) *Natural enemies of G. Palpalis*.—Only one internal parasite—the small Chalcid *Syntomosphyrum glossina*—has been found and so far the degree of parasitism is very low.

(3) CO-OPERATION WITH NEIGHBOURING COLONIES.

In March an educational visit was paid to Uganda and through the kindness of Dr. Carpenter, Senior Medical Officer i/c. Sleeping Sickness, it was possible to spend some ten days with him among the Sesse Islands viewing the work done there.

In November a meeting was arranged on the Uganda-Kenya border with Dr. Griffin, M.O., Lake area, and a brief investigation was carried out along the

border as a preliminary to co-operation in control of Sleeping Sickness in the border areas.

II. MOSQUITOES.

A start has been made on a mosquito survey of the Nairobi-Fort Hall Road area. This area is known to be particularly malarious, the Sisal Estates therein occasionally suffering seriously from loss of labour due to Subtertian infection. It is impossible at the moment to make the survey continuous throughout the year, owing to lack of sufficient staff, but it is considered that a study of known breeding grounds involving a collection of the mosquito fauna at least four times in the year at chosen seasonal periods, will provide valuable material on which to base preliminary control measures.

In many respects this area is particularly difficult to deal with because of the many extensive payprus swamps, the treatment of which, if it is found to be necessary, is likely to entail a very large expenditure.

In August and September, at the end of a particularly long dry period, the first survey of typical blocks was made. The following species of Anophelines are recorded in order of prevalence of breeding grounds, not adult numbers:—

- A. maculipalpis.
- A. funestus.
- A. christyi.
- A. rufipes.
- A. costalis.
- A. mauritanus.
- A. pretoriensis.
- A. squamosus.
- A. rhodesiensis (group).

Surveys of other areas are in hand with a view to definite schemes of control.

The essential study of adult infectivity cannot yet be started since the various problems in hand do not allow a sufficiently long period of time to be spent in one place. With the advent of another entomologist such work can be undertaken.

III. TICKS.

Some slight attention has been devoted to this subject. The labour camps in Kisumu and Kisii, through which pass many recruited natives from Kavirondo and the Tanganyika border, were visited on several occasions to ascertain the degree of infestation with *Ornithodoros*. *O. moubata* was found in considerable numbers in the Kisumu camps and control measures as recommended were carried out by the camp managers.

No work has been done on the bionomics of *O. moubata* but it is of interest to record that of a collection of ticks taken in Kisumu on 10th January, 1925, by Dr. Milne, M.O.H. the majority lived without food in petri dishes with sand occasionally dampened until August, 1925, and two are still alive. (27th January, 1926.)

IV. FLEAS AND PLAGUE.

A small collection of fleas submitted by the M.O. i/c. Machakos has been dealt with. Details are as follows:—

FLEAS, 1924.

From rats caught in and around Machakos township.

Collection of 333 fleas identified as follows:—

X. Cheopis	...	...	...	145	106 = 75.37%
X. brasiliensis	...	...	...	30	20 = 15%
Echhednophaga gallinaceus	...	...	...		11 = 3.3%
Dinopsyllus lypusus	...	...	...	4	} = 6.6%
Ctenocephalus felis	...	...	...	2	
Ctenocephalus canis	...	...	...	1	
Unidentified (damaged)	...	...	...	12	

RATS (RRK) ANALYSIS (FROM M.O.'S RECORD).

Month.				Rats		Average fleas per rat.	
				Rats examined.	No. of fleas. infested.	Infested.	Examined.
March ...	...	...	27	3	3	10	0.1
May ...	...	...	29	15	34	15.7	2.2
June ...	...	...	31	13	37	42	1.2
July ...	...	...	34	14	24	41	1.7
August ...	...	...	19	6	10	31.5	1.66
September ...	...	...	*47	11	31	24.4	2.8
October ...	...	...	16	6	9	37.5	1.5
November ...	...	...	25	6	7	24	1.19
December ...	...	...		No record.			.28
Totals ...	...	...	237	75	155	31.6	2. .6

* One *Arvicanthus* sp.

RATS AND FLEAS, 1925.

From rats (*Rattus rattus* Kijabius) caught in and around Machakos township.

Fleas submitted	...	...	1,082 (from M.O.'s list).
Fleas identified	...	...	869 (mounted)
<i>X. cheopis</i>	...	...	147 = 35.1%
<i>X. brasiliensis</i>	...	...	79 = 15 %
<i>Echidnophaga gallinaceus</i>	...	...	36 = 44.8%
<i>Ctenocephalus felis</i>	...	...	1 3)
<i>Ctenocephalus canis</i>	...	...	1) = 4.9%
<i>Dinopsyllus lypusus</i>	...	...	3 7)
Not identified (damaged)	...	...	23)

Discrepancy between Nos. submitted and Nos. mounted, 213.

Month.					Average fleas per rat.			
	Rats caught.	% rats with fleas.	No. of fleas.	Infested.	Caught.	%	<i>X. cheopis</i> .	<i>X. brasiliensis</i> %
April ...	25	72	97	5.39	3.88			
May ...	23	52	34	2.8	1.5			
June ...	13	46	15	2.5	1.1			
July ...	34	47	57	3.5	1.7			
August ...	96	36.4	198	5.7	2			
September ...	70	28.8	64	2.8	.8		42.3	17
October ...	53	58.6	324	8.	4.6		43	10.7
November ...	76	25.4	47	3.1	.8		16	15.4
December ...	60	57.6	246	8.	4.1		32.4	46
Totals ...	450	43.3	1,082	5.5	2.4		37.3	11. 51.7

V. SCABIES.

Whenever possible searches have been made for *Sarcoptes* on patients provided by the M.O.'s i/c. Native Hospital and Dispensary. None have been found.

VI. MYIASIS.

Three cases of intestinal Myiasis have been reported by doctors and the larvæ submitted for identification. All were unfortunately immature stages preserved in spirit so that adults could not be bred for reliable identification. They have been provisionally identified as species of *Sarcophaga*.

VII. GENERAL.

A collection of all insects likely to influence public health in any degree is being aimed at. This year a small start has been made, but the time occupied in the study of Tsetse flies and mosquitoes and the general organisation of the branch has allowed of little devotion to general collection.

It is recognised that too little is known by the public of the influence of insects on public health and that the work of an economic scientist should include simple propaganda. To this end exhibits have been arranged at Agricultural Shows, showing essential points in the life histories of Tsetse flies, Mosquitoes, Ticks, Fleas, etc., accompanied by brief explanations of their role as disease vectors and advice as to control. It is hoped that this side may be developed considerably in future.

VIII. ACCOMMODATION.

The present quarters are quite inadequate for the work already in hand. An outdoor insectary with facilities for breeding of any insects under investigation is an absolute necessity. Life histories of insects, their association with and their power to transmit diseases cannot be studied in anything but a suitable insect proof building. At the present site there appears to be no room whatever for such facilities. Work involving the study of experiments with infected insects must necessarily be definitely held up until a safe and suitable insectary can be provided.

H. BIOCHEMICAL SECTION.

Prior to his departure on leave the Biochemist was engaged solely in the production of a sufficient quantity of sodium potassium bismuth tartrate to meet requirements till his return. A certain number of general chemical examinations of urines were carried out and a number of urines were examined for urea concentration. Reports on these will be found at the end of the Bacteriological Section Report.

I. ANALYTICAL CHEMISTRY SECTION.

I. GENERAL ANALYTICAL WORK.

(a) MILK.

Two hundred and eight-two samples of ordinary milk were examined. Of these 273 were submitted by the Medical Officer of Health, Nairobi, or were from official sources. Four came from the Medical Officer of Health, Mombasa, and five were submitted by private individuals.

	No. of samples.	No. adulterated with water.	% adulterated.	Average % of added water in adulterated samples.
January	26	4	15.4	22.5
February	26	6	23.1	25.2
March	34	7	20.6	26.0
April	8	0	0	—
May	27	8	29.6	17.1
June	36	15	41.7	23.1
July	38	9	23.7	14.3
August	17	6	35.3	15.0
September	12	5	41.7	17.0
October	34	19	55.9	25.4
November	24	6	25.0	26.5
December	0	—	—	—
Totals	282	85	30.1	21.2

As in previous years the majority of these samples has been collected from street hawkers.

The figures for the percentage of samples adulterated with water during the months June to October reflect the efforts of the local native to compensate himself for the shortness of grazing caused by the dry weather of 1925. These figures are much higher than in 1924.

Selecting from the figures obtained during the year those appertaining to milk which has not been tampered with the following data are obtained:—

	Normal samples.	Average specific gravity.	Average total solids.	Average fat.	Average solids not fat.
			%	%	%
January ...	20	1.0327	14.1	4.8	9.3
February ...	19	339	14.4	4.7	9.6
March ...	23	328	14.3	4.9	9.3
April ...	7	337	14.2	4.7	9.5
May ...	17	333	14.1	4.7	9.4
June ...	17	327	14.1	4.8	9.3
July ...	23	322	14.0	4.8	9.2
August ...	10	325	13.9	4.7	9.2
September ...	5	329	13.7	4.5	9.3
October ...	14	311	13.6	4.7	8.9
November ...	16	320	13.6	4.5	9.0
December ...	—	—	—	—	—
Total ...	171	1.0327	14.0	4.7	9.3

Similar average

for 1924 ... 257 ... 1.0331 ... 14.0 ... 4.6 ... 9.3

The average figures for 3,125 samples of milk not collected from hawkers but specially supplied during the years 1913, 1914, and 1916 are:—

Total Solids	...	14.6%
Fat	...	5.4%
Solids not fat	...	9.2%

These figures represent with sufficient accuracy the composition of milk from native cattle kept under good conditions.

The cow is not an instrument of mathematical precision and the composition of milk varies with the seasons according to more or less defined rules. It may also when drawn from one cow vary irregularly according to the idiosyncrasy or fitness of the animal though the mixed milk from a herd is practically the same at any particular season of the year. The component subject to least variation is that for the non-fatty solids and it is this that is of most importance in deciding whether a sample of milk is genuine or otherwise.

It is usual to have a standard defined legally to which the milk must conform. Samples not reaching this standard being deemed adulterated.

In this country no such standard exists and the onus rests on the Analyst of deciding each particular case on its merits.

It has been customary to regard with suspicion milk samples in which the non-fatty solids do not reach 9%.

Attention was drawn in the annual report for last year to the desirability of ascertaining the composition of milk from imported pure-bred cattle more especially of Frieslands as even in Europe these heavy milkers are apt to give milk which is more "dilute" than that from other breeds. The figures are now available and appear in the Appendix.

The milk came from Limoru where perhaps the conditions approximate as closely as can be obtained in this country to those at home. The average figures are as follows:—

Month.	Time of milking.	Specific gravity.	Total solids.	Fat.	Solids not fat.
PURE-BRED FRIESLAND CATTLE.					
1924.			%	%	%
December ...	Evening	1.0315	12.6	3.8	8.8
1925.					
January ...	"	1.0312	12.1	3.5	8.6
Average ...		1.3014	12.4	3.7	8.7
February ...	Morning	1.0304	12.3	3.8	8.5
March ...	"	1.0311	12.7	4.2	8.7
April ...	"	1.0303	12.0	3.5	8.4
Average ...		1.0306	12.3	3.8	8.5
Average Morning & Evening		1.0309	12.3	3.8	8.6
GRADE FRIESLAND CATTLE.					
May ...	Evening	1.0299	12.4	4.0	8.4
June ...	"	1.0303	12.7	4.1	8.6
Average ...		1.0301	12.6	4.1	8.5
July ...	Morning	1.0303	12.1	3.6	8.5
Average Morning & Evening		1.0302	12.4	3.9	8.5

Droop Richmond quotes the following figures for North Dutch or Friesian cows: Total Solids, 11.5%; Fat, 3%; Solids not Fat, 8.5%

It is obvious that data obtained in Europe are just as little use in judging the performance of this breed when imported to Kenya as are general figures for European milk with respect to native cows.

No little difficulty must attend any attempt to fix a legal standard for the composition of milk in Kenya as the following figures placed together for comparison will show.

			Total solids.		Fat.		Solids not fat.
			%		%		%
Friesland Cattle	...	...	12.3	...	3.8	...	8.6
Native Cattle	...	...	14.6	...	5.4	...	9.2

In both cases these figures represent milk produced under good conditions.

There is a great difference between them. Suppose for example the lower limit was fixed for milk, then the following conditions would arise.

To milks from native cows about 7% of water could be added without reducing the figure for the non-fatty solids below 8.6%. If this were done the fat would only be reduced to about 5% and the difference between 5% and 3.8% which represents 22% of the fat in the original milk, could be removed before the milks were brought below the lower standard.

Conversely an attempt to fix the higher standard would have an adverse effect on the general grading up of stock. From a practical point of view the general consumer is much more concerned with a clean milk supply than with an extra percentage of fat in the milk—and in extreme cases there always remains the "appeal to the cow."

It is perhaps well to remark in view of the above that any attempt to sophisticate milk to the extent indicated would be apparent for reasons which have not been discussed—designedly.

(b) WATER.

Classification of samples:—

Sanitary:

Nairobi water supply	...	...	...	11
Miscellaneous	...	...	...	24
Metallic contamination	...	...	...	5
Pollution of rivers	...	...	...	8

<i>Industrial and Mineralogical</i>	...	...	...	13
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(1) *Nairobi Water Supply.*—The supply as it reaches the laboratory tap has been examined on eleven occasions and in no case has any chemical evidence of contamination been obtained. The figures have been normal throughout with the exception of those expressing the temporary hardness which for some unexplained reason sank to .8deg. during the months March to June. The average figure is 1deg. 7.

(2) *Miscellaneous.*—The only samples that call for comment are those from the Nairobi river taken outside Nairobi. The figures relating to these appear in the appendix.

The extraordinary purification that takes place when sewage contaminated water percolates through a papyrus swamp is apparent from a comparison of these figures.

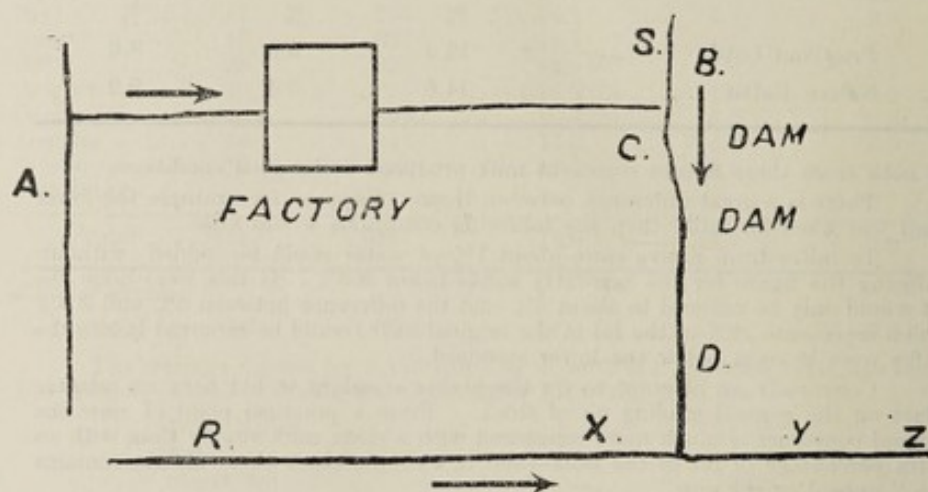
(3) *Metallic contamination.*—Only five samples of aerated water or water used in its manufacture were submitted. In no case was any copper or lead detected.

(4) *River Pollution by Sisal waste.*—This problem has again this year received considerable attention, work being directed towards the special case considered in detail in the annual report for 1924.

The plan adopted by the factory for dealing with the effluent consisted in damming the narrow valley below the factory in two places. The water collected by the first dam is led by a furrow along the valley side and allowed to overflow from the furrow at various places between the first and second dam. This water finds its way more or less slowly to the original stream bed and thence is held again by the second dam. From this it flows down its usual channel till it joins the large river.

By this method two opportunities are given to the water to deposit by sedimentation the larger suspended solid matter and in addition the water from the furrow between the first and second dam being spread in a more or less thin sheet over the valley side is exposed to conditions favourable to oxidation and evaporation. A certain amount also percolates through the soil and is thus purified by filtration.

To aid the following discussion the diagram from the report for 1924 is reproduced here:



When first visited after completion of the two dams the water from the first dam was for the most part being led clear beyond the second dam so that the aeration which may be expected between the first and second dam was not taking place.

Nevertheless, so far as the visible characteristics of the water at point D were concerned the operations had been attended with a certain amount of success. The water was clearer, contained less solid matter in suspension, and was less frothy. The odour though still bad was less marked than before the construction of the furrow. Chemical analysis supported this as the figures in the appended table show.

The factory was again visited after the method of dealing with the waste had been in operation for some time.

Reference to the table of analyses will show that the principle underlying this method of dealing with sisal effluent is sound.

The small stream at "D" which was originally exceedingly foul and covered with froth had, when last seen, only a faint odour of decaying sisal refuse, contained very little vegetable debris, and carried no froth with it.

The figures for the "oxygen absorbed" which give an indication of oxidisable organic matter, had fallen from 3 to 0.2 parts per 100,000. The solid residue and the loss on ignition (chiefly the loss of organic matter by combustion) also show similar large decreases. The water from the small effluent-bearing stream although still "dirty" could hardly, having regard to the relative volumes of the stream and the river into which it discharges, be described as a nuisance. That the water from this stream had after treatment either no recognisable effect or an effect which is barely recognisable on the water of the large river is apparent if the last figures for Y and Z are compared with those at X. The differences are practically within the limits of experimental error.

A change even more remarkable than that indicated by figures had taken place in the visual characteristics of the large river and its bed between X and Z. The bed of the stream was clean, there was none of the leprous-looking vegetable growth noticed a year previously, the water was free from decaying particles of vegetable matter and had lost its faint unpleasant odour.

ANALYSES OF WATER FROM POINTS MARKED X, Y, Z AND D ON DIAGRAM.

	X.		Y.		Z.		D.	
	Sept., 1924.	June, 1925.	Sept., 1924.	June, 1925.	Sept., 1924.	June, 1925.	Sept., 1924.	June, 1925.
Nitrogen as saline ammonia ...	trace	.002	.005	.0004	.001	.003	.17	.03
Nitrogen as albuminoid ammonia ...	.003	.009	.005	.002	.005	.022	.17	.20
Oxygen absorbed ...	.06	.08	.07	.25	.08	.37	3.0	1.62
Solid residue ...	15.7	18.2	24.4	26.5	26.1	23.3	90.3	90.4
Solid residue, loss on ignition ...	6.0	5.8	7.7	11.1	6.5	9.3	38.7	32.1
Whether residue chars on heating ...	None.	Slight.	Slight.	Slight.	Slight.	Marked.	Much.	Some.

Sisal manufacturers do not apparently fully appreciate the effect of the solid vegetable debris that collects at the end of the flume on the problem of water pollution.

Huge mounds of this in all stages of decomposition can be seen below the flumes. The washing water from the decorticators which carries with it all the plant juices of the sisal is sometimes allowed to percolate through these mounds and wash out from them as it does so the products of the decomposition of the solid waste. Quite a large part of the trouble appears to be due to this cause.

It should not be a difficult matter to remove immediately the solid matter as it collects at the end of the flumes, by perforated trucks on trolley lines or in some other way. The ash of the material if dried and burnt is a valuable fertiliser or possibly the return of the debris direct to the soil of the plantations might help to prevent loss of humus.

(5) INDUSTRIAL AND MINERALOGICAL.

Thirteen samples under this head were examined. Figures, where of interest, are quoted in the appendix.

Several samples of water have been received to which extraordinary curative effects have been attributed or which are specially sought out by natives for themselves or their stock. No reason for any special medicinal qualities has been found in the former class except in one case in which the water owing to the presence of chlorides and sulphates of magnesia possessed a certain laxative effect.

The predilection of natives in parts of the country for certain water supplies appears to have a solid foundation. It is nearly always found that these much sought after waters have this in common, that they contain appreciable quantities of salts of sodium generally the carbonate, not the chloride. In this they are similar to the so-called salt licks of the country which as a general rule contain little or no chloride of sodium but instead the carbonate of sodium.

The soft rock which is quarried in the Lumbwa country and which has been quarried for generations if the extent of the workings is any guide owes its use in the feeding of stock probably to the same reason, namely that it contains sodium compounds which are soluble in the gastric juices.

The demand of herbivora for "salt" is therefore not so much for the particular compound "sodium chloride" but for any inorganic compound of sodium that can be assimilated. Professor Cathcart quoted by Dr. J. W. Gregory in his book on the Rift Valleys of East Africa, suggests that it is probably not the fact that the diet of the herbivora is deficient in sodium salts but that it contains excessive amounts of potassium and this owing to interaction between the inorganic salts in the organism leads to the excretion of abnormal quantities of sodium. It is this loss which must be made good from "salt licks" and similar soda supplies.

The suggestion links together several separate facts, for it is amongst natives whose diet is mainly vegetable that this predilection for certain water supplies exists.

(c) FOODS AND LIQUORS.

Fifteen samples of native beer brewed by the Municipality were submitted. The alcoholic contents varied from a minimum of 1.50% by volume to a maximum of 4.27, the average figure being 3.2%. The total solid matter contained in "tembo" is about 10 gms. per 100 c.c., about half of this being dissolved and the remainder in suspension in the liquid. This kind of native liquor is therefore to a certain extent a food as well as a drink.

Other samples include coffee, 1 sample; ghee, 1 sample; "vegetable ghee," 2 samples; dripping, 1 sample; maize meal, 7 samples; pearl barley, 4 samples; chocolate, 1 sample; wines and spirits, 2 samples; calf's foot jelly, 1 sample; flavouring essences, 5 samples; tinned foods, 20 samples; liquors under the Native Liquor Ordinance, 4 samples.

Of these the "vegetable ghee" calls perhaps for further comment. Examination showed it to be as it was described, a vegetable product containing no appreciable amount of animal fats. In a sense it bears the same relation to ghee proper as margarine does to butter but since margarine made from vegetable oils may be blended with butter or other animal fats so there was at least a possibility that this substance might contain fats other than vegetable.

Such a blend might offend the religious scruples of some sections of the Kenya community, but since such scruples would be equally offended by traces of foreign fats beyond the power of the chemist to detect as by large amounts the question is one which the analyst is unable to settle—*caveat emptor*.

(d) TOXICOLOGY AND FORENSIC CHEMISTRY.

The samples examined under this head during the year number fifty.

Twenty-three of these were native "medicines" of various kinds.

Native "medicines" may be divided roughly into two main types, those which contain considerable amounts of charcoal and in which no vegetable structure is visible microscopically and those which consist of powdered vegetable tissue.

A characteristic specimen of the former class examined during the year was alkaline in reaction, effervesced with acids evolving carbon dioxide and on ignition the carbonaceous matter burnt readily leaving an almost white ash. The ash contained Lime, Soda, Potash, Alumina, Magnesia, traces of Iron and marked amounts of phosphate. This and the presence of alkaline carbonates is consistent with the supposition that the material is mainly an ash of vegetable origin except that the phosphate present was too great in quantity. Microscopic examination showed the presence of dull white fragments which when picked out and examined separately were found to have the phosphatic material concentrated in them. They were probably powdered bones. No alkaloids were present and physiological experiments showed the material to be not poisonous.

Such a "medicine" may have a certain use as a condiment, but any bad effects on the consumer must be due to the power of suggestion.

The investigation of the other type of "medicine" which has not been subject to heat during the course of its manufacture presents great difficulties. As a general rule only minute amounts are submitted. It is not possible to identify the plant from which the powders are derived and enquiries among natives lead one to a blank wall of ignorance, real or assumed. It is generally not possible to do much more than administer an extract to a guinea pig and note the results. Nearly invariably the animal suffers no hurt. A fairly long experience of endeavours to make these native "medicines" exhibit their supposed poisonous qualities with very little success leads one to infer that the popular idea that the black man is necessarily an expert poisoner is a fallacy.

The poisonous effect of "Datura" is probably known amongst the Kavirondo, but it appears that the supposed properties of the snake fat with which they are said to compound it bulk more largely in their eyes.

One vegetable substance examined during the year gave partially positive results. It appeared to have been soaked or cooked so that most of the active principle had been extracted.

An extract was obtained from it which responded to alkaloidal tests and which when administered to a guinea pig produced poisonous symptoms resembling those caused by atropine. It was not however a mydriatic alkaloid and unfortunately it was not possible to identify the plant.

An investigation of the native "pharmacopoeia" before this is lost through the influence of civilisation would be of exceeding interest, though the enormous

difficulties, having regard to the natural secretiveness of the native, would be

A case of suspected poisoning by small amounts of Arsenic is of interest. In all twenty-two samples were examined, including cream, butter, chutney, vinegar, liquors, Worcester sauce, and urine.

In the foodstuffs either no arsenic was found or only those exceedingly minute amounts which are in a sense normal to certain foods.

The urine contained only .088 to .012 mgms. arsenious oxide per litre, figures which are inconsistent with arsenical poisoning.

With regard to the occurrence of Arsenic in urine the following transcribed from a paper by H. E. Cox in the *Analyst*, January, 1925, is of interest:—

" It has been generally assumed, without reason, that urine is normally almost Arsenic free. In medical literature 0.03 mgm. per litre is widely recognised as a maximum figure. . . . It appears that 60% of the population of Sweden could be suspected on the above basis, or suffering from chronic arsenical poisoning. Thus, the following figures are given for 100 persons on a known hospital diet:—

				Mgm. White Arsenic per litre.		Percentage of cases.
1	...	...	...	.00 to .01	...	21.1
2	...	...	...	.01 to .03	...	18.4
3	...	...	...	.04 to .06	...	23.7
4	...	...	...	.06 to .09	...	7.9
5	...	...	...	.10 to .20	...	21.1
6	...	...	...	.20 to .30	...	2.6
7	...	...	...	.30 to .70	...	5.2

" It will be appreciated how important such figures are in view of any criminal proceedings respecting arsenical poisoning. If 0.1 mgm. or upwards of arsenious oxide were found in the urine, it would raise grave suspicion in the minds of chemists and physicians, yet it appears that seven times this amount may occasionally be present in the urine of a normal healthy person who is not taking arsenic in any form, except as a natural impurity in certain foods."

Among the miscellaneous exhibits examined were tablets which proved to be veronal, sugar containing arsenite of soda, corrosive sublimate, the lining of a safe, two reputed bombs which actually were the inside cell of a Leclanche battery, and one cell of a dry battery such as is used in pocket electric torches, an ox hide with a stain on it, proof of the similarity of this to some green paint being required, two counterfeit shillings, etc.

(e) MINERALS AND METALS.

Much assay work had to be refused owing to lack of staff and the work carried out under this head has mainly been classification of specimens brought by private individuals. A few partial rock analyses are quoted in the appendix.

(f) MISCELLANEOUS.

Fuel Oils	...	...	...	...	...	5
Clay for brick making	...	...	...	...	...	3
Ledger damaged by heat	...	...	...	...	...	1
Fencing wire for damage by sale water	...	...	...	...	...	1
Carbon tetrachloride	...	...	...	...	...	1
Preparation of Bismuth	...	...	...	...	...	1
Saw dust for moisture	...	...	...	...	...	11
Morphine preparations	...	...	...	...	...	7
Bituminous paint	...	...	...	...	...	1
Remedy for snake bite	...	...	...	...	...	1
Oil from " <i>Oncoba brachyanthera</i> "	...	...	...	...	...	1
Rat poison	...	...	...	...	...	1
Tiles	...	...	...	...	...	5
Alloys	...	...	...	...	...	2
Preparation of quinine	...	...	...	...	...	1
Salt	...	...	...	...	...	2
Distilled water	...	...	...	...	...	4
Boiler scale	...	...	...	...	...	1
Lichen	...	...	...	...	...	2
Emulsion of castor oil	...	...	...	...	...	1
Various substances for identification	...	...	...	...	...	5

Figures relating to the porosity of tiles of local manufacture appear in the appendix. One of the lichens examined was the same as that referred to in the report for the previous year and yielded a maroon dye. The other of a different kind gives a brown colour. No information is available as to whether this also has a market value in Europe.

(g) MEDICAL.

Six specimens of urine were examined for blood, seventeen for sugar, one for albumin, and nine for acetone. Eleven specimens of stomach contents were examined for the hydrochloric acid percentage.

One gall stone was examined. This consisted chiefly of cholesterin with some bile pigment and a little phosphate and carbonate of lime.

An oval vesical calculus, weighing 9.6 gms. and of dimensions 1.2 x 3.1 x 2.6 cms., consisted of an outer shell of a white crystalline nature with a grey core. The outer shell contained no uric acid or urates, but was entirely phosphatic, probably the magnesium ammonium phosphate. The inner core though chiefly phosphatic contained in addition uric acid or urates and possibly a trace of carbonate of lime.

Another calculus consisted of calcium oxalate with a very little phosphate and a third was almost pure uric acid.

[2] APPENDIX.

TABLES OF ANALYTICAL FIGURES.

Source.	Ammonia. Saline, Albuminoid.	Nitrogen as Nitrate, Nitrite, lab. temp.	Oxygen absorbed 3 hours	Chlorine.	Hardness.		Total
					Tem y.	Permanent.	
Lyene stream, Machakos. No. 1 spring. November	.002	.014	.216	1.0	0.8	0.8	8.9
Lyene stream, Machakos, below No. 1 spring, Nov.	.002	.007	.178	1.1	1.1	1.1	16.5
Lyene stream, Machakos, beginning of water furrow	.001	.007	.152	0.9	1.3	1.2	11.3
Kibos river, proposed supply for Kisumu. June	.001	.031	.408	0.2	0.2	1.2	18.0
Machakos, well, 110 ft. deep. September	.019	.009	.033	9.5	14.6	10.9	46.7
Mombasa, tap. November	nil	.004	.122	1.8	2.5	2.5	10.0
Mombasa, well, off Salim Road. July	.009	.002	.015	13.3	43.0	24.5	128.0
Mombasa, well, Ras Keberani. July	.007	.002	.020	12.8	50.5	29.5	92.2
Mombasa, well, Bondeni. November	.001	.003	.040	1.8	21.2	5.3	33.6
Nairobi river, above outfall of sewer. January	.002	.016	.203	7.9	7.7	6.5	35.8
Nairobi river, below outfall of sewer. January	.284	.028	.226	7.9	8.1	7.0	33.6
Nairobi river, below papyrus swamp. February	.002	.017	.235	7.4	6.9	6.6	24.9
Nairobi river, above outfall of sewer. February	.002	.018	.176	6.5	7.1	5.9	27.1
Nairobi river, below outfall of sewer. February	.020	1.192	.632	7.5	8.3	7.0	35.5
Nairobi river, below papyrus swamp. April	.001	.010	.132	7.4	8.2	6.5	24.7
Nairobi river, above outfall of sewer. April	.002	.017	.203	6.7	7.5	0.4	7.1
Nairobi river, below outfall of sewer. April	1.17	.070	.459	7.2	8.9	2.6	34.3
Nairobi river, below papyrus swamp. April	.002	.012	.172	7.1	8.5	2.7	25.2
Nairobi tap water. January	.0006	.006	.005	3.6	6.2	2.3	18.7
" " February	nil	.0012	nil	3.6	5.7	2.2	16.6
" " March	nil	.0010	.007	3.8	4.6	0.7	16.3
" " April	trace	.0016	.020	3.8	4.6	0.7	15.1
" " May	.0006	.0010	nil	3.6	4.3	0.8	16.6
" " June	nil	.0006	.077	3.6	4.7	0.8	17.0
" " July	trace	.0012	trace	3.6	5.1	3.9	16.3
" " August	nil	.0008	.006	3.5	6.2	2.2	16.4
" " September	trace	.0008	.008	3.5	5.7	1.8	14.7
" " October	nil	.0006	nil	3.5	6.2	2.0	15.7
" " November	trace	.0008	.008	3.5	5.3	1.1	17.2
" " August	.001	.010	.067	2.2	3.5	0.7	15.0
Ruaraka river, well in bed of. August	.001	.010	.051	2.3	4.3	2.6	19.3
Ruaraka river, well in bed of. November	.004	.006	.025	4.1	12.6	1.8	40.7
Ruiru river	.003	.016	.135	0.7	1.6	0.0	8.8
Saba saba river. May	.002	.009	.079	0.4	11.4	7.5	18.2
" " May	.002	.011	.134	0.4	12.6	6.7	22.0
" " May	.024	.014	.116	0.4	13.5	10.2	22.4
" " September	.005	.005	.072	0.2	16.9	9.0	24.4
" " September	.001	.005	.082	0.2	17.1	11.5	26.1
" " September	.002	.006	.087	0.2	17.2	11.7	26.2
" " September	.037	.018	.118	0.7	3.3	0.4	8.2
Therika river. March	.030	.200	1.62	0.4	17.5	10.3	90.4
Stream carrying sisal waste. May	.003	.016	.198	0.4	10.5	0.8	38.9
Stream carrying sisal waste. September							

ELLEGERINI RIVER.

	parts per 100,000.
Solid matter in suspension	1.0
Solid matter in solution	3.5
Chlorine	.18
Free carbon dioxide	.22
Combined carbon dioxide	.77
Dissolved oxygen (at 20deg.C.)	.681
Total hardness	.6

	parts per 100,000.
	Kibos River. Well, Tabora.
Calcium carbonate	.45 ... 1.00
Magnesium carbonate	.87 ...
Magnesium sulphate	26
Magnesium chloride	23
Sodium chloride	.03 ... 2.06
Sodium sulphate	.13 ...
Sodium carbonate	1.61 ... 3.62
Potassium chloride	.38 ...
Potassium carbonate	41
Potassium nitrate	... 1.45
Silica	9.22 ... 16.04
Lime	.25 ... 1.48
Ferric oxide	90
Alumina	1.08 ... 2.42
Organic matter	4.20 ...
	18.22 ... 29.87

MINERALISED WATERS.

Source.	Parts per 100,000.			
	Mongokki.	Keruguya.	Wajeir.	Lodwar.
Total solids	336.4	426.1	213.2*	57.0
Hardness, Temporary	92°	84°	19°	10°
Hardness, Permanent	33°	24°	80°	4° 8
Hardness, Total	125°	108°	99°	14° 8
Chlorine as Sodium chloride	51.3	—	present	17.2
Sodium carbonate	170	283	—	28.6
Sodium sulphate	—	—	present	small amt.
Sulphuretted hydrogen	—	—	—	1.0

* Chiefly chlorides and sulphates of magnesia.

WATERS FOR USE IN BOILERS.

	Parts per 100,000.
	? Kitale.
Total solids	35.5* ... 14.7
Hardness, Temporary	1° 2 ... 1° 2
Hardness, Permanent	3° 5 ... 2° 9
Hardness, Total	4° 7 ... 4° 1
Chlorides	... traces
Sulphates	... traces

* Mostly silt.

SAWDUST.

	Ratio
	dry wood to moisture.
Podocarpus	100 to 14.8
"	100 to 29.5
"	100 to 10.7
"	100 to 12.9
"	100 to 11.9
"	100 to 11.1
"	100 to 46.3
"	100 to 22.8
"	100 to 14.6
"	100 to 31.7
"	100 to 44.2

CLAYS FOR BRICK MAKING.

Increase in weight on soaking in water ...	12.6%	17.3%	15.9%	11%	13.8%
Specific gravity of saturated brick ...	2.0	2.07	1.92	2.06	2.1
Specific gravity of dry brick ...	—	1.76	1.65	1.85	1.8
Ratio, vol. of brick to vol. of pores ...	100 to 22.5	100 to 30.4	100 to 26	100 to 20.4	100 to 25.3

TILES.

	Pressed local tile.	Unpressed local tile.	Mangalore tile.
Increase in weight on soaking in water ...	18.50	21.30	16.32
Specific gravity of saturated tile ...	2.04	1.96	2.04
Specific gravity of dry tile ...	1.70	1.60	1.75
Ratio, vol. of tile to vol. of pores ...	100 to 31.5	100 to 34.1	100 to 28.5

“ VEGETABLE GHEE.”

	A.	B.
Moisture ...	.06%	.09%
Fat ...	99.94%	99.91%
Refractive index (Zeiss 40°C) ...	51° 2	49° 9
Reichert Meiss value ...	.28	1.79
Polenske value ...	.11	.38

GHEE.

Moisture ...	1.7%
Foreign matter ...	.7%
Butter fat ...	97.6%
Refractive Index (Zeiss 40°C.) ...	41.3

NATURAL SALT.

Sodium chloride ...	83.6%
Moisture ...	5.7%
Insoluble residue ...	.5%
Undetermined ...	10.2%
	Silica.
Nephelene Angitite ...	46.34%
Quarz Trachyte ...	66.47%
Rhyolite (Naivasha) ...	74.01%
Pitchstone (Kedong Escarpment) ...	70.30%

HUMAN MILK.

Specific gravity.	Total solids.	Fat.	Solids not fat.
1.0338 ...	12.7 ...	3.4 ...	9.3

NATIVE BEER.

	% alcohol by volume.
January ...	4.01
	3.87
	2.66
	4.27
February ...	3.09
March ...	3.24
April ...	1.50
May ...	3.47
June ...	1.57
July ...	4.27
August ...	2.62
September ...	3.20
October ...	4.14
November ...	3.09
December ...	2.97

PURE-BRED FRIESLAND CATTLE.

Evening.

Date. Dec., 1924.	Specific gravity.	Fat.	Solids not fat.	Total Solids.
		%	%	%
10	1.0314	3.8	8.8	12.6
11	321	3.8	8.9	12.7
12	319	3.7	8.9	12.6
13	321	3.8	8.9	12.7
15	326	3.75	9.05	12.8
16	324	3.9	9.0	12.9
17	319	3.8	8.8	12.7
18	317	3.8	8.8	12.6
19	322	4.3	9.1	13.4
20	317	3.9	8.9	12.8
21	314	4.0	8.8	12.8
22	315	4.2	8.9	13.1
23	314	3.85	8.75	12.6
24	304	4.0	8.5	12.5
25	311	4.0	8.7	12.7
27	306	3.4	8.5	11.9
28	302	3.7	8.4	12.1
29	309	3.5	8.6	12.1
30	316	3.5	8.7	12.2
31	309	3.25	8.55	11.8
Average	1.0315	3.8	8.8	12.6

January, 1925.

PURE-BRED FRIESLAND CATTLE.

Evening.

Date. Jan., 1925.	Specific gravity.	Fat.	Solids not fat.	Total Solids.
		%	%	%
1	1.0314	3.75	8.75	12.5
2	314	3.8	8.8	12.6
3	311	3.7	8.7	12.4
4	317	4.1	8.9	13.0
5	318	3.45	8.75	12.2
6	315	3.4	8.7	12.1
7	314	3.55	8.75	12.3
8	311	3.4	8.6	12.0
9	322	3.85	8.95	12.8
10	304	3.2	8.4	11.6
12	317	3.7	8.8	12.5
13	314	3.6	8.7	12.3
14	306	3.2	8.4	11.6
15	312	3.5	8.6	12.1
21	309	3.5	8.6	12.1
22	310	3.25	8.55	11.8
23	309	3.25	8.55	11.8
24	317	3.2	8.7	11.9
25	307	3.2	8.5	11.7
26	310	3.0	8.5	11.5
27	311	3.3	8.6	11.9
28	308	3.3	8.5	11.8
29	310	3.25	8.55	11.8
30	298	3.2	8.2	11.4
31	310	3.7	8.6	12.3
Average	1.0312	3.5	8.6	12.1

February, 1925.

PURE-BRED FRIESLAND CATTLE.

Morning.

Date. Feb., 1925.	Specific gravity.	Fat.	Solids not fat.	Total Solids.
		%	%	%
1	1.0295	3.55	8.25	11.8
2	303	3.7	8.5	12.2
3	306	3.55	8.55	12.1
4	298	3.6	8.3	11.9
5	305	3.55	8.45	12.0
6	307	3.5	8.5	12.0
7	310	3.7	8.6	12.3
8	314	3.6	8.7	12.3
9	308	3.4	8.5	11.9
11	310	3.45	8.55	12.0
12	306	3.85	8.55	12.4
13	305	3.9	8.5	12.4
14	305	3.9	8.5	12.4
15	308	4.0	8.6	12.6
16	307	3.85	8.55	12.4
17	305	3.45	8.45	11.9
18	305	4.0	8.6	12.6
19	302	3.75	8.45	12.2
20	302	3.75	8.45	12.2
21	303	3.95	8.45	12.4
22	305	3.4	8.5	11.9
23	303	4.2	8.6	12.8
24	304	3.9	8.5	12.4
25	298	4.4	8.5	12.9
26	297	4.2	8.4	12.6
27	302	3.85	8.45	12.3
Average	1.0304	3.8	8.5	12.3

March, 1925.

PURE-BRED FRIESLAND CATTLE.

Morning.

Date. March, 1925.	Specific gravity.	Fat.	Solids not fat.	Total Solids.
		%	%	%
1	1.0304	3.65	8.45	12.1
2	314	4.0	8.8	12.8
3	307	3.8	8.6	12.4
4	310	3.9	8.7	12.6
5	316	4.0	8.8	12.8
6	314	3.8	8.8	12.6
7	317	3.8	8.8	12.6
8	319	3.9	8.9	12.8
9	317	3.9	8.9	12.8
10	316	3.95	8.85	12.8
11	313	3.95	8.75	12.7
12	309	3.9	8.7	12.6
13	314	3.9	8.8	12.7
14	309	3.9	8.7	12.6
15	309	3.85	8.65	12.5
16	313	3.95	8.75	12.7
17	305	4.25	8.65	12.9
18	308	4.2	8.7	12.9
19	304	3.95	8.55	12.5
20	303	4.3	8.6	12.9
21	300	4.3	8.5	12.8
22	312	4.45	6.85	13.3
23	311	4.55	8.85	13.4
24	314	4.2	8.8	13.0
25	308	4.2	8.7	12.9
Average	1.0311	4.2	8.7	12.7

April, 1925.

PURE-BRED FRIESLAND CATTLE.

Morning.

Date. April, 1925.			Specific gravity.		Fat.		Solids not fat.		Total Solids.	
					%		%		%	
14	...	...	1.0305	...	4.1	...	8.6	...	12.7	
15	...	...	294	...	3.8	...	8.3	...	12.1	
16	...	...	298	...	4.0	...	8.4	...	12.4	
17	...	...	317	...	4.15	...	8.95	...	13.1	
18	...	...	301	...	3.3	...	8.3	...	11.6	
19	...	...	303	...	3.45	...	8.45	...	11.9	
20	...	...	306	...	3.75	...	8.55	...	12.3	
21	...	...	294	...	3.35	...	8.15	...	11.5	
22	...	...	302	...	4.1	...	8.5	...	12.6	
23	...	...	305	...	3.25	...	8.45	...	11.7	
24	...	...	303	...	3.1	...	8.3	...	11.4	
25	...	...	308	...	3.1	...	8.5	...	11.6	
26	...	...	302	...	3.6	...	8.4	...	12.0	
27	...	...	310	...	3.05	...	8.55	...	11.6	
28	...	...	298	...	3.1	...	8.2	...	11.3	
30	...	...	301	...	3.3	...	8.3	...	11.6	
Average			...	1.0303	...	3.5	...	8.4	...	12.0

May, 1925.

GRADE FRIESLAND CATTLE.

Evening.

Date. May, 1925.		Specific gravity.	Fat.	Solids not fat.	Total Solids.
			%	%	%
1	...	1.0302	3.45	8.35	11.8
2	...	285	3.8	8.0	11.8
3	...	292	4.0	8.2	12.2
4	...	287	3.75	8.05	11.8
5	...	280	3.8	7.9	11.7
6	...	290	4.0	8.2	12.2
7	...	303	4.1	8.5	12.6
8	...	268	4.4	8.2	12.6
9	...	300	3.75	8.35	12.1
10	...	302	4.2	8.5	12.7
12	...	293	4.0	8.3	12.3
14	...	296	4.0	8.3	12.3
15	...	295	3.9	8.3	12.2
16	...	299	3.9	8.4	12.3
17	...	298	4.2	8.4	12.6
18	...	302	4.5	8.6	13.1
19	...	306	3.8	8.6	12.4
20	...	302	4.25	8.55	12.8
21	...	301	3.8	8.4	12.2
22	...	304	4.2	8.6	12.8
23	...	310	4.15	8.75	12.9
24	...	307	4.15	8.65	12.8
25	...	306	4.0	8.6	12.6
26	...	308	4.1	8.7	12.8
28	...	308	4.25	8.65	12.9
29	...	312	4.0	8.7	12.7
30	...	300	4.1	8.5	12.6
31	...	305	4.1	8.6	12.7
Average		1.0299	4.0	8.4	12.4

June, 1925.

GRADE FRIESLAND CATTLE.

Evening.

Date. June, 1925.	Specific gravity.	Fat.	Solids not fat.	Total Solids.
		%	%	%
1	1.0309	4.2	8.7	12.9
2	302	4.3	8.6	12.9
3	303	4.3	8.6	12.9
4	305	4.35	8.65	13.0
5	304	4.3	8.6	12.9
6	298	4.25	8.45	12.7
7	307	4.5	8.7	13.2
8	302	4.1	8.5	12.6
9	303	4.25	8.55	12.8
10	301	4.2	8.5	12.7
11	310	3.9	8.7	12.6
14	307	4.2	8.7	12.9
15	308	4.2	8.7	12.9
16	298	4.1	8.4	12.5
17	303	4.2	8.6	12.8
18	302	4.3	8.6	12.9
19	303	4.1	8.5	12.6
20	302	3.8	8.5	12.3
21	307	3.8	8.6	12.4
22	288	4.55	8.25	12.8
23	297	3.75	8.35	12.1
24	302	4.0	8.5	12.5
25	302	4.0	8.5	12.5
26	312	3.95	8.75	12.7
27	288	4.5	8.2	12.7
28	309	4.1	8.7	12.8
29	303	4.2	8.6	12.8
30	310	3.4	8.6	12.0
Average	1.0303	4.1	8.6	12.7

July, 1925.

GRADE FRIESLAND CATTLE.

Morning.

Date. July, 1925.	Specific gravity.	Fat.	Solids not fat.	Total Solids.
		%	%	%
1	1.0312	3.9	8.7	12.6
3	307	3.8	8.6	12.4
4	305	3.95	8.55	12.5
5	305	3.1	8.4	11.5
6	301	4.1	8.5	12.6
7	296	3.6	8.3	11.9
8	301	3.8	8.4	12.2
9	305	4.25	8.65	12.9
10	305	3.6	8.5	12.1
11	296	3.8	8.3	12.1
12	303	3.85	8.45	12.3
13	310	2.9	8.5	11.4
14	302	3.6	8.4	12.0
15	307	3.5	8.5	12.0
16	307	3.35	8.45	11.8
17	296	3.1	8.2	11.3
18	304	3.2	8.4	11.6
19	302	3.5	8.4	11.9
20	305	3.45	8.45	11.9
22	309	4.2	8.7	12.9
23	298	4.0	8.4	12.4
24	299	4.2	8.5	12.7
25	302	3.85	8.45	12.3
26	305	2.9	8.4	11.3
Average	1.0303	3.6	8.5	12.1

BACTERIOLOGICAL DIVISION

SECTIONS B.D.E. & F.

APPENDIX J

Grand Total of all Examinations 8689.

[illegible]



